

Ref No 5026 (v8)

Inflatable Amusement Devices – Safe Operation

Introduction

This Hardfacts is concerned with inflatable amusement devices (inflatables) i.e. air filled structures designed to allow users to bounce, slide or climb on them. They are made from flexible fabric, kept inflated by one or more blowers and rely on air pressure to maintain their shape. The range of designs continues to increase with simple bouncing devices now joined by climbing frames and obstacle courses, crazy golf, slides and mazes, bungee runs and “barfly” type devices on which people wear special suits fitted with hook and loop fabric. In addition the use of inflatables as “art” has increased with air filled structures being used provide enclosed spaces for light shows etc.

There have been a number of instances where users of inflatables have suffered injury through inappropriate use e.g. mixed ages or over energetic activities. There have also been cases of inflatables breaking free, which have resulted in injury and even death of users.

There are three main designs for the most common type of inflatable, the “bouncy castle”:

- Open-sided, often referred to as flat beds (distinguished by their lack of walls)
- Open-fronted, often referred to as ‘castles’ (these have walls on all sides except one)
- Totally enclosed e.g., disco bouncers (all sides enclosed by an inflatable dome)

Hazards

There are a number of hazards associated with the use and operation of inflatables:

- Wind distorting or blowing over the whole inflatable
- Failure of seams or splitting of the fabric under pressure
- Air loss due to blower disconnection or failure or interruption of power supply
- Zip failure

- Accidental injury to users caused;
 - by themselves or others e.g. overcrowding
 - by spilling or falling from the inflatable
 - during mounting and dismounting i.e. entry or exit
 - by disregard of large users for little users
- Tripping (particularly over anchorages)
- Access to unguarded or inadequately protected parts of equipment e.g. blower units
- Electrical hazards (e.g. shocks and burns)
- Inadequate means of escape in case of fire
- Dangerous siting of equipment.

But the most significant risks are those associated with the risk of injury to users and/or the escape of the inflatable due to high winds.

Selection a suitable source

When the use of an inflatable is contemplated it is important that the Hirer selects a suitably competent supplier. The industry trade body PIPA operates an equipment inspection scheme and authorises persons and bodies to carry out inspections of inflatables. PIPA also maintains a list of suppliers whose equipment is inspected – [the Operators List](#).

Anyone who seeks to hire an inflatable should use a PIPA approved Operator and ensure that the inflatable carries a PIPA “sticker”.

Use and Operation of Inflatables

In the majority of circumstances an inflatable is hired from an Operator. The Operator will generally deliver the inflatable and may erect it - that is - inflate it. Operators may supply Attendants whose role/function is to supervise users and ensure safe operation and use of the inflatable.

However, the contract may make the Hirer responsible for supervision of the inflatable whilst it is in use. If so it is essential that the Operator supplies clear guidance and instructions for safe use. In such circumstances the Hirer should appoint a sufficient number of suitable i.e. mature and responsible persons, to act as Attendants.

Where necessary, the Hirer should provide training for the Attendants (see guidance later under Controlling Risk – Injury to Users).

Controlling Risk - Injury to Users

With outdoor events, where the inflatable is the only or the main attraction and where crowds are present, a perimeter fence should be positioned around the inflatable. Such a crowd control barrier should be at least one metre high, should surround the device and have an access gateway, the barrier may need to have an alternative means of exit or escape for use in an emergency.

The operating area at the front of the step/front apron should be kept clear of onlookers so that the Attendant has a clear field of vision and can ensure that persons can mount and dismount safely. This is also essential in order to permit a clear view of the interior of the inflatable.

Non inflatable gym mats or similar soft landing material (minimum 25 mm to maximum 125 mm thickness) should be provided to cover hard surfaces which are adjacent to open sides and entrances/exits for a distance of at least 1.2 metres. Safety mats should be fire resistant when used indoors.

The Operator may identify the minimum number of Attendants needed to ensure the safe operation of the device or this may need to be done by the Hirer. This number must be available at all times. If there are insufficient Attendants the inflatable should be taken out of use. Entrance and exit points should be covered by an adequate number of attendants.

Attendants must know and understand the rules outlining the safe operation of the inflatable and know the maximum number of users permitted at one time. In particular Attendants must:

- Ensure that users:
 - remove their footwear and any other hard, sharp or dangerous object
 - do not consume food/drink or chew gum
 - do not bounce on the step/front apron of the device
 - do not climb or hang on the outside walls
- Not allow persons who are taller than the outside walls (when standing on the device) to use the device
- Ensure that the entrance/exit is not obstructed

Attendants must possess sufficient maturity to enforce safe use and to stop horseplay or inappropriate use. They must constantly monitor the activity on the inflatable, discouraging any horseplay. The first sign of any misbehaviour should be corrected by the use of a whistle or similar means of attracting attention. Attendants should not allow overloading of the inflatable.

Boisterous and larger children should be separated from smaller ones and numbers on the inflatable should be restricted to allow the users enough room to play safely.

Controlling Risk – Effects of High Winds

When used outdoors inflatables must be securely anchored to the ground at all times. Anchoring to vehicles (or similar method) should be used on hard standings or impenetrable ground where pegs of pins can not be used.

It is the responsibility of the Operator to identify the extent to which an inflatable needs anchoring. The Operator should ensure that a sufficient number of suitable anchor points are used if they erect the inflatable. Alternatively they should supply the Hirer with information about anchoring. It may be necessary to carry out an assessment of ground conditions to determine the suitability of anchor points e.g. more may be required in soft or sandy ground.

Information about weather conditions for the duration of the event should be obtained. When high winds are expected it may be necessary to stop use of the inflatable or even deflate it.

Inflatables must not be used during periods of high or gusty wind.

It will not be possible to anchor the inflatable with stakes when used indoors. However, whilst there may be no risk of overturning due to high winds it may be necessary to secure the inflatable to ensure that it does not “creep” during use.

Key Action Steps

- Hirers should only select suitably competent Operators when they wish to use inflatables
- All Hirers should receive full and sufficient training in the working of inflatables if they are responsible for erection and control including:
 - method of operation
 - safe loading of the inflatable
 - safe system of work
 - training requirements for Attendants
 - safe methods of assembly and dismantling of the device
 - inspections
- Attendants should receive suitable and sufficient training for the work they will be expected to carry out as follows:
 - safe anchorage arrangements
 - crowd control enclosures
 - control of the public
 - safe loading of the device
 - associated risks and precautions
 - defect and breakdown procedures
 - emergency procedures

- Rules and procedures for safe operation should be available to Hirers and Attendants and should be adhered to at all times when both erecting/dismantling and using the inflatable
- Each inflatable device should be thoroughly examined at regular intervals and at least annually by a competent person
- The Hirer should ensure that there is an inspection of the inflatable out first use on any day. This should include:
 - crowd control measures
 - anchorage points
 - ropes and stakes
 - inspection of the material for defects
 - adequate pressure upon inflation
 - blowers
 - electric cables

The inflatable should not be used by the public until any defects, adjustments or repairs identified in the daily check have been carried out.

NB This will be carried out by the Operator if there are supplying Attendants

- Use of the inflatable should not be allowed during high winds.
- Operators should ensure:
 - Maintenance of the inflatable is carried out in accordance with manufacturers' guidelines and schedules.
 - Records of all examinations and daily inspections are kept either with the device or should be readily available for inspection.

References

Fairgrounds and Amusement Parks – Guidance on Safe Practice – HS(G) 175 – HSE Books 1997, tel 01787 881165.

Guidance from the Inflatable Play Inspection Scheme www.pipa.org.uk

BS 5438: 1989 Methods of test for flammability of vertically oriented textile fabrics and fabric assemblies subjected to a small igniting flame.

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Aviva Risk Management Solutions operate a Risk Helpline during normal business hours for the cost of a local telephone call. The telephone number is:

0845 366 66 66

www.aviva.co.uk/risksolutions