# Sprinkler Systems – 25 Year Inspections

Sprinkler systems components need to be maintained in full working order to ensure correct operational performance.

This Loss Prevention Standard provides guidance on undertaking 25 year system inspections.

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# Sprinkler Systems – 25 Year Inspections

## Introduction

It is essential that sprinkler systems, including water supplies, are regularly inspected, serviced and maintained to ensure continued reliable performance and effectiveness in protecting property and life safety from fire hazards.

**Note:** This document is focussed on property loss prevention in relation to sprinkler system maintenance. It is not intended to address Liability exposures. The presumption is that all regulatory requirements, Fire Risk Assessments, and compliance with requirements placed by the local authority having jurisdiction which would include licencing, building permissions, regulations, codes, or standards, have or will be met.

## Scope

This standard applies to all automatic sprinkler systems installed in commercial and industrial properties. It covers the periodic inspections, testing, and maintenance procedures required to comply with Technical Bulletin TB203 of the LPC Sprinkler Rules, **TB203: Care and maintenance of automatic sprinkler systems**, and **NFPA 25 Standard for the Inspection, Testing, and Maintenance of Water-Based Fire Protection Systems** to ensure optimal performance is maintained.

The objective is to verify the operational integrity of the sprinkler system and condition of the pipework, identify and rectify any potential issues that could impair system performance or lead to a large escape of water, as well as ensuring compliance with current standards and regulations.

Inspection procedures involve visual inspections, functional testing and documentation of the maintenance and results. When a sprinkler system has been in service for no more than 25 years or sooner if required/necessary, the following routines must be carried out by a specialist sprinkler maintenance contractor, and findings detailed in written reports supported by full descriptions and photographic evidence:

### Sprinkler Pipework

- To be flushed through until the water runs clear (this may need to be repeated where there are several terminal ends to the installation). Where sprinklers or pipework is blocked by a build-up of sediment or other material, steps to be taken to ensure all contaminants are removed from all potentially affected system installations.
- Inspected externally for signs of corrosion.
- Inspected internally by removing 1 metre sections of pipework of each pipe diameter from various locations on the system from each installation.
- Visual internal inspection should identify presence of any foreign bodies, evidence of microbial activity (presence of tubercles), or other corrosion. Non-destructive testing using ultrasonic detection or investigative camera technology is not considered sufficiently comprehensive to adequately assess the overall condition of the pipework.

Photographs must identify where each section of pipe has been removed from. Where significant corrosion/foreign bodies (5mm or larger), or pinhole leaks are present, further analysis of pipework to be carried out by an approved accredited independent test laboratory.

### Sprinkler Heads

A sample of sprinkler heads are to be removed from the system from various locations in the building and where different conditions exist (including spares box) by a competent sprinkler maintenance provider and sent to an approved accredited independent test laboratory for function testing based upon BS EN 12259-1 **Fixed firefighting systems. Components for sprinkler and water spray systems – Sprinklers,** or alterative standards as required. Any damaged sprinklers should be replaced as new and not sent for testing.

- For Ordinary Hazard occupancies, a minimum of 10 sprinkler heads of each different type and location shall be removed for testing.
- For High Hazard occupancies, a minimum of 50 sprinkler heads of each different type and location shall be removed for testing.
- Where there are fewer than ten sprinklers of a particular type that are over 25 years old, these should all be replaced as new.
- Where sprinklers in the spares cabinet are over 25 years old, these are to be replaced as new.

All sprinklers submitted for testing shall be subjected to:

- Visual inspection (all).
- 70% of sprinklers shall be tested for functionality.
- The remaining 30% of the sample are retained for testing operating temperatures, K-Factor, water distribution and/or thermal response.

A copy of the test laboratory's report should be forwarded to your Property Insurer for review

Function testing is normally carried out at 0.35 bar. Function test failure/non-operation is considered serious. Any single sprinkler of a particular type which fails the function test will require all heads in an installation of that type to be replaced. Pending completion of this replacement programme, the system shall be considered impaired.

### Flushing of Underground Sprinkler Trunk Mains

Where only supplied by potable water, the underground trunk mains are to be flushed in accordance with TB237 of the LPC Sprinkler Rules **TB237: Flushing Underground Sprinkler Mains,** or alternative standards as required.

Following replacement of pipework and sprinklers, the installations must be carefully re-commissioned including any appropriate inspection and testing to identify leaks.

All findings to be reported to and discussed with Authorities Having Jurisdiction (including your Property Insurer) to determine re-inspection frequencies.

### Compliance and Record Keeping

- Record all findings and actions taken during the inspection.
- Maintain detailed records and update maintenance logs of all inspections, tests, and maintenance activities.
- Ensure that all documentation is readily accessible for review by regulatory authorities and insurance providers.
- Implement a schedule for regular inspections and maintenance in accordance with this standard.

## Conclusion

Adhering to this loss prevention standard will help ensure the continued reliability and effectiveness of your sprinkler system, providing essential protection for your property and occupants. Regular inspections and maintenance are critical to identifying and addressing potential issues before they compromise system performance.

## Specialist Partner Solutions

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## Sources and Useful Links

- Technical Bulletin TB203: Care and maintenance of automatic sprinkler systems
- Fire Protection Association (FPA) Sprinkler System Service and Maintenance Guidance:
- NFPA 25: Standard for the Inspection, Testing, and Maintenance of Water-Based Fire Protection Systems
- FM Global Datasheet 2-81: Fire Protection System Inspection, Testing & Maintenance

**Note:** Whilst UK standards and legislation are referenced in this document, other international standards and legislation should be referenced where applicable.

## Additional Information

Relevant Aviva Loss Prevention Standards include:

- **Sprinkler Systems – How They Operate**
- **Sprinkler Systems – Review of Hazards**
- **Sprinkler Systems – Storage of Lithium-ion Batteries**
- **Sprinkler Systems – Tank Inspections**

To find out more, please visit Aviva Risk Management Solutions **or speak to one of our advisors.**

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