



Suggested performance specification for defibrillator cabinets

Summary

This paper suggests a minimum performance standard for cabinets for housing Public Access Defibrillators, commonly known as Automated External Defibrillators (AEDs), and is an advisory document. It has been recognised by the BHTA defibrillator group that there are a variety of storage cabinet options but that specifications, especially around performance, vary widely.

This guidance is for BHTA members, the wider industry and communities on the requirements for appropriate defibrillator storage. Since this document is for guidance only and is not aimed at any specific defibrillator, the defibrillator manufacturers documentation should always be referred to for storage requirements specific to the defibrillator being stored.

Defibrillator cabinets can be constructed from various metal, composite and plastic materials. They can be placed inside a building or externally. When considering which cabinet is suitable, due consideration of the location, environment, storage requirements specific to the defibrillator and your own risk assessment is required.

Suggested performance standards

The following performance standards relate to cabinets that will be situated outdoors or in indoor areas which are susceptible to major temperature extremes or variations.

- 1. Manufacture** – Cabinets should be manufactured from materials that have a suitable standard of flame retardancy to prevent the cabinet from catching fire when exposed to high levels of heat and that are Low Smoke Halogen Free. If plastics are used, they should also be UV stabilised to prevent cracking from exposure to sunlight (UV rays) which over time reduces the strength. IP rating of the cabinet gaskets should also meet these requirements.
- 2. Internal temperature** – The cabinet should have a heating and/or cooling system to ensure that the internal temperature is maintained between +5°C and +40°C. The heat and/or cooling system should be designed so that it does not have any negative effect on the defibrillator, its batteries and other accessories. The cabinet should be situated out of direct sunlight, to minimise the effect of the sun.
- 3. Ingress protection** – The cabinet should be constructed to achieve a minimum of Ingress Protection (IP) rating of 55 (IP55). If the cabinet is to be located where there is an increased risk of water or dust ingress (for example a coastal area), it is recommended that the cabinet has a minimum IP rating of IP66.

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4. Vandalism and accidental damage – Cabinets should be impact resistant to minimise the chances of damage to the defibrillator from an act of vandalism or an accident and to reduce the risk of the integrity of the cabinet being impaired by such action. Damage to the cabinet could result in the internal temperature not being maintained or the ingress of water. Whilst at present there is no UK or European standard that relates specifically to the impact resistance of a defibrillator cabinet, successfully passing the following test will demonstrate the cabinets’ ability to withstand the average force applied by a person hitting the cabinet with a sledgehammer, baseball bat or similar.

The cabinet’s construction should be able to withstand an object impacting it with the force equivalent to the head of a 9kg sledgehammer being dropped on each surface of the cabinet (or in the case of cabinets that do not have flat sides, from 5 different perpendicular planes) from a height of 2.5m above the cabinet surface with the IP rating intact. The test should be carried out when the cabinet is fixed to a surface to simulate it being fixed to a wall. This will ensure that both the construction of the cabinet as well as the wall fixing is tested.

5. Access in an emergency – A rescuer should be able to remove the defibrillator within 15 – 30 seconds (when in possession of unlock code if a locked cabinet).

6. Cabinet closure mechanism – Cabinets come in both lockable, and non-lockable versions. The manufacture of the closure should take into consideration the environment that the cabinet will be located in. If the closure mechanism is metal, stainless steel should be used as a minimum for low risk environments whereas marine grade stainless steel should be used for harsher environments (for example coastal locations).

If the cabinet is lockable, both mechanical and digital locks are available. Where a mechanical lock is used, clear instructions should be provided on any regular maintenance that is required to ensure the continued successful operation of the lock. (see section 11 below).

Electronic or electrical locks should be designed so that the cabinet can still be opened in an emergency even if there is a power failure. During such power failure the cabinet should still maintain its integrity, including its IP rating and the ability to maintain its internal temperature.

Regardless of whether any lock is mechanical or digital, it should be able to be unlocked by entering a simple numerical code. It is strongly recommended that the code is set to the standard code used by the ambulance service within the region in which the cabinet is to be installed. Further information about this code can be obtained from the local Ambulance Service.

7. Remotely Operated and Monitored Cabinets – Remotely operated (locked/unlocked) cabinets should be able to be opened locally as well as remotely.

Manufacturers who produce cabinets that offer remote monitoring (which can include both environmental monitoring as well as defibrillator monitoring) should supply very clear information about the capabilities and limitations of the monitoring solution. This should include both the functionality of the system as well as a definitive list of what defibrillators the system will work with, highlighting any differences in the monitoring functionality between the various defibrillator makes and models. Instructions should also make it clear that remote monitoring does not completely replace the need for physical defibrillator and cabinet checks.

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8. **Visibility** – The cabinet design should allow the cabinet to be easily identified as a defibrillator cabinet, both day and night. It is an advantage to have a window or other mechanism to verify the presence of the defibrillator to be confirmed without opening the cabinet.

9. **Electrical connections** – Cabinets which rely on an electrical supply must be installed as per the manufacturer’s installation instructions and must meet current electrical regulations. Depending upon the power supply to the cabinet, this may include the need for RCD protection. The manufacturer’s instructions should make it clear what is required for safe installation and connection to a power supply.

10. **Labelling** – Internal labelling on the cabinet must give key technical information for the installer, such as electrical class and IP rating and who should be contacted in the event of a problem with the cabinet.

External labelling should include standardised recognisable signage that indicates that the cabinet contains a defibrillator. Currently this is either the UK ‘Heart Restarter’ signage or the ILCOR ‘lightning bolt through a heart’ sign. In addition there should be clear and simple instructions on what to do in the event of an emergency.

11. **Environmental Resistance** – Cabinets should be constructed of suitable materials to resist corrosion when placed in their intended environments for a minimum of five years. In addition, sales materials and fitting instructions should give clear guidance on

any environmental limitations of the cabinet to meet this performance, such as:

‘This cabinet is not intended for use in marine environments or other environments that expose the cabinet to higher than average levels of salt’.

Additional instructions should be included for any processes that are required to maintain corrosion resistance and normal operation of the cabinet, such as:

‘The lock should be opened at least once per month and lubricated every 12 months with a good quality lubricant such as silicone spray.’

12. **Environmental considerations** – The cabinet must be able to maintain the above performance standards when situated in a position, not within direct sunlight, with a temperature range of – 10°C to +30°C.

13. **Installation instructions** – In addition to the information provided on the label, these must give advice about choosing a suitable location for the cabinet, out of direct sunlight. They should also include information about installing the cabinet so that it is easily accessible by a wheelchair user (whereby the bottom of the cabinet should be approximately 1.1m, and no more than 1.3m from the ground – and in a location accessible by wheelchair).

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