



# IS11 – Electrical Maintenance

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## 1) Overview

Electrical maintenance covers the process of inspecting, servicing, and repairing electrical systems and equipment to ensure they operate safely and efficiently. It goes beyond a single ‘portable appliance test’ (PAT). It includes the regular use of an electrical system and operating it.

An inflatable amusement device relates to all devices used in leisure or play whereby its structure relies upon a continuous supply of air to maintain its shape. The continuous supply of air is supplied by an electrical blower fan. These pieces of equipment are usually sold or supplied as a separate entity to the inflatable structure itself. However, when it comes to considering the risks associated with amusement inflatable devices, it must be considered as part of the whole device.

For many years, inspections of inflatable amusement devices have incorporated the requirement of a PAT test as part of the inspection process. However, the guidance issued by ‘The Institution of Engineering and Technology’ (IET) 5<sup>th</sup> Edition Code of Practice for ‘In-service inspection and testing of electrical equipment’ has updated the considerations for electrical equipment, and ‘PAT’ testing as a term has now become redundant. It has also included electrical equipment which is considered to be ‘hired’ as within the scope of the code of practice.

The 5<sup>th</sup> edition code of practice puts the onus on the ‘duty holder’ (i.e. the ‘person’ responsible) to ensure that there is a suitable electrical maintenance scheme in place, relevant to the context of the business and the use of the electrical equipment. This is opposed to providing specific requirements such as completing annual PAT tests.

PIPA has reviewed the code of practice to determine whether electrical blower fans would be in scope of the code of practice, or out of scope and solely included within the annual in-service safety inspections of inflatable amusement devices (i.e. a PIPA inspection). For the following reasons, PIPA believes the controller is responsible as a duty holder under the code of practice:

1. Whilst electrical fan blowers are considered to be part of the inflatable amusement device when the device is operational, the blower is not intrinsically linked to that particular inflatable structure (i.e. the same blower is not always used with the same inflatable structure).
2. Within the industry, electrical fan blowers are not inspected during the operation of the inflatable amusement device. Rather, they are inspected on their own when they are disconnected from the inflatable structure.
3. In the event of a repair, the electrical fan blower is repaired without the inflatable structure. If the electrical fan blower requires replacing, it again is not intrinsically linked to a particular inflatable structure.
4. Controllers usually have other interchangeable pieces of electrical equipment which are used in combination with electrical fan blowers (such as extension leads, or splitters), or alongside them (such as disco lights or music speakers).

PIPA encourages all controllers to purchase and read the code of practice, alongside this guidance, to help enable them carry out their risk assessment and electrical maintenance scheme.

## **2) Why is this important?**

The concept behind electrical maintenance is that it is an ongoing process undertaken by your staff, and the safety of the electrical equipment must be considered each time it is used by a person. This means your staff must carry out more regular checks to increase the number of opportunities to identify an issue. This helps to monitor the safety of the equipment on a regular basis, as opposed to a single annual test.

It also ensures that the type of check is suitable for the context, and the associated risks, for the electrical equipment in use.

By implementing an effective electrical maintenance programme, rather than just carrying out a tick box exercise, you will help to ensure that users of the inflatable amusement device, your staff, or anyone else that comes in contact with your electrical equipment are suitably protected.

In the event of an accident, it is likely that the code of practice will be referred to with an expectation to follow it.

### **3) What do Controllers need to do?**

PIPA is not responsible for how controllers implement an electrical maintenance scheme. This is because the context of each controller's business vary drastically, and the legal requirements sit with the controller.

We recommend that controllers follow the latest version of the IET's code of practice. We also recommend reading the Health and Safety Executive's (HSE) guidance HSG107 'maintaining portable electrical equipment' to supplement the code of practice.

Table 1 offers guidance around how different risks for electrical fan blowers for inflatable amusement devices can be considered as part of the controller's electrical maintenance scheme, particularly in the leisure hire industry. Whilst the contents of table 1 is aimed at electrical fan blowers, the risks are the same for any electrical equipment and may be helpful for considering the risk assessments of other electrical equipment not part of an inflatable amusement device.

**Table 1 – Considerations of the risk**

<b>Risk</b>	<b>Considerations</b>
Environment (location)	Static blowers used in the same location, are less likely to become damaged due to movement. Whereas blowers stored in vehicles and moved site to site are subject to an increased likelihood of damage.
Environment (dirt/dust)	The nature of how blowers operate involves the movement of air into the equipment and projected out at speed. This attracts dirt and dust particles smaller than the grill of the equipment and can accumulate on the blades of the impeller fan, or within its container. So, the environment of the blower needs to be considered, if it is used in the same or similar environment during its lifetime.
Users (reporting faults)	Users include your staff/operators, and end users if they are responsible for the operation of the blower or inflatable amusement device (e.g. dry hire). Do you rely on users to check the blower and report potential faults? Or do you have alternative means which relies less on users to report faults?
Equipment construction	Is your blower a class 1 or a class 2 device? Class 1 devices rely on earthing to protect users and class 2 require an intact casing.
Equipment type	Most blower fans are transportable, which increases the risk of damage. Although, there are some blower fans fixed in a permanent location.
Frequency of use	The in-service life of the blower fan is dependent upon the frequency of its use.
Installation	Where blowers are installed as a fixed installation, consider the ability of users to safely isolate the device and inspect the cable.
Previous records	Access to previous outcomes of assessment for each device can help as part of the risk assessment. Some inspections or tests of equipment may indicate more frequent inspections/tests are required due to unexpected results or occurrences.
Functional in-service life	The operations manual may indicate the likely functional in-service life of the equipment and whether it is safe to use past this time. More frequent inspections/tests may be required past this date.

Where controllers are unfamiliar with electrical equipment, the risk assessment about the frequency and type of inspection undertaken should be dynamic and responsive. This lends itself to more frequent checks at first and changing the frequency to the findings of the checks and the familiarity of the equipment.

Table 2 provides a list of potential solutions which act as a control to manage the risk.

**Table 2 – Controls to Manage Risks**

<b>Control</b>	<b>What this looks like</b>
Defined processes	Written procedures, such as method statements or standard operating procedures, defines expectations about how a job or task is carried out. Ensuring anyone involved in the job or tasks are trained to carry out the process in an accepted manner reduces risks such as people overlooking key steps or checks.
Roles + Responsibilities	Having a define roles and responsibilities of people involved in processes also helps to define expectations of who does what, if different classes of people are part of a process. This may be part of written procedures, or feature as a list.
Training	Ensuring people are trained in the procedures, helps to ensure they follow them. There may also be a competency sign-off process prior to people completing tasks. Or random spot checks to ensure they continue to carry out the task as expected.
Servicing Equipment	Ensuring equipment is serviced by a competent person, such as completing checks on the moving impeller, cleaning blades, and non-return flaps, will help to ensure equipment is working efficiently.
End-user checks	Checks carried out by untrained members of staff on basic parts which does not involve taking the unit apart. For example, external casing, the plug, and the cable, to ensure there are no signs of damage.
Operator checks	Checks carried out by trained members of staff on basic parts, which is similar to end-user checks but includes a more comprehensive and defined checklist which can be recorded.
Formal Visual Checks	Checks carried out by trained members of staff, who have completed suitable training, to undertake the formal visual check Staff do not disassemble the equipment, but may check the plug assembly and fuse.
Combined Inspection and test	Checks carried out by a suitably qualified person in line with the code of practice. This is considered to be the original 'PAT test' of the device.
Record keeping	Ensuring comprehensive records are kept to not only show the checks are being completed, but to enable trends to be identified.
Visual aids/reminders	Providing reminders, or visual aids, will help to ensure people complete the checks.
Frequency	The frequency of undertaking certain tasks can help manage risks. For example, increasing the number of checks helps to manage some risks, such as where there is recurring damage. The frequency of reviewing processes or risk assessments also helps to manage some of the risks presented.

Table 3 is a non-exhaustive list of potential scenarios in the leisure hire industry. It considers some of the risks in a theoretical manner, with example of some of the controls which could be used. Table 3 does not replace the need for a robust risk assessment to be created by the controller and unique to the controller's circumstances.

**Table 3 - Specific Scenarios**

<b>Scenario</b>	<b>Overview of Risks</b>	<b>Controls</b>
Static locations (e.g. an inflatable amusement device at a venue which is permanently erected)	<ul style="list-style-type: none"> <li>- Environment is less likely to be moved to cause damage, but it could be subject to increased dust intake</li> <li>- Users are likely to be regular staff operating the device</li> </ul>	<ul style="list-style-type: none"> <li>- Use of standard operating procedures with defined responsibilities for staff to carry out a daily visual check of the blower for signs of overheating</li> <li>- A formal visual check is to be completed once every three months</li> <li>- Spot checks are carried out monthly to ensure staff are undertaking their checks</li> <li>- Servicing of the blower to be carried out at defined points by a competent person</li> </ul>
Various locations (e.g. an inflatable amusement device delivered to and collected from an address)	<ul style="list-style-type: none"> <li>- The environment is variable, and uncontrolled, and the controller is not always aware of where or how the blower is being used</li> <li>- Users may not always be trained staff</li> <li>- The blower is used on a regular basis throughout the week, at different locations, by different users</li> </ul>	<ul style="list-style-type: none"> <li>- Use of standard operating procedures with defined responsibilities for staff to carry out a visual check each time the blower is connected to an inflatable structure, looking for damage, overheating, or a build-up of dirt</li> <li>- Only competent persons to undertake servicing of the blower</li> <li>- Each time the blower is returned to the controller, a combined inspection and test is undertaken to ensure it remains safe for the next user</li> <li>- Spot checks of records are carried out monthly to ensure staff are following the process</li> </ul>

Overnight hire	<ul style="list-style-type: none"> <li>- Users are likely to be untrained staff</li> <li>- Users are responsible for operating the equipment, including turning it off and unplugging overnight</li> </ul>	<ul style="list-style-type: none"> <li>- Providing user training through demonstration</li> <li>- Providing user instructions as a reminder what to check before switching on</li> </ul>
Mixed use scenarios (e.g. an electrical blower fan used in a static location, and also used in other locations)	<ul style="list-style-type: none"> <li>- A mix of environments which cause different risk exposure</li> <li>- Users are likely to be a mix between both trained and untrained people</li> </ul>	<p>Either:</p> <ol style="list-style-type: none"> <li>1) produce procedures, training, and increased checks to manage the variability of the risks presented</li> <li>2) designate different blowers for specific uses, and link into the frequency and types of checks undertaken</li> </ol>

Controllers must consider who is a suitable and competent person to undertake the servicing element of a blower. Only competent people should dismantle the blower to undertake servicing, as this may invalidate any warranty provided by the manufacturer.

Note – electrical maintenance schedules should not require fan blowers to be disassembled by staff, unless they have the relevant electrical knowledge and skill to be considered a competent person.

#### 4) Information for Inspectors

PIPA inspectors are no longer required to formally carry out the ‘PAT’ testing of electrical equipment as part of a PIPA inspection. However, you must ensure that an electrical maintenance scheme is in place by the controller which includes a combined inspection and test of each fan blower (see Inspection requirements below).

All PIPA inspectors must continue to carry out a formal visual inspection of the blower fan as part of a PIPA inspection, to ensure that the blower fan appears in good order and is safe to use. This includes checking the non-return guards etc.

PIPA inspectors are permitted to carry out any additional services of their choosing, such as electrical inspection and testing, provided they have the necessary skill and knowledge required to undertake the work.

## 5) Inspection Requirements

PIPA inspection reports will be marked as:

- **Pass** = Visual inspection of the blower fan does not identify any concerns, and there is evidence of electrical maintenance (see below).
- **Advisory** = Visual inspection of the blower fan does not identify any concerns, and;
  - o there is evidence of electrical maintenance (see below) which is due to be reconducted in the next 28-days by a third party,or;
  - o the blower fan is less than 12-months old and does not have evidence of being included in an electrical maintenance scheme (in which case the inspector should advise the controller to include the new blower within their electrical maintenance schedule).
- **Fail** = where there is out of date or insufficient evidence of electrical maintenance and/or the blower is found to be faulty or unsafe.

Evidence of an electrical maintenance scheme includes any documentation which clearly shows electrical maintenance is conducted, and includes a 'combined test' or PAT test which has been undertaken in the last 12 months. Documentation may be a sticker attached to the device, or records to show the device is included in electrical maintenance.

The PIPA inspection does not include an assessment of the controller's electrical maintenance scheme to determine whether it is sufficient, as this is the responsibility of the legal duty holder (i.e. the controller). However, there is no restriction to prevent PIPA inspectors offering this service outside the remit of a PIPA inspection.

## Appendix A - FAQs

1. How do I know which type of test to perform?
  - a. Read the code of practice and HSG107
  - b. Undertake a written risk assessment considering the advice provided by the information sheet
  - c. Your risk assessment will help you to determine how your electrical equipment will be tested and inspected as part of an electrical maintenance scheme
2. How often should I test my electrical equipment?
  - a. Please see FAQ 1a)
  - b. The guidance within the code of practice and HSG107 will help you to make an informed decision as part of a written risk assessment
3. What type of training is required to test electrical equipment?
  - a. The code of practice and HSG107 provides clear guidance on the different types of training required to perform electrical testing
  - b. The level of training required for visual inspections is considerably different to that required of the combined inspection and test
4. Can I carry out my own servicing of the blower?
  - a. Only competent persons should dismantle and service blowers (e.g. trained electricians)
  - b. Any servicing by a non-competent person may invalidate a blower's manufacturer warranty
5. Will my PIPA inspector carry out the combined inspection and test (i.e. a 'PAT' test)?
  - a. PIPA is not directing PIPA inspectors to stop all electrical testing of blower fans
  - b. PIPA inspectors are free to choose whether they wish to offer the combined inspection and test as part of their services
  - c. The main change is the PIPA inspection does not formally require the inspector to undertake the combined inspection and test (i.e. PAT test) as part of the inspection process
6. Will PIPA inspectors accept my own combined inspection and test?
  - a. PIPA will not be stipulating who is required to perform the combined inspection and test (i.e. PAT test)
  - b. The duty holder is responsible for ensuring the person who carries out the test is suitably qualified

7. My equipment does not have a combined inspection and test, what should I do?
  - a. Speak to your PIPA inspector to identify whether this is a service they can provide as part of the PIPA inspection
  - b. Ensure your equipment is suitably tested by a qualified person in line with your electrical maintenance scheme