

Is cam-actuated BVM compression a viable option for portable ventilator technology?

Through this prototype, the strategy of cam-actuated BVM compression is proven to be a viable option to achieve low-cost, low-power portable ventilator technology that provides essential ventilator features at a fraction of the cost of existing technology.

1. Introduction

What is a compression module?

The Compression Module contains the Control Panel, a removable and rechargeable battery pack, and the piston drive used to generate the chest compressions. Modularization of the Compression Piston has benefits in all phases of use, particularly during deployment and repacking.

What will be included in a cam arm acoustic ventilator?

Cam arm shape will be optimized to ensure the use of the most efficient rolling contact embodiment. An LCD screen will be included, and alarms programmed for loss of power, loss of breathing circuit integrity and low battery life. Extensive testing of the ventilator's repeatability will be conducted.

What are the disadvantages of valve bag?

An elastic band is used as a fixing component, however, in the future, it is necessary to redesign the system to make bag movement physically impossible.

5. Valve bag is limited to the amount of airway pressure that can be achieved in a cycle.

6. Valve bag could be cause of shifting, and inconsistent, tidal volumes between tests.

7.

How does a bag-valve mask work?

The ventilator delivers breaths by compressing a conventional bag-valve mask (BVM) with a pivoting cam arm, eliminating the need for a human operator for the BVM. An initial prototype was built out of acrylic, measuring 11.25 x 6.7 x 8 inches (285 x 170 x 200 mm) and weighing 9 lbs (4.1 kg).

How does the compressions-with-Breaths protocol work?

When using the compressions-with-breaths protocol, a reminder chirp and flashing LED are used as notifications during the three compressions prior to the device pausing for the operator to give rescue breaths. If needed, the user may toggle between the two protocols during the rescue.

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