

**Victorian
Centre for Early
Defibrillation**



Semi Automated External Defibrillators

Semi Automated External Defibrillators

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SAED's by companies in aphaeretic order currently available in Australia and Therapeutic Goods Administration (TGA) approved.

Suppliers of Semi Automatic Defibrillators (SAED) in Australia

Biomedex

- Paramedic™

Cardiac Science

- Powerheart™

Ferno Australia

- MRL Lifequest™

Laerdal

- Heartstart FR 2™

Medtronic - Physio-Control

- Lifepak 500™
- Lifepakcr+™

Zoll

- M Series AED™
- AED+™

The information included in the following pages was correct at the time of writing. However, the company's involved may change specification without notice.

This information is provided as a generalised summery only to help you to look at the plain facts so that you or your organisation can make an informed decision about the machine that will suite your needs best.

The Victorian Centre Early Defibrillation does not have a preference for any one machine over another they all meet the national standard.

There are a number of other machines available internationally however; the listed machine in this document are the only machines with Therapeutic Goods Administration (TGA) approval ***available in Australia at this time that are designed with the first responder in mind.*** There are other defibrillators available and approved these are designed for the health care professional as the care giver and as such a greater need for higher levels of training and clinical exposure to operate them is required.

If and when other suitable first responder machines become available and approved they will be added to this list.



TYPES of DEFIBRILLATORS and DEFINITIONS

Manual:

Manual defibrillators provides for defibrillation and diagnostic (Monitoring) functions. Traditionally used by emergency trained medical personal.

Semi-Automated:

These are shock advisory models that require little input for the operator. However the operator will have to execute the defibrillation by pressing the appropriate control device. The operator will only be able to perform this action if the machine has determined that a rhythm that can be defibrillated is present.

Some models in the class of defibrillator will have the facility for manual override, this function is for the trained health care professional to utilise if they deem it necessary.

Automated AED:

In the USA the term AED is applied to the class of machine that can be used by the first responder with little training or by the bystander, by only following the voice and other prompts. This class of defibrillator is used in public access defibrillation programs (PAD). In Australia this terminology is not clear as the term Automatic implies minimal application by the user.

In Australia the term AED is not generally utilised, we tend to generically apply the term SAED for all defibrillators that are designed for the first responder and PAD programs. All others are manual defibrillators with some having the option for either manual or semi automatic. This class of machine is usually designed for the hospital crash cart or for the paramedical services.

North Carolina Department of Administration have defined the three classes of defibrillators as follows;

- 1. **Manual Defibrillators** are defibrillators/monitors that provide therapeutic and diagnostic functions. Traditionally used by emergency trained medical personnel in Critical Care Units, Intensive Care Units and Operating Rooms as well as EMT-Paramedics in the pre-hospital setting. Unit may be used as an ECG bedside monitor. Documents date/time, heart rate, instrument status and critical shock parameters. Offers preset patient alarms, measures SpO2 as part of patient monitoring*
- 2. **Semi-Automatic Defibrillators** are manual defibrillators/monitors that provide therapeutic and diagnostic functions but can be converted to an Automatic External Defibrillator (AED) with the use of an optional Shock Advisory Adapter. In the AED mode the Shock advisory System advises the operator when it detects a shockable rhythm and requires user interaction in order to deliver a defibrillation. The manual mode features a simple manual 1-2-3 operation. As a monitor the display may allow 1, 2, or 3 ECG channels to be viewed simultaneously or a cascading ECG, heart rate, oxygen saturation and other vital patient information. The design of the unit provides ease of use and the flexibility to add new features and enhancements that can*



Semi Automated External Defibrillators

be used for both out of the hospital and hospital users. Traditionally used by Emergency Medical Technicians (EMT), Advanced Life Support (ALS), Basic Life Support (BLS) and other emergency medical personnel in the AED mode and EMT-Paramedics who are trained to interpret arrhythmias and determine when a shock is needed

3. **Automatic Defibrillators (AED)** ...*The device analyses the heart rhythm and decides if a shock is necessary. The microprocessor will not permit the device to deliver a shock unless it detects the presence of a heart rhythm that requires defibrillation. These devices are traditionally used by emergency medical personnel, but AED training programs are being implemented to train lay personnel in the use.*

(North Carolina Department of Administration.

http://www.doa.state.nc.us/PandC/465b.htm#P45_466)



PARAMEDIC™ (Biomedex)

Wave Form:

- e-cube Biphasic Waveform (Truncated exponential) Pre-programmed selection 150-150-180, 150-180-180 joules

Packaging:

- Weight 2.7 Kg 305mm x 250mm x 95mm.

Prompts:

- Voice and text prompts

Operation:

- Standard 1 2 3 operation

Charge Time:

- Less than 10 seconds

Electrodes:

- Multifunctional adult

Reports:

- Internal flash memory 10 hours of event and ECG recording.
- Optional smart media flash card (32m) 48 hrs ECG and event recording 1 hour voice if enabled

Battery:

- 12 volt Nickel-Metal Hydride (rechargeable) Charging time 4 hours or more. A new fully charged battery will deliver a minimum of 200 shocks.

Training:

- Unknown at this time.





POWERHEAT™ (Cardiac-science)

Wave Form:

- Star Biphasic Waveform Optimized Energy Delivery / Variable energy levels 105j to 360 joules

Packaging:

- Weight 3.36 Kg inclusive of battery Rugged with Wall Mounted Storage Case Self contained Mid console Flip lid.

Prompts:

- LED Screen Text instructions and Voice / Audible Alarms Indicators - Ready Status / SmartGauge / Battery / Service

Operation:

- Single Button User Console Operation

Charge Time:

- Less than 55 seconds for three shock series

Electrodes:

- Self Checking and Pre-Connected to Unit Disposable Non-Polarised (Interchangeable Body Placement)

Reports:

- Internal Memory and/or Optional Data Card Internal Memory - 20 minutes ECG and event recording
- Data Card - 10 Hours ECG and event recording, or 40 minutes Voice, ECG and Event recording Communications - PC Windows Based Review

Battery:

- Lithium with 5 year Shelf and Operating Life Typical Shocks - 300

Training:

- Provides a wide range of training tools and applications





M.R.L Lifequest™ (Ferno-Australia)

Wave Form:

- Orbital Biphasic Truncated Exponential

Packaging:

- Robust and Portable. Weight 2.2 Kg

Prompts:

- Both Audio Visual Inclusive of a Red Flashing Shock Indicator Button.

Operation:

- Uses the 1-2-3 principle and 2 button function of On/Off and Shock In Manual Mode energy selection of 2J - 360J Manual Mode Protected by 3 digit Pin Code



Charge Time:

- To 150 Joules in less than 2 seconds To 360 Joules in less than 7 seconds

Electrodes:

- Uses R2 Standard of Electrodes (Adult & Paediatric) Adapter Lead available to be utilised with other Electrodes. Also, offers another option of 2 ECG Dot Monitoring

Reports:

- Capable of 100-4 second ECG Trapped Events 300 Time Stamped Events.
- On Board Memory with Print and Email Capacity. Removable Data Card with Various Configurations.

Battery:

- Rechargeable - nimh 80 x 360 Joules discharges - 3 hours of ECG Monitoring
- Non-rechargeable - Lithium 200 Full Energy Discharges - 6 Hours of ECG Monitoring

Training:

- Available a CD Rom Training Package Company Based Training Support



Heart Start FR2™ (Laerdal)

Wave Form:

- Smart-biphasic truncated exponential Impedance compensated waveform at nominal 150 joules

Packaging:

- Weight 2.1 Kg with battery installed Portable Robust case with Zip lid to open Two compartments - Equipment Unit



Prompts:

- Volume adjustable Voice Prompts LCD Screen - Text displayed messages & Audible beeps

Operation:

- Sequential 3 Step action FR2 has models with or without ECG display capabilities

Charge Time:

- Typically less than 10 seconds. Shock to shock time less than 20 seconds inclusive of Analysis time

Electrodes:

- Disposable - Self Adhesive Anterior & Lateral Placement

Reports:

- Data Card Data Management inclusive of Infrared Communications and Data Transfer 4 Hours of Event and ECG Data, or 30 Minutes with Voice Recording

Battery:

- Lithium (Disposable / Recyclable) New 300 Shocks or 12 hours Operating time Shelf Life - 5 yrs Prior to Installation

Training:

- AED Little Anne Training System / Used with any Manikin Soft Pack / Battery Pack and Remote Control Flexibility

Heart Start First Aid (Laerdal)

Wave Form:

- Smart-biphasic truncated exponential Impedance compensated waveform at nominal 150 joules.
- Infant/Child 50 Joules into a 50 ohm load

Packaging:

- Weight 1.5 Kg with battery installed case with and pads

Prompts:

- Voice prompts to guide the operator.

Operation:

- Sequential 3 Step action and indicators guides user through process.

Charge Time:

- Typically less than 20 seconds.

Electrodes:

- Disposable - Self Adhesive Anterior & Lateral Placement. Electrodes available for use in paediatrics.

Reports:

- Infrared data transmission to personal computer using IrDA protocol. Data management software. The first fifteen minutes of ECG and the entire incident events and analysis decisions.

Battery:

- Lithium (Disposable / Recyclable) 90 Shocks or 3 hours operating time Shelf Life 4 years when installed.

Training:

- Special pads place the machine in to training mode that gives 8 training scripts.





LIFEPACK 500™ (Medtronic - Physio Control)

Wave Form:

- Choice of: Traditional Monophasic Pulse (Edmark)
- 3D Biphasic Truncated Exponential

Packaging:

- Rugged durable. Weight 2.4 kg Press stud release access to expose the console and Pads. Readiness Indicator located in the Handle



Prompts:

- Screen - Liquid Crystal - Two Line - 20 Characters / line
- Audible Tones and Sequential Voice Prompts

Operation:

- Two Modes available
 1. Standard 3 Button On/Off Analyse Shock
 2. Streamlined 2 Button On/Off Shock

Charge Time:

- 200 joules in 9 Seconds 360 joules in 15 seconds (*From a Fully Charged / New Battery*)

Electrodes:

- Pre-Connected Quick Combo / Fast Patch Disposable Standard Anterior / Lateral Placement

Reports:

- Internal Digital Memory - 20 to 80 minutes (Depending on selected configuration type). 300 Event Logs Events / 30 Test Logs 3 Communication Options.(PC / Modem / Print)

Battery:

- Rechargeable - Lead Acid 59 Full Discharges - 3 hours "ON" time / 10hrs to Charge
- Non-rechargeable - Lithium 312 Full Discharges -14 hrs "ON" time Shelf life 5 years

Training:

- Full range of Training Tools / Manikins and interactive Computer Applications



LIFEPACK CR+™ (Medtronic - Physio Control)

Wave Form:

- Biphasic Truncated Exponential Voltage and Current Duration Compensation impedance

Packaging:

- Weight 2 Kg Push Button opens Lid also Turns the Unit ON. Visible Readiness Indicator



Prompts:

- Voice prompts - Audible tones and graphic prompts OK indicator for Last Self Test / Service Indicator

Operation:

- Available in Semi-Automatic (User to push Shock) Or, Fully Automatic (User applies Pads Only)

Charge Time:

- Shock Charge Time 200 joules - less than 9 seconds 360 joules - less than 15 seconds (From Fully Charged Device)

Electrodes:

- Rapid Release Quick-Pak Electrode Pads Pre-connected pads
- Standard Anterior and Lateral placement

Reports:

- Internal Digital Memory - Range of configurations available ECG Storage / Continuous Summary / Event Log / Test Minimum of 200 time - stamped event log markers Infrared Wireless communications with PC

Battery:

- Rechargeable - Charge PAK Battery Charge system 20 - 30 Full Discharges 140 - 210 minutes of "ON" time Re-charge Time:6 Shocks / 42 mins operating Time - 48 hours (Fully discharged)

Training:

- Lifepak™ CR-T Training System Simulates the main Unit in appearance and operation Wireless remote control simulation unit

Zollaedplus™ (ZOLL)

Wave Form:

- Rectilinear Bi-phasic Technology

Packaging:

- Plastic case with separate flip lid that also provides head extension in resuscitation Weight - 3.1 kg

Prompts:

- LCD screen prompts / voice prompts consistent with graphical operator interface Led indicator lights



Operation:

- Single button on/off only CPR depth / rate feedback function providing voice prompts indicating adequate compression rate/depth.

Charge Time:

- Less than 10 seconds with charge hold time 30 seconds Pre-programmed selection of - 120J 150J 200J

Electrodes:

- One Piece CPR-D pads Uses CPR Landmarks for correct placement Pre-connected- 4 yr shelf life Intended to eliminate placement confusion

Reports:

- Infrared to PC, also Compact Hand Held Unit Full set of ECG and event reports Windows™ and IBM™ Compatible

Battery:

- Typical New - 5 Years 300 Shocks / 1.5 Hours of Continuous Monitoring / Defibrillation

Training:

- Wide range of training packages to suit each ZOLL™ product.