Dedicated to Delivery

Nasco

Life/form®

3 Life/form. Year Warranty Simulators & Trainers

CRiSis™ Manikins

LF03953U – Complete *CRiSis*™
LF03955U – Deluxe *CRiSis*™
LF03956U – Deluxe Plus *CRiSis*™
LF03965U – *CRiSis*™ Auscultation
LF03966U – *CRiSis*™ Auscultation w/Interactive ECG
LF03968U – Deluxe Plus *CRiSis*™ Auscultation

Instruction Manual

WARNING: Products may contain dry natural rubber.

Life/form® *Products by Nasco*

Limited Warranty

Nasco warrants to the purchasers of ***CRiSis***™ manikin products that they will be free from defects in material and workmanship for a period of three years from the date of purchase. Nasco will repair any defect reported within three years of the date of purchase at no charge. Products found to be defective may be returned to the authorized Nasco dealer from whom the item was purchased, or returned directly to Nasco. Nasco will be liable under this limited warranty only if ***CRiSis***™ manikin products have been serviced properly as directed in the operating manual.

Nasco will not be responsible for damage caused by unauthorized repairs or modifications that have been made, or if the product has been damaged through misuse, accident, or abuse. This warranty does not cover wear and tear or expendables such as batteries, lubricant, and replacement lungs. There are no other expressed or implied warranties of merchantability, fitness of purpose, or otherwise on ***CRiSis***™ manikin products, parts, and accessories.

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Life/form® Adult CRiSis™ Manikins

All of the Adult ***CRiSis™*** Manikins are Complete Resuscitation Systems with five stations allowing you to practice different scenarios. Each manikin consists of a full body CPR manikin, IV Arm, Blood Pressure Arm, Defibrillation Chest Skin, and features the "Airway Larry" Airway Management Head. Ideal for ACLS, paramedic, EMT, and nursing training at every level. Modular components allow you to create a manikin to suit your needs.

This manual will guide you in setting up, using, and maintaining each of the available components. Each section also includes a list of replacement parts, supplies, and auxiliary equipment.

By reading and following all instructions carefully and completely, you can be sure your ***Life/form® CRiSis™*** Manikin will provide years of valuable service.

Identifying Your Model

Pages 5-10 display the Adult ***CRiSis™*** family of simulators. Identify your model and refer to the Operation Section pertaining to your model.

This guide has been carefully written to guide you in the operation of your unit. Depending on your model, please read the procedure(s) indicated. All models follow procedure A. Check your model description to see if procedures B, C, D, E, or F pertain to your model

Cleaning

Normal surface soil can be removed from the trainer with mild soapy water. Do not allow water to contact electrical components. Stubborn stains may be removed with Nasco Cleaner (LF09919U). Simply apply the Nasco Cleaner to the soiled area and wipe clean with a soft cloth.

Note: Avoid using cleaner around the mouth area if students will be applying direct mouth-to-mouth resuscitation techniques, as the cleaner may be toxic if ingested. NEVER place the trainer on any kind of printed paper or plastic. These materials, as well as ball-point pens, will transfer indelible stains. Do not use any cosmetics.

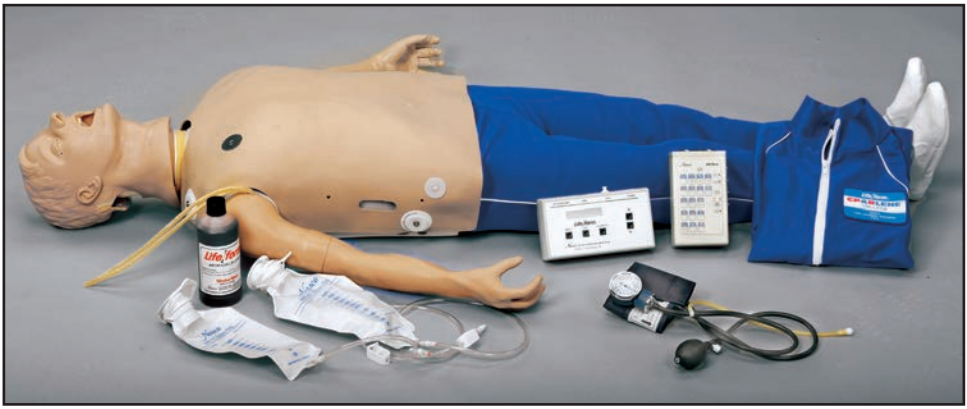
***Resusci® Anne™ is a trademark of Laerdal Medical Corporation.**

Complete CRiSis™ Manikin — LF03953U

List of Components

- ***CRiSis***™ Manikin, Full Body Manikin with “Airway Larry” Management Head
- IV Arm
- Blood Pressure Arm
- Electronic Blood Pressure Control Unit
- Defibrillation Chest Skin
- Pump Spray Lubricant
- 3 cc Syringe with Needle
- 12 cc Syringe with Needle
- Two IV Bags
- Three Pinch Clamps
- Two Small Towels
- Butterfly Infusion Set
- Synthetic Blood
- Sphygmomanometer
- Batteries Included
- No Electronic Connections

Follow Procedure A

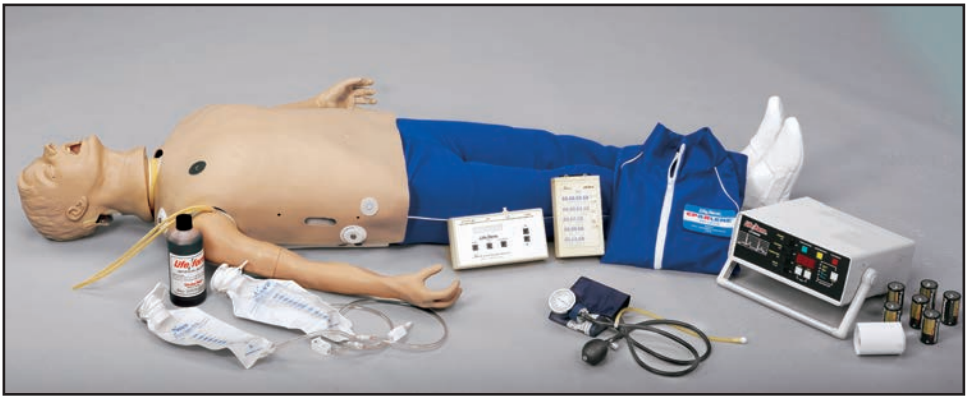


Deluxe CRiSis™ Manikin — LF03955U

List of Components

- ***CRiSis***™ Manikin, Full Body Manikin with “Airway Larry” Management Head
- IV Arm
- Blood Pressure Arm
- Electronic Blood Pressure Control Unit
- Defibrillation Chest Skin
- Pump Spray Lubricant
- 3 cc Syringe with Needle
- 12 cc Syringe with Needle
- Two IV Bags
- Three Pinch Clamps
- Two Small Towels
- Butterfly Infusion Set
- Synthetic Blood
- Sphygmomanometer
- Batteries Included
- No Electronic Connections
- **Interactive ECG Simulator**

Follow Procedure A and B

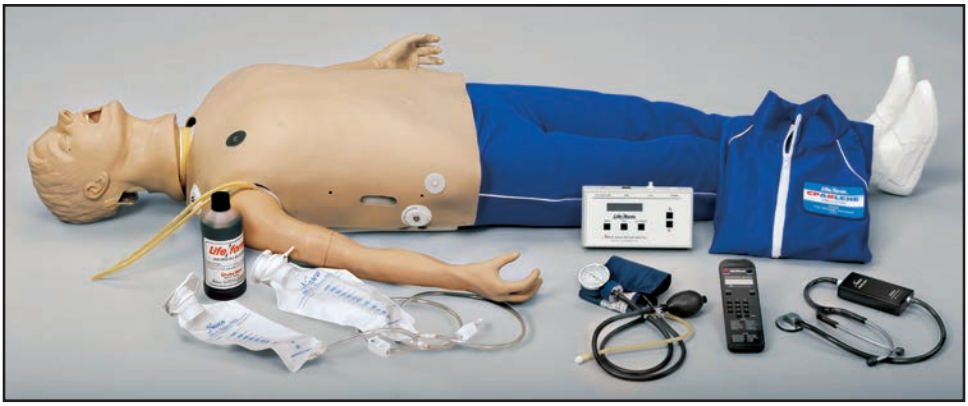


Deluxe Plus CRiSis™ Manikin — LF03956U

List of Components

- ***CRiSis***™ Manikin, Full Body Manikin with “Airway Larry” Management Head
- IV Arm
- Blood Pressure Arm
- Electronic Blood Pressure Control Unit
- Defibrillation Chest Skin
- Pump Spray Lubricant
- 3 cc Syringe with Needle
- 12 cc Syringe with Needle
- Two IV Bags
- Three Pinch Clamps
- Two Small Towels
- Butterfly Infusion Set
- Synthetic Blood
- Sphygmomanometer
- Batteries Included
- Electronic Connections
- **Interactive ECG Simulator**
- **Electronic Memory Unit with Printer**
- **Three Rolls of Thermal Recording Paper**
- **Hard Storage Case with Wheels**

Follow Procedure A, B, D, E, and F

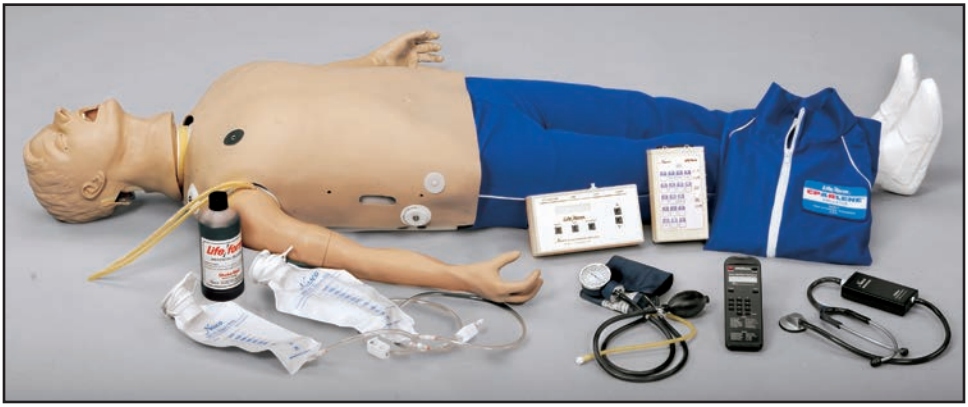


CRiSis™ Auscultation Manikin — LF03965U

List of Components

- ***CRiSis***™ Manikin, Full Body Manikin with “Airway Larry” Management Head
- IV Arm
- Blood Pressure Arm
- Electronic Blood Pressure Control Unit
- Defibrillation Chest Skin
- Pump Spray Lubricant
- 3 cc Syringe with Needle
- 12 cc Syringe with Needle
- Two IV Bags
- Three Pinch Clamps
- Two Small Towels
- Butterfly Infusion Set
- Synthetic Blood
- Sphygmomanometer
- Batteries Included
- No Electronic Connections
- **Auscultation Chest**
- **Auscultation Remote Control with SmartScope™**
- **Hard Storage Case with Wheels**

Follow Procedure A and C



CRiSis™ Auscultation Manikin with Interactive ECG Simulator — LF03966U

List of Components

- ***CRiSis***™ Manikin, Full Body Manikin with “Airway Larry” Management Head
- IV Arm
- Blood Pressure Arm
- Electronic Blood Pressure Control Unit
- Defibrillation Chest Skin
- Pump Spray Lubricant
- 3 cc Syringe with Needle
- 12 cc Syringe with Needle
- Two IV Bags
- Three Pinch Clamps
- Two Small Towels
- Butterfly Infusion Set
- Synthetic Blood
- Sphygmomanometer
- Batteries Included
- No Electronic Connections
- **Auscultation Chest**
- **Auscultation Remote Control with SmartScope™**
- **Interactive ECG Simulator**
- **Hard Storage Case with Wheels**

Follow Procedure A, B, and C

Deluxe Plus CRiSis™ Auscultation Manikin — LF03968U

List of Components

- ***CRiSis***™ Manikin, Full Body Manikin with “Airway Larry” Management Head
- IV Arm
- Blood Pressure Arm
- Electronic Blood Pressure Control Unit
- Defibrillation Chest Skin
- Pump Spray Lubricant
- 3 cc Syringe with Needle
- 12 cc Syringe with Needle
- Two IV Bags
- Three Pinch Clamps
- Two Small Towels
- Butterfly Infusion Set
- Synthetic Blood
- Sphygmomanometer
- Batteries Included
- Electronic Connections
- **Auscultation Chest**
- **Auscultation Remote Control with SmartScope™**
- **Interactive ECG Simulator**
- **Electronic Memory Unit with Printer**
- **Three Rolls of Thermal Recording Paper**
- **Hard Storage Case with Wheels**

Follow Procedure A, B, C, D, E, and F

Nasco *Life*/*form*® "Airway Larry" Airway Management Head

About the Simulator

The ***Life*/*form***® "Airway Larry" Airway Management Trainer is the most realistic simulator available for the training of intubation and other airway management skills.

Nasco has taken great care to create an airway management trainer that is anatomically correct in respect to both size and detail. Landmarks include nostrils, teeth, tongue, oral and nasal pharynx, larynx, cricoid ring, epiglottis, arytenoid, false and true vocal cords, trachea, esophagus, "Airway Larry" lung set, and stomach.

Nasco's "Airway Larry" allows you to practice oral, digital, and nasal intubation. E.T., E.O.A., PTL®, and Combitube® insertion can all be practiced as well (please see "Using the Combitube®"). Suction techniques and proper cuff inflation can also be performed and evaluated.

Lubricating the Airway Trainer Head

Lubricate both the simulator and supplies being used with the pump spray lubricant provided. (***See figures 1 & 2.)***

Figure 1

Figure 2

Note: Nasco recommends the use of the provided lubricant or a similar vegetable-based lubricant for the Airway Management Trainer head. The use of a silicone-based lubricant may cause damage to the simulator, thus voiding Nasco's warranty on the trainer.

Set Up

A. Connecting the Airway

1. The manikin's airway has been disconnected to prevent damage during shipping. To connect the airway, remove the chest skin, chest plate, compression springs, and upper compression plate.

Note: Caution must be taken not to damage the defibrillation electronics attached to the chest skin when removing the skin from the manikin.

Figure 3

2. Remove the lung bags from the upper compression plate. Connect the right and left lung bags to the adapters in the right and left bronchi. ***(See figure 3.)***

B. Installing the Chest Compression Plate

1. Remove the compression springs from packaging. Insert the springs into the four plastic cylinders extending up from the lower compression plate. ***(See figure 4.)***
2. Before replacing the upper compression plate, make sure the lung bags are connected to the tracheal tube extending from the lower portion of the neck of the Airway Management Trainer head.

Figure 4

3. Position the upper compression plate over the springs so that each of the springs fits up into a cylinder on the bottom of the upper compression plate. ***(See figure 5.)***

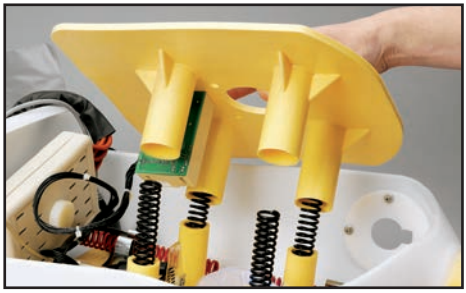


Figure 5

4. Place the lung bags through the hole in the center of the upper compression plate so they rest on top of the plate. ***(See figure 6.)***

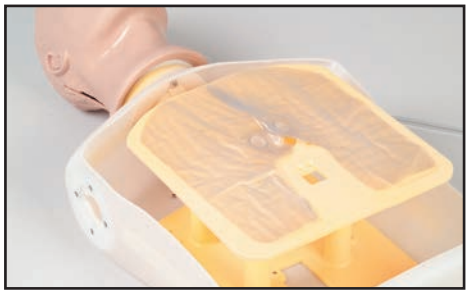


Figure 6

5. Place the chest plate back over the upper compression plate and lungs.
6. Reattach the chest skin by adjusting the hook-and-loop edges. Again, be careful not to damage the electronics attached to the chest skin.

Cleaning and Maintenance

To clean the Airway Management Trainer head, you will need to remove the head from the manikin. To do so, disconnect the lungs from the bronchi. Then, rotate the head so that it is facing backwards. The large tab on the front of the neck should be aligned with the keyway in the torso. Tilt the head upward until it snaps free. Disengage the smaller rear tabs from the neck opening and pull the head from the body. ***(See figure 7.)*** Reverse these steps to reattach the head.

Figure 7

Next, take the trainer to an area with a sink and open counter space. Using the red caps supplied, plug off the right bronchus (the esophagus should already be plugged). Stabilize the head on the counter face-up (towels work well for this) with plugged tubes hanging over the sink. ***(See figure 8.)*** Carefully pour warm soapy water (a mild dish soap works best) into the mouth until the water level reaches halfway up the tongue. Tilt the head back and bring the neck up 3" off the countertop.

Figure 8

Continue filling until the water level covers the tongue. At this point, take a small soft brush and gently scrub the inside of the mouth (a small toothbrush works well for this). Cotton swabs can be used to scrub inside the nostrils. When done, pull the plug from the esophagus and drain the water into the sink. Now pick the head up, hold it in a vertical position, and pull the plugs from the trachea to completely empty the system. ***(See figure 9.)***

Rinsing the Airway

To rinse the airway, follow the same procedure using clean, warm tap water. Repeat this process until all the soap has been flushed from the system.

Figure 9

Disinfecting the Airway

To disinfect, repeat the standard cleaning procedure, but this time use a bleach solution instead of soapy water, as specified by the Centers for Disease Control. Fill the system with the solution until it reaches the corners of the mouth. Remember to start filling with the head flat and finish with the neck slightly elevated to ensure that the solution completely fills all airway passages. Once completely filled with the bleach solution, allow the head to sit for at least 10 minutes. Drain as described earlier and repeat the rinsing process to flush out all of the bleach solution. Set the head aside and allow it to dry completely.

Using the Combitube®

Thoroughly read and follow the instructions that come with the Combitube®. The trainer will accept either a full-size or a small adult tube. As with a live patient, it may be necessary to back the tube out slightly if ventilation cannot be established.

Note: Depending on tube placement, the large cuff may not accept the recommended amount of air. In this case, simply inflate the cuff to its maximum volume (when the plunger stops) and, while holding the plunger down, detach the syringe from the blue pilot balloon and proceed.

Supplies/Replacement Parts for Airway Management Trainer Head

LF03285U Replacement Lungs
LF03644U Pump Spray Lubricant
LF09919U Nasco Cleaner

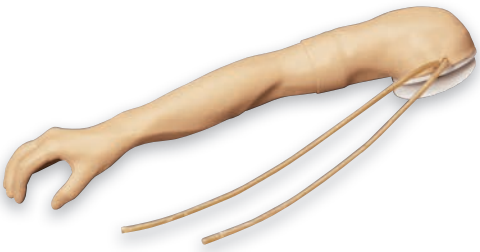


Figure 10

Nasco *Life/form*® Injectable Training Arm

About the Simulator

The *Life/form*® Injectable Training Arm Simulator duplicates the human condition as closely as modern plastics technology allows — it is almost the real thing. ***(See figure 10.)*** Its care and treatment should be the same as with a patient; abuse or rough handling will damage the simulator — just as it would cause pain to a patient.

Although this arm will provide years of trouble-free usage, the skin and veins can be readily replaced when needed. The outer skin is easily peeled off, revealing the "core" and veins, providing, literally, a brand new arm. The life of the replaceable skin and veins will be prolonged by utilizing smaller needle sizes (such as 20- to 25-gauge). However, if instruction with larger needle sizes is required, this can be done; the skin and veins will merely need to be replaced sooner. The Skin and Vein Kits are available through Nasco (see page 17 for list of supplies).

Internal Structure

Internally, the vascular structure (rubber tubing) begins at the shoulder and continues under the arm, crosses the antecubital fossa forearm, makes a loop in the back of the hand, and then returns to the underarm. This venous system is constructed of special plastic

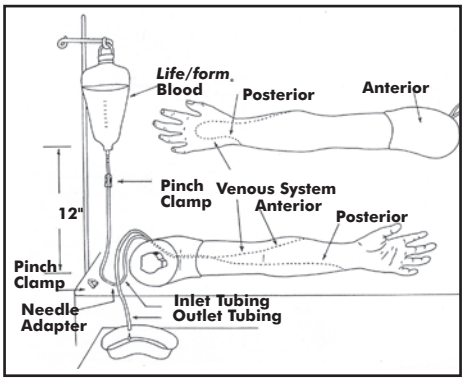


Figure 11

tubing, with the lumen being the approximate size of a human vein. ***(See figure 11.)*** This vascular structure has inlet tubing and outlet tubing at the shoulder. It is via these tubes that synthetic blood is injected and removed, thus allowing practice in the techniques of blood drawing and starting intravenous infusions.

Set Up

A. Preparing the Synthetic Blood

1. Fill the pint bottle containing synthetic blood concentrate with distilled water. ***(See figure 12.)***
2. Pour the synthetic blood into one of the bags. ***(See figure 13.)***

Figure 12

Figure 13

3. Be sure the clamp on the IV tubing is closed, and hang the bag no more than 18" above the level of the arm.
4. Attach the end of the IV tubing to one of the shoulder tubings.
5. With the other shoulder tubing in a basin or sink, gradually "flush" the vascular system with synthetic blood by slowly opening the clamp. Allow some "blood" to pass through the system until the air bubbles have been eliminated.
6. Once the system is filled, use one of the pinch clamps to close off the blood outlet tubing. The venous system is now full of "blood" and pressurized. Be sure to leave the clamp on the IV tubing open.
7. After filling the venous system according to instructions, the arm is now ready for you to practice drawing blood. "Blood" can be drawn anywhere along the pathway of the vein. Distilled water, rather than alcohol, should be used to prepare the sites. Synthetic blood will actually be aspirated once the vein is properly punctured.
8. Small diameter needles (20- to 25-gauge) should be used.

Figure 14

B. Preparing the Arm for Intravenous Infusions

1. Close clamp at end of bag A IV tube, then fill with water (distilled water is recommended), and hang not more than 18" above the arm. ***(See figure 14.)***
2. Appropriate intravenous infusion needles (or butterflies) should be used, and distilled water is recommended as an infusion.
3. IVs can be started anywhere along the pathway of the simulated vein. Cleanse the sites with distilled water only.
4. Attach the adapter end of the IV tubing into one of the shoulder tubing ends.
5. Place the other shoulder tubing end in a basin or jar, and "flush" the vascular system by opening the clamp. Allow infusion (water) to pass through the system until air bubbles are eliminated. Shut off the flow with a pinch clamp. The venous system is now full and pressurized.
6. Insert an IV needle or butterfly in the vein. "Flashback" will indicate proper insertion.
7. Close the clamp on IV bag A tube and remove pinch clamp from shoulder tubing.

Figure 15

8. Attach latex needle adapter to IV needle and IV tubing. ***(See figure 15.)*** Proof of proper procedure will then be evidenced by the flow of infusion fluid from IV bag B. Control flow rate with clamp on IV set B. This fluid can be used over. If more realistic experience is desired with "blood flashback" instead of water when inserting butterfly into lumen of vein, use next procedure C.

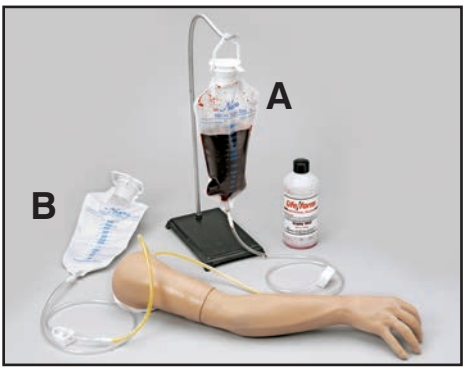


Figure 16

C. Recommended Procedure for Simultaneous IV Infusions and Drawing Blood

Using two IV bag kits, hook up and install with IV bag A and IV bag B. ***(See figure 16.)*** Remove air vent from bag B.

1. Begin with synthetic blood in IV bag A. Open clamp on both A and B to pressurize system. "Flush" system by allowing "blood" to flow into container B until bubbles in tubing disappear, then regulate blood flow from bag A (using clamp). System is now full of "blood" and pressurized. "Blood" can now be drawn anywhere along the pathway of the vein.
2. Intravenous infusion — Insert butterfly into lumen of vein. Proof of correct insertion is evidenced by flashback of "blood." Insert end of IV tubing into butterfly. Adjust flow to desirable rate with clamp. With this arrangement, IV bag B, when full, may be easily switched with A.

Note: Always regulate flow of "blood" from the raised bag, and open the other clamp.

D. Intramuscular Injections

The procedure for administering intramuscular injections can be practiced in the area of the deltoid. Prep the site with distilled water only. These injections can be done utilizing the appropriate needle and syringe. 1/2 cc of distilled water may be injected, however, we recommend utilizing air as injectant since the distilled water cannot be drained, but must evaporate from the arm. Synthetic blood must NEVER be used for injections.

Troubleshooting

If "blood" cannot be aspirated during the blood drawing procedure:

1. The clamp is not opened.
2. There are kinks in the tubing of IV sets.
3. Tubing has been pinched shut by constant pressure of pinch clamps. Lumen remains pinched occasionally even if pinch clamps are loosened. Slide clamp to new position and, with fingers, manipulate tubing at pinched site to restore lumen. In heavy use, slide clamp to new position on tubing from time to time to prevent the "permanent pinch" caused by constant clamp pressure. Replace IV kit.
4. Hanging the supply bags "slightly" higher for the arms that are not producing enough pressure can create just enough gravity on the fluid to facilitate flow.
5. If these measures do not unclog the venous system, try using a large 50 cc syringe to force fluid through the tubing.

6. If none of these measures work, peel back the skin (soap up exterior arm skin generously with Ivory® liquid detergent) of the arm to the knuckles (do not remove from fingers), and examine all tubing for possible kinks. Soap up arm core and skin generously with Ivory® liquid detergent, and return skin over arm.

Cleaning and Maintenance

After each class use, disconnect "blood" and flush the venous system. Return synthetic blood to the storage bottle. Remove pinch clamps and IV sets from arm. Use tap water to flush the venous system and wash the outside of the arm with Ivory® liquid detergent and water. Excess water may be removed from the arm by raising the hand, lowering the shoulder, and draining it into a sink or basin. Always remove the pinch clamps from shoulder tubing and drain excess water from veins before storing.

Cautions

1. This synthetic blood is specially formulated to be compatible with the self-sealing veins and plastics used in manufacturing the arm.
2. NEVER use synthetic blood for intramuscular injection.
3. DO NOT use dull or burred needles, as these will cause leaks in the system. Burred needles will cause permanent damage. Use smaller needles (20- to 25-gauge).
4. DO NOT allow "blood" to dry on the simulator — it may stain the skin.
5. Use only 500 cc of infusion fluid, as a larger amount will also increase the pressure of the venous system, resulting in leaks.
6. DO NOT clean the simulator with solvents or corrosive material, as they will damage it.
7. DO NOT use for subcutaneous injection. Nasco's Intradermal Injection Simulator (LF01008U) is specially designed for intradermal injection training and practice.
8. Nasco Vein Tubing Sealant Kit (LF01099U) will extend the life of the tubing.

Supplies/Replacement Parts for Injectable Training Arm

LF00845U	***Life/form***® Venous Blood, 1 quart
LF00846U	***Life/form***® Venous Blood, 1 gallon
LF01099U	Vein Tubing Sealant Kit
LF03215U	Skin and Vein Replacement Kit
LF09919U	Nasco Cleaner

Nasco *Life*/*form*® Blood Pressure Simulator

About the Simulator

The Nasco *Life*/*form*® Blood Pressure Simulator is designed for years of maintenance free operation as a training tool for not only the nurse, doctor, or pre-hospital health care provider, but also for anyone involved in the training of health care professionals.

The Nasco *Life*/*form*® Blood Pressure Simulator has digitally recorded blood pressure sounds that can be varied by pulse rate and volume. The different Korotkoff phases can be identified and an optional auscultatory gap can be selected. A palpable radial pulse is present in the wrist. For additional uses, purchase the Amplifier/Speaker System (LF01189U) for group demonstrations or review.

Set Up

Installing the Batteries

Take the Blood Pressure Electronic Control Unit from the box and turn it over, placing it face down onto a padded work surface. Locate the "Open" compartment on the back of the panel where the batteries are to be installed. ***(See figure 17.)*** Place your thumb or index finger on the "Open" compartment and push up.

This will open the battery compartment. The compartment is marked as to the "+" and "–" positions of the batteries. The battery bracket is now accessible to the user.

Figure 17

Install six "AA" batteries as indicated by the orientation diagram embossed in the bottom of the bracket. It is recommended that alkaline batteries be used for increased battery life. After the batteries have been properly installed, reassemble the Blood Pressure Simulator by simply reversing the disassembly procedures. Place the unit face up on the work surface and turn it on by pressing the on/off switch on the top right of the unit. ***(See figure 18.)*** Observe the display and verify that a readable display is present, indicating proper battery installation.

Note: The control box has a battery saving feature which will turn the unit off after about 8-10 minutes if no keys are used within that period of time.

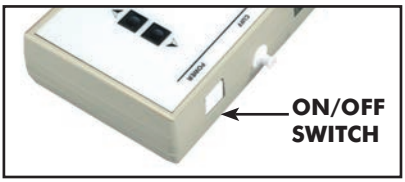


Figure 18

The next step is to connect the simulated arm and speaker assembly along with the sphygmomanometer cuff and gauge assembly included with the unit. First, locate the end of the pressure line attached to the sphygmomanometer that has the male luer fitting attached to it. Attach this to the female luer fitting at the top of the unit marked CUFF. After the pressure line has been properly installed, locate the plug that is at the end of the wire which extends from the simulated arm assembly. Insert the plug from the arm into the jack at the top of the unit marked ARM. ***(See figure 19.)***

At this point the Blood Pressure Simulator is ready for use. The unit has been factory calibrated for use with the accessories included in the kit. No further calibration adjustments should be necessary at this time. If the unit is to be used with a sphygmomanometer other than that supplied with the unit, or if recalibration is necessary at a later date, then see the section titled "Calibration Procedures."

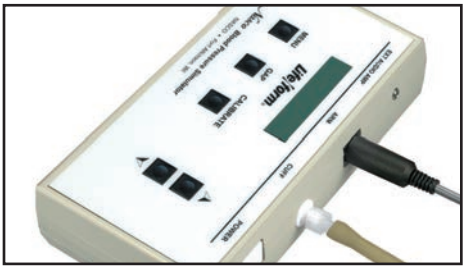


Figure 19

Figure 20

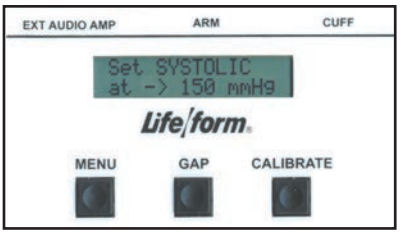


Figure 21

Familiarizing Yourself with the Nasco *Life/form*® Blood Pressure Simulator Control Panel

Under the display window are three buttons: Menu, Gap, and Calibrate. ***(See figure 20.)*** The systolic pressure is set by pressing the Menu key once. The pressure is adjusted up or down using the up and down arrow keys. ***(See figure 21.)*** The diastolic pressure is set by pressing the Menu key a second time. Adjust the setting up or down with the arrow up and down keys. ***(See figure 22.)*** The heart rate is set by pressing the Menu key a third time, and adjusting the rate with the arrow up and down keys. The pulse rate can be set from 0 beats per minute to 300 beats per minute. ***(See figure 23.)*** The palpation can be set to either on or pulseless. When the pulseless setting is used, the diastolic and systolic pressures will automatically be set to 0.

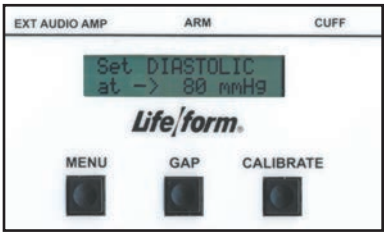


Figure 22

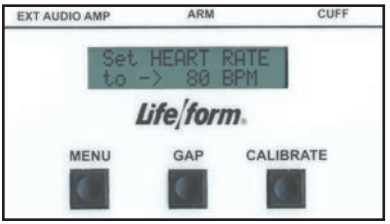


Figure 23

Palpable Pulse Feature

The Nasco *Life/form*® Blood Pressure Simulator also incorporates a palpable pulse at the radial location. ***(See figure 24.)*** Palpations can be felt upon start-up of the unit or after blood pressure settings have been made. Press the Menu key repeatedly until “Set PALPATION” menu appears. “Pulse ON” is defaulted and enables the palpation feature.

The pulse in the wrist will begin when the electronic box is turned on. During the actual blood pressure reading, the palpable pulse will turn off when the cuff is inflated and surpasses the systolic set point. It will turn on again when the cuff is deflated 20 mmHg BELOW the diastolic set point.

Note: The pulse feature is turned off during this time to allow students to clearly hear the Korotkoff sounds through the stethoscope without interference from the background noise of the pulse feature in the wrist. **The palpable pulse is delicate and should be palpated lightly, as you would with a real patient. Pressing too hard can damage the pulse feature.**

Make sure the cable from the blood pressure arm is properly connected to the electronic box and the Palpation feature is in the “PULSE ON” mode.

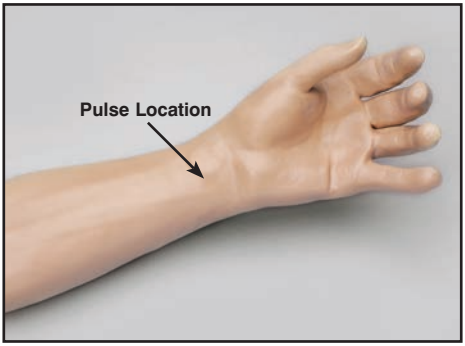


Figure 24

A pulseless condition can be simulated by switching your unit to the "pulseless" mode. Press the Menu key repeatedly until "Set PALPATION" menu appears. By pressing the down arrow at this point, palpations can be disabled, causing the simulator to be pulseless. When in the "pulseless" mode, all settings are automatically reset to 0 and all blood pressure sounds are disabled.

The pulseless setting will also turn off the sounds in the arm. The pulse will always be on unless the pulseless feature is activated or if the systolic or heart rate levels are set to zero. To do this, press the Menu key four times. The down arrow key will set the pulse to pulseless. Press the arrow up key to turn the pulse back on. ***(See figure 25.)*** Located to the right of the Menu key is the auscultatory Gap key. ***(See figure 26.)*** This key is included to simulate the auscultatory gap that is sometimes present between phase

Figure 25

Figure 26

1 and phase 2 sounds in which no audible sound is noted during this portion of auscultation. This control function is included so that the trainee can become familiar with this phenomenon.

Pressing the Gap key simply turns the gap function off or on. When the key is pressed, a message will briefly appear that the auscultatory gap is enabled or disabled. Also the main display will show (at the bottom right of the display) either AGap:Y (for on) or AGap:N (for off).

The arrow up and down keys also control the volume of the sounds that are present in the arm. From the main menu, press the up arrow key to increase the volume; press the down arrow key to decrease the volume. The volume levels can be adjusted from level 1 (the lowest volume) to level 7 (the highest volume).

Using the Nasco *Life/form*® Blood Pressure Simulator

First, verify that the pressure line tubing from the sphygmomanometer and the audio line coming from the simulated arm assembly are properly connected to the blood pressure simulator unit, as previously described in the set up procedures. Apply the sphygmomanometer cuff and gauge to the simulated arm assembly in the usual manner. Apply the stethoscope to the simulated arm, also in the usual manner. Set the systolic and diastolic controls to the desired levels. Select the auscultatory gap if desired. Finally, adjust the pulse rate control to the desired setting.

To proceed with the simulated blood pressure measurement, first close the valve on the sphygmomanometer bulb tightly and begin pumping air into the cuff until the gauge reads higher than the preset systolic level chosen. Once this point is reached, loosen the valve on the bulb slightly to allow the gauge pressure reading to decrease slowly. While monitoring the arm assembly with the stethoscope, note the point on the sphygmomanometer gauge when the first Korotkoff sound is heard. This will be the systolic blood pressure. Allow the pressure in the cuff to continue to decrease until the point at which the last pulse is heard, noting the reading on the gauge. This is the diastolic blood pressure.

Compare the results of reading the systolic and diastolic blood pressures on the gauge with the respective settings on the simulator. If the readings were accurate, they should compare favorably with the preset values. If the auscultatory gap had been selected, then an absence of an audible pulse would have been noticed during what would have been the phase 2 Korotkoff sound. It is this lack of an audible pulse that is considered an auscultatory gap. Note that in reality the auscultatory gap can be present in either the phase 1 or phase 2 Korotkoff sounds. If it is desired to demonstrate the sounds heard while measuring a subject's blood pressure to the trainee or group of trainees, an auxiliary Amplifier/Speaker System is available (LF01189U). If the auxiliary speaker is used, the speaker is plugged into the EXT AUDIO AMP jack located next to the ARM output jack at the top of the unit. Adjust the volume control to increase the output of the Amplifier/Speaker System, and proceed with the blood pressure measurement sequence as it would normally be performed, except that the stethoscope need not be used. Instead, listen to the sounds as they emanate from the Amplifier/Speaker System, noting the differences in the Korotkoff phases being presented.

The Nasco ***Life/form***® Blood Pressure Simulator is programmed to demonstrate the five Korotkoff phases, including an auscultatory gap, which can be heard during auscultation of a subject while measuring the subject's blood pressure. Each is distinctly different and present for only a portion of the measurement sequence.

Low Battery Indicator

When the battery supply diminishes to a level near the point that the unit will no longer function properly, the "low batt" segment of the systolic pressure display will activate when the pressure in the sphygmomanometer cuff reaches above 20 mmHg. At this point, the batteries should be replaced as soon as possible in order to insure proper operation of the unit. Refer to the section titled "Installing the Batteries."

Calibration Procedures

To calibrate the simulator, set the unit up as described in the section titled "Using The Nasco ***Life/form***® Blood Pressure Simulator." Apply the cuff to the simulated arm. Set the control box systolic pressure to 150 mmHg and set the diastolic pressure to 70 mmHg. Proceed with a simulated blood pressure measurement. Note the discrepancy in the readings between the gauge and the control box. Set the systolic "offset." **Example:** If the blood pressure reading was taken and the sounds started at 148 mmHg, then the offset is +2. If the sounds started at 152 mmHg, the offset is –2. For this example, assume that the sounds started at 148 mmHg. Press and hold the Calibration key until the systolic correction window appears. ***(See figure 27.)*** Using the arrow up key, set the correction to +2. Set the diastolic offset. **Example:** If the blood pressure reading was taken and the sounds stopped at 72 mmHg, the offset is –2; if the sounds stopped at 68 mmHg, the offset is +2.

For this example, assume that the sounds stopped at 72 mmHg. From the systolic window, press the Menu key to change the diastolic window. ***(See figure 28.)*** With the arrow down key, set the correction to –2. Press the Menu key again and the message "CALIBRATION COMPLETE" will appear. The main menu window will be displayed.

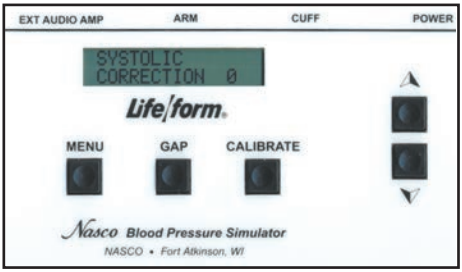


Figure 27

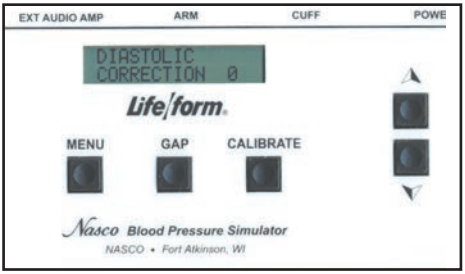


Figure 28

Preparing Your Equipment for Use with the Nasco Blood Pressure Simulator

To adapt your sphygmomanometer for use with the simulator, it is first necessary to obtain the luer fitting and the T-fitting included with the simulator, which is also available through your Nasco catalog sales office. Using a wire cutting pliers or similar instrument, carefully cut the pressure line of the sphygmomanometer about 2" from the gauge. ***(See figure 29.)***

Take the T-fitting and insert it between the two ends of tubing that were previously cut. ***(See figure 30.)*** Assemble the portion of pressure line tubing over the remaining barbed end on the T-fitting. ***(See figure 31.)***

Figure 29

Lastly, take the loose end of the tubing and push the male luer fitting into it. ***(See figure 32.)*** Attach the male luer fitting to the fitting marked CUFF at the top of the unit. Once all of the necessary connections have been properly made, go to the section titled "Calibration Procedures" and calibrate the unit. When the calibration procedures have been completed, the simulator is ready for use.

Figure 30

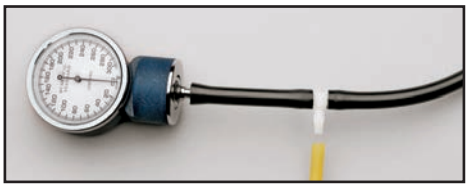


Figure 31

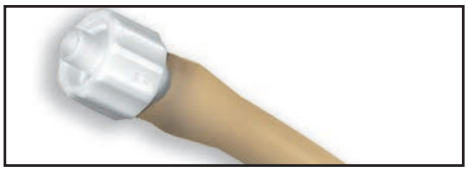


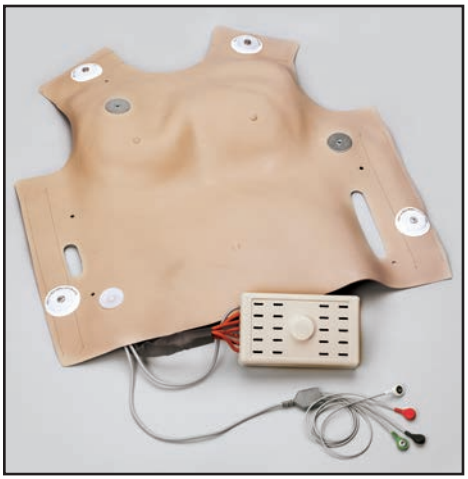
Figure 31

Supplies/Replacement Parts for Blood Pressure Simulator

LF01225U Electronic Control Unit

LF01189U Amplifier/Speaker System

LF01073U Replacement Blood Pressure Cuff



Nasco *Life*/*form*® Defibrillation Chest Skin

About the Simulator

The ***CRiSis***™ System Defibrillation Chest Skin has been designed to absorb a maximum of 360 joules of energy*. Although capable of absorbing 360 joules, we do recommend that the smallest energy level possible be used while training with the skin.

The ***CRiSis***™ System Defibrillation Chest Skin will enable you to practice defibrillation using manual, semiautomatic, and automatic external defibrillators (AEDs). When using any one of these in training, always follow the recommended operating procedures for that particular defibrillator.

The "Airway Larry" Manikin comes with the Defibrillation Chest Skin in place and ready for use.

Note: 360 joules is the maximum energy level that Nasco recommends administering to the Defibrillation Chest Skin. Energy levels in excess of 360 joules may cause irreparable damage to the chest skin, circuitry, and patient simulator being used — thus voiding Nasco's warranty and endangering your equipment. Nasco assumes no liability for damage or injury that may be caused by the use and/or misuse of this equipment. All normal safety precautions for defibrillation training should be followed, and energy levels should be minimized. Nasco did not design nor intend this Defibrillation Chest Skin to be used as anything other than a training apparatus.

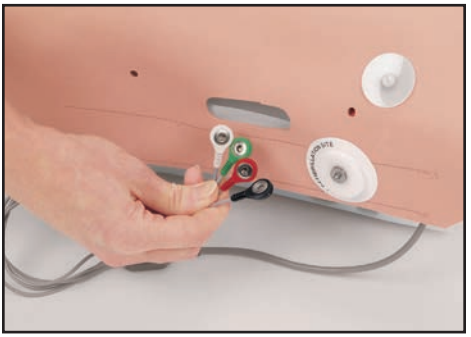


Figure 33

Connecting Your Arrhythmia or Patient Simulator

Nasco has designed the ***CRiSis***™ System to be compatible with a variety of patient simulators. This is possible via the standard four-lead snap cable. ***(See figure 33.)*** If your patient simulator has only two output posts, the red and black leads must be connected to the patient simulator.

You may want to connect the manikin to the simulator that came with your defibrillator. If your patient simulator doesn't have the standard snap connectors, it will be necessary to purchase the corresponding adapters from Nasco. To order, please see "Supplies/Replacement Parts" on page 24.

Once your manikin is connected to your patient simulator, you will be able to pick up the ECG waves either through the monitor hook-ups on the skin or through the two disks attached to the skin on the defibrillation sites.

These disks will enable you to pick up the ECG wave using either the "Quick Look" paddle option or directly through gel pads, just like on a real patient.

It is possible to use AED gel pads with the cable connectors built into the gel — the same ones you use on patients. In an effort to help you save money, Nasco does offer a set of defibrillation pad and patient simulator adapters that will correspond to your particular AED unit. These defibrillation pad and patient simulator adapters can be used again and again. They come as a set. (See "Supplies/Replacement Parts" at right.)

Troubleshooting

Problem ECG wave is not being picked up from the manikin.

Solution

1. Check your connections on the patient simulators; one or more may be disconnected.
2. Check to make sure your patient simulator is plugged in and working properly.

Problem ECG wave is inverted.

Solution

Recheck the position of the red and black lead snaps on the patient simulator.

Note: If the defibrillation skin is not functioning or wiring comes undone, please contact us to repair or replace the unit. Failure to do so, or unauthorized repair, may void the warranty or cause further harm or damage to you or your equipment.

Supplies/Replacement Parts for Defibrillation Chest Skin

LF03656U Physio Control Defibrillation Pad and Patient Simulator Adapter Package for LifePak 10 and LifePak 20

LF03657U Marquette Electronics Defibrillation Pad and Patient Simulator Adapter Package

LF03658U SpaceLabs/Laerdal/ Heartstart/First Medic Defibrillation Pad and Patient Simulator Adapter Package

LF03691U Zoll Training Cables with Adapters

LF03962U Physio Control Training Cables with Adapters for LifePak 12

If you need help selecting the training pad adapters that correspond to your AED unit, please feel free to call us at 1-800-558-9595 for assistance.

Nasco *Life*/*form*® Interactive ECG Simulator

The *Life*/*form*® Interactive ECG Simulator is an easy-to-use training tool that allows you to practice defibrillation and pacing procedures with or without a defib manikin. For arrhythmia recognition, you can select fibrillations, tachycardias, and bradycardias in either adult or pediatric format.

ON-OFF

Press to power on and to power off.

LOW BATT

Red indicator illuminates when battery needs replacement.

DEFIB DISCHG

Green indicator illuminates for two seconds when defib discharge is sensed. If defibrillating Nasco manikin, set defib to 2J or more. If defibrillating directly into simulator, set defib to 50J or more.

convert

Simulate cardioversion by activating convert feature. Simulator responds to defib discharge.

Adult Ped

Yellow indicators tell which rhythm set is being simulated — adult or pediatric.

age group

Press to select adult rhythm set or pediatric rhythm set.

PACER PULSE

Green indicator flashes when external pacer pulse is sensed. (Captured beat is simulated, too.) Sensing occurs when external pacer current is set to 60mA - 70mA or more.

convert

The convert feature allows you to convert automatically from one rhythm (running rhythm) to another rhythm (waiting rhythm) when a defib discharge is sensed. If defibrillating into Nasco manikin, set defib energy to 2J or more. If defibrillating directly into simulator, set defib energy to 50J or more.

To perform convert operation:

1. Press **convert** key. Indicator of running rhythm pulses brighter.
2. Press key of rhythm to be simulated immediately after defib discharge. Indicator of this (waiting) rhythm blinks on and off.
3. Discharge defibrillator. The waiting rhythm becomes the running rhythm.

To cancel convert operation before it's completed, either press convert key again or press key of running rhythm. If convert operation is started, but a discharge is not sensed within two minutes, the convert operation cancels automatically.

age group

The age group feature allows you to simulate either adult or pediatric rhythms. In general, P wave amplitudes, PR intervals, QRS durations, QRS axes, and ventricular rates are representative of the age group selected.

Adult and **Ped** indicators tell you which rhythm set is selected. To switch from one set of rhythms to the other, press age group key, then key of rhythm you wish to simulate. If age group key is pressed, but a rhythm key is not pressed, the age group changes within two seconds. At power-on, adult age group is selected automatically.

GETTING STARTED

Using Simulator with Defib Manikin

1. Connect manikin's ECG cable to simulator's color-coded ECG snaps. (***See figure 1.)*** This is the only cable needed for connecting simulator to manikin.
2. Connect defibrillation cable to manikin's defibrillation sites. (If you have a separate pacer cable, attach it to defibrillation sites for pacing.)
3. Connect monitor's ECG cable to manikin's ECG snaps. If monitor ECG cable has right leg lead, but manikin does not have right leg ECG snap, connect right leg lead to simulator's green-labeled ECG snap.
4. Press **ON-OFF** key to power on simulator. Observe that **NSR** and **Adult** indicators are illuminated. Power on monitor/defibrillator. Observe that NSR at 72 bpm is displayed.

Using Simulator Without Defib Manikin

1. Connect monitor's ECG cable to simulator's ECG snaps. ***(See figure 1.)***
2. Using your pad adapters or pad adapter cable, connect cable to simulator's defib cable receptacles. ***(See figure 2.)***
3. Press **ON-OFF** key to power on simulator. Observe that **NSR** and **Adult** indicators are illuminated. Power on monitor/defibrillator. Observe that NSR at 72 bpm is displayed.

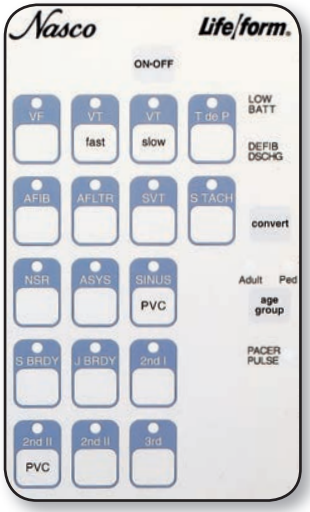


Figure 1

Press ECG cable connectors onto simulator snaps (match colors). Left to right: green (RL), white (RA), black (LA), red (LL).

ECG signal is obtained with either 3- or 4-lead ECG cable.

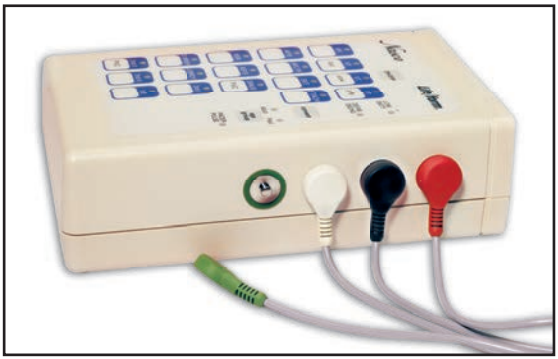


Figure 2

Insert pad adapters, or pad adapter cable, into adapter receptacles. Connect defibrillation cable — APEX to left, STERNUM to right.

WARNING: SHOCK HAZARD!
Be sure defibrillation cable is securely attached to simulator.

ADULT

FOR DEFIBRILLATION TRAINING

VF	*Ventricular Fibrillation.*
VT fast	*Ventricular Tachycardia. Wide QRS. Rate: 185.*
VT slow	*Ventricular Tachycardia. Wide QRS. Rate: 140.*
VT poly	*Ventricular Tachycardia. Fluctuating QRS axis.*
AFIB	*Atrial Fibrillation. Ventricular rate: 120 to 160.*
AFLTR	*Atrial Flutter (2:1). Ventricular rate: 150.*
SVT	*SVT alternates with NSR, then remains in SVT. SVT rate: 216.*
S TACH	*Sinus Tachycardia. Rate: 120.*
NSR	*Normal Sinus Rhythm. Rate: 72.*
ASYS	*Asystole.*
SINUS PVC	*Sinus Rhythm with PVCs. Sinus rate: 72.*

FOR EXTERNAL PACER TRAINING

S BRDY	*Sinus Bradycardia. Rate: 40.*
J BRDY	*Junctional Bradycardia. Rate: 42.*
2nd I	*2nd deg. type I AV Block (4:3). Atrial rate: 60.*
2nd II PVC	*2nd deg. type II AV Block (4:3). PVCs. Wide QRS. Atrial rate: 60.*
2nd II	*2nd deg. type II AV Block (4:3). Wide QRS. Atrial rate: 60.*
3rd	*3rd deg. AV Block. Wide QRS. Ventricular rate: 37.*

PEDIATRIC

FOR DEFIBRILLATION TRAINING

VF	*Ventricular Fibrillation.*
VT fast	*Ventricular Tachycardia. Wide QRS. Visible P wave. Rate: 180.*
VT slow	*Ventricular Tachycardia. Wide QRS. Rate: 148.*
VT poly	*Ventricular Tachycardia. Fluctuating QRS axis. Short runs.*
AFIB	*Atrial Fibrillation. Small R waves. Ventricular rate: 135 to 160.*
AFLTR	*Atrial Flutter (2:1). Ventricular rate: 150.*
SVT	*Supraventricular Tachycardia. Inverted P follows QRS. Rate: 240.*
S TACH	*Sinus Tachycardia. Rate: 165.*
NSR	*Normal Sinus Rhythm. Rate: 90.*
ASYS	*Asystole.*
SINUS PVC	*Sinus Rhythm with PVCs. Sinus rate: 90.*

FOR EXTERNAL PACER TRAINING

S BRDY	*Sinus Bradycardia. Rate: 50.*
J BRDY	*Junctional Bradycardia. Rate: 60.*
2nd I	*2nd deg. type I AV Block (5:4). Atrial rate: 60.*
2nd II PVC	*2nd deg. type II AV Block (5:4). PVCs. Atrial rate: 60.*
2nd II	*2nd deg. type II AV Block (5:4). Atrial rate: 60.*
3rd	*3rd deg. AV Block. Ventricular rate: 60.*

Procedure C

About the Auscultation Simulator

The ***Life/form***® Auscultation Trainer Simulator duplicates heart and lung conditions selected by the instructor by wireless remote control. The student must palpate to identify the correct auscultation sites. They will hear different heart and lung sounds as the SmartScope™ is moved from site to site.

The simulator has six heart sites and five lung sound sites on the anterior surface and midaxillary sites. The remote control can select from 12 different heart conditions, as well as 16 lung conditions. The instructor can select any condition, then switch to another condition easily so the student can compare sounds and make a diagnosis.

The remote control does not have to be pointed directly at the manikin or stethoscope to operate. One remote control will operate multiple sets of SmartScopes™ and manikins simultaneously. Great for group instruction. The range of the remote control is up to 100 feet.

General Instructions for Use

To begin using the Auscultation Trainer, press the red power button. This turns on the remote control and sends a signal to activate the stethoscope as well. After the unit is activated, the display will be in the “status” mode, displaying the current menu settings for the heart and lung conditions.

To select a new condition, press either the heart or lung button. This will put the display into the menu mode. The user can select a condition by either using the number buttons, or by viewing the conditions in sequence using the scroll button. After the condition is selected, press the enter button to activate.

The remote control can be programmed to these heart conditions:

01 Normal
02 Aortic regurgitation
03 Pulmonary stenosis
04 Mitral stenosis
05 Holosystolic
06 Mid-systolic
07 S3 Gallop
08 S4 Gallop
09 Systolic click
10 Atrial septal defect
11 PDA
12 VSD

The remote control can be programmed to these lung conditions:

01 Normal Lung
02 Normal Vesicular
03 Wheezes
04 Mono wheeze
05 Fine crackle
06 Coarse crackle
07 Ronchi crackle
08 Stridor
09 Cavernous
10 Bronchovesicular
11 Bronchial
12 Pulmonary edema
13 Infant
14 Friction rub
15 Egophony
16 Pectoriloquy

Consult the enclosed laminated card for lung and heart sound site locations.

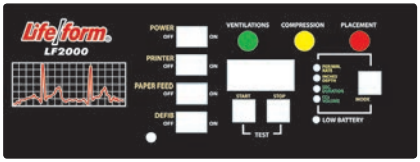
To listen to the selected sounds, place the earpieces in ears, angled in a forward position. Place the diaphragm of the SmartScope™ over one of the appropriate sites on the manikin.

As an alternative, an Amplifier/Speaker System (LF01189U) can be used, allowing an entire classroom to hear at the same time. To connect the speaker, plug the speaker cord into the speaker jack on the top of the SmartScope™ box. When a speaker is connected to the SmartScope™, the earpieces will not work. Place the diaphragm of the SmartScope™ over the appropriate sites on the manikin.

Note: The remote has a battery saver that shuts the unit down after eight minutes if the remote is left on the same setting. To prevent it from shutting down, select a different heart or lung sound within the eight minute period of time.

Available Supplies

LF01144U Additional SmartScope™
LF01145U Additional Auscultation Manikin Torso
LF01148U Replacement Remote Control
LF01189U Amplifier/Speaker System



CPARLENE®

External Electronic Monitors
Simple and accurate feedback! Select one of the four modes (compression rate, compression depth, ventilation duration, ventilation volume) by pushing indicator switch. Red light indicates improper hand placement; yellow light signals proper compression depth of 2.0-2.5 inches adult/1.75-2.25 inches child. Green light signals proper ventilation volume at 0.80 liters adult/0.50 liters child. The performance of each skill is displayed separately, while averages are stored in the memory. Designed to automatically switch between the compression and ventilation modes, depending on which one is being applied.

LF03401U

Electronic Monitoring, Memory, and Printer Unit
For testing, simply push test start button and begin CPR sequence. Compression and ventilation waveforms are plotted in a time sequence. When stop button is pushed, averages of the four skills are shown on the digital display while the printer tabulates the result on paper.

Electronic Monitoring and Memory Unit
Provides same visual feedback as unit above, but without printer component.

Adult/Child Switch on all Monitors

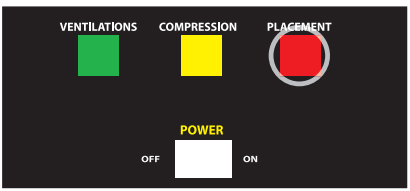
LF03403U

Light Controller
Three-color light controller indicates acceptable levels. Red flashing light indicates improper hand placement, green flashing light indicates proper ventilation volume, and yellow flashing light indicates proper compression depth. Child CPR can be practiced by changing the compression springs and flipping the switch on the light controller.

Procedure
Light Controller Setup
Remove the cover using a medium-sized Phillips head screwdriver. Batteries are included (use “C” cell alkaline batteries).

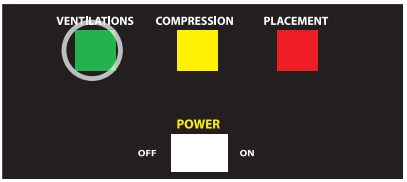
Operation
1. Connect the controller to the manikin with the interface jack.
2. Select adult or child mode at switch.

Hand Placement (Red Light)



The placement light will turn on every time the chest is compressed 1.00 inch and the proper hand placement has not been accomplished.

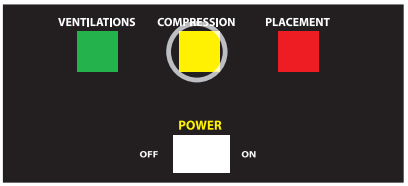
Ventilations (Green Light)



Adult Setting: The ventilation light will turn on every time the ventilation of 0.80 liters is reached. It will turn off when volume drops below this level.

Child Setting: The ventilation light will turn on every time the ventilation of 0.50 liters is reached. It will turn off when volume drops below this level.

Compressions (Yellow Light)



Adult Setting: The compression light will turn on every time the compression depth of 2.00 inches is reached. It will turn off when it drops below this depth or if it exceeds 2.50 inches.

Child Setting: The compression light will turn on every time the compression depth of 1.75 inches is reached. It will turn off when it drops below this depth or if it exceeds 2.25 inches

Procedure D

Procedure E

TROUBLESHOOTING

The red placement light is continuously on, indicating improper hand placement.

1. Turn power off.
2. The chest plate sensor has become disconnected from the red connector in the chest cavity. ***(See figure 3.)***
3. Check inside chest cavity to see if electronic bar reader assembly is in proper vertical alignment. ***(See figure 4.)***
4. Turn power on and test.

The compression depth indicator reports only low compressions.

1. Turn power off.

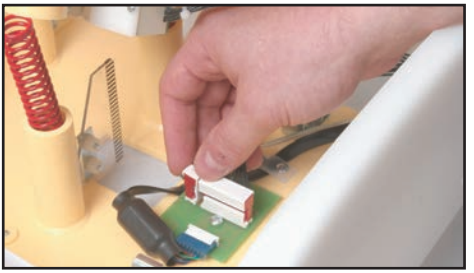


Figure 3

Figure 4

2. Check alignment of lower slide and upper groove reader inside chest cavity.
3. Turn power on and test.

The ventilation volume indicator reports low or no levels.

1. Turn power off.
2. Check to see if the lung bag is properly installed. Lung bag may be blocking the ventilation reader.
3. Check to see that ventilation reader slides easily.
4. Turn power on.

PROCEDURE FOR MEMORY UNIT

Setup Battery Installation

Remove the cover using the key provided and insert in the four open slots on the sides of the unit (two on each side). ***(See figure 5.)*** Press inward while gently applying upward pressure until you hear a soft click. If the supplied key is not available, a small screwdriver can be used. Batteries are included. All electronic components use “D” cell alkaline batteries. On models requiring six batteries, you may find it easier to remove or install batteries if the center two batteries are removed first and installed last.

Figure 5

The “Low Battery” light indicates the end of the batteries’ useful life. The unit will still function for several hours under normal use. A low battery condition can also be indicated by skips or unwanted feed lines in the printout.

Operation

1. Connect the controller to the manikin with the interface jack.
2. Select adult or child mode at switch.

PRACTICE MODES SESSIONS

Select one of the four modes you wish to practice by pushing the mode button until the red light corresponding to the proper mode comes on. The unit will advance the light one position each time the mode key is pushed. ***(See figure 6.)*** The unit will automatically switch between compression and ventilation modes, depending on which one is being applied.

Compression Rate

In the compression rate mode, the unit will display the average rate in compressions per minute of the last five compressions. The unit will continue to update this average until you change modes or push the stop button. Upon pushing the stop button, the unit will calculate and display the average compression rate of all compressions from the start of the present cycle. Any compressions made after the stop button is pushed will start a new cycle.

Compression Depth

In the compression depth mode, the unit will display the average depth in inches of the last compression. The unit will continue this display mode until the mode is changed or the stop button is pushed. Upon pushing the

Figure 6

stop button, the unit will calculate and display the average depth of all compressions from the start of the present cycle. Any compressions made after the stop button is pushed will start a new cycle.

Ventilation Duration

In the ventilation duration mode, the unit will display the duration in seconds of the last ventilation. The unit will continue this display mode until the mode is changed or the stop button is pushed. Upon pushing the stop button, the unit will calculate and display the average duration of all ventilations from the start of the present cycle. Any ventilations made after the stop button is pushed will start a new cycle.

Ventilation Volume

In the ventilation volume mode, the unit will display the volume in liters of the last ventilation. The unit will continue this display mode until the mode is changed or the stop button is pushed. Upon pushing the stop button, the unit will calculate and display the average volume of all ventilations from the start of the present cycle. Any ventilations made after the stop button is pushed will start a new cycle.

Auto Mode

This unit is designed to automatically switch between compression and ventilation modes, depending on which one is being applied.

Defibrillation “Defib” Mode

This unit is designed with a defib simulator. After the defib button is pressed, a light indicating this will turn on. The light will remain on for 30 seconds. While this light is on, no further defibrillations can be performed. A “lightning bolt” icon will also appear on the printout at this point.

Auto Power Down

To increase battery life, the unit will automatically shut off the display and go to a standby mode if no activity is sensed for approximately 30 seconds. The display will turn on when any compression or ventilation activity is sensed. You can also reactivate the display by pressing the mode or start button.

TEST MODES

To begin a test, press the start button. Pressing the start button will clear all registers.

Compression Rate

In the compression rate mode, the unit will display the average rate in compressions per minute of the last five compressions. The unit will continue to update this average until you change modes or push the stop button. Upon pushing the stop button, the unit will calculate and display the average compression rate of all compressions from the start of the present cycle.

Example: For the first compression cycle of 30 compressions, an average rate of 60 compressions per minute (CPM) was obtained. Next, two ventilations were applied to the manikin. Then a second compression cycle of 30 was applied, at an average rate of 100 CPM, and then the stop button was pushed. The unit would calculate and display the overall average of 80 CPM.

Compression Depth

In the compression depth mode, the unit will display the average depth in inches of the last compression. The unit will continue this display mode until the mode is changed or the stop button is pushed. Upon pushing the stop button, the unit will calculate and display the average depth of all compressions from the start of the present cycle.

Ventilation Duration

In the ventilation duration mode, the unit will display the duration in seconds of the last ventilation. The unit will continue this display mode until the mode is changed or the stop button is pushed. Upon pushing the stop button, the unit will calculate and display the average duration of all ventilations from the start of the present cycle.

	Adult	Child
Good =	2.00 - 2.50"	1.75 - 2.25"
High =	Over 2.50"	Over 2.25"
Low =	0.00 - 2.00"	0.00 - 1.75"
Place =	Compression depth of 1.0" with improper hand placement	

Ventilation Volume

In the ventilation volume mode, the unit will display the volume in liters of the last ventilation. The unit will continue this display mode until the mode is changed or the stop button is pushed. Upon pushing the stop button, the unit will calculate and display the average volume of all ventilations from the start of the present cycle.

Adult

Good = Over 0.80 liters (800 cc)
High = Over 2.00 liters (2000 cc)
Low = Under 0.80 liters (80 cc)

Child

Good = Over 0.50 liters (800 cc)
High = Over 2.00 liters (2000 cc)
Low = Under 0.50 liters (80 cc)

TROUBLESHOOTING

Low battery light remains on.

1. Turn power off.
2. Replace batteries.
3. Turn power on.

PROCEDURE FOR PRINTER SETUP

Printer On

If a printout of the compression and ventilation waveforms and defibrillation is wanted, switch the printer switch to the “on” position and press the start button. The printer will print the following (this is an adult test). ***(See figure 7.)***

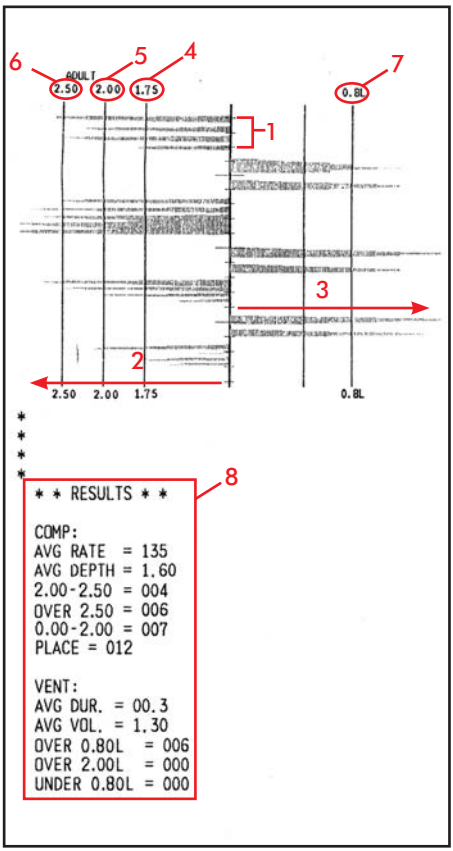


Figure 7

Reading The Printout

Ventilation/Compression Limits

The ventilation limits are labeled 0.5 L and 0.8 L.

The compression limits are labeled 2.00" and 2.50" for adult and 1.75" and 2.25" for child, depending on your selected setting.

Waveform Printout

All compression and ventilation waveforms are plotted. On completion of a test, press the stop button. The final results will be calculated and printed out as shown. ***(See figure 7.)*** It shows:

1. Time scale: ⅛" = 1 second.
2. Axis for compression waveforms start at the center and goes left.
3. Axis for ventilation waveforms start at the center and goes right.
4. 1.75" limit line for compressions is the low level limit for compressions when in the child setting.
5. 2.00" limit line for compressions.
6. 2.25" limit line for compressions.
7. 2.50" limit line for compressions.
8. 500 cc line for child ventilations (0.50 liters)

   800 cc line for adult ventilations (0.80 liters)
9. Printout of final test results. These include averages for compression rate and depth; number of good, high, or low compressions; hand placement; average ventilation volume and durations; and the number of good, high, or low ventilations.

Paper Installation

1. Remove the cover. (See battery installation under section C.)
2. Remove platen from bracket by gently pulling up on one end. ***(See figure 8.)***

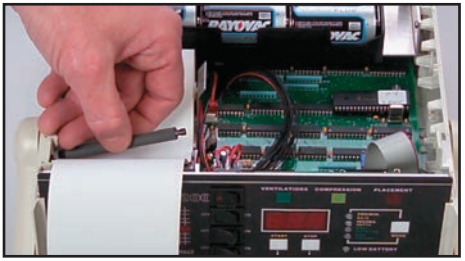


Figure 8

3. Remove the plastic paper holder rod from the paper holder bracket by applying a slight outward pressure to the bracket until the rod can be removed. Care should be taken not to bend too far, or the bracket may become deformed and not hold paper securely.

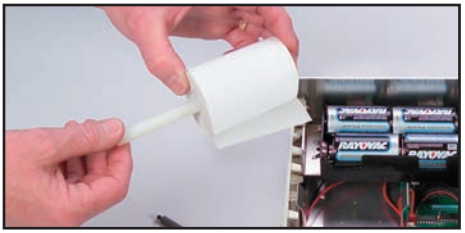


Figure 9

4. Insert plastic rod through the center of a new paper roll. ***(See figure 9.)*** Reinstall into bracket so that the paper feeds off the bottom of the roll pointing towards the front of the printer. ***(See figure 10.)***

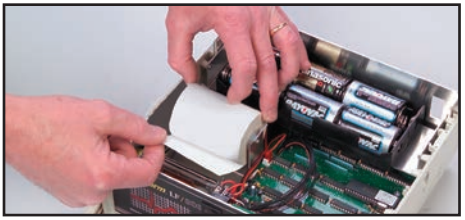


Figure 10

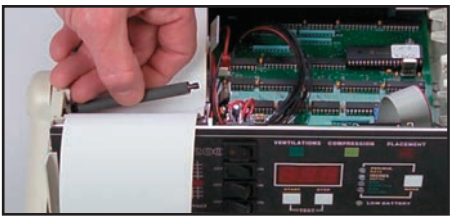


Figure 11

5. While keeping paper taut, position the paper within the guides of the printer and reinstall the platen so that the gears of the platen engage with the gears of the printer. ***(See figure 11.)*** Gently insert platen in bracket until it snaps into place. ***(See figure 12.)***

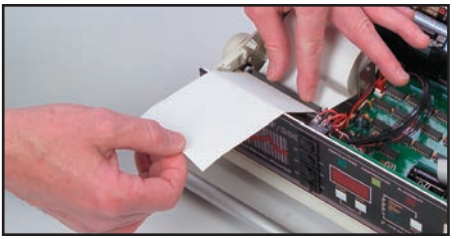


Figure 12

6. While continuing to keep paper taut, press the Paper Feed switch on the front panel until 7" to 8" have fed through the printer to make sure paper is properly aligned and feeding straight. Repeat step 5 if necessary.

Figure 13

7. Feed paper through paper guide in the top cover and replace cover by aligning the slots and tabs on the unit and pushing down on the cover to snap into place. ***(See figure 13.)***

TROUBLESHOOTING

Information is on pages 31 & 33.

Supplies/Replacement Parts for Printer

LF03451U Thermal Printer Paper

Nasco CRiSis™ Manikins

Model	Part #	Intubation/Airway Management Head	IV Arm	Blood Pressure Arm	Defibrillation Chest	ECG Arrhythmia Simulator	Electronic Monitoring, Memory, and Printer	Heart & Lung Sounds	Hard Case
Full Bodied *CRiSis*™ Manikins									
Complete *CRiSis*™ Manikin	LF03953U	✔	✔	✔	✔				
Deluxe *CRiSis*™ Manikin	LF03955U	✔	✔	✔	✔	✔			
Deluxe Plus *CRiSis*™ Manikin	LF03956U	✔	✔	✔	✔	✔	✔		✔
Full Bodied CRiSis™ Manikins with Heart and Lung Sounds									
CRiSis™ Auscultation Manikin	LF03965U	✔	✔	✔	✔			✔	✔
CRiSis™ Auscultation Manikin with ECG Simulator	LF03966U	✔	✔	✔	✔	✔		✔	✔
Deluxe Plus *CRiSis*™ Auscultation Manikin	LF03968U	✔	✔	✔	✔	✔	✔	✔	✔
CRiSis*™ Torsos — *No Heart and Lung Sounds									
CRiSis™ Manikin Torso	LF03957U	✔	✔	✔	✔				
Deluxe *CRiSis*™ Manikin Torso	LF03958U	✔	✔	✔	✔	✔			

Other Available Life/form® Simulators

LF00698U Adult Injectable Arm (White)
LF00855U Male Catheterization
LF00856U Female Catheterization
LF00901U Prostate Examination
LF00906U Ostomy Care
LF00929U Surgical Bandaging
LF00957U Enema Administration
LF00958U Pediatric Injectable Arm
LF00961U Intramuscular Injection
LF00984U Breast Examination
LF00995U Arterial Puncture Arm
LF00999U Pediatric Injectable Head
LF01005U First Aid Arm
LF01008U Intradermal Injection Arm
LF01012U Heart Catheterization (TPN)
LF01019U Ear Examination
LF01027U Peritoneal Dialysis
LF01028U Suture Practice Arm
LF01034U Suture Practice Leg
LF01036U Spinal Injection
LF01037U Hemodialysis Practice Arm
LF01038U Episiotomy Suturing Set
LF01042U Suture Kit
LF01062U Pelvic, Normal & Abnormal
LF01063U Stump Bandaging, Upper
LF01064U Stump Bandaging, Lower
LF01069U Cervical Effacement
LF01070U Birthing Station
LF01082U Cricothyrotomy
LF01083U Tracheostomy Care
LF01084U Sigmoidoscopic Examination
LF01087U Central Venous Cannulation
LF01095U Blood Pressure Arm
LF01108U Infant Intraosseous Infusion
LF01121U Advanced IV Arm
LF01131U Venipuncture and Injection Arm
LF01139U Advanced IV Hand
LF01142U Auscultation Trainer
LF01143U Testicular Exam
LF01152U Male & Female Catheter
LF01155U Advanced CPR Dog
LF01162U Venatech IV Trainer
LF01174U NG Tube & Trach Skills
LF01184U Venatech IM & Sub Q
LF01193U Special Needs Baby
LF03000U CPARLENE® Series
LF03601U Adult Airway Management Trainer with Stand
LF03602U Adult Airway Management Manikin
LF03609U Child Airway Management Trainer with Stand
LF03616U Child CRiSis™ Manikin
LF03617U Deluxe Child CRiSis™ Manikin with Arrhythmia Tutor
LF03620U PALS Update Kit
LF03623U Infant Airway Management Trainer with stand
LF03632U Child Intraosseous Infusion/ Femoral Access Leg on a Stand
LF03633U Child Airway Management Trainer Torso
LF03693U Basic Buddy™ CPR Manikin
LF03699U "Airway Larry" Airway Management Trainer
LF03709U Infant CRiSis™ Manikin
LF03720U Baby Buddy™ Infant CPR Manikin
LF03750U Fat Old Fred
LF03760U Airway Management/Cricoid Pressure Trainer
LF03770U Chest Tube
LF03953U CRiSis™ Manikin, complete
LF03955U Deluxe CRiSis™ Manikin
LF03956U Deluxe "Plus" CRiSis™ Manikin
LF03965U Adult CRiSis™ Auscultation Manikin
LF03966U Adult CRiSis™ Auscultation Manikin with ECG Simulator
LF04000U GERi™/KERi™ Manikin Series
LF04200U Adult Sternal Intraosseous Infusion
LF06001U CPR Prompt® Adult/Child Manikin
LF06012U CPR Prompt® Infant Manikin
LF06200U CPR Prompt® Keychain Rescue Aid
LF06204U CPR Prompt® Rescue and Practice Aid

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