Inflatable Amusement Devices – Safe Operations

Guidance to outline the safe operation, management, and supervision requirements for inflatable amusement devices, helping organisations control risks related to the installation, use, environmental conditions, and user behaviour.

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Introduction

Inflatable amusement devices (commonly referred to as inflatables) are air-supported structures designed for recreational use, allowing individuals to bounce, slide, climb, or navigate through various features. These devices are constructed from durable fabric and are maintained in shape by continuous airflow from electric blowers. They are available in a wide range of formats, including bouncy castles, obstacle courses, slides, mazes, and bungee runs. Inflatables are increasingly used for immersive experiences such as enclosed light shows and interactive displays. In addition to dry land applications, many are designed for aquatic environments, supporting activities such as pool slides and aqua runs.

Hazards

Both dry-side and water-based inflatables present distinct safety hazards that require careful management to ensure safe operation.

Dry-side Inflatables

Dry-side inflatables present a range of risks that must be carefully managed. Mechanical issues such as fabric tears, seam failures, or blower malfunctions can compromise structural integrity. Environmental conditions, particularly high or gusty wind conditions, pose a serious threat, potentially causing the device to become unstable or airborne. User-related hazards include overcrowding, rough play, and falls from elevated sections. Additionally, site-specific risks such as poor anchoring, tripping hazards, and exposure to electrical components must be effectively managed to ensure the safe operation.

Water-based Inflatables

Water-based inflatables present several safety risks that must be carefully managed. Key hazards include the potential for drowning or entrapment, particularly where users may become trapped between the inflatable and fixed structures such as pool edges. Injuries can result from collisions with other users, falls from the device, or strain during entry and exit, especially if the inflatable lacks stability. Additional concerns include water contamination, allergic reactions, and exposure to environmental factors such as strong winds or water currents. Electrical shock is also a significant risk, particularly when equipment is faulty or improperly installed near water.

Selecting a Suitable Supplier

When procuring inflatable devices, whether through purchase or hire, it is essential to engage with competent and reputable suppliers. Suppliers must provide comprehensive operating instructions and demonstrate compliance with relevant safety standards.

To support safe use, the Health and Safety Executive endorse two key industry inspection schemes: PIPA and ADiPs. Most inflatable play equipment will display either:

- A PIPA tag (a unique identifier confirming inspection under the PIPA scheme), or
- An ADiPs Declaration of Compliance, indicating conformity with applicable standards.

Both schemes verify compliance with British Standard BS EN 14960 (British and European safety standard for inflatable play equipment, specifying design, manufacture, and testing requirements), which governs the safety, performance, and testing of inflatable play equipment. A new inflatable should have an 'initial test' to confirm it complies with BS EN 14960.

Users can verify inspection status and compliance via the respective scheme websites:

- PIPA: Covers inflatable devices within the scope of BS EN 14960 and provides detailed guidance on inspected equipment.
- ADiPs: Encompasses a broader range of inflatable and fairground equipment.

Where multiple inflatable components are used to form a single activity, each individual piece must be inspected separately. However, if the components are fixed, non_interchangeable parts of one integrated activity, they should be inspected together as a single unit.

Using and Operating Inflatables

In cases where inflatable devices are hired, the operator will typically deliver, install, and inflate the equipment. Operators may also provide trained attendants whose role is to supervise users and ensure the device is operated safely and in accordance with manufacturer's guidelines.

However, certain hire agreements may transfer supervisory responsibilities to the hirer. In such instances, it is essential that the operator supplies clear, written instructions outlining safe operating procedures. The hirer must ensure that a sufficient number of responsible, competent adults are appointed as attendants. These individuals should receive appropriate training to carry out their duties effectively, including managing user behaviour, monitoring environmental conditions, and responding to incidents.

Irrespective of the route of supply, a full risk assessment must be carried out for all inflatables, taking account of key factors such as correct installation and dismantling, weather conditions, secure anchorage, supervision arrangements, electrical safety, and user restrictions. Control measures should include verifying valid PIPA/ADIPS inspection certificates, implementing an appropriate inspection regime, and ensuring access to the manufacturer's User Manual. If changing conditions are foreseeable e.g., the inflatable is to be located outside, the risk assessment should include the provision of dynamic risk assessment allowing operators to adapt promptly to changing conditions and prevent harm or loss.

Controlling Risk - Injury to Users

Inflatables must only be used for their intended purpose. Prior to hire or purchase, obtain written confirmation from the supplier that the equipment is suitable for the specific application and operating environment in which it will be deployed.

The area directly in front of the inflatable's entry and exit point (such as the step or apron) must remain free of spectators. Keeping this space clear ensures attendants have an unobstructed line of sight, including into the interior of the inflatable, so they can effectively monitor user behaviour and maintain safety during both mounting and dismounting.

Safety Barriers

For outdoor events where inflatables serve as the primary or sole attraction and where crowd presence is anticipated, a secure perimeter must be established to manage access and enhance safety.

- A continuous perimeter barrier should be installed around the inflatable device, except for designated access points.
- The barrier should be a minimum of 1.8 metres in height, and any access gateway should be at least 1 metre wide to allow safe entry and exit.
- An alternative emergency exit route must also be considered and incorporated into the layout where appropriate.

Landing Mats

To reduce the risk of injury, soft-landing materials such as gym mats must be placed adjacent to all entrances, exits, and any open sides of the inflatable amusement device. These mats should:

- Have a minimum thickness of 25 mm and a maximum thickness of 125 mm.
- Cover an area extending at least 1.2 metres from the inflatable.
- Be made of fire-resistant material if used indoors.

Landing mats must be correctly positioned to avoid creating any tripping hazards. They should be placed securely, checked regularly for wear, damage or creep, and monitored throughout the entire period the inflatable is in operation to ensure they remain safe and effective.

For further technical specifications and safety requirements, refer to BS EN 1177 (European and British safety standard for impact-attenuating playground surfacing).

Blowers

Blowers used to inflate amusement devices are typically positioned externally, most often at the rear or side, and connected via a flexible inflation tube. To ensure safe and effective operation, the following controls must be implemented:

- **Secure Connections**: Verify that all blowers and inlet pipes are correctly and securely connected. They must be free from obstruction, twisting, or damage, and functioning properly.
- **Stable Positioning**: Place blowers on a flat, dry, and stable surface, away from the main play area to prevent contact or tripping hazards involving users or power cords.
- **Restricted Access**: The area surrounding the blower and the rear/sides of the inflatable must be cordoned off to prevent public access. Blowers should be positioned at least 1.2 to 2 metres from the inflatable structure.
- **Airtight Seal**: Ensure the blower's air output is securely fastened to the inflatable's intake tube using appropriate straps or ties to maintain an airtight seal.
- **Clear Air Intake**: Keep the blower's air intake area free from debris such as leaves, dirt, or fabric to maintain airflow and prevent overheating.
- **Physical Barriers**: Fence off or barricade blowers, electrical connections, and anchor points to prevent unauthorised access and reduce trip or injury risks.
- **Electrical Safety**: Blowers must be plugged into a properly grounded outlet with ground fault circuit protection (GFCI) protection. Any extension cords used must be suitable for outdoor use and of appropriate gauge to prevent electrical faults.
- **Weather Protection**: Blowers must not be operated in wet conditions. If rain is forecast, they should be adequately covered or shielded, ensuring the air intake remains unobstructed.

Attendants

A sufficient number of trained attendants must be present to ensure the safe operation of inflatable amusement devices. The exact number required will depend on the type of inflatable and the anticipated volume of users.

- **Minimum Staffing**: If the number of available attendants falls below the required level, the inflatable must be taken out of use until adequate supervision can be restored.
- **Coverage of Access Points:** All entrance and exit points must be continuously monitored by attendants to ensure safe user flow and prevent overcrowding or misuse.
- **Competency:** Attendants should be mature, responsible individuals who are confident in enforcing safety rules and capable of responding to incidents. They must be familiar with the device's operational guidelines and user restrictions.

Safe Use

Attendants must be fully familiar with the operational safety rules for inflatable devices, including the maximum number of users permitted at any one time. They are responsible for ensuring that users:

- Remove footwear and any hard, sharp, or potentially hazardous objects before entering.
- Do not consume food, drink, or chew gum while using the inflatable.
- Remove glasses where possible to prevent injury.
- Avoid bouncing on the step or front apron of the device.
- Refrain from climbing or hanging on exterior walls.
- Are not permitted to use the inflatable if their height exceeds the exterior wall height while standing.
- Keep entry and exit points clear of obstructions at all times.

Attendants must be competent and confident in enforcing these rules. They should monitor user activity continuously and intervene promptly at the first sign of misuse or horseplay using a whistle or other attention-getting method if necessary. Overcrowding must be prevented at all times.

To further reduce risk, attendants should:

- Separate boisterous or larger children from smaller ones.
- Limit the number of users to ensure adequate space for safe play.

Setting up Indoors

When setting up inflatables indoors dry side or water based, there are a few measures to consider to ensure the inflatable can be operated safely.

Dry Side

Before setting up the inflatable, confirm that there is sufficient floor space for it to stand upright with the filler tube fully extended, and ensure a clear area of at least 3.5 metres where users will mount and dismount. The ceiling height must also allow the inflatable to fully inflate without making contact. If there is any uncertainty about height clearance, remain positioned by the fan during inflation so it can be switched off immediately if the inflatable approaches the ceiling.

It is not possible to anchor inflatables with stakes when using indoors. Although there will be no risk of overturning due to high winds, it may still be necessary to secure the inflatable device to prevent ‘creep’ during use.

Water Based

Securing inflatables properly in swimming pools is essential to prevent movement, tipping, entrapment risks, and potential injuries. Use only purpose-designed anchor points, weights, or underwater fixings suitable for pool inflatables. Always consult the User Manual to determine the correct number and placement of anchor points.

Setting up Outdoors

When setting up inflatables outdoors dry side or water based, there are a few measures to consider to ensure the inflatable can be operated safely. Additional factors also include weather conditions.

Dry Side

It will be necessary to carry out an assessment of ground conditions where the inflatable is to be sited, to determine the suitability of anchor points. For example, more anchors may be needed for soft or sandy ground. If the inflatable is erected on hard standings or impenetrable ground where pegs or pins can't be used, alternative means of securing the device must be used e.g., heavy ballast.

The operator is responsible in determining to what extent an inflatable requires anchoring. If they are the one to erect the device, they should ensure that a sufficient number of suitable anchor points are used. Alternatively, they may supply the hirer with information about proper anchoring.

A programme of regular inspections must be in place whenever inflatables are installed for an extended period. Inspection frequency should increase during adverse weather conditions. User Manuals must also be consulted about specific inspection requirements.

Water Based

Safe positioning of water inflatables in open water requires careful planning. Inflatables should only be installed in bodies of water with sufficient depth, free from submerged hazards such as rocks, vegetation, or sudden drops. The water area must be clearly designated, with adequate separation from boating routes, anglers, or open_water swimmers. Inflatables should be positioned so that wind direction and prevailing currents do not push users toward hard structures, deep water, or shorelines with slip or impact risks. All units must be anchored securely using systems suitable for open_water environments, ensuring stability without creating underwater entanglement hazards. Clear access points, safety signage, and designated supervision zones should be established to ensure controlled entry, monitoring, and rapid response in an emergency situation.

Deflating the Device

Inflatable equipment must never be deflated while in use. In the event of blower failure, attendants must act immediately to evacuate all users from the structure to prevent injury.

To ensure the safety of an inflatable in the event of a sudden loss of power, the deflation rate of the inflatable should be tested before each use by switching the blowers off and observing the inflatable deflate. The inflatable should deflate at a rate that allows sufficient time for the maximum number of permitted users to be safely evacuated, whilst retaining its shape and rigidity so that users do not fall from the inflatable. If the inflatable deflates at a such a rate, that it becomes misshapen or deformed and prevents either safe escape or cannot prevent users from falling, the inflatable should not be operated.

After use, the inflatable must be fully deflated to prevent unsupervised access. Before beginning deflation:

- Ensure all users and bystanders are safely clear of the area.
- If the inflatable was operated within a perimeter fence, dismantling the fence should be the final step once the structure is fully deflated.

A safe system of work must be in place to manage the risks associated with cleaning and storing the inflatable, including hazards related to slips and trips, exposure to body fluids or cleaning agents, and manual handling.

Measuring Devices

Whether you are hiring or purchasing an inflatable device you must ensure that you have:

- A manometer which is used to measure pressure in sealed inflatables.
- An anemometer which is used to monitor wind speeds enabling operators to ensure that the attraction is operated safely within recommended limits.

Both devices will require regular calibration to ensure accuracy.

Adverse Weather Conditions

Operators must check weather conditions for the duration of the event at which the inflatable will be used. If high winds are expected it may be necessary to stop use of the device or even deflate it. Inflatables must not be used during periods of strong or gusty winds. An anemometer must be available to measure wind speeds.

Checklist

A generic Inflatable Amusement Devices Checklist is presented in Appendix 1 which can be tailored to your own organisation.

Specialist Partner Solutions

Aviva Risk Management Solutions can offer access to a wide range of risk management products and services at preferential rates via our network of Specialist Partners.
For more information please visit:

Aviva Risk Management Solutions – Specialist Partners

Sources and Useful Links

- Fairgrounds and Amusement Parks - Guidance on Safe Practice: HSG175 – Health and Safety Executive**
- Guidance from the Inflatable Play Inspection Scheme – The Professional Inflatable Play Association (PIPA)
- Amusement Device Inspection Procedures Scheme (ADIPS)
- The Royal Life Saving Society UK

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Additional Information

Relevant Loss Prevention Standards include:

- Induction Training
- Safeguarding of Children and Vulnerable Adults

To find out more, please visit Aviva Risk Management Solutions **or speak to one of our advisors.**

Email us at riskadvice@aviva.com or call 0345 366 6666.*

*The cost of calls to 03 prefixed numbers are charged at national call rates (charges may vary dependent on your network provider) and are usually included in inclusive minute plans from landlines and mobiles. For our joint protection telephone calls may be recorded and/or monitored.

Appendix 1 – Inflatable Amusement Devices Checklist

Location	
Date	
Completed by (name and signature)	

	Inflatable Amusement Devices	Y/N	Comments
1.	Has the equipment been sourced from a suitably competent supplier and is it appropriate for its intended use?		
2.	If hiring the equipment, is it from a PIPA approved operator and does it carry a PIPA or ADiPs mark?		
3.	Are copies of manufacturer's instructions readily available? And have these been communicated to relevant persons?		
4.	Is maintenance carried out in accordance with the manufacturer's guidelines and schedules? Are records of maintenance and inspections records readily available?		
5.	Has a risk assessment of the equipment, including its intended use, the location of operation and ancillary equipment, been completed by a competent person?		
6.	Does the risk assessment include all aspects of storage, pre-use checks, inflation, use, supervision, weather, dismantling and inspection (by a PIPA or ADIPS approved company)?		
7.	Have the risk assessments been communicated to all relevant persons / parties? Is this recorded?		
8.	Has a safe system of work been developed? Has this been communicated to all relevant persons / parties? Is this recorded?		
9.	Has a dynamic risk assessment been considered to mitigate risks in the event of changing events/ circumstances?		

	Inflatable Amusement Devices	Y/N	Comments
10.	Is there a manometer available to take regular measurements of the internal pressure of the inflatable? Are these checks recorded? If one is not available, the device must not be used.		
11.	If the inflatable device is to be used outside is there an anemometer available to measure wind speed? Are wind speed checks recorded? If one of these is not available, the inflatable should not be operated outside. Do not use smartphone weather applications to measure wind speed as they do not take localised wind conditions into account.		
12.	Have the hirers and attendants received suitable training in the working of the inflatable? And is this recorded?		
13.	Are there sufficient numbers of attendants on duty for the duration of the event? Are they suitably trained?		
14.	Have sufficient provisions been made for immediate response to emergency situations e.g., first aid and lifeguard provision?		
15.	Is there suitable life saving devices readily available for water inflatable activities? Are they inspected and records maintained?		
16.	Have emergency procedures, including communication with external agencies been developed and tested? Are records maintained?		
17.	Is the inflatable inspected prior to use and thoroughly examined at least annually by a competent person? Is this audited?		
18.	Are clear rules and procedures available and displayed for users?		
19.	Is there a procedure for cleaning the inflatable in the event of an incident such as sickness etc.?		

20.	Additional comments:

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