The Trainer's Guide:

A Comprehensive Training Course Reference

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Defibtech Lifeline ARM
Automated Chest Compression System

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1   Before Training Starts

As a trainer, you will be teaching other medical personnel how to use the Lifeline ARM effectively in a real-life rescue situation. This helpful guide has all the information and practical pointers you'll need to prepare students to:

- Deploy the Lifeline ARM to administer automated chest compressions with minimal interruption to manual CPR
- Adjust the Lifeline ARM to provide effective compressions at a consistent rate and depth
- Maintain and store the Lifeline ARM so it will be ready for future use

The course is conducted in two parts:

1. A group session in which the trainer will go over the written information in this guide
2. Practice groups to provide high-quality, hands-on training and evaluation

A crucial part of the learning process, the hands-on training and practice sessions allow students to watch and learn from their peers, receive instant feedback on how well they are performing, and hone their skills before putting them to use in a real-life rescue.

After these training sessions, your students should also be able to pass on the knowledge and expertise they learn from you.

As the leader of the training, be sure to refer to the User Manual for complete directions, indications, contraindications, side effects, training requirements, dangers, warnings, cautions, troubleshooting, maintenance, and technical specifications.

Remember it is the responsibility of all students/operators to read the User Manual before operating the Lifeline ARM.

Getting Ready

In addition to the basics of how to operate and maintain the Lifeline ARM, this guide includes information on how to successfully conduct your training sessions.

Each training section begins with specific information **For the Trainer**, which you should review before each session. At the start of each Course Content section, you'll see a checklist of **Key Concepts** that summarizes the material your students should master. Refer to this checklist to stay focused on the essential elements during the actual training. You'll also see **Trainer Tips** — helpful hints and notes related to that particular section of the training.

Your training sessions will go much more smoothly when you are well prepared. Knowing who you will be teaching, where and how the sessions will be held, and having all materials ready to go are key to effective training.

Know Your Group

Each group will be different and you will be training providers who work in different environments, both in and out of the hospital. Try to establish before each session what type of professionals will be in your group so you can tailor your training to their needs.

Know Your Setup

Well in advance of your training session, make sure your designated facility offers the appropriate resources. You will need:

- A room large enough for the entire group and with enough open floor space for the group to break into the hands-on practice sessions (or enough alternate rooms to accommodate all practice groups)
- Enough seating and desktop space for students to be able to write notes and take tests
- Adequate power and outlets for video / PowerPoint presentations (if used) and to charge the Battery Pack of the Lifeline ARM if needed

Prepare Devices, Accessories, and Training Materials

Print and refer to this checklist before each session to be sure you have all materials fully prepared and ready for use.

For each group of 6 students, you will need:

1. A prepared Lifeline ARM device and all relevant accessories:
   - Backboard, Frame, Carrying Case, Compression Module, Battery Pack, Patient Interface Pad (PIP), Stabilization Strap, Wrist Straps (if used), AC Adapter, Quick Reference Guide, and User Manual.


2. A fully-charged Battery Pack
   - Remember to charge Battery Packs at least 2-3 hours before each session.

3. An anatomically representative full-body manikin, sized appropriately for an adult, that is designed for manual CPR training, works best. Torso manikins with flat backs or too many functions or electronics might be problematic, as well as manikins without arms do not adequately demonstrate the interaction between the Frame and the Neck Strap.

4. Student Self-Tests, Competency Checklists, Training Evaluations, and Certificates of Completion. (pages 37,39,41 and 43)
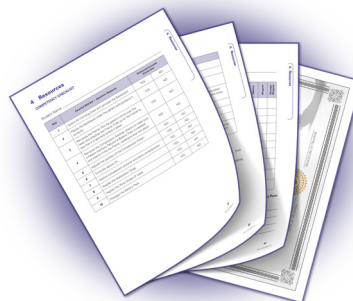
Operator Training Requirements

The Lifeline ARM is intended for use by qualified medical personnel certified to administer CPR. To safely and effectively operate the Lifeline ARM, it is the responsibility of the operator to obtain the following training:

- Lifeline ARM training in accordance with the User Manual, including handling of the actual device

- CPR training in accordance with recent resuscitation guidelines as required by local, state, provincial, and/or national regulations, (e.g., the American Heart Association or the European Resuscitation Council).

- Thorough knowledge and understanding of the material in the User Manual

Note: *This course is not intended to provide CPR certification.*

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2 Group Training Sessions

FOR THE TRAINER

At the beginning of each group session, welcome your students and introduce yourself and the other training staff. If the size of the group allows, ask your students to introduce themselves and the type of environment in which they work. This information can help you anticipate specific questions that may come up during the training as well as create a feeling of common purpose for the students.

> **Trainer Tip:** If the group session is too large for each student to speak, ask the other trainers to lead off with introductions in the practice sessions.

Setting the Agenda

Let your students know what to expect during the session by providing an agenda and establishing a timeline for breaks.

A typical training session lasts about 1 to 1-1/2 hours and includes:

Welcome and introduction

- Group Session:
  - Overview and review of the Quick Reference Card
  - Demonstration of the components and assembly of the Lifeline ARM
  - Demonstration of the operation sequence of the Lifeline ARM
  - Discussion of device use and removal, patient transport, and maintenance
- Break
- Hands-on Training Sessions:
  - Small practice groups for team practice in rotation and student self-tests
  - Evaluations by trainers of student competency
- Time for questions and completion of Training Evaluations

Course Content

KEY CONCEPTS

At the end of this session, your students should know:

- ✓ Benefits of automated chest compressions during CPR (page 12)
- ✓ When — and when NOT — to use the Lifeline ARM (page 13)
- ✓ Side effects of CPR (page 13)
- ✓ Components of the Lifeline ARM and how they function (page 14)

Introducing the Lifeline ARM

As emergency responders know, any lifesaving technique demands a high level of excellence in its delivery. During CPR, it is crucial that rescuers provide effective and uninterrupted chest compressions to maximize the patient's chest compression fraction. Maintaining a level of consistency during manual CPR can be difficult — and sometimes impossible if there are not enough rescuers or if the patient requires transport.

The Lifeline ARM offers an automated solution for providing victims of sudden cardiac arrest with high-quality CPR. It is intended for use as an adjunct to manual CPR when effective manual CPR is not possible (e.g., during patient transport, or extended CPR when fatigue may prohibit the delivery of effective/consistent compressions to the victim, or when insufficient personnel are available to provide effective CPR).

The device is easy to use, easy to transport, and delivers continuous compressions at the depth and rate recommended by the guidelines of the American Heart Association (AHA) and the European Resuscitation Council (ERC).

The following statement comes from the *Highlights of 2015 American Heart Association Guidelines Update for CPR and ECC*[1]:

- There is continued emphasis on the characteristics of high-quality CPR: compressing the chest at an adequate rate and depth, allowing complete chest recoil after each compression, minimizing interruptions in compressions, and avoiding excessive ventilation.
- The recommended chest compression rate is at least 100 per minute.
- The recommendation for chest compression depth for adults is at least 2 inches (5 cm).

Indications for Use

Before and during use of the Lifeline ARM, you should always follow the accepted guidelines and your local protocol for CPR.

Once you have confirmed that the patient is unconscious and not breathing, begin manual CPR and get ready to deploy the Lifeline ARM as appropriate.

1. American Heart Association. *Highlights of 2015 American Heart Association Guidelines Update for CPR and ECC*. Dallas, TX: American Heart Association; 2015; p5.

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Use of the Lifeline ARM is appropriate when effective manual CPR is not possible, such as:

- During extended CPR when rescuer fatigue may compromise consistent and effective compressions
- During patient transport
- When there are not enough rescuers present to deliver adequate and effective CPR

> The Lifeline ARM is intended for use as an adjunct to manual cardiopulmonary resuscitation (CPR) when effective manual CPR is not possible (e.g., during patient transport, or extended CPR when fatigue may prohibit the delivery of effective/consistent compressions to the victim, or when insufficient personnel are available to provide effective CPR).
>
> Federal Law (USA) restricts this device to sale by or on the order of a physician.

Contraindications

Be prepared to recognize situations in which use of the Lifeline ARM is not appropriate.

> **Do not use the Lifeline ARM in the following cases:**
>
> - It is not possible to position the Lifeline ARM safely or correctly on the patient's chest
> - The patient is too small for the starting piston height to reach the patient's chest
> - The patient is too large for the Frame to attach to the Backboard or if the Compression Module/Piston cannot be mounted without compressing the patient's chest
>
> Always follow local and/or recognized resuscitation guidelines for CPR when using the Lifeline ARM.

Side Effects

All operators of the Lifeline ARM should be aware of potential side effects of CPR, which were well established by 2005. The International Liaison Committee on Resuscitation (ILCOR) states the following side effects of CPR:

> "Rib fractures and other injuries are common but acceptable consequences of CPR given the alternative of death from cardiac arrest. After resuscitation, all patients should be reassessed and re-evaluated for resuscitation-related injuries." *(From the 2005 International Consensus Conference on Cardiopulmonary Resuscitation and Emergency Cardiovascular Care Science With Treatment Recommendations, hosted by the American Heart Association in Dallas, Texas, January 23–30, 2005. Published in Circulation. 2005; 112: III-5-III-16.)*
>
> The above side effects, as well as bruising and soreness of the chest, may commonly occur after the use of the Lifeline ARM. *(Black CJ, Busuttil A, Robertson C. Chest wall injuries following cardiopulmonary resuscitation. Resuscitation. 2004 Dec;63(3):339-43.)*

Getting Familiar with the Lifeline ARM

The Lifeline ARM is designed to be stored in a Carrying Case with a small number of easy-to-assemble components; it can also be stored in a fully assembled and ready-to-use state. When you receive a Lifeline ARM device, identify each component and ensure that the package is complete before use.

The key components of the Lifeline ARM include:

- The Backboard
- The Frame
- The Compression Module
  - Compression Piston with Patient Interface Pad (PIP)
  - User Control Panel
  - Battery Pack
- AC Adapter
- A Stabilization Strap
- The Quick Reference Guide and User Manual

Trainer Tip: As you begin this section, place a Lifeline ARM device in its closed Carrying Case on a table or raised surface so the group can see what you are doing. As you open the Carrying Case and remove its contents, demonstrate and discuss the function and details of each component in sequence.

Remind students that they will have lots of opportunity to familiarize themselves with the physical components during the hands-on training session.

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The Backboard

The lightweight Backboard is the base for the Lifeline ARM system. It is placed under the patient and has attachment points on either side to which the Frame latches. The Backboard should be positioned as shown on the positioning label, with the center in line with the patient's nipple line.

The Frame

The single-piece Frame attaches to the Backboard and holds the Compression Module in position over the patient. With the Backboard attached, the Frame is designed to create a rigid structure that enables a consistent compression depth without unwanted flex or distortion during operation. The latches are self-centering and self-locking and are easy to match up with, and snap into, the Backboard.

There are two sets of wide-release levers located on each side of the frame. These levers allow the user to detach both sides of the Frame together or one side at a time. It offers easy access to the patient.

The Frame is large enough to accommodate a broad range of patient sizes (weight is not a factor).

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The Compression Module

The removable Compression Module contains all the active components of the Lifeline ARM system, including the User Control Panel, Battery Pack, and Compression Piston. It also houses a software-controlled motor that controls both the rate and depth of compressions.

The User Control Panel is located at the top, the Battery Pack slides into the side, and the Compression Piston (with the Patient Interface Pad) is located at the bottom, facing the patient.

To attach the Compression Module to the Frame, insert the locking sleeve at about 90 degrees into the module receptacle at the top of the Frame. Rotate the Module in either direction until it is in line with the Frame and snaps to lock securely into place.

To remove the Compression Module from the Frame, push down on the Module and rotate about 90 degrees in either direction. Lift the Module out of the Frame.

To attach a Patient Interface Pad, press the pad onto the end of the Piston until it snaps into place, rotating the pad if necessary. To remove the Patient Interface Pad, grasp the pad by the edges and gently pull down one edge. Each Patient Interface Pad is for one-time use only; it is non-sterile and contains no latex.
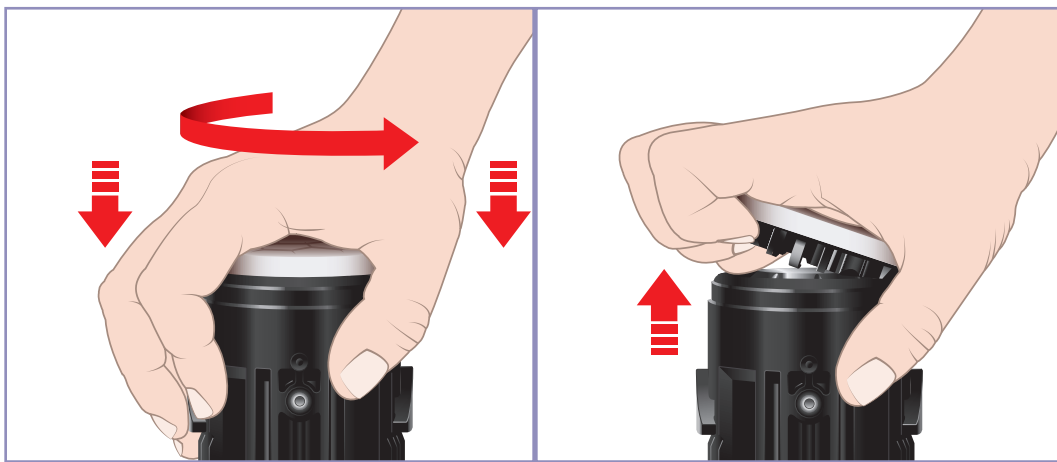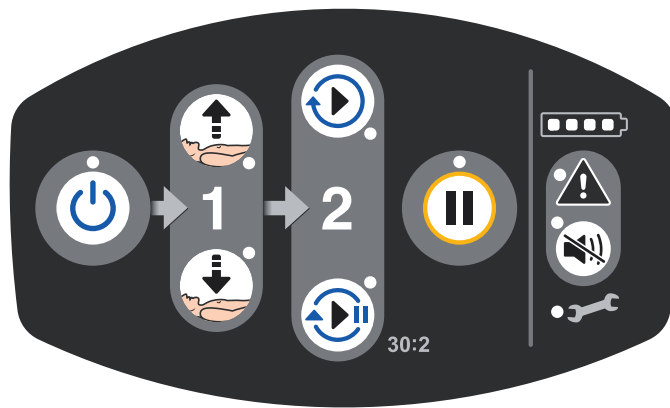
The User Control Panel
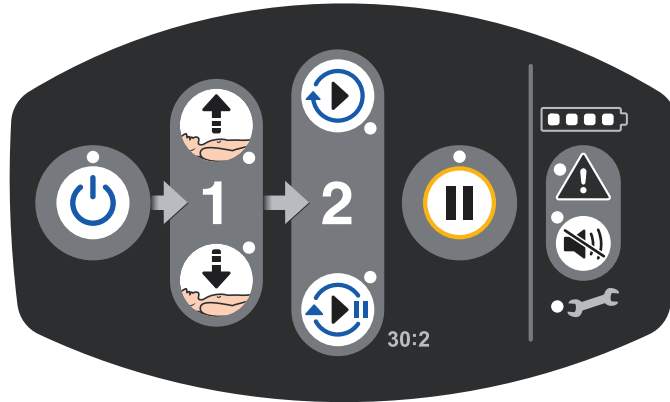
> **Trainer Tip:** Point out each of the buttons on the User Control Panel as you discuss them.

The simplified User Control Panel is intuitive and easy to use. It requires just two steps to initiate mechanical CPR:

1. Press the Up/Down button to adjust the height of the Compression Piston relative to the patient's chest

2. Press one of two softkeys to select a rescue protocol:
   – Chest compressions only
   – Chest compressions with rescue breaths

   During a rescue, you can toggle between these two protocols, and compressions can be stopped (paused) or resumed.
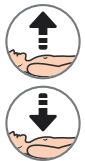

2. Group Training Sessions

Here is an overview of the functions on the User Control Panel:

On/Off Button — Press for at least 1 second to turn the Lifeline ARM on or off

Up/Down Buttons — Use to position the Piston relative to the patient's chest

Run Compressions — Press the top button to perform continuous compressions; press the bottom button to perform compressions with pauses for rescue breaths

Pause Button — Stops compressions when running or resumes compressions when stopped

Battery Pack Indicator — Indicates the approximate remaining Battery Pack capacity

Warning Indicator — Illuminates to notify the user that there is a problem with the compression module and immediate attention is needed

Warning Mute Button — Silences the audible sound associated with a warning for one minute

Service Indicator — Will flash to indicate when the Lifeline ARM requires periodic maintenance

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The Battery Pack

The Lifeline ARM is powered by a replaceable Battery Pack that slides into either side of the Compression Module. The Battery Pack must always be installed in the unit to operate the device, even when powered by the AC Adapter.

The Compression Module should be turned off, or paused if in use, whenever batteries are swapped out. To remove the Battery Pack, squeeze the eject release latches on either side of the Battery Pack opening.

To insert the Battery Pack, be sure the contacts are facing the device and push in until the latch clicks. When the device is turned on, the Battery Pack Status indicator will display throughout its use.

When fully charged, the Battery Pack will provide about 60 minutes of compressions. With the Battery in the Compression Module at room temperature and in the off state, the external AC Adapter can charge the battery in less than 3 hours.

To charge the Battery Pack with the AC Adapter:

1. Insert the Battery Pack into the Compression Module.

2. Connect the AC Adapter plug to the external power input jack on the Compression Module. Lock it in place by aligning the raised notch on the plug with the notch on the jack. While the Battery Pack is charging, a green LED will flash slowly on the Battery Pack Indicator.
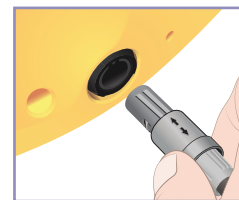
To check the Battery Pack's charge with LED status indicator:

Press and hold the membrane switch panel on the Battery Pack. A full charge is indicated by all-lit LEDs on the status indicator.

To replace the Battery Pack during operation:

If the Battery Pack charge becomes very low during use, the Warning Indicator will flash and the Battery Pack Status Indicator shows one lit LED. If this happens, there are two options:

**Option 1:** Swap with a sufficiently charged spare Battery Pack.

- Push Pause on the User Control Panel to temporarily stop compressions.
- Press the Battery Pack Release to quickly eject the depleted Battery Pack and remove it.
- Insert the charged spare Battery Pack.
- Wait for the Pause LED indicator to illuminate.
- Restart compressions by pushing the Pause button again or one of the Run buttons.

If the Battery Pack change takes over 15 seconds, the Piston will automatically retract when the spare Battery Pack is inserted and the start position will have to be set again.

Option 2: Connect the Lifeline ARM to an external power source by connecting the AC Adapter to the external input jack of the Compression Module. The Battery Pack must always be installed in the Compression Module to operate the device, even when powered by the AC Adapter.

> **Trainer Tip:** Demonstrate how to remove and replace the Battery Pack, and review the Battery Pack Indications and Alerts on the User Control Panel. Also point out the location of the external input jack on the Compression Module.

The Stabilization Strap and Other Accessories
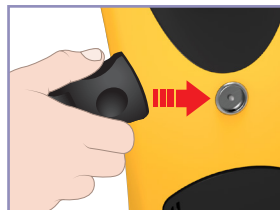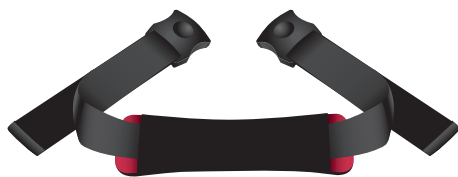
The Stabilization Strap holds the Lifeline ARM device securely in the correct position in relation to the patient. It snaps into the Stabilization Strap connectors located on the Frame.

> **Trainer Tip:** Point out the location of the Stabilization Strap connectors on the Frame.

Other accessories include the Patient Interface Pad, AC Adapter, Quick Reference Guide, and User Manual. Available options include: a USB cable, Wrist Straps, spare Battery Pack, Patient Interface Pads (package of 3) and a Battery Charging Station.

Reviewing Initial Assembly

To quickly assemble the Lifeline ARM, follow this sequence:

1. Attach the Frame to the Backboard.

2. Insert the Compression Module into the receptacle of the Frame. Rotate the Module until it is in line with the Frame and snaps into place.

3. Check that the Patient Interface Pad (PIP) is installed. If not, attach it to the distal end of the Piston by pressing the pad onto the Piston until it snaps into place, rotating pad if necessary.
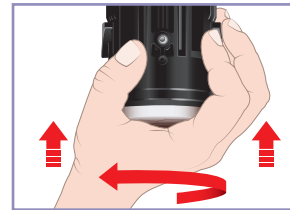
> **Trainer Tip:** Emphasize the importance of making sure a Patient Interface Pad (PIP) is installed on the Compression Module.

4. Insert a fully charged Battery Pack into the opening in the side of the Compression Module.
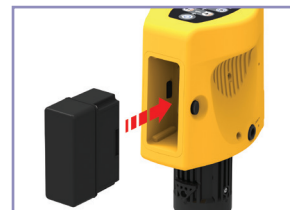
Before using the Lifeline ARM, always check to be sure it is completely assembled and that all components are present and functional. Check the Battery Pack to be sure it is fully charged.

The following section, "*Learning the Deployment Sequence*," provides a more detailed view of the assembled components and how they are used during a rescue.

> **Trainer Tip:** Before moving on to the next section, ask if anyone has questions or concerns.

2. Group Training Sessions

Learning the Deployment Sequence

To minimize CPR interruptions and to most effectively use the Lifeline ARM it is recommended two rescuers work as a team.

Before and during deployment of the Lifeline ARM:

- Confirm that the patient is unresponsive and not breathing.
- Start manual compressions.
- Minimize compression interruptions as much as possible.
- Perform manual compressions whenever possible.

Team dynamics are important. Establish who will be in charge of starting manual CPR and who will perform the various steps of assembly.

> **Trainer Tip:** Remind students that providing manual compressions always takes precedence over the setup and use of the device.

This section of the course covers the core elements of how to deploy the Lifeline ARM in a real-time emergency setting. The goal of the rescuer is to put the Lifeline ARM into action as quickly and smoothly as possible.

> **Trainer Tip:** Working with the Lifeline ARM around a manikin and a partner while talking at the same time can be a challenge: Practice this aspect of the training beforehand to be sure participants can hear you and see what you are doing.

Steps to Deploy the Lifeline ARM:

The following instructions are for a two-rescuer scenario that begins after it has been confirmed that the patient is unresponsive and not breathing, clothing has been removed from the patients chest and manual CPR has begun.

1. **Open the Carrying Case and remove the Backboard.**

   Place the Backboard next to the patient.

2. **Place the Backboard under the patient.**

   Lift and roll the patient as needed to slide the Backboard underneath the patient's armpits and in line with the nipple line according to the Patient Diagram. Accurately placing the Backboard now will make it easier to correctly align the Compression Module later on. Resume manual CPR.

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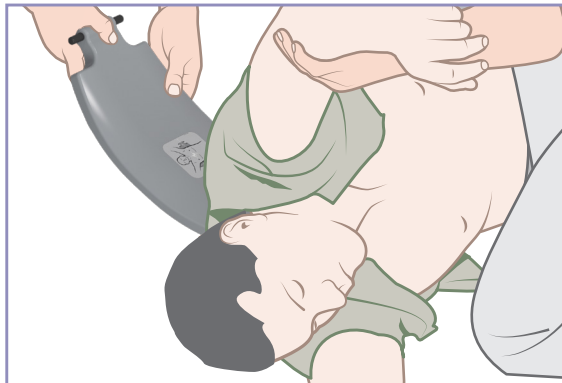
3. Attach the Frame to the Backboard.

Without interrupting manual CPR, position the Frame over the patient.

Attach the Frame to the Backboard by aligning the Frame latches over the Backboard pins and pushing down until the latches snap into place. The latches may be clicked into place one at a time or simultaneously.

Pull up on the Frame to make sure it is securely attached to the Backboard.


⚠️ **WARNING**   If patient is too large for the Frame, remove Frame and continue manual CPR compressions. Do not use the Lifeline ARM if the Frame cannot be latched to the backboard.

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4. Attach the Compression Module to the Frame.

Continue manual CPR.

Check the Compression Module to be sure the Patient Interface Pad and Battery Pack are installed.

Insert the Module into the Frame and rotate in either direction until the Module is in line with the Frame and snaps to lock into place.
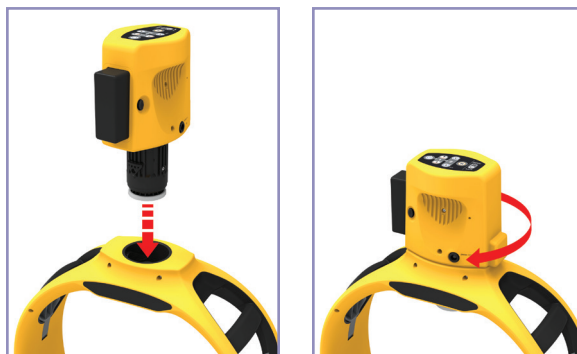
5. Adjust the placement of the Compression Piston relative to the patient's chest.

Adjust the Frame and Backboard to position the Compression Piston over the patient's chest and directly in line with the nipples. (This is the same target point used for manual CPR.)
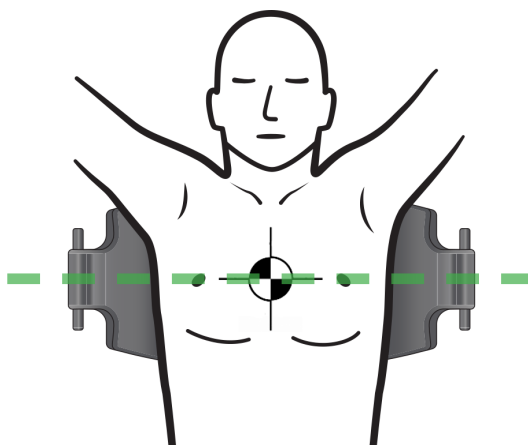
⚠️ **WARNING**   Do not initiate Lifeline ARM compressions if the piston is not in the proper position.

6. Turn the unit On.

Press the On/Off button on the Control Panel for at least 1 second. If the Battery Pack indicator shows red for low battery or the device does not turn on, replace the Battery Pack or connect the AC Adapter.

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7. Adjust the height of the Compression Piston relative to the patient's chest.

Interrupt manual CPR to adjust the height of the Compression Piston. Press the "Adjust Down" and "Adjust Up" buttons on the Control Panel as needed while guiding the Piston with the other hand to just touch the patient's chest.
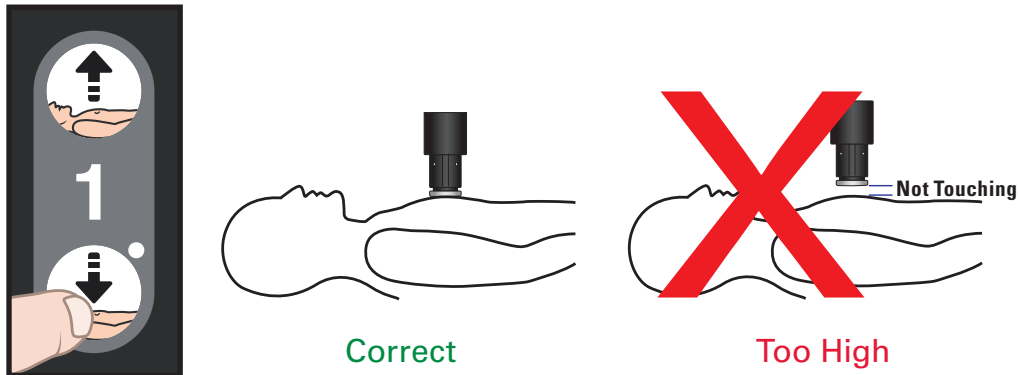

Correct   Too High

WARNING   If the Piston cannot be adjusted to reach the patient's chest, the patient is too small. Remove Frame and continue with manual CPR compressions.

8. Start chest compressions.

Once the Piston is properly adjusted, push the "Run Continuous" button OR the "Run with Breaths" button in accordance with your emergency response protocol.

Run Continuous

Run with Breaths
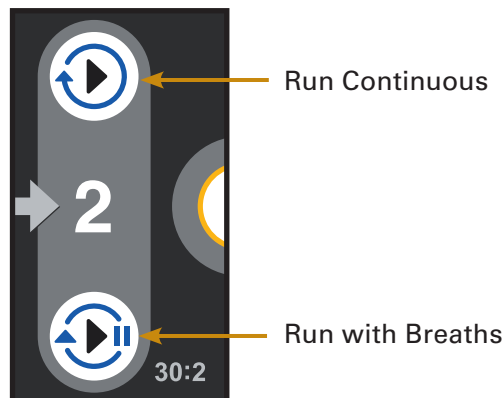
WARNING   Do not leave the Lifeline ARM running while unattended. Patient injury may result if the unit is left unattended.

The Lifeline ARM can withstand the effects of an externally applied defibrillation shock.

WARNING   Lifeline ARM compressions may interfere with ECG analysis. Pause compressions during ECG analysis.

9. Apply the Stabilization Strap.

Remove the Stabilization Strap from the Carrying Case and place it next to the patient.

Lift the patient's head and slide the Stabilization Strap under the patient's neck. If the patient might have head, neck, spine, or other bone-structure injuries, use accepted handling techniques.

Attach the Stabilization Strap to the Frame on both sides by pushing the strap clips into the connectors until they click into place.
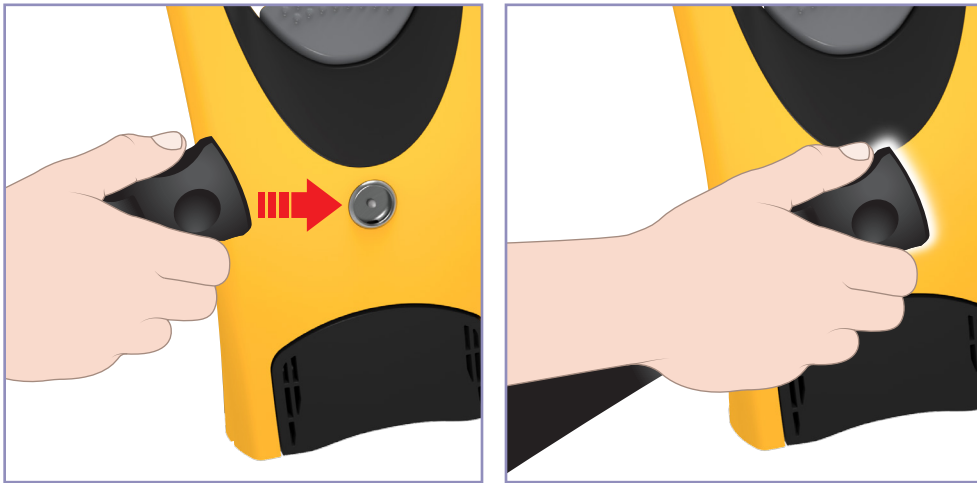
Tighten the Stabilization Strap to maintain the Piston's correct position over the patient's chest by adjusting the Velcro® that holds both clips to the Stabilization Strap.
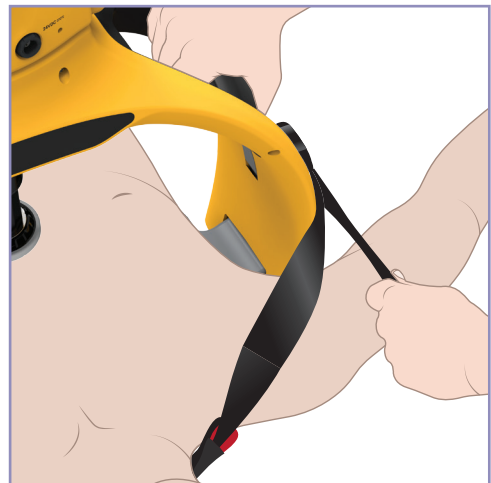
SELECT IMPORTANT WARNINGS WHEN USING THE LIFELINE ARM

- Patient size is the determining factor when deploying the Lifeline ARM; there is no limitation regarding patient weight.

- If the Piston cannot be adjusted to reach the patient's chest, the patient is too small. Remove the Frame and continue manual CPR.

- If the Frame cannot be latched, the patient is too big. Remove the Frame and continue manual CPR.

- If at any time compressions cannot be performed by the Lifeline ARM, resume manual CPR.

During use:

- Always pause the device before changing the Battery Pack.
- Always pause compressions before performing ECG analysis with other equipment.
- The Battery Pack must always be installed in the Compression Module to operate the device, even when powered by the AC Adapter.
- Avoid getting gel on the patient's chest (e.g., from defibrillation pads) in the area of the Piston target area.

During storage:

- Always store the device so it is ready to go.
- Always have the external AC Adapter power supply available with the device at all times.
- Store the Compression Module with a fully charged Battery Pack installed.
- Store the Compression Module with a new Patient Interface Pad installed.
- Be sure accessories such as the Stabilization Strap and extra Patient Interface Pads are available.
- Consider keeping a spare fully charged Battery Pack on hand.

Note: *Refer to the User Manual for complete directions, indications, contraindications, side effects, training requirements, dangers, warnings, cautions, troubleshooting, maintenance and technical specifications.*

Transporting the Patient

To move the patient to a stretcher or other transport equipment:

1. Prepare the stretcher/transport equipment near the patient.

2. Position two people on either side of the patient; other personnel may be needed to stabilize the patient's head and limbs, as necessary.

3. When ready to move the patient, push the "Pause" button to temporarily stop compressions.

4. Lift the patient by grabbing the black handle of the unit with one hand using the other hand to support the lower torso.

5. After the patient is safely on the stretcher/transport equipment, check that the positions of the unit and the Piston have not changed; readjust if necessary; compressions may then be continued.

6. Push the "Pause" button again, or the appropriate "Run Compressions" button, to resume compressions.

⚠️ **WARNING** Carefully monitor the position of the piston on the patient's chest to ensure that it has not moved from the appropriate target area. Pause compressions and readjust position if needed.

Disassembling and Storing the Lifeline ARM

When compressions are no longer needed, follow this sequence to remove the device:

1. Turn the unit Off by pressing and holding the On/Off button for at least 1 second.

2. Remove the Stabilization Strap and Wrist Straps, if used.

3. Remove the Compression Module from the Frame by first pushing down and rotating it about 90 degrees in either direction. Lift out the Module and place it in the appropriate storage section of the Carrying Case.

4. Release the Frame from the Backboard using the release levers.
   Note: The Frame can be released one side at a time. Lift the Frame and place it in its storage section of the Carrying Case.

5. Pack the Backboard in the Carrying Case on top of the fabric flap that covers and protects the Compression Module.

6. Add remaining accessories, including the Stabilization Strap, Wrist Straps, AC Adapter, spare Battery Pack, extra PIPs, and User Manual.

2. Group Training Sessions

Recommended Maintenance for the Lifeline ARM

To be sure that all components and accessories are available and ready for next use:

1. Make sure the Battery Pack is fully charged and inserted into the Compression Module.

2. Check the condition of the system. Make sure the Carrying Case contains all accessories, including the Patient Interface Pad(s), AC Adapter, Stabilization Strap, Wrist Straps (if used), Quick Reference Guide, and User Manual.

3. Make sure the Patient Interface Pad is installed on the Compression Module.

4. Make sure at least one unused Patient Interface Pad is stored in the Carrying Case.

5. Turn the device On to perform a self-test. Make sure the Compression Piston is retracted and the PAUSE indicator comes on with no warning indicators.

Clean all components before the next use as recommended in the User Manual.

Different maintenance intervals may be appropriate depending on the environment. Ultimately, the maintenance program is at the discretion of the medical director.

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Troubleshooting During Operation of the Lifeline ARM

Refer to the User Manual for complete instructions on how to handle potential problems encountered before, during, or after use of the Lifeline ARM. Some examples of warnings include:

Battery Pack Indicator

- If the Battery Pack indicator on the User Control Panel shows red (low battery), replace the Battery Pack as soon as possible with a sufficiently charged Battery Pack or apply external power.

- At any time, the Lifeline ARM can be connected to an external power source to power the device during its operation, or to charge the battery.

Warning Indicators

The Warning Indicators on the User Control Panel will flash and be accompanied by an audible alert to notify the user of a detected problem, such as possible misuse or malfunction. Pressing the Warning Mute button causes the LED to illuminate red and silences the alert. A muted audible alert will automatically disable.

If the Warning Indicator (located below the Battery Pack Indicator on the User Control Panel) flashes red and is accompanied by an audible alert:

- Check for installed and charged Battery Pack
- Check for proper Piston position and height

To clear the condition and try again, press the Pause button. If the device fails to perform compressions, push the On/Off button for at least 1 second to power off. Then push the On/Off button again for at least 1 second to turn it back on.

WARNING   If the condition persists, remove the Lifeline ARM from the patient and start manual CPR.

Service Indicator
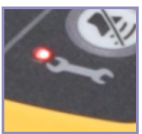
Defibtech recommends periodic maintenance every 18 months of use. The Service Indicator is the wrench symbol located on the User Control Panel. After approximately 200 hours of operation, the Service Indicator LED will flash red to indicate that the unit requires maintenance. The device may still be used but should be serviced as soon as practical.

> **Trainer Tip:** Remind students that if they encounter device issues, they should always minimize compression interruptions and perform manual compressions whenever possible.

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3 Hands-On Training and Practice

For the Trainer

The practice session is the student's opportunity to put theory into practice. This is where trainers can ensure that students understand and demonstrate competency in handling and using the Lifeline ARM device in a rescue scenario.

Setting Up the Practice Groups

After the break, divide to classroom group into smaller practice groups. The student to trainer ratio should be no more than six to one in each of the smaller groups. Ask each group to divide themselves into teams of two. One student will provide manual CPR while the other practices the operation sequence; they then switch roles.

Ask students to use the Student Self-Test during the Hands-On Session, both for review of the operation sequence and as a reference while they watch other teams practice

Depending on how many Lifeline ARM devices are available for practice, manage the teams as they rotate through the session to be sure that each student goes through the operation sequence at least three times.

In each practice group, trainers should follow the same protocol:

1. Trainers and students introduce themselves.

2. Trainer reviews and demonstrates deployment of the Lifeline ARM at the expected speed and proficiency.

3. Students take turns working in teams of two to practice deployment. As each team works, the other teams and the trainer watch, referring to the Student Self-Test, and provide feedback. Teams rotate practice sessions until all students have completed at least three deployments.

4. Students have the opportunity to review and ask questions of the trainers.

5. Trainers complete a Competency Checklist evaluation for each student.

6. Trainer selects one student to "be the trainer." This student acts as the trainer for the group to demonstrate the ability to teach others to use the Lifeline ARM.

Evaluating the Students

Learning happens best without fear or pressure. Remind students that you are there to help them learn, not to criticize them or "catch" them making errors. Ask whether anyone has concerns or questions that you can address before the evaluations. If needed, explain and demonstrate any areas that are unclear.

Once students show that they are comfortable and confident in using the Lifeline ARM, they are ready to be evaluated per the Competency Checklist (page 37). For each hands–on evaluation, watch the student perform the operation sequence beginning with opening the Carrying Case of the Lifeline ARM. Check that each step is done correctly according to the checklist, and note any feedback that may help the student later on.

> **Trainer Tip:** Carrying a clipboard makes it easy to move around to observe the student while completing the Competency Checklist.

At the end of the hands-on evaluation, share your results with the student and go over any areas that were not correctly performed or could be improved.

Course Content

At the end of the Hands-On Session, students should be able to demonstrate their ability to correctly and efficiently:

- Position the Backboard
- Attach the Frame
- Insert the Compression Module
- Operate and understand all functions of the User Control Panel: On/Off, Up/Down, Continuous Compressions or With Breaths
- Start and stop manual CPR during deployment
- Correctly attach the Stabilization Strap and Wrist Straps (if used)
- Change the Battery Pack or apply the AC Adapter during operation

Step-by-Step Review of Lifeline ARM Operation Sequence: Essential Elements

Following the steps on the Student Self-Test (page 39), students watch as the trainer reviews the essential elements of the operation sequence and then demonstrates deployment at full speed as needed during an emergency. Based on performance testing, the expected deployment time (from the time the Backboard is used to the first compression) is less than 45 seconds.

With a manikin ready, begin the review with a Lifeline ARM device in the Carrying Case nearby and another participant acting as the second rescuer. As you demonstrate each step, emphasize the elements that are most important.

1. **Open the Carrying Case and remove the Backboard.**
   Instruct partner: "Stop manual CPR."
   Essential elements:
   - Show how to open the Carrying Case

2. **Place the Backboard under the patient and position it correctly. Instruct partner: "Restart manual CPR."**

   Essential elements:

   - Show that the Backboard is placed next to the patient with the positioning label facing up.

   - Show how to roll the manikin to slide the Backboard into the proper position, just below the armpits with the center of the Backboard in line with the nipple line of the patient.

3. **Remove the Frame; check for clearance. Attach the Frame to the Backboard. Pull up on the Frame to test that it is securely locked in place.**

   Essential elements:

   - Point out that the Frame can be attached to both latches at once or one side at a time.

   - Demonstrate the correct position of the patient's arms using the manikin.

   - Show how much to pull up on the Frame for an effective test.

   - Remind students that if the patient is too large for the Frame, they should remove the Frame and continue manual CPR.

4. **Remove the Compression Module and insert it into the Frame, rotating until it is in line with the Frame and snaps to lock into place. Check that the Patient Interface Pad is in place.**

   Essential elements:

   - Show how to orient the Compression Module at the top of the Frame so that it sits crosswise. Insert the Module and show how to rotate it by 90 degrees to lock it in place.

   - Remind students that the Module can be oriented in either direction for faster assembly.

   - Show how to check the Patient Interface Pad. Remove it and replace it, and remind students that it is for one-time use only.

5. **Turn the device On.**

   Essential elements:

   - Remind students to press the On/Off button for at least 1 second. If the Battery Pack indicator shows red (low battery) or the device does not turn on, they should replace the Battery Pack or connect the AC adapter.

6. **Adjust the height and position of the Compression Piston.**

   Essential elements:

   - Show how to use the Up/Down buttons on the User Control Panel to adjust the height of the Piston until it is touching the patient's chest.

   - Remind students to confirm that the Piston is properly placed over the patient's chest. They should not start compressions until it has been properly positioned. If the Piston cannot be adjusted to reach the patient's chest, the patient is too small. Remove the Frame and continue manual CPR compressions.

7. Select compression protocol and start compressions.

Essential elements:

- Remind students that they have the choice of running compressions with or without breaths. Show how to start Run Continuous (top button) on the User Control Panel, then Run with Breaths (bottom button).

- Show how to temporarily stop compressions, if needed, by pressing the Pause Button, and to restart compressions by pressing either Pause again or the appropriate Run compressions button.

8. Apply the Stabilization Strap.

Essential elements:

- Show how to lift the patient's head, place the strap behind the neck, and connect to the Frame by pushing the clips into the strap connectors. They should hear an audible click.

- Show how to adjust the strap length to maintain the correct position of the device over the patient's chest.

- Remind students that if the device is not correctly positioned, they should loosen the Stabilization Strap and readjust.

- Show how to position and attach Wrist Straps (if used).

9. Change the Battery Pack.

Essential elements:

- Show how to push Pause to temporarily stop compressions, then eject and replace the existing Battery Pack with a spare charged Battery Pack.

- Remind students that the Battery Pack will operate in either orientation (with the contacts toward the unit).

- Remind students that the Battery Pack must always be inserted into the Compression Module even when using an external power source.

4 Resources

COMPETENCY CHECKLIST

Student Name _____

Step	Essential Skill Set — Operation Sequence	Performed Correctly (Circle One)	
1	Opens the Carrying Case and removes the Backboard.	YES	NO
2	Places the Backboard under the patient and positions it correctly.	YES	NO
3	Removes the Frame; lifts the patient's arms over the head; and attaches the Frame. Pulls up on the Frame to test that it is securely locked in place.	YES	NO
4	Removes the Compression Module; checks to make sure a Patient Interface Pad and a Battery Pack is installed, and inserts it into the Frame, rotating to lock into place.	YES	NO
5	Adjusts the position of the Compression Piston.	YES	NO
6	Turns the device On.	YES	NO
7	Selects compression protocol and starts compressions.	YES	NO
8	Applies the Stabilization Strap.	YES	NO
9	Applies the Wrist Straps (if used).	YES	NO
10	Changes the Battery Pack.	YES	NO

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STUDENT SELF-TEST

Step	Essential Skill Set — Deployment
1	Open the Carrying Case and remove the Backboard.
2	Place the Backboard under the patient and position as needed.
3	Attach the Frame to the Backboard (one side at a time or simultaneously). Pull up on the Frame to test that it is securely locked in place.
4	Remove the Compression Module and check that the Patient Interface Pad is installed. Mount in the Frame, rotating in either direction until it is in line with the Frame and locks into place.
5	Press the On/Off button for at least one second to turn on.
6	Adjust the position of the Piston until it touches the patient's chest.
7	Push Run Continuous or Run with Breaths button to start compressions.
8	Apply the Stabilization Strap behind the patient's neck. Connect the Strap to the Frame with the Stabilization Strap Connectors. (Stabilization Strap can be adjusted using self-adhesive Velcro.)

Notes:

- To minimize CPR interruptions and to most effectively use the Lifeline ARM, two rescuers are recommended.
- Providing manual chest compressions takes precedence over setting up and initiating use of the Lifeline ARM.

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TRAINING EVALUATION for the Defibtech Lifeline ARM

Trainer Name / Course / Date _____

Please mark the columns that most closely reflect your thoughts after this training.	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree
1	Training objectives were clearly defined and addressed in the course.					
2	Course content was well organized and clearly presented.					
3	The trainer was well prepared, knowledgeable, and helpful.					
4	Participation and interaction with the class were constructive and encouraged.					
5	The trainer allowed adequate time for questions and answers.					
6	The training materials provided were effective.					
7	The breakout sessions offered adequate opportunity for practice and reinforced the content taught in the class.					
8	The training session was long enough to cover the material presented.					
9	The training location and facilities were comfortable and provided adequate space for practice.					
10	The training prepared me to use the Lifeline ARM in my work environment.					

Overall, the training was (circle one): Excellent / Good / Average / Poor / Very Poor

Comments _____

_____

_____

_____

_____

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CERTIFICATE

OF COMPLETION

THIS DOCUMENT CERTIFIES THAT

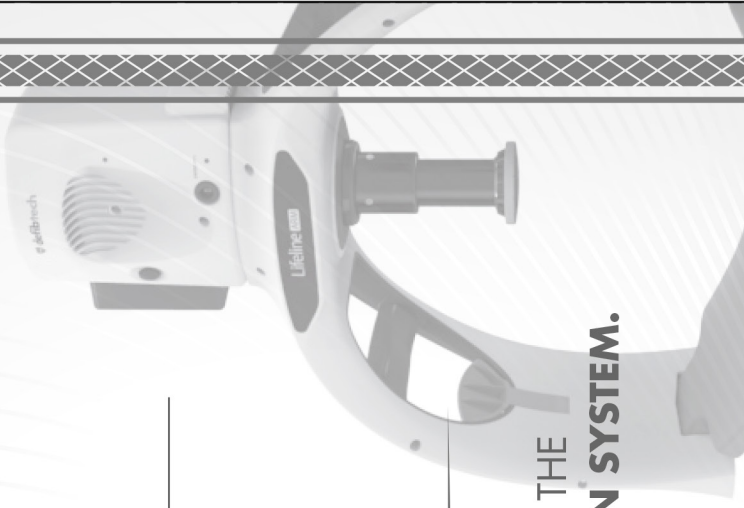HAS SUCCESSFULLY COMPLETED TRAINING FOR USE OF THE
DEFIBTECH RMU-1000 AUTOMATED CHEST COMPRESSION SYSTEM.

SIGNATURE OF TRAINER

DATE OF TRAINING

5   Contacts

Manufacturer

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