

Fire Alarm Systems – Care and Maintenance

Introduction

A fire alarm installation is designed to provide early warning of a fire condition. To ensure that the utmost reliance can be placed upon the protection this provides, the alarm should be maintained in perfect working order at all times. For this reason, any fire alarm should be serviced, under contract, with an approved company at predefined intervals. There are also more regular checks that can be undertaken by the user and this Risktopic will provide details of the recommended checks that should be undertaken.

Daily Inspection

The following daily inspections can be undertaken quickly and easily by looking at the control panel:

- A visual check should be made daily, to ascertain that the control panel indicates normal operation.
- If a fault condition is indicated, determine the area affected and decide whether any special action is required (e.g. fire patrols).
- If possible, determine the reason for the fault or note activities immediately prior to the fault in the area affected.
- Record the fault in the logbook and notify the servicing company for repair.

Weekly Inspection

The following weekly checks can be undertaken by a nominated person:

- At least one manual call point should be operated during normal working hours, to test the ability of the control and indicating equipment to receive a signal and to operate the fire alarm sounders. If the fire alarm system automatically signals to an alarm receiving centre the test should ensure that the fire signal is received at the monitoring centre to which fire signals are transmitted. The alarm receiving centre should also be made aware of any imminent tests to prevent a false alarm being made to the Fire Brigade.
- A different manual call point should be used at the time of every weekly test so that all manual call points in the building are tested in rotation over a period of time. There is no maximum limit for this period (e.g. in a system with 50 call points, the user will test each manual call point once every 50 weeks). The result of the weekly test and the identity of the manual call point used should be recorded in the log book.
- The duration for which the fire signal is given (other than solely at the control and indicating equipment) at the time of the weekly test by the user should not normally exceed one minute so that, in the event of a fire at the time of the weekly test, occupants will be warned by the prolonged operation of the fire alarm system.

Monthly Inspection

The following monthly inspection can be undertaken by a nominated person:

- Standby generators used to provide emergency power supplies should be tested monthly under load conditions and allowed to energise the fire alarm supply for a continuous period of at least one hour. During the test, the fire alarm should be monitored to identify any malfunction caused by the use of the generator.
- If vented batteries are used as a standby power supply, a visual inspection of the batteries and their connections should be made, to ensure that they are in good condition. Action should be taken to rectify any defect, including low electrolyte level.

Quarterly Maintenance Inspection and Test

- If vented batteries are installed for standby power, all batteries and their connections should be examined by a person who is competent in battery installation and maintenance technology. Electrolyte levels should be checked and topped up as necessary.

Inspection and Test of the System over a 12 Month Period

The period between successive inspection and servicing visits should be based upon a risk assessment, taking into account the type of system installed, the environment in which it operates and other factors that may affect the long term operation of the system. The period between successive inspection and servicing visits should not exceed six months. The appointed maintenance company should make the following checks:

- Entries in the log book should be checked and any necessary action taken.

- Visual inspection should be made, to check whether structural or occupancy changes have affected the requirements for the location of manual call points, detectors and sounders. The visual inspection should also confirm that a clear space of at least 500mm is provided around every detector.
- The records and rate of false alarms should be checked for the previous six months.
- Batteries and their connections should be examined and tested, as specified by the supplier to ensure that they are in good serviceable condition. The standby power supply capacity should also be checked to establish its suitability for continued service.
- The alarm and fault functions of the control and indicating equipment should be checked by the operation of a detector or call point. In addition, the operation of any remote signalling system must also be checked.
- The audible fire alarm devices should be checked for correct operation. It should be confirmed that visual fire alarm devices are not obstructed from view and that their lenses are clean.
- All ancillary functions (e.g. automatic door closers) of the control and indicating equipment should be tested to ensure they remain in working order.
- All printers should be tested to ensure that they operate correctly and that characters are legible.
- Radio systems of all types should be serviced in accordance with the recommendations of the manufacturer.
- Visual inspection of cable fittings and equipment should take place to ensure these are secure, undamaged and adequately protected.
- The switch mechanism of every manual call point should be tested, either by removal of a frangible element or by insertion of a test key switch to operate the device as it would in the event of a fire.
- All automatic detectors should be examined and functionally tested to ensure they are both operational and are capable of responding to the phenomena they are designed to detect.
- Radio signal strengths should be checked for adequacy.
- The cause and effect programme should be confirmed as correct.
- All further annual checks and tests recommended by the manufacturer of the control and indicating equipment and other components of the system should be carried out.
- Upon completion of the work, a maintenance/test certificate should be obtained.

Actions Following a Fire

If a fire occurs, subsequent checks should be made of the fire alarm system as follows:

- Each detector or call point which may have been affected by the fire should be tested.
- Each fire alarm sounder should be tested.

- A visual inspection of all parts of the fire alarm installation which could have been affected by the fire should be undertaken.
- The appointed maintenance company should be instructed to complete a full test of the system and should rectify any defects found.
- All ancillary functions of the control and indicating equipment should be tested.
- Upon completion of any repair work, the maintenance company should issue a test certificate.

False Alarm Conditions

False alarms can result in loss of confidence in the system and may also result in the downgrading of response levels by the local Fire Authority. The following recommendations should be actioned after a false alarm has occurred:

- Where possible, identify the particular detector or call point that has caused the alarm.
- Establish the cause of the false alarm. This could be as a result of a change in environmental conditions within the building.
- Record the false alarm in the logbook and inform the appointed maintenance company.

Summary

Automatic fire alarm systems are an integral part of building fire safety, providing early warning of fires, allowing occupants to evacuate the building and, in some cases, allowing for a fire to be fought in its early stages, potentially saving the expensive consequences of a large fire. In order for the fire alarm system to remain effective it is imperative that a formal system of maintenance is implemented. As detailed within this Risktopic, the responsibility for the upkeep of a fire alarm system does not rest solely with the maintenance company and users can do their own daily, weekly and monthly checks to ensure the system is fully operational between scheduled service visits. It is important to remember to keep a written log of any checks and performance issues.

United Kingdom Approved Maintenance Companies

This Risktopic refers to maintenance companies being employed to undertake scheduled testing. In the United Kingdom an 'approved' company is one which accredited to one of the following standards:

- Loss Prevention Standard (LPS) 1014.
- Approval via the British Fire Protection Systems Association (BAFE) – SP203 – 1 modular scheme.

Further guidance on the care and maintenance of fire alarm systems can be found in:

British Standard (BS) 5839 Part 1: 2002 + A2:2008 – *Code of practice for system design, installation, commissioning and maintenance.*

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