British Automatic Fire Sprinkler Association
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INFORMATION FILE

#16a

# Maintenance of Domestic and Residential Systems

**Fire Sprinkler systems installed in accordance with BS9251: 2014 are designed and installed as a measure for the protection of life in the event of a fire.**

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 importance of ensuring that the sprinkler system is maintained and fit for purpose when needed.

## RELIABILITY

The most recent data available from the NFPA suggests that sprinklers did not operate as designed in only 7% of fires and that in at least 65% of these cases, the systems were not effective only because the sprinklers had either been turned off or were disconnected from their water supply.

Where sprinklers were effective:

- 67% of cases involved only one sprinkler operating
- 83% involved 1-2 sprinklers operating
- 89% involved 1-3 sprinklers operating

## END USER RESPONSIBILITIES

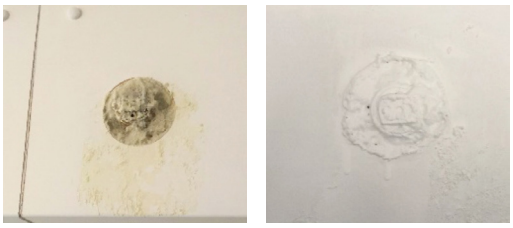
It is the responsibility of the property owner to maintain the system and be able to produce a valid certificate of conformity. The British Standard and Approved Document B both advise the use of a third party accredited service company to carry out these inspections. Maintenance of the system might be a legal requirement in some circumstances and may also be a requirement of the building fire strategy. Some residential properties may be subject to the Regulatory Reform (Fire Safety) Order, 2005 Article 17 of which imposes 'significant' liabilities on the 'responsible person' (read employer or property owner) and significant penalties could be imposed if such person fails to maintain fire safety equipment (including sprinkler systems) intended for the protection of life from fire.

## WHAT CAN HAPPEN TO SPRINKLER EQUIPMENT IF IT IS NOT MAINTAINED CORRECTLY?

The importance of regular maintenance and inspections cannot be stressed enough. There are numerous cases of failed systems due to a lack of maintenance or inspection.

Some causes of failed systems are:

- Concealed sprinkler heads sealed up or painted over.
- CPVC pipe work damaged.
- Storage tanks run dry or have the water supply isolated.
- Pumps seized
- Water mains blocked or isolated.
- Building layouts altered.
- Power supplies isolated.
- Insulation removed and pipework frozen



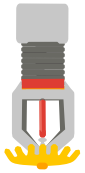
*Sealed and painted over heads*

## INSPECTION AND TEST PROCEDURES

The sprinkler system should be subject to an annual inspection and test by a competent person, as follows.

a) The system should be inspected to determine whether all components are functioning as designed.
b) The system should be inspected for leaks.
c) The system should be inspected to determine whether any or all modifications have been carried out in accordance with the standard.
d) Where there has been an increase in fire loading or change in occupancy or purpose an assessment should be carried out to confirm the category of system.
e) The sprinkler and cover plates should be inspected to determine whether they have been tampered with or whether their spray pattern has been impeded.

## SPRINKLER FACTS



**ONLY THE SPRINKLER HEADS IN THE IMMEDIATE VICINITY OF THE FIRE ACTUALLY OPERATE**

**SPRINKLERED BUILDINGS PREVENT FIRE FIGHTER DEATHS**

**DESPITE PRECONCEPTIONS, SPRINKLERS ARE NOT DIFFICULT OR EXPENSIVE TO INSTALL**

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f) Valves should be exercised to ensure free movement and any locking mechanism should be checked and reinstated.
g) The test valve should be operated to determine whether the system's design flow rate and pressure, as hydraulically calculated, is achieved.
h) Alarms should be tested to determine whether they function as designed.
i) Backflow prevention devices should be maintained in accordance with manufacturer's recommendations or BS EN 806-5.
j) Any remote monitoring arrangements should be tested to determine whether they are being transmitted and received correctly.
k) Where trace heating is installed, its operation should be checked.

The person carrying out the inspection should complete and sign the log book as evidence of the inspection.

Annexe E of BS:9251 2014 provides an example of a Test.


This label is essential if the system is to be correctly tested. Without this label or a completed log book showing this data the system cannot be correctly inspected.

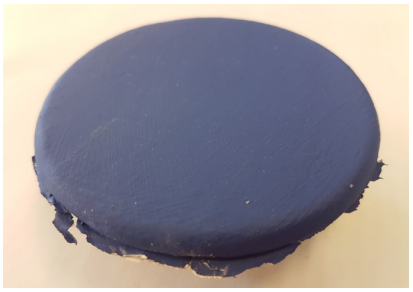
### TESTING

Annexe E requires that before testing begins, the as installed design pressure and flow for the system, at the test point, are ascertained. There have been instances where the original documentation is either not present or has never been handed over to the end user.

Under section 6.4 of BS9251: 2014 there is a requirement to fit a system data label as shown in Annexe F. A working example of this is shown above.

### PUMPS

If a pump is installed it should be designed to include an automatic test cycle where by the pump is activated at least monthly. It should have a fault signal to raise the alarm if the power is interrupted or the automatic test cycle fails. The alarm should be situated in such a place or of sufficient decibels to ensure that it is audible to appropriate personnel. It is common practice for an auto dialler to be installed to notify a remote monitoring station in the event of an alarm activation.



### SPRINKLER HEADS

One of the main items for inspection is the sprinkler head and cover. With the increase in the number of concealed sprinklers being installed the risk of failure due to cover issues has increased. Some issues are clear to see such as over-painting which will l seriously delay the action of the cover plate dropping and could cause the sprinkler to fail.

A frequent problem is where sealant is introduced into the air gap as this will impede the air flow and stop the head from operating. The amount of sealant may be quite small and the situation may require closer inspection.

### SOME FACTS ABOUT FIRE SPRINKLERS

- Since 1945 no one in the UK has ever died as a result of a fire in a building with a working sprinkler system.
- Most fires in residential properties are extinguished with no more than two heads operating.
- Only the sprinkler heads in the immediate vicinity of the fire actually operate.
- Sprinklered buildings prevent fire fighter deaths.
- Sprinklers do not false alarm they will only operate if there is an actual fire.
- For a small cost an auto dialler can be built into the system to call a remote monitoring station should the sprinklers operate.
- Maintenance costs for sprinklers are very low.
- Sprinklers save lives and property and are the only devices which can detect a fire, sound the alarm, call the fire brigade and extinguish or control a fire.
- Despite preconceptions, sprinklers are not difficult or expensive to install.
- Sprinkler systems installed in full compliance with third party certification standards may attract insurance premium discounts.

PRESENTED BY

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**BRITISH AUTOMATIC FIRE SPRINKLER ASSOCIATION**
BAFSA PO BOX 28683
Edinburgh EH4 9GN
info@bafsa.org.uk www.bafsa.org.uk

facebook.com/SprinklersSaveLives
twitter.com/BAFSAfocus Find us on LinkedIn: BAFSA