



# Sprinkler System Maintenance to BS EN 12845

**Sprinkler systems are installed either for life safety and or property protection. They may be installed to satisfy building regulations, customer preference or if required by your insurance company. Whether or not the system will operate as designed when required will depend on whether the correct maintenance procedures are carried out.**

## INTRODUCTION

Sprinklers are ready to detect and protect against fire 24 hours a day 365 days per year. The purpose of this BIF is to explain the fundamentals of maintenance and its importance in ensuring that such investments are always ready and fit for action.

## END-USER RESPONSIBILITIES

Once a sprinkler system has been handed over to its owners, the responsibility for the equipment will rest with them. Whether or not the system will operate as designed when required will depend on whether the correct maintenance procedures are carried out. Article 17 of the Regulatory Reform (Fire Safety) Order 2005, which came into effect in England Wales on 1st October 2006, imposes significant liabilities on the 'responsible person', (read employer or property owner) who fails to maintain fire safety equipment (including sprinkler systems) intended for the protection of life from fire.

To maintain the validity of a Certificate of Conformity the system must be serviced and maintained by an approved sprinkler servicing contractor under a maintenance contract, from the time the sprinkler system is commissioned.

An approved sprinkler servicing contractor is defined in LPC Rules Technical Bulletin 203 as:

TB203.0.1.9 Sprinkler servicing contractor An approved sprinkler contractor with servicing as part of their approval scope appointed by the user to undertake a test, service and maintenance schedule to TB203.3.

## FIRE PROTECTION SYSTEM SERVICING

The requirements of the Regulatory Reform (Fire Safety) Order 2005 states:

*Maintenance:*

17. (1) Where necessary in order to safeguard the safety of relevant persons the responsible person must ensure that the premises and any facilities,

*equipment and devices provided in respect of the premises under this Order are subject to a suitable system of maintenance and are maintained in an efficient state, in efficient working order and in good repair.*

Clearly this is intended to cover aspects of the building, including compartmentation, fire stopping, fire doors, stairs, ramps and signage, in addition to fire alarm equipment, sprinkler systems, electrical installations, heating equipment and installations and portable electrical appliances.

## MAINTAIN RELIABILITY

There is little doubt that sprinklers are inherently reliable and have a well-deserved reputation for controlling or suppressing fires in buildings.

However, this reliability is only achieved by strict adherence to the published standards and to quality system procedures (including third-party certification requirements). As a result of this need for system reliability, sprinklers have been closely regulated since their earliest days.

Sprinkler systems in the United Kingdom are generally designed and installed to European and British Standards. Other sprinkler standards that are commonly used in the UK are: NFPA (National Fire Protection Association) and FM Global. Each of the above standards sets out requirements for testing and routine maintenance that is required to ensure that the sprinkler system is in a good working condition. The end users have a responsibility to arrange a specialist to carry out this work.

In the UK, sprinklers in non-residential premises are usually designed, installed and maintained in accordance with BS EN 12845: Fixed firefighting systems. Automatic sprinkler systems. Or The LPC (Loss Prevention Council) Rules.

Section 20 of BS EN 12845 details the maintenance requirements for a sprinkler system



**TO MAINTAIN THE VALIDITY OF A CERTIFICATE OF CONFORMITY THE SYSTEM MUST BE SERVICED AND MAINTAINED BY AN APPROVED SPRINKLER SERVICING CONTRACTOR UNDER A MAINTENANCE CONTRACT, FROM THE TIME THE SPRINKLER SYSTEM IS COMMISSIONED**



**AN APPROVED SPRINKLER SERVICING CONTRACTOR IS DEFINED IN LPC RULES TECHNICAL BULLETIN 203**

and Annex J of the standard deals with the precautions that must be taken in the event of a shutdown of the system.

Technical Bulletin 203 of The LPC Rules gives comprehensive details of what routine maintenance is required to ensure effective operation of the system.

These standards requires that the testing, servicing and maintenance be carried out by the system installer or a similarly qualified company but there is no reason why weekly test procedures cannot be carried out by the owner, providing that the person undertaking this work is competent so to do.

Given that a sprinkler system not only protects property but also life, and is often mission critical, the value of following appropriate procedures cannot be over-emphasised. Of particular importance is the need to verify that all valves are left in the correct position and that the system is fully operational on completion of any test procedure. BAFSA recommends that where these tests are carried out in-house, a second person be present to verify that this has been done.

The Fire Safety Order also makes it clear that to successfully discharge the obligations of the responsible person there is a need to ensure that adequate records are kept. The burden of proof in respect of offences created by the Order has been reversed from the normal presumptions of English law and in order to escape prosecution a responsible person will have to be able to prove, in the words of article 33, that he/she 'took all reasonable precautions and exercised due diligence to avoid the commission of an offence'. Good record keeping is therefore essential.

BAFSA also suggests that, should a sprinkler system have to be taken out of service, or rendered inoperable for some other reason (such as a loss of water supply from a public service main), then the fire and rescue service and the appropriate insurers should be notified. This is a 'condition precedent' in many insurance policies and failure to comply can result in a subsequent claim being denied.

#### TEST PROCEDURES

Technical Bulletin TB203, part of the LPC Rules for Automatic Sprinkler Installations incorporating BS EN 12845 (published by the Fire Protection Association), reiterates the importance of appropriately trained personnel carrying out the testing procedures and the need for approved companies to carry out servicing and inspections. That document also emphasises the need for documentation of the testing and servicing, and the need to have in place procedures to be implemented in the event of a shutdown of the system, together with the actions to be taken in the event of an alarm signal being received from the installation.

Section 20 of BS EN 12845 requires that the installation is visually checked each week and that action is taken to activate the water-driven motor alarm.

This is done by opening a valve to simulate the operation of a sprinkler head. In the case of an installation fed from a service main, it would be necessary to record the readings of the pressure gauges before and after the test.

In the case of an installation supplied by pumps, the simulation of the sprinkler head activation would cause the duty pump to be operated and provide the opportunity to witness a pump performance alarm signal activation. Where a pump is diesel driven, the engine

should be run for 20-30 minutes and checks on the cooling system, oil pressure, batteries and fuel should be made. In winter, it is essential to check that any anti-frost measures – such as trace heating, pump-house heating and tank immersion heaters – are functioning correctly.

BS EN 12845 also requires a quarterly inspection of sprinkler heads, pipework and pipe supports, and suggest that a flow test be carried out on the water supplies. Section 20.3.2.2 requires that a review of the hazard is carried out on a quarterly basis, to ensure that there have been no changes of structure, occupancy, storage configuration, heating, lighting or other parameters that would change the hazard classification of the risk or render the installation in any way inadequate. This is not a procedure that can be carried out by the end-user. It requires the services of a specialist and should normally be undertaken by the system installer or specialist maintenance contractor, an insurance surveyor or specialist fire engineer.

BS EN 12845 also requires any pumps to be tested at full load condition on a yearly basis.

Additional checks are required on water storage facilities. A visual check for corrosion should be made of the exterior of the tank every three years and it should be refurbished, as necessary. All storage tanks should be cleaned and examined internally by a competent person at least once every ten years.

In certain cases where sprinklers are installed for life safety purposes – as a condition of Building Regulations approval, or in compliance with other legislation, such as the Fire Safety Order – it will be necessary to ensure that all sprinkler maintenance is fully documented, undertaken only by a competent person, and fully complies with the appropriate standards.

Below is a summary of the requirements, in accordance with the appropriate standards.

#### TESTING

**Weekly:** Testing alarms, Pump/engine test . Test air compressors if installed, Check isolating valve positions, Heating systems/frost protection

**Monthly:** Battery level checks, Water Storage tank security

#### ROUTINE SERVICE

**Quarterly:** Review of hazard, Inspection of pipework/supports, Water supply flow tests, Exercise stop valves, Test flow switches

**Six Monthly:** Alternate pipe system – change over from air to water/ water to air, Check electrical signal to Fire brigade

**Annually:** Pump service, Check tank ball float valves, Engine service, Valve service/inspection

**3 Yearly:** Inspect tanks, All valves & non return valves, Inspection, service and overhaul as necessary

**Other Intervals:** Tank drain down & clean – 10 yearly, Sprinkler head performance testing to suit rules

#### WHAT CAN HAPPEN TO SPRINKLER EQUIPMENT WHEN IT IS NOT MAINTAINED OR NOT DONE PROPERLY?

The following are a few examples:

- Pipes become blocked and corroded.
- Sprinkler heads become covered with debris or corrosion and will not operate effectively if at all.
- Essential equipment sprinkler pumps and flow alarm switches become corroded and won't operate.

It is BAFSA's view that apart from the basic inspections and tests outlined above, all maintenance work should be only undertaken by a third-party certified installation or maintenance company listed by a United Kingdom Accreditation Service (UKAS) approved accreditation body.

*If you have a question or seek advice regarding automatic water-based fire suppression systems, please email the team : [ian.gough@bafsa.org.uk](mailto:ian.gough@bafsa.org.uk) or [joe.mcafferty@bafsa.org.uk](mailto:joe.mcafferty@bafsa.org.uk). If they do not have an answer for you, they will know someone who has! FAQs can be found at [bafsa.org.uk/sprinkler-systems/faqs/](http://bafsa.org.uk/sprinkler-systems/faqs/)*