

LUCAS™

CHEST COMPRESSION SYSTEM

Recommendations for Operating with Compressed Air

The LUCAS Chest Compression System is a pneumatically-driven device and requires no electrical supply for operation. It is powered by compressed air from a portable compressed air cylinder or wall outlet. In the pre-hospital environment, portable compressed air cylinders (SCBA bottles) are the optimal solution for customers. In the hospital environment, wall outlets with adequate supply pressure using an additional connector to the air hose is the optimal solution for customers.

Before using the LUCAS Chest Compression System, become familiar with the components and symbols on the device. Refer to the LUCAS Instructions for Use for complete directions for use of the device. Manual compressions can alternatively be provided to the patient to support circulation.

Basic Items for Out-of-Hospital Use

To be able to connect LUCAS to an air cylinder, you'll need the LUCAS Regulator. The **LUCAS Regulator** is custom pressure regulator for compressed air and delivered with LUCAS. Before using the LUCAS Regulator, read the Operating Instructions included with the product. The unique green/yellow male connector of the air hose fits with the corresponding green/yellow female connector of the LUCAS Regulator. Avoid using a Connector from the air outlet panel in the rescue vehicle, only use the LUCAS regulator. The LUCAS Regulator modifies the pressure and flow supplied to LUCAS for optimal device performance.

The LUCAS Regulator connects to a cylinder valve outlet connection meeting the Compressed Gas Association (CGA) connection 346 (up to 3,000 psi) or CGA 347 (up to 4,500 psi) standards for breathing air. Replacement of the o-ring seal in the LUCAS Regulator should be carried out every 6 months or in the event of a leak. It is recommended to leave the LUCAS Regulator attached to the cylinder valve at all times to keep it ready and available for patient use.

LUCAS should only be used with **breathing or medical grade AIR (NOT technical grade air)**. The cylinder should accommodate pressured air from 2,200 psi (low-pressure) to 4,500 psi (high-pressure). Aluminum carbon-fiberglass cylinders with an internal volume of 3 to 7 liters are generally recommended for use with LUCAS for most situations to offer portability and maximize operating time.



LUCAS Chest Compression System



LUCAS Regulator (supplied with LUCAS system)



Compressed Air Cylinder (not supplied by Physio-Control)

Basic Items for In-Hospital Use

Pressured air is already in place in most hospitals. This is the optimal solution if available as it allows for a continuous source of air without the need to change out tanks. Be sure to check the flow rate for the performance of the air supply. If it is not possible to use the wall outlet, use a compressed air tank listed above.

To be able to connect LUCAS to a compressed air wall outlet you'll need a **LUCAS Connector** to fit the outlet connection. The LUCAS Connector is available in several different versions to meet the various standards for wall outlets that exist. The green/yellow female end of the LUCAS Connector fits with the correlating green/yellow male end of the LUCAS hose, the other end connects to the wall outlet. The **LUCAS Extension Hose** might be useful in situations when you will need more distance between LUCAS and the air source, such as a Cath Lab. Adding the Extension Hose (11.5 ft) to the standard hose of LUCAS (10.8 ft) creates a total length of 23.0 ft.

LUCAS should be used with **wall outlets** supplying compressed medical/breathing air (NOT technical air) with a nominal air pressure between 46 to 87 psi.

For use with a crash cart or for transportation – use the out-of-hospital solution with a portable air cylinder (SCBA bottle).



LUCAS Chest Compression System



Example of LUCAS connector (6 options available)



LUCAS Extension Hose (optional accessory)

Calculating the Operating Time for a Compressed Air Cylinder

LUCAS consumes 52 liters per minute of air to operate. The **operating time** for a specific compressed air cylinder is calculated as follows:

**LUCAS consumes
52 liters/minute**

Internal Cylinder Volume:
0.03 cubic feet ≈ 1.0 liter
0.24 cubic feet ≈ 6.88 liters
0.61 cubic feet ≈ 17.2 liters

$$\text{Operating Time (minutes)} \approx \frac{\text{Pressure (psi)} \times \text{Internal Cylinder Volume (liters)}}{14.5 \text{ psi} \times 52 \text{ liter/minute}}$$

For example; an air tank of 5 liters with a pressure of 4,500 psi has an operating time with LUCAS of:

$$\frac{(4500 \text{ psi} \times 5 \text{ liters})}{754} = 29.8 \text{ minutes}$$

Sourcing Compressed Air Supplies

Please refer to **compressed gas suppliers** to order compressed air cylinders.

www.scotthealthsafety.com/airpak.htm

www.draeger.com

www.luxfer.com

Please follow the manufacturer's instructions for proper use, care, and safety precautions of the compressed air cylinder.

The list below includes some approved tanks for use with the LUCAS device. Contact Physio-Control with further questions on other potential compressed air cylinders you would like to use that are not listed below.

Manufacturer	Catalog #	Pressure	Cylinder Weight	~ Operating time for LUCAS
Scott® Health and Safety Air-Pak®	804721-01	4500 psi	9.4 lbs	27 min
Scott Health and Safety Air-Pak®	804722-01	4500 psi	13.7 lbs	40 min
Dräger® Safety Inc.	3338301	4500 psi	7.9 lbs	31 min
Luxfer® Gas Cylinders	L45H	4500 psi	10.1 lbs	24 min
Luxfer Gas Cylinders	L45E	4500 psi	6.4 lbs	24 min

Recommended Accessories

Item Description	Catalog #	LUCAS Connectors	Wall Outlet
LUCAS Connector – Chemtron Air	11996-000278		
LUCAS Connector – Ohmeda Air	11996-000279		
LUCAS Connector – Puritan Bennett Air	11996-000280		
LUCAS Connector – Diss Air	11996-000281		
LUCAS Connector – Schrader Air	11996-000282		
LUCAS Connector – Oxequip Air	11996-000283		
LUCAS Extension Hose	21996-000061		
O-ring LUCAS Regulator (Variflow) 10 pcs/pack	21996-000058		

LUCAS is designed and manufactured by JOLIFE AB in Sweden and distributed exclusively worldwide by Physio-Control, Inc.
For further information please call 1.800.442.1142 or visit www.physio-control.com



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