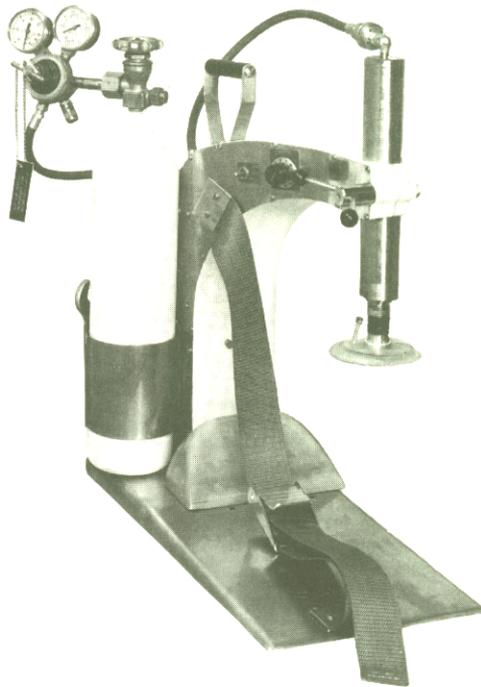


The HARKINS-BRAMSON PORTABLE RESUSCITATOR

A Self Contained External Cardiac Massage Machine

MODEL 1337



This machine is intended for use by ambulance units, police and fire departments, emergency hospitals, and other emergency personnel for the resuscitation by external cardiac massage of patients in cardiac arrest. It utilizes the principle of the Johns Hopkins method now extensively taught and practiced by hospital and emergency personnel, but does this mechanically instead of manually, with the following main advantages:

1. It frees the operator to attend to ventilation of the patient's lungs (mouth-to-mouth or otherwise) and to other emergency action.
2. It maintains a satisfactory resuscitation regime with a consistency unobtainable by manual massage.
3. It is less traumatic to the patient.
4. It can, if necessary, be continued for prolonged periods (up to 2 hours on one gas cylinder) without operator fatigue.
5. It can be continued without difficulty while the patient is being transferred via stretcher and ambulance to hospital.

EXPLANATION OF PRINCIPLE:

Kouwenhoven, Jude and Knickerbocker have demonstrated that pressure over the lower sternum during cardiac arrest compresses the heart against the vertebral column and forces blood out of the ventricles of the heart. These workers found that a repetitive or pulsating force correctly applied over the sternum produced a sufficient cardiac output to maintain life during cardiac arrest. This method of cardiac massage has become the preferred treatment for the emergency of cardiac arrest, for several reasons. (1) It is more quickly applied than open chest massage; (2) does not require surgery; (3) does not lead to infection; (4) can be used by non-professional personnel; (5) produces better circulation than open-chest cardiac massage.

CARDIAC RESUSCITATION:

In the past, external cardiac massage has been applied only by hand. When compared to proper mechanical application, however, the manual method

is distinctly inferior. Application by hand tends to be uneven, with too little force leading to poor circulation and jeopardizing success, whereas, too exuberant an application may lead to unnecessary trauma to the thoracic cage or abdominal organs. External cardiac massage by hand is exhausting, frequently requiring the alternate services of several operators. Mechanical application is more convenient and more apt to result in a successful outcome. The force applied can be delicately controlled; the minimum pulsating force needed to produce satisfactory cardiac output being consistently applied for whatever period is necessary. An optimum regime, once established, can be continuously maintained. This assures satisfactory circulation with minimum hazard of rib fracture or other trauma. Only one operator is needed and he is then free to attend to other aspects of emergency care, such as ventilation of lungs, airway problems, application of electrical defibrillation, injection of drugs, etc.

DESCRIPTION OF THE INSTRUMENT:

This machine is a completely self-contained portable cardiac massage machine. It comprises a compressed gas (normally carbon dioxide) cylinder, as the source of power; a reducing valve with high and low pressure gauges, an electrically operated solenoid valve and a power cylinder with piston, piston rod and pressure disc. The solenoid valve is controlled by a variable speed timer driven by a 6 volt dry battery (two batteries always available). The power cylinder is clamped vertically in a strong "horizontal U" cantilever structure, the lower leg of which can slide under an unconscious patient lying on his back. The position of the power cylinder is vertically adjustable to make correct contact with the patient's chest. The actual contact is made by a water-filled pad fitted to the massaging disc. The patient, who is retained laterally by a safety belt, can be positioned ready for treatment and the machine started in about 15 seconds. The force and the pulse rate of the cardiac massaging pulses are adjustable. The complete machine weighs 40 lbs. and is carried by a single handle.

APPLICATION:

If cardiac arrest is diagnosed and if it does not yield to manual massage immediately, the Harkins-Bramson Portable Resuscitator should be applied. The machine is designed for quick application. The change from manual to mechanical massage can be effected in a matter of seconds. As soon as the massaging pulse rate and force have been properly set and lung ventilation has been assured, the immediate extreme danger of irreversible brain damage will have been avoided and urgent attention can then be given to the practical problem of transferring the patient to an Emergency Hospital (or, if already in a hospital, to the appropriate intensive care unit.)

PORTABLE RESUSCITATOR MAY BE USED IN CONJUNCTION WITH THE MODEL 1318 HARKINS-BRAMSON SYNCHRONOUS ELECTROCARDIAC MASSAGE MACHINE.

Following successful resuscitation, whether accomplished by hand or with the aid of the machine, it is recommended that the machine be placed, or remain, in position on the patient on a stand-by basis, and that the electrocardiograms and blood pressure be monitored for several hours so as to provide the best safeguard in the event of recurring arrest.

If defibrillation is required, and is successful, it is nevertheless probable that the returning heart function will be weak and perhaps insufficient for the maintenance of life. In this deteriorating situation the heart requires synchronous support, i.e. massage in exact synchrony and phase with its own contractions (electrical systole). If a Harkins-Bramson Synchronous Electrocardiac Massage Machine is available, such support can now be provided, without removing the patient from the portable resuscitator, by connecting the snap-on socket from the Synchronous pulse generator (see separate brochure on Synchronous Massage Machine) to the power cylinder of the portable resuscitator. This changeover can be made in 5 seconds. Thereafter the heart which is beating significantly, but inadequately, can be supported with the hope of it ultimately taking over unaided.

