

LUCAS™ CHEST COMPRESSION SYSTEM





In an emergency,
an extra set of
hands is always
welcome—particularly
when it comes to
performing CPR.



Your partner in life support

Effective chest compressions are essential for providing good blood flow during CPR.

Compressions deliver vital oxygen to the brain and can prime the heart for a successful shock. Maintaining sufficient coronary perfusion pressure during cardiac arrest improves the likelihood of return of spontaneous circulation (ROSC).¹

However, as any rescuer or caregiver knows, performing manual CPR according to current AHA guidelines is difficult and tiring. Several studies show the effectiveness of chest compressions can drop rapidly – often after only one minute – due to rescuer fatigue^{2,3}. In fact, many organizations have added extra staff to cardiac arrest calls to switch out rescuers performing compressions.

The LUCAS Chest Compression System automates external chest compressions from first response in the field to ambulance transport and throughout the hospital. LUCAS facilitates consistent blood flow from the moment it is turned on, helping caregivers deliver CPR with safety and confidence.



**“It’s simple and easy
to use, and it’s small
and compact.”**

Dr. Charles Lick,
Medical Director,
Allina Medical Transportation



Effective, consistent and uninterrupted compressions according to current guidelines

LUCAS is an easy-to-use system designed to deliver chest compressions in the same way and with the same efficiency for adult patients. This reduces the impact of extenuating factors such as transport conditions, rescuer fatigue and variability in caregiver experience. Interruptions to compressions can reduce the effectiveness of resuscitative efforts. LUCAS performs 100 compressions per minute with a depth of 2 inches. It also allows for complete chest wall recoil after each compression and provides a 50% duty cycle—equal compression and relaxation time for the chest wall.

Good circulation during the patient transport process

For patients whose hearts are able to generate little or no cardiac output, the ability to deliver efficient chest compressions is a great advantage. LUCAS makes it possible to provide good circulation to the patient during transport to the hospital and throughout the hospital for further treatment.

Hands-free compressions

LUCAS is designed for optimal performance in different surroundings in and outside the hospital. LUCAS consistently performs compressions while the responder is free to provide medication, defibrillation or ventilation. The results of defibrillation can be improved when there is minimal delay between chest compressions and shock¹. With LUCAS, delays between chest compressions and defibrillation can be minimized.

Safety during transport for both personnel and patient

When LUCAS provides the compressions, the responder can be safely seat belted in during transport.

Ease of use and portability

LUCAS can be applied to the patient with interruptions in compressions of less than 20 seconds, whether the patient is on the ground, on a bed or on a stretcher in the ambulance. One control knob makes operation as easy as 1-2-3. LUCAS is lightweight and has an ergonomic and compact design. Its padded backpack makes it easy to carry to the patient in a variety of emergency situations.



Speed and simplicity for first responders



At a cardiac arrest scene, the situation is often chaotic and stressful. With LUCAS, rescuers can initiate hands-free compressions immediately, stabilize the patient and quickly control the scene. LUCAS eliminates the need for extra CPR personnel, reducing scene congestion while ensuring the delivery of consistent, quality chest compressions.

- Automated compressions give rescuers the opportunity to deliver other life support activities and prepare the patient for ambulance transport.
- Simple set-up and operation with a single control knob allows you to start compressions fast, and deliver them continuously and effectively.
- A sleek, padded backpack makes LUCAS comfortable to carry and convenient to store. This smart design frees up your hands to carry other emergency equipment.



Travel with care during ambulance transport



Transferring a cardiac arrest victim from the scene to the hospital often involves interruptions in CPR delivery—and potential risk to the patient. LUCAS moves with the patient from the emergency scene to the ambulance. It provides continuous compressions to help prevent a drop in coronary perfusion pressure, allowing the patient to maintain good circulation during transport.

- Rescuers can be safely seat-belted in the ambulance while compressions continue on the patient, helping to reduce travel-related injuries.
- Hands-free compressions eliminate rescuer fatigue and stress injuries associated with CPR delivery.
- Automated compressions free up ambulance personnel to focus on other life support activities such as delivering medication, ventilation or defibrillation.



In a recent survey, nearly 25% of ambulance officers suffered back injury, and as many as 62% of these reported that the cause of the injury was related to CPR delivery.

LUCAS™ CHEST COMPRESSION SYSTEM

COMPRESSIONS

Compression Frequency: 100 compressions per minute

Compression Depth: 2 inches (5 cm)

Compression: Decompression Duty Cycle: 50%

Patients Eligible for Treatment:

- Sternum height of 7.5 –11.9 inches (19–30.3 cm)
- Maximum sternum width of 17.7 inches (45 cm)

OPERATION

Operation: Fully pneumatic (compressed air)

Power Source:

- Breathing air from portable compressed air cylinder
- Air outlet in hospital/ambulance with nominal supply pressure within 46–87 psi (3.17– 6 bar)

Air Consumption: 1.84 ft³ per minute (52 L/minute)

Operating Temperature: 41 to 104°F (5 to 40°C)

Storage Temperature: -22 to 140°F (-30 to 60°C)

PHYSICAL CHARACTERISTICS

Height (stowed in backpack): 25.6 inches (65 cm)

Width (stowed in backpack): 13.0 inches (33 cm)

Depth (stowed in backpack): 9.8 inches (25 cm)

Air hose length: 10.8 feet (3.3 meters)

Weight (unit only): 13.9 lbs (6.3 kg)

Weight (backpack and included accessories): 5 lbs (2.27 kg)

All specifications are at 25°C unless otherwise stated.
Technical data are subject to change without prior notice.





Operation Knob

Patient Strap

Release Ring

Height Adjustment Handle

Suction Cup with Pressure Pad

Backboard

Stabilization Strap

Provide continuous care in the emergency department



In the emergency department, LUCAS is a vital tool in the treatment of cardiac arrest victims. LUCAS is designed to deliver consistent, quality chest compressions—providing continuous care while healthcare professionals administer shocks or medications, or move the patient to another location.

- Coronary perfusion pressure can be maintained without interruption—from the cardiac arrest scene to the emergency department and beyond.
- Emergency department staff, free from the need to perform manual compressions, can more efficiently assess the patient's condition and determine the best course of action.
- Automated compressions reduce crowding and chaos in the emergency department, keeping staff calm and focused.
- LUCAS plugs directly into your hospital's compressed air outlet for easy access to an uninterrupted power source.



Keep up the pressure in the cath lab



Don't compromise between continued intervention, effective chest compressions or safety of your personnel. With LUCAS, you don't have to choose. The LUCAS Chest Compression System facilitates blood circulation to supply oxygen to vital organs.

- LUCAS helps sustain circulation while enabling simultaneous percutaneous intervention (PCI) and catheterization.
- Medical staff can perform cath lab procedures without sacrificing compressions, allowing for a less stressful environment that facilitates quality decision-making.
- LUCAS is also translucent except for the hood and the piston. This enables you to capture most fluoroscopy projections without removing LUCAS. The following fluoroscopy projections can be captured in monoplane while LUCAS is attached to the patient: LAO Cranial/Caudal Oblique; RAO Cranial/Caudal Oblique; Straight Caudal; Straight Lateral; and Straight Cranial.

“The mood in the cath lab was calm at all times despite the ongoing VF...This is quite contrary to what usually happens in such situations when manual compressions are used.”

Olivecrona, Lund, Sweden,
(tctmd.com 24 Oct 2006).

A Tireless Lifesaver

When Leon Schmidt, 68, suffered a massive cardiac arrest, it was LUCAS that kept him alive. “As soon as the paramedics arrived, they had Leon on the LUCAS,” recalls Gayle Schmidt, Leon’s wife.

Later, Gayle was told that patients who experience the same type of cardiac arrest as her husband have only a three percent survival rate. “If it wasn’t for the LUCAS,” she insists, “Leon wouldn’t be with us today.”

Results like this are encouraging to Charles Lick, MD, medical director for Allina Medical Transportation and Emergency Department director for Buffalo Hospital. “In 2005, the AHA determined that we need to focus on performing better chest compressions to move the blood around and keep the organs working. We know that CPR is difficult to do well. People slow down. They don’t always do it appropriately—even professional rescuers. A machine doesn’t get tired; it is consistent, and consistency is key,” he explained.

All Allina Medical Transportation ambulances are equipped with the lifesaving devices. And now Buffalo Hospital has added a LUCAS device to its Emergency Department. “Someone who has suffered a sudden cardiac arrest in the field has a good chance of suffering another one as we work on them in the Emergency Department,” Lick said. “The LUCAS is as valuable here as it is in the field.”

Lick predicts that in the coming months, LUCAS will help more patients like Schmidt get on with their lives. “I’m convinced we can do much better CPR with LUCAS than we can with human intervention.”



A look at the past can change the future

CODE-STAT™ Data Review Software is a retrospective analysis tool that allows you to evaluate an entire CPR event at a glance. CODE-STAT software annotates chest compressions onto the patient's continuous ECG report and calculates CPR statistics to help you assess your performance and meet current guidelines.

For instance, the AHA guidelines stress the importance of starting CPR quickly. CODE-STAT software allows you to see when LUCAS was powered on at the scene, how long it took to start compressions (mechanical or manual), and the overall compression rate throughout

the episode of care. This enables you to measure, analyze and review the performance of individual rescue teams or medical units, target specific areas for improvement, and retrain personnel to meet performance goals.

The ability to download, review, manage and analyze emergency medical data from LUCAS facilitates quality analysis and business decisions. Together, LUCAS and CODE-STAT software work effectively to support your quality improvement initiatives.



Manual Chest Compression

LUCAS Chest Compression

Target Chest Compression Rate Achieved



A Team Player

The Physio-Control service team has been a part of our company's framework since 1972. Our service representatives have an average tenure of over 12 years and log an average of 2,400 field hours each year. With Physio-Control on your side, your equipment is backed by stellar support, so you get maximum life and use from your investment.

The LUCAS Chest Compression System is an out-of-the-box device ready for immediate use. The Silver 2-year Extended Service Plan provides two years of extended coverage after the end of the manufacturer's one-year warranty, for a total of three years of support. This plan is included with the purchase of the LUCAS Chest Compression System. An upgrade to the Gold 2-year Extended Service Plan provides enhanced services such as scheduled performance inspections, loaner equipment, extended coverage for parts and labor, and replacement of unserviceable equipment.



As your trusted partner in saving lives, we offer a full suite of solutions from field to hospital. Whether your need is emergency response or quality control analysis, our technologies can help you make a difference in the lives of the people in your care.

Defibrillator/Monitors

LIFEPAK® 12 Defibrillator/Monitor

Over 90,000 LIFEPAK 12 defibrillator/monitors are in use today—on rescue rigs and in hospitals worldwide. Feedback from this global community keeps us innovating—adding features to help you in your lifesaving work. The LIFEPAK 12 defibrillator/monitor packs multi-parameter therapeutic and diagnostic functions into a rugged, portable device. Use a tool that can tackle today's patient care needs and adapt to tomorrow's challenges.

LIFEPAK 20e Defibrillator/Monitor

Providing monitoring and therapeutic functions, the device helps hospitals meet standards of the Joint Commission on Accreditation of Healthcare Organizations (JCAHO) for resuscitation services throughout the hospital. The device offers both manual and automated (AED) modes and includes ADAPTIV™ biphasic technology.

LIFEPAK 1000 Defibrillator/Monitor

The LIFEPAK 1000 defibrillator is a powerful and compact device designed to treat cardiac arrest patients and provide continuous cardiac monitoring capabilities. Built-in flexibility allows the 1000 to be programmed for use by first responders or professionals and enables care providers to change protocols as standards of care evolve. A large, intuitive screen displays graphics and ECG readings that are clear and easy to read from a distance. The most rugged defibrillator in the LIFEPAK fleet, you can carry the 1000 with confidence into the harshest environments.

LIFEPAK CR® Plus Automated External Defibrillator

Designed for minimally trained rescuers in commercial and public settings, the CR Plus guides the rescuer step by step with calm, clear voice prompts. Simple to use, it is built with the same advanced defibrillation technology used by EMS and hospital personnel.

Data Management and Connectivity Tools

LIFENET® STEMI Management Solution

The LIFENET STEMI Management Solution from Physio-Control lets you create an early warning system for STEMI patients and share critical information about them. While care teams focus on patients, the STEMI Management Solution securely delivers ECG data when and where it's needed, linking prehospital, emergency room, and PCI treatment teams. The first web-based system of its kind, our STEMI Management Solution allows patient care teams to quickly decide where to send the STEMI patient for the appropriate care—mobilizing the cardiac catheterization lab, freeing up the emergency department, enabling the EMS team to move on quickly to their next case, and reducing false-positive cath lab activations. Physio-Control offers the LIFENET STEMI Management Solution in a variety of options and term lengths, with implementation services to help smooth your way to a regional approach to STEMI care.

CODE-STAT™ with Advanced CPR Analytics

CODE-STAT Data Review Software with CPR analytics is a post-event review tool that annotates chest compressions onto the patient's continuous ECG report and calculates CPR statistics such as compression rate and hands-on time. Benchmarking and trending reports help you manage quality assurance and improve responder performance via intuitive, easy to read reports. Data collection is simple, giving you the ability to download from medical informatics-enabled LIFEPAK defibrillators.

DT EXPRESS™ Data Transfer Software

This simple, Windows®-based software application manages data from LIFEPAK defibrillator/monitors. The software makes it easy to download critical event and waveform data to your PC, add supplemental patient data, print a hardcopy report, and store records on a disk. For storage and on-screen viewing of reports, export files to CODE-STAT data review software.

For more than 50 years, Physio-Control, maker of the renowned LIFEPAK defibrillators, has been developing technologies and designing devices that are legendary among first response professionals, clinical care providers and the community.

REFERENCES

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LUCAS is designed and manufactured by JOLIFE AB in Sweden and distributed exclusively worldwide by Physio-Control, Inc.

For further information, please contact your local Physio-Control representative or visit our website at www.physio-control.com



HEADQUARTERS

Physio-Control, Inc.
11811 Willows Road NE
P.O. Box 97006
Redmond, WA 98073-9706 USA
Tel. 425 867 4000
Toll Free. 800 442 1142
Fax. 425 867 4121
www.physio-control.com

SALES OFFICES

Physio-Control UK
Medtronic Ltd
Suite One, Sherbourne House
Croxley Business Park
Watford, Herts
WD18 8WW
Tel. 44 1923 212 213
Fax. 44 1923 241 004

Canada
Medtronic of Canada
6733 Kitimat Road
Mississauga, ON
L5N 1W3
Tel. 888 879 0977
Fax. 416 430 6115