



Fire Protection
Association



Sprinkler System Service and Maintenance: Guidance, Records and Checklists



Endorsed by

British Automatic Fire Sprinkler Association

bafsa

RISK INSIGHT, STRATEGY AND CONTROL AUTHORITY
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Contents

| | | |
|----------|--|-----------|
| 1 | Introduction | 2 |
| 2 | The Regulatory Reform (Fire Safety) Order 2005 | 4 |
| 3 | Definitions | 5 |
| 4 | Guidance for sprinkler system owner/user | 6 |
| 5 | Guidance for specialist sprinkler maintenance contractors | 8 |
| 6 | Maintenance procedures | 10 |
| 6.1 | Weekly checks and tests | 10 |
| 6.2 | Monthly checks and tests | 13 |
| 6.3 | Quarterly routines | 15 |
| 6.4 | Half yearly routines | 17 |
| 6.5 | Yearly routine | 19 |
| 6.6 | Two yearly routine | 23 |
| 6.7 | Three yearly routine | 25 |
| 6.8 | Five yearly routine | 28 |
| 6.9 | 10 yearly routine | 29 |
| 6.10 | 25 yearly routine | 30 |
| 7 | Appendices/Template Forms | 32 |
| | Appendix AA | 32 |
| | Appendix A | 35 |
| | Appendix B | 36 |
| | Appendix C | 37 |
| | Appendix D | 38 |
| | Appendix E | 39 |
| | Appendix F | 41 |
| | Appendix G | 42 |
| | Appendix H | 45 |
| | Appendix I | 48 |
| | Appendix J | 51 |
| | Appendix K | 56 |
| | Appendix L | 58 |
| | Appendix M | 59 |

All form templates can be freely downloaded in Excel format from the FPA website by searching 'Sprinkler Template Forms'.

1 Introduction

This document of guidance, template forms, and checklists (*which may be photocopied*) is intended to supplement the 'LPC Rules for Automatic Sprinkler Installations 2015, Incorporating BS EN 12845' and, in particular, 'LPC Technical Bulletin TB203 Care and Maintenance of Automatic Sprinkler Systems' to give additional help and information for both the *sprinkler system owner/user* and the *specialist sprinkler maintenance* company to ensure the sprinkler system is correctly maintained in accordance with these standards to provide protection against the effects of fire for many years.

This document is intended to provide practical guidance to sprinkler system owners and specialist sprinkler maintenance contractors for the requirement and scope of the necessary and suitable maintenance required by manufacturers of all equipment and systems. Unfortunately, this guidance is often not clearly conveyed in detail in published standards, service sheets, specialist quotations, or equipment data sheets. The FPA has engaged with sprinkler equipment manufacturers, pumps and tank suppliers, specialist sprinkler maintenance contractors, their trade associations, and leading insurers to provide a concise and clear guide to the requirements expected and necessary to inspect, test, and maintain a sprinkler system and meet the intent of EN12845, LPC TB203, and property insurer requirements. It is provided on the basis of typical expectations, but it should be noted that some equipment may be subject to unique maintenance requirements by the equipment manufacturer, so the chosen specialist sprinkler maintenance contractor should be aware of and be able to advise on any such nuances.

The service and maintenance routines for sprinkler systems were originally derived from BS 5306 - Part 2 (1990). Currently, where the sprinkler system is installed to satisfy Building Control/Fire and Rescue Services, the service and maintenance routines required would normally be as detailed in Part 1 of these LPC Rules under BS EN 12845:2015 clause 20. If the sprinkler system is installed to satisfy the requirements of the building/contents/business continuity insurers, then the service and maintenance routines required would normally be as detailed in Part 2 of these LPC Rules, within Technical Bulletin TB203. Whilst there are subtle differences between BS EN 12845:2015 clause 20 and Technical Bulletin TB203, they both represent the minimum level of service and maintenance routines to be carried out.

Sprinkler systems are considered to provide a high degree of reliability to safeguard both life and property against the effects of a fire, but to ensure this protection is available when needed, it is imperative systems are routinely serviced and maintained in accordance with these relevant standards.

When designing a sprinkler system, the heat output and growth rate of fires in premises need to be considered and these can vary significantly depending on the occupancy or processes involved, requiring different water flow outputs from the sprinkler system to control the fire. A fire in an office building, for example, would represent a much lower challenging fire for a sprinkler system to protect than say a storage warehouse containing flammable products where the storage height and arrangement can add considerably to the fire challenge. Therefore, a sprinkler system's performance is designed specifically based on the building layout, occupancy, processes, and/or product storage heights and arrangements.

A 'Review of Hazards' is, consequently, an important part of the service and maintenance routines for sprinkler systems as it assesses any changes to the original building layout, occupancy, processes, and/or product storage heights/arrangements etc., and in this context, whether the original design criteria for the sprinkler system is still appropriate. The system user should be aware of this and ideally consult their insurers or a specialist sprinkler engineer before making any such changes. However, at quarterly intervals, a formal 'Review of Hazard' shall be undertaken to assess these aspects. These formal assessments are more commonly undertaken by a competent person, such as an engineer from a sprinkler design/installation/servicing contractor carrying out a detailed inspection of the premises/system. However, in premises where changes to the structural layout and/or occupancy may be less complex or likely to occur, three of these quarterly reviews can be undertaken by the system user completing a Review of Hazard Form (see **Appendix E**) and submitting these to a competent person for assessment, in which case only one annual review would need to be carried out based on a detailed inspection of the premises/system by the competent person.

In addition to this 'Review of Hazard', the sprinkler system shall be periodically inspected by a suitably qualified person at least once a year, and undertaken by an independent body, i.e. not the system owner, building occupier, system installer (or competing installer), or service and maintenance provider (or competing service and maintenance provider). The qualified person is a designated individual, suitably trained, competent through knowledge with experience to assess the system compliance to standard and able to perform practical tests if required. This annual inspection shall assess whether:

- the system is in accordance with the standard.
- it is being maintained to the minimum level required by the standard (including preparing appropriate records of such maintenance).
- it is fully operational and should perform as intended in the event of a fire.
- it is still adequate in terms of controlling fires involving the current occupancy risks and building layout etc.

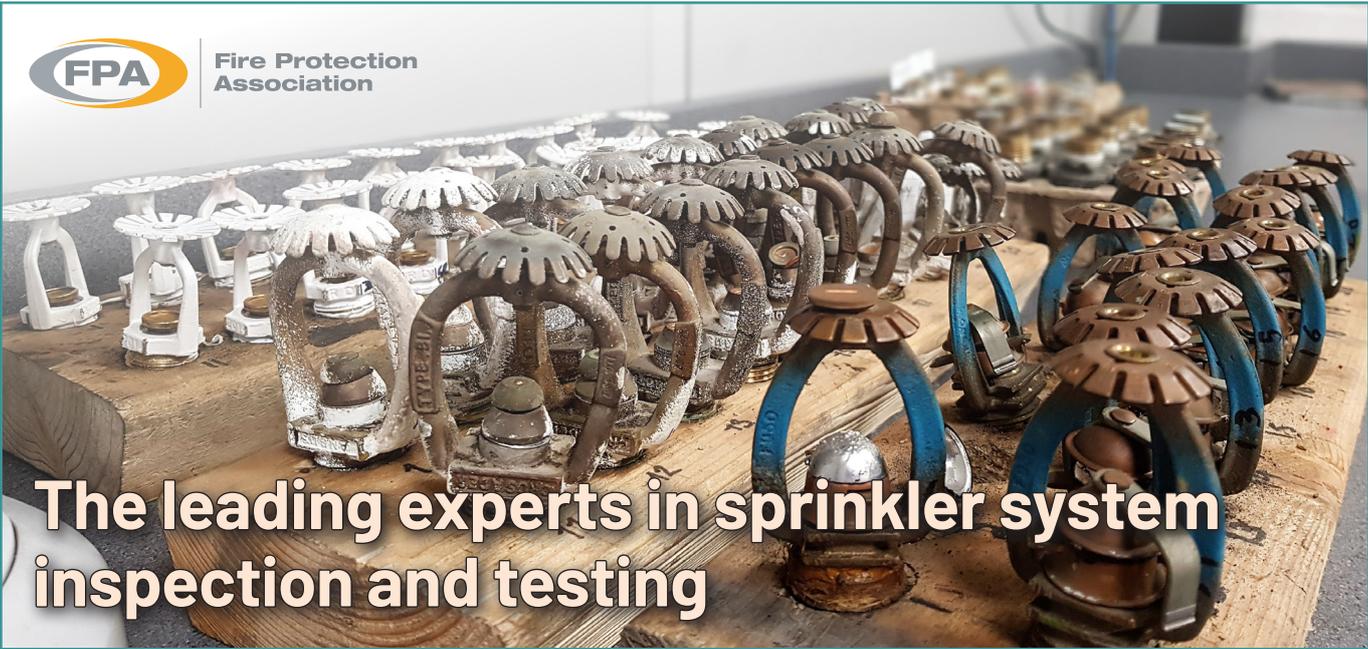
(This annual inspection is not to be confused with the routine assessments carried out by the property insurers as their routine assessments may only be limited to assessing the ongoing commercial insurance risks.)

This guidance explains the minimum frequency of the various service routines listed in the standard and who is both responsible and capable of carrying out these tasks. It provides additional practical descriptions of the task to be undertaken and, where relevant, why these tasks are necessary. Photographs and diagrams have been included to support these descriptions, to assist both the *sprinkler system owner/user* and the *specialist sprinkler maintenance company* to fully appreciate what is expected.

This guidance has been prepared with input from the leading insurers, it should not be taken as representing a pan-insurer perspective on minimum service and maintenance requirements for sprinkler systems. It is advisable for sprinkler system owner/user and, where different, the building owner/landlord to consult their own insurers, or any other authorities having jurisdiction such as Building Control/Fire and Rescue Services, to establish if there are any additional specific service and maintenance routines required.

The service and maintenance routines outlined in this document are the minimum tasks necessary to comply with the requirements of both EN 12845 and 'LPC Technical Bulletin TB203 – Care and Maintenance of Automatic Sprinkler Systems'.

(LPC Technical Bulletin TB203 – Care and Maintenance of Automatic Sprinkler Systems' can be freely downloaded from the Fire Protection Association's website.)



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The leading experts in sprinkler system inspection and testing

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2 The Regulatory Reform (Fire Safety) Order 2005

Part 2, Article 17 of 'The Regulatory Reform (Fire Safety) Order 2005' (RRO) covers the maintenance of fire safety systems, outlining the legal obligation on the building owner/ occupier's *responsible person* to ensure their sprinkler systems is suitably serviced and maintained.

Part 2, article 17 of the RRO 2005 states:

- (1) Where necessary, 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, or subject to paragraph (6), under any other enactment, including any enactment repealed or revoked by this Order, are subject to a suitable system of maintenance and are maintained in a sufficient state, in efficient working order, and in good repair.
- (2) Where the premises form part of a building, the responsible person may arrange with the occupier of any other premises forming part of the building, for the purpose of ensuring that the requirements of paragraph (1) are met.
- (3) Paragraph (2) applies even if the other premises are not those to which this Order applies.
- (4) The occupier of the other premises must cooperate with the responsible person for the purposes of paragraph (2).
- (5) Where the occupier of the other premises is not also the owner of those premises, the references to the occupier in paragraphs (2) and (4) are to be taken to be references to both the occupier and the owner.
- (6) Paragraph (1) only applies to facilities, equipment, and devices provided under other enactments where they are provided in connection with general fire precautions.

Alarm receiving station – An alarm receiving station approved to Loss Prevention Standard LPS 1020 or equivalent, for transmission of fire signals to the fire authority within which the sprinkler protected property is situated.

Approved sprinkler contractor – A sprinkler installing company certificated to an appropriate level to the Loss Prevention Standard LPS1048 or equivalent scheme.

Fire safety official – The employee or agent of the owner or user of the sprinkler system(s) nominated to undertake specified tasks relating to the upkeep of the sprinkler protection.

Impairment – An abnormal condition affecting the ability of a fire protection system to effectively perform its intended function should a fire occur.

Inspection – A visual inspection of a sprinkler system or portion thereof, to verify that it appears to be in operating condition and is free from physical damage.

Insured – Person or persons, companies, or bodies corporate who may be either or both owners or occupiers of the sprinkler protected premises, and who have an insurable interest in the building, content, or business interruption risks.

LPCB – Loss Prevention Certification Board at the BRE.

LPS 1048 Scheme – Requirements for the approval of sprinkler system contractors in the UK and Ireland.

LPS 1276 – Requirements for the LPCB certification and listing of above-ground suction tanks for sprinkler systems.

Maintenance – A service activity involving cleaning, adjustment, lubrication, renewal, repair, overhaul, or replacement of a system component to maintain its performance and serviceability.

Sprinkler protection user – The person responsible for or having effective control over the sprinkler system provision and its upkeep.

Sprinkler servicing contractor – An approved sprinkler contractor with servicing as part of their approval scope and certification, appointed by the user to undertake a test, service, and maintenance schedule to the appropriate standard.

Ten-year tank – A suction tank designed and protected against corrosion such that the need for emptying the tank for maintenance is reduced to a period of no less than 10 years.

Test – A functional activity involving the operation of a system component to confirm its ability to perform as intended.

The LPC Rules – LPC Rules for Automatic Sprinkler Installations 2015 incorporating BS EN 12845.

Weekly test card – Record card(s), giving both specific advice and space to record the weekly testing of sprinkler system alarms and the quarterly testing of water supplies.

- 4.1 As outlined in the Introduction, sprinkler systems are commonly installed to satisfy either:
- Building Regulations/Fire Officer's requirements, where Life Safety is more likely to be the primary objective, or
 - Insurer's requirements, where Property Protection is usually the primary objective.

The scope of the service and maintenance routines can differ slightly depending on which is the leading authority requiring the sprinkler system. Building Control/Fire Officers usually require compliance with **Part 1 of The LPC Rules** (BS EN 12845 clause 20 and 21), whereas insurers would typically require additional compliance with **Part 2 of The LPC Rules** (TB203). However, insurers are always likely to be involved, so they should always be consulted regarding the scope of service and maintenance routines as **any deviations or non-compliance with the standard may invalidate the insurance cover.**

- 4.2 Organisations such as BRE (LPCB) and Warrington Fire (FIRAS), and others who may have their own scheme, maintain lists of accredited sprinkler contractors who would be suitable to carry out the service and maintenance of sprinkler systems, which might be helpful when selecting a contractor for the work. Other companies who may choose not to be so listed need not be discounted on this basis. It is always advisable to consult the insurers for their advice and recommendations in this respect.

- 4.3 Service and maintenance contractor's quotations should confirm their scope is fully compliant with the relevant standard (refer to Point 1 above) and, if not, that they specify exactly the routines they are not including and why. The specialist sprinkler service and maintenance contractor should complete and issue a copy of **Appendix M** with their proposals to clearly summarise the scope of works they propose, compared to the requirements in the standard, so the system owner/user can be fully aware of what they have included or excluded. This should then be referred to the insurers to obtain their approval of any non-compliances before placing any contract for this work. Ensure the formal contract with the contractor includes reference to the compliant scope or, where the insurers agree to a departure, any non-compliance is clearly recorded in the contract scope.

The service engineer who actually carries out the service and maintenance routines on site for the specialist contractor should have a copy of the agreed **Appendix M** with them, so they are fully aware of and can carry out all the works to be undertaken.

(It would be advisable to include a reference to this FPA/RISCAuthority document as part of the formal contract.)

- 4.4 Ensure after every service and maintenance visit the specialist contractor presents a fully documented record of the works undertaken, clearly listing every routine carried out, together with all checks and test results including pressures/flows/capacities recorded where relevant. Signed and dated hard copies of these documented records should be handed over by the specialist contractor before leaving the site and these hard copies should be retained on the premises protected by the sprinkler system for future reference (e.g., by insurers or any other authority having jurisdiction when they review/inspect the sprinkler system).

If the specialist contractor prepares these documented records electronically, they must send hard copies for retention on the premises protected by the sprinkler system within a maximum of 5 days of their visit. Electronic copies should only be retained in place of hard copies if they can be readily retrieved, viewed, and if necessary printed at the premises protected by the sprinkler system.

Where any remedial works are identified by the contractor during the service visit these should be recorded on the documented records, clearly stating the urgency with which the remedial work should be undertaken. Any remedial works found that are critical to the ongoing effectiveness of the sprinkler system should be highlighted by the specialist contractor immediately so that urgent corrective action can be arranged without delay (*refer to Appendices Section at the end of this document for sample service record templates*).

- 4.5 The specialist service and maintenance contractor should complete and present to the sprinkler system owner/user '**Appendix AA – Sprinkler System Condition Report**' at least annually or immediately if any deficiencies are found that would or could potentially detract from the performance or reliability of the sprinkler system. If a specialist, engaged directly by the sprinkler system owner to service or repair only a particular component of the sprinkler system, such as a fire pump or the water storage tank, identifies any deficiencies that would or could detract from the performance or reliability of this equipment, they should also complete and issue to the sprinkler system owner/user '**Appendix AA – Sprinkler System Condition Report**' clearly identifying on the report the equipment to which the report applies. Where any deficiencies are found, this report classifies each of these in terms of the effects they have or are likely to have on the sprinkler system to operate properly and reliably and in a way that clearly conveys to the sprinkler system owner/user the urgency with which remedial action needs to be taken to ensure the sprinkler system remains fully operational.
- 4.6 Be aware that any changes to the building structure/layout, storage of materials, or processes undertaken in the premises are likely to have a bearing on the performance/design of the sprinkler system, so advise your insurers and service and maintenance contractor immediately and preferably prior to any changes being implemented.
- 4.7 There are some simple checks and tests that need to be carried out on the sprinkler system every week. These checks and tests can and normally are carried out by the system owner/user's staff after receiving a basic level of training on the operation of the sprinkler systems. Such training should be provided by either the specialist contractor who designed and installed the sprinkler system or the specialist sprinkler maintenance contractor.
- 4.8 The sprinkler system owner/user should also be provided with suitable documentation and training on 'Emergency Procedures' covering the actions to be taken if faults arise on the system or if the system should operate. Such procedures should include the 24/7 emergency contact details of a specialist sprinkler contractor who can respond quickly if needed to resolve the fault/issue and ensure the system is put back into the correct operating mode as soon as possible. Again, the specialist contractor who designed and installed the sprinkler system, or the specialist sprinkler maintenance contractor, would normally provide this training and emergency response service. The property insurers usually have their own helpful guidance and information in this respect; therefore, it is always advisable to consult them on such issues.

- 5.1 Establish whether the purpose of sprinkler systems is to satisfy either:
- Building Regulations/Fire Officer's requirements, where Life Safety is more likely to be the primary objective, and where compliance with the service and maintenance scope detailed in **BS EN 12845 – Clause 20** is likely to be required, or,
 - Insurer's requirements, where Property Protection is usually the primary objective and where compliance with the service and maintenance scope detailed in the **LPC Rules/TB203** is likely to be required.

Ensure the scope of works included in your quotation for the service and maintenance routines fully complies with either BS EN 12845 – Clause 20 or TB203 as applicable, together with this document. As the specialist sprinkler service and maintenance contractor, ensure you complete and issue a copy of **Appendix M** with your proposals to clearly summarise the scope of works you offer, compared to the requirements in the standard, so the system owner/user can be fully aware of what you have included or excluded. If it is not possible to quote for a fully compliant scope in this regard, ensure your quotation fully details the non-compliant element of your scope and why there needs to be such a departure from the standard, in a manner that the sprinkler system owner/user will understand.

Ensure the service engineer who actually carries out the service and maintenance works on site is provided with a copy of the agreed **Appendix M**, so they are fully aware of and can carry out all the works to be undertaken which form the basis of the service and maintenance contract with the system owner/user.

(Note: insurers are always likely to be involved and any deviations or non-compliance with the standard may invalidate any insurance cover they provide, so it is your duty as a specialist to fully advise and document this to the sprinkler system owner/user in this regard.)

- 5.2 Prepare service and maintenance record sheet(s) that fully record the works undertaken during each visit, clearly listing every routine carried out, together with all checks and test results including pressures/flows/capacities where relevant and summarise any relevant findings. Ensure a signed and dated hard copy of these reports is issued to the sprinkler system owner/user immediately for retention on the premises protected by the sprinkler system for future reference (e.g., by insurers or any other authority having jurisdiction when they review/inspect the sprinkler system). If there is a particular requirement to issue documented records elsewhere, this should be in addition to issuing to the premises protected by the sprinkler system. If these documented records are prepared electronically, hard copies shall be sent to the relevant representative at the premises protected by the sprinkler system(s), so they are received no more than five days after the date of the service visit. Electronic copies should only be used in place of hard copies if they can be readily retrieved by the sprinkler system owner/user for viewing at the premises protected by the sprinkler system. Where remedial works are found to be required, fully explain the need for this work on the service reports and where relevant stipulate the urgency with which this work needs completing. Any remedial works found that are critical to the ongoing effectiveness of the sprinkler system should be highlighted immediately to the sprinkler system owner/user so that urgent corrective action can be arranged without delay.

- 5.3 Complete and present to the sprinkler system owner/user '**Appendix AA – Sprinkler System Condition Report**' at least annually or immediately if any deficiencies are found that would or could potentially detract from the performance or reliability of the sprinkler system. If an equipment specialist, engaged to service or repair only a particular component of the sprinkler system, such as a fire pump or the water storage tank, identifies any deficiencies that would or could detract from the performance or reliability of this equipment, also complete and issue to the sprinkler system owner/user '**Appendix AA – Sprinkler System Condition Report**' clearly identifying on the report the equipment to which the report applies. Where any deficiencies with the sprinkler system are found, this report allows you to classify each of these in terms of the effects they have or are likely to have on the sprinkler system to operate properly and reliably and in a way that clearly conveys to the sprinkler system owner/user the urgency with which remedial action needs to be taken to ensure the sprinkler system remains fully operational. At the earliest appropriate opportunity, ensure the sprinkler system owner/user is provided with full details of costs and timescales for rectifying each deficiency.
- 5.4 Templates of typical service and maintenance reports are contained in the Appendices section of this document. These cover the minimum level of detail expected to be included in service and maintenance reports. Specialist sprinkler maintenance contractors may use their own report formats providing they contain at least the details covered in these templates.
- 5.5 Ensure the service and maintenance routines specified by the manufacturers of equipment installed on the system are followed and fully documented. Where such routines require specialist knowledge and experience such as sprinkler fire pumps, these specialists should be engaged by the sprinkler maintenance contractor to undertake this work.
- 5.6 Record the date the system was originally installed and commissioned on the service reports so that any equipment requiring a different frequency of service routines (such as alarm valves and water storage tanks) can be carried out at the appropriate time.
- 5.7 Ensure the site service engineers receive suitable and regular training on all the equipment they are to service, preferably by the equipment manufacturers/suppliers, if available, and that they are also trained and fully aware of all the service and maintenance routines they are required to carry out as stipulated in the standard (i.e. BS EN 12845 Clause 20, where the sprinkler system has been installed to satisfy Building Control/Fire Officers, and/or LPC Rules Technical Bulletin TB203, where the sprinkler system has been installed to satisfy the property insurers).

NOTE: The following tables provide additional information to assist the end user/contractor in *blue italics*.

6 Maintenance Procedures

6.1 System owner's/user's weekly routines:

Weekly checks and tests (to be carried out at intervals of no more than seven days)

The following weekly checks and tests can be carried out by the sprinkler system owner/user with suitable basic training from the specialist sprinkler installer/maintenance contractor

OR

by the specialist sprinkler maintenance contractor – if the system owner/user prefers.

Requirements and guidance for the checks and tests to be carried out weekly (results should be noted on the relevant Weekly Checks and Tests Record Card)

Prior to carrying out any of the following tests, ensure any building evacuation alarms and any fire signals transmitted off site to a remote central monitoring station are muted or disabled until after the tests are completed.

| | |
|---|---|
| 1 | TB203.2.2.2 (a) All water and air pressure gauge readings on installation(s) [i.e., downstream of the alarm control valve set(s)] and trunk main(s) [i.e., upstream of the alarm control valve set(s)], including, if relevant, the pressure transducer reading on the sprinkler pump(s) control panel(s) to be checked to verify there has been no significant change in pressures from previous readings. <i>(It may be useful to mark lines on the pressure gauges to show the normal pressure readings expected.)</i> |
| 2 | TB203.2.2.2 (b) All water levels in water storage tanks (including pump priming tanks if applicable) to be checked and verified as full/normal. <i>(Do not always rely on the contents gauge for these checks as it may be faulty, so in accordance with the monthly routines detailed below, once a month visually check the physical level of water via the ball valve housing.)</i> Where water supplies for sprinkler systems are drawn from reservoirs, rivers, canals, or lakes, check the relevant water level is normal. |
| 3 | TB203.2.2.2 (c) Check all stop valves controlling the flow of water to the sprinkler protection are fully open, such as any located underground on the incoming supply, tank infill, pump suction and delivery valves, all sectional isolating valves on the trunk main, alarm control valve set isolating valves, and zone isolating valves. <i>Stop valves should be fitted with physical 'open/shut' indicators to help verify this. Where these valves are electrically monitored, partially closing and then re-opening each valve will verify if the relevant 'Fault' alarms are correctly registered on the relevant panel.</i> |
| 4 | TB203.2.2.3 Test whether the hydraulic water motor alarm gong on each installation control valve set operates and functions correctly by opening the '15 mm alarm test valve' on each control valve set in turn. This simulates the water discharge equivalent to the opening of one sprinkler head. Measure the time from first opening the alarm test valve until the hydraulic alarm gong rings and record this time. Allow the hydraulic alarm gong to sound for 30 seconds before closing the 15mm alarm test valve, allowing the installation to recharge to normal pressure. |

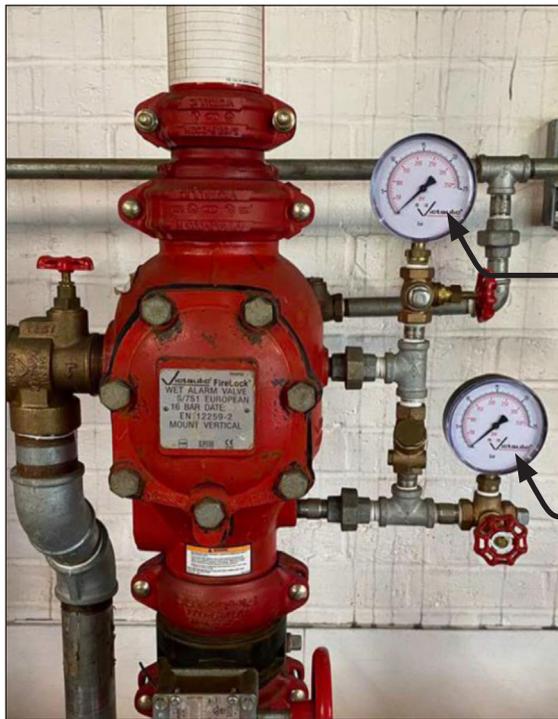
**Requirements and guidance for the checks and tests to be carried out weekly
(results should be noted on the relevant Weekly Checks and Tests Record Card)**

Prior to carrying out any of the following tests, ensure any building evacuation alarms and any fire signals transmitted off site to a remote central monitoring station are muted or disabled until after the tests are completed.

| | |
|----------|---|
| 5 | <p>TB203.2.2.4 and TB203.2.2.5 Test each automatic sprinkler pump and jockey pump starts and functions correctly, as listed below:</p> <ul style="list-style-type: none"> a) Check fuel and engine lubricating oil levels are sufficient in diesel engine-driven pumps and top up if necessary. b) Reduce the pressure on the starting pressure switch arrangement to initiate the automatic start, then when the pump starts, check the starting pressure is normal and record it on the weekly test sheet. c) With the pump running, check the cooling water is flowing through the open circuit cooling system. d) Check any automatic ventilation louvres that are open when the diesel pump(s) start and close (after a possible delay) when this pump stops. e) In the case of the main electric motor-driven sprinkler pump, allow the pump to run for 15 minutes before stopping. In the case of diesel engine-driven fire pumps following the above procedure, further check/test as follows: f) Run the engine for 30 minutes, or the time recommended by the supplier. The engine should then be stopped and restarted using the manual start test button. <i>This sequence ensures both sets of starting batteries are checked.</i> g) The water level in the primary circuit of closed-circuit cooling systems shall be checked after the engine has been allowed to cool down. h) When the engine is running monitor the oil pressure, engine temperature, and cooling water flow. Oil hoses shall be checked for leaks and a general inspection made for leakage of fuel, coolant, or exhaust fumes, and if found, arrange for any remedial works to be carried out. <p>Once the above tests on the fire pumps are complete, check the correct sequence of signals were transmitted/received on the Remote Alarm Panel.</p> |
| 6 | <p>TB203.2.2.6 Where there is pipework Trace Heating and/or a water storage tank immersion heater to prevent freezing of any part of the sprinkler system, these frost prevention systems shall be checked for correct function. <i>(Trace heating systems commonly have test buttons on the control panel to verify the function.) Ambient heaters in the pump room to avoid condensation forming in electric sprinkler pump motors and/or to provide a warmer environment to help diesel engine-driven sprinkler pumps start in cold weather should be checked for correct function. Ambient heaters in sprinkler alarm control valve set chambers to prevent freezing of the water in the sprinkler alarm control valve trim piping should also be checked for correct function.</i></p> |
| 7 | <p>TB203.2.2.7 Where alarm signals from the sprinkler installation are automatically transmitted off site to the Fire and Rescue Service and/or a remote central monitoring station, the equipment for this automatic transmission shall be checked for:</p> <ul style="list-style-type: none"> a) continuity of the connection b) continuity of the connection between the alarm switch and the control unit c) with prior agreement and arrangements with the Fire and Rescue Service/Remote Central Monitoring Station, the alarm signal should be checked as being received during these tests. |
| 8 | <p><i>Complete Appendix C and D to record the results of these checks and tests.</i></p> <p>Once the above checks and tests are complete, ensure any building evacuation alarms and any fire signals transmitted off site to a Fire and Rescue Service/remote central monitoring station are reactivated to operational mode.</p> |



Check the correct position of all stop valves that control the flow of water



Check all water and air pressure gauge readings ('C' gauge - shown)

Check all water and air pressure gauge readings ('B' gauge - shown)

6.2 System Owner's/User's Monthly Routines:

Monthly checks and tests (to be carried out at intervals of no more than one calendar month)

The following monthly checks and tests can be carried out by the sprinkler system owner/user with suitable basic training from the specialist sprinkler installer/maintenance contractor

OR

By the specialist sprinkler maintenance contractor – if the system owner/user prefers.

| Requirements and guidance for the checks and tests to be carried out monthly (results should be noted on the relevant Weekly/Monthly Checks and Tests Record Cards) | |
|--|---|
| 1 | TB203.2.3.2 Where applicable, check the electrolyte level of all battery cells (including diesel engine starting batteries and those for control panel power supplies) and carry out all other maintenance procedures specified by the battery manufacturers. |
| 2 | TB203.2.3.2 Check the battery charging voltage and make sure it has not changed. Report any changes to the specialist sprinkler maintenance contractor. |
| 3 | TB203.2.3.3 Check, where necessary, the lower section of the sprinkler water storage tank access ladder has been removed and stored securely to prevent unauthorised access. |
| 4 | TB203.2.3.3 Check that the sprinkler water storage tank ball valve housing cover located at the top of the tank is closed, secure, and locked. |
| 5 | TB203.2.3.4 Verify the water storage contents gauge is registering the correct water level by lifting the ball valve housing cover at the top of the tank and checking the actual water level in the tank. <i>The water level in the tank should be full to the shut off level of the ball valve and the contents gauge should read the same. If the contents gauge is calibrated to register the 'height of water in metres', an assessment will be needed to compare the actual water level in metres.</i> |
| 6 | Complete the relevant sections of Appendix D to record the results of these checks and tests. |



Battery checks identified above in routines 1 and 2



Sprinkler tank checks identified in routines 3, 4, and 5 above

6.3 Specialist's Quarterly Routines:

Quarterly routine (to be carried out at intervals of no more than 13 weeks)

The following quarterly routines shall be carried out by a specialist sprinkler maintenance contractor.

| Requirements and guidance for the tasks to be carried out Quarterly | |
|--|--|
| <p>Prior to carrying out any of the following tasks, notify your insurers and ensure any building evacuation alarms and any fire signals transmitted off site to a remote central monitoring station are muted or disabled until after the tests are completed.</p> | |
| 1 | <p>TB203.3.2.1 requires the Quarterly routines to be undertaken '...shall include all the tasks identified in the weekly (TB203.2.2) and monthly (TB203.2.3) routines...'</p> <p><i>This is to verify that the sprinkler system owner/user is carrying out all the weekly and monthly checks and tests required by the standard correctly and that detailed records of these are being kept. The specialist shall conduct all these weekly and monthly tasks during their quarterly service visits, in the form of a training demonstration, where it is apparent the system owner/user's representative is either not fully conversant with all the tasks they should be doing, how to carry them out or what records they have to keep. An ongoing review by the specialist sprinkler maintenance contractor during subsequent quarterly service visits may be needed to verify the effectiveness of this training and further demonstrations may be necessary.</i></p> <p>Complete Appendix AA, A, B (if necessary), C, and D to record these routines and test results.</p> |
| 2 | <p>TB203.3.2.2 requires a 'Review of Hazard' to be carried out Quarterly to assess whether there have been any changes to the building structure, occupancy, storage configuration, or any interior features such as building services/room partitions/false ceilings/equipment, which may affect the Hazard Classification of the risk and/or the design criteria of the installed sprinkler system.</p> <p>This 'Review of Hazard' shall be carried out by one of the following procedures:</p> <ol style="list-style-type: none"> an inspection or survey of the actual building/system by a competent person, for example, by an engineer from a sprinkler servicing contractor with the appropriate design knowledge and experience; or the building owner/user completing and returning Appendix E to the sprinkler servicing contractor detailing any such changes so they can assess whether these could have an impact on the design criteria of the installed sprinkler system. <p><i>A review undertaken by procedure b) is likely to be the more economical method as it essentially involves a desktop assessment by, for example, an engineer from the sprinkler servicing contractor, and this may be appropriate for a building where the occupancy is rarely, if ever, likely to change, such as offices, hotels, car parks, museums, cinemas etc. However, system owners/users may prefer to adopt procedure a) in larger, more complex buildings or in storage warehouses where the products being stored and/or storage arrangement may change frequently and completing Appendix E may not fully convey all the relevant details the specialist sprinkler engineer needs to carry out a desktop review.</i></p> <p>If option b) is adopted, the system owner/user to complete Appendix E and issue it to the specialist service and maintenance contractor to conduct a desktop 'Review of Hazard' and report back.</p> |
| 3 | <p>TB203.3.2.4 requires 'Flow Alarm' devices, such as flow switches and/or pressure switches, in systems designed and installed to comply with Annex F of the LPC Rules, shall be checked Quarterly for correct function.</p> <p><i>Pressure switches are typically used on Alarm Control Valve Sets to initiate an alarm if there is a flow of water into the downstream sprinkler pipework, and these pressure switches are checked and tested weekly.</i></p> <p><i>Sprinkler installations designed and installed to comply with Annex F of the LPC Rules have to be subdivided into zones, and flow switches are typically used in the zone control arrangement so any flow of water into a zone under fire conditions can be detected,</i></p> <p><i>allowing the location of a fire to be more accurately identified, and these flow switches shall be tested Quarterly.</i></p> <p><i>(Note: Flow switches used in other applications such as to comply with Annex D of the LPC Rules, need only be tested annually for correct function.)</i></p> <p>Complete Appendix F to record these routines and test results.</p> |
| 4 | <p>TB203.3.2.5 Float valves on water storage tanks are to be checked to ensure they are free from corrosion/debris and that they function correctly. Operate the arm of the float valve to simulate a drop of water level in the sprinkler tank to verify the float valve opens and closes to control the inflow correctly.</p> <p>Complete Appendix D to record these routines and results.</p> |

Requirements and guidance for the tasks to be carried out Quarterly

Prior to carrying out any of the following tasks, notify your insurers and ensure any building evacuation alarms and any fire signals transmitted off site to a remote central monitoring station are muted or disabled until after the tests are completed.

- 5 TB203.3.2.6 Water storage tanks shall be checked for integrity, condition, damage, and any evidence of water leakage. The tank shell, ball float valve housing, tank roof, and any flashing shall be visually checked to ensure there are no loose, missing, or excessively corroded sections and there is no evidence of any areas of roof collapse. Any internal tank roof support purlins or wind bracing steels should be visually checked, where possible, to assess their condition. Where water storage tanks are fitted with internal liners, a visual check shall be undertaken to assess whether there is any evidence of shrinkage. If any of these visual inspections indicate a need, arrange for a full tank inspection in accordance with TB203.3.5.2 by either a) the original water storage tank manufacturer; b) a manufacturer of water storage tanks with proven knowledge and experience of similarly designed and constructed tanks; or c) a specialist water storage tank inspection/maintenance contractor. Any remedial works identified during this inspection shall be undertaken by one of the aforementioned parties as necessary.

Complete Appendix D to record these routines and results.

- 6 *In addition to the Quarterly tasks listed above, any maintenance tasks required to be conducted quarterly by equipment manufacturers of any other components used in the sprinkler system shall also be carried out.*

- 7 *The sprinkler service contractor shall provide signed and dated reports of these quarterly inspections undertaken to the user upon completion and shall include advice of any rectification works carried out or needed (with recommended timescales/urgency) and details of any external factors, e.g., weather conditions, which may have affected the results.*

Once the above tasks are complete, **advise your insurers** and ensure any building evacuation alarms and any fire signals transmitted off site to a Fire and Rescue Service/remote central monitoring station are reactivated to operational mode.



Flow switches to be checked quarterly



Pressure switches to be checked quarterly

6.4 Specialist's Half-Yearly Routines:

Half-yearly routine (to be carried out at intervals of no more than 6 months)

The following half-yearly routines shall be carried out by a specialist sprinkler maintenance contractor.

| Requirements and guidance for the tasks to be carried out Half Yearly | |
|---|--|
| <p>Prior to carrying out any of the following tasks, the user should notify their insurers and ensure any building evacuation alarms and any fire signals transmitted off site to a remote central monitoring station are muted or disabled until after the tests are completed.</p> | |
| 1 | <p>TB203.3.3.1 requires the Half Yearly routines to be undertaken '...shall include all the tasks identified in the weekly (TB203.2.2), monthly (TB203.2.3), and quarterly (TB203.3.2) routines...'</p> <p><i>The Quarterly 'specialist' routines obviously repeat every six months, but the weekly and monthly user tasks also need to be carried out by the specialist to verify the user continues to carry these tasks out fully in accordance with the standard. An ongoing review by the specialist sprinkler maintenance contractor during subsequent quarterly, half yearly, and yearly service visits may be needed to establish whether the user needs any further refresher training on these tasks to continue to carry these out fully and correctly.</i></p> <p>Complete Appendix AA, A, B (if necessary), C, and D to record these routines and test results and Review Appendix E completed and issued by system owner/user.</p> |
| 2 | <p>TB203.3.3.2 The moving parts of dry alarm valves, alternate wet/dry alarm valves and pre-action valves, and any accelerators or exhausters shall be exercised in accordance with the manufacturers' instructions.</p> <p><i>This may require the dry alarm valve or pre-action valve to be 'tripped' by releasing the compressed air from the system (and/or activating the solenoid valve in the case of pre-action Type A valves) to simulate the operation as if there was a fire. Where a downstream stop valve is fitted, this test can be carried out with this stop valve closed to prevent water from flowing into the installation pipework. Where there is no downstream stop valve, the alarm valve manufacturers' instructions shall be followed to prevent water from flowing into the installation pipework.</i></p> <p>Complete Appendix G to record these routines (although Appendix G is for the Yearly Functional test, it can be used for the half yearly exercise routines record).</p> |
| 3 | <p>TB203.3.3.3 Each water supply shall be tested to verify the flow and pressure are sufficient to satisfy the system design criteria. A direct reading flow meter, fitted either at the alarm control valve set(s) or in the sprinkler pump room, as appropriate, will facilitate this test. In the case of water supplies provided by dedicated sprinkler pumps, these should be started automatically by dropping the pressure in the pump delivery main to simulate the same loss of pressure that would occur if sprinkler head(s) operated. This will check the pump initiation pressure switches/ starting sequence operates correctly. Each pump shall be tested at the full load condition by flowing the stated duty flow through the flow meter and noting the pressure generated by the pumps at this flow and comparing it with the duty listed on the nameplate on the pump. An adjustment in the delivery pressure will be needed to take account of any positive (or negative) suction pressure generated by the suction conditions (i.e., the pressure head imposed by the height of the water in the storage tank). In the case of suction lift pumps, any low water level switches in the pump priming tanks will be tested for correct function.</p> <p>Complete Appendix I to record these routines and test results.</p> |
| 4 | <p>TB203.3.3.4 Where both or all sprinkler pumps are electric motor-driven pumps, a secondary power supply (usually provided by a diesel-driven generator) should be available in the event of mains power failure. This secondary electrical supply shall be checked every six months to verify the changeover of the power source operates satisfactorily.</p> <p><i>This will involve turning the main electrical power off to ensure the back-up generator power supply will take over and cater for the sprinkler pumps (one at locked rotor and one at starting current condition), together with any other essential electrical plant being powered at the same time.</i></p> <p>Complete Appendix I to record these routines and test results.</p> |
| 5 | <p>TB203.3.3.5 All stop valves controlling the flow of water to the sprinklers shall be operated to ensure the stop valve and any electrical monitoring systems are working correctly and then securely refastened in the correct mode. This shall include the stop valves on all water supplies, at the alarm control valve(s), and all zone controls or other subsidiary stop valves.</p> <p>These checks and tests are recorded in Appendix C and Appendix F (if applicable).</p> |

Requirements and guidance for the tasks to be carried out Half Yearly

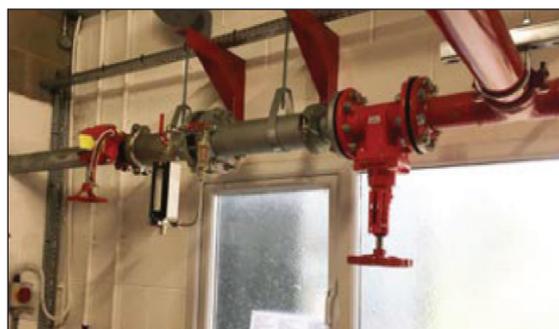
Prior to carrying out any of the following tasks, the user should **notify their insurers** and ensure any building evacuation alarms and any fire signals transmitted off site to a remote central monitoring station are muted or disabled until after the tests are completed.

| | |
|---|---|
| 6 | <p>TB203.3.3.6 (Pressure Transducer Calibration) The pressure displayed on the sprinkler pump controller shall be compared with:</p> <ul style="list-style-type: none"> • The correlating pressure gauges for the sprinkler pump control, or • Another pressure transducer (where more than one sprinkler pump is installed) <p>Pressure transducers shall be periodically checked for accuracy against suitably calibrated equipment, such as a Druck meter or similar. Any discrepancies found shall be corrected as appropriate.</p> <p style="text-align: center;">Complete Appendix D to record these routines and results.</p> |
| 7 | <p>TB203.3.3.7 A specialist pump service engineer shall carry out a 6-monthly interim service on the sprinkler fire pumps, as generally outlined in TB203 – Appendix A of The LPC Rules and in line with the tasks listed in Table TB203.T2. The Table TB203.T2 checklist serves as a general guide but not all items will apply to some makes and models of pump sets.</p> <p>Similarly, some pump sets may require further maintenance activities specified by the manufacturer not specifically listed in Table TB203.T2.</p> <p><i>It is unlikely the sprinkler maintenance contractor's engineers will have the knowledge and experience to undertake this work; therefore, this is normally sub-let to a pump specialist.</i></p> <p><i>See 'Appendix J – Specialist Pump Service Task Report' at the end of this document, which is based on Table TB203.T2 in the LPC Rules.</i></p> <p style="text-align: center;">Complete the relevant sections of Appendix J to record these tasks. (If applicable, complete Appendix AA.)</p> |
| 8 | <p><i>In addition to the Half Yearly tasks listed above, any maintenance tasks required to be conducted every six months by equipment manufacturers of any other components used in the sprinkler system shall also be carried out.</i></p> |
| 9 | <p><i>The sprinkler service contractor shall provide signed and dated reports of these half yearly inspections undertaken to the user upon completion and shall include advice of any rectification works carried out or needed (with recommended timescales/urgency) and details of any external factors, e.g., weather conditions, which may have affected the results.</i></p> |

Once the above tasks are complete, the user should **advise their insurers** and ensure any building evacuation alarms and any fire signals transmitted off site to a Fire and Rescue Service/remote central monitoring station are reactivated to operational mode.



Fire Pump(s) half yearly service (interim service) together with water supply flow and pressure test



Water supply flow and pressure test equipment, comprising full flow stop valve, direct reading flow meter and controlling butterfly valve, returning water back to the sprinkler tank

6.5 Yearly Routines:

6.5.1 Specialist's yearly routines

Yearly routine (to be carried out at intervals of no more than 12 months)

The following yearly routines shall be carried out by a specialist sprinkler maintenance contractor.

| Requirements and guidance for the tasks to be carried out Yearly | |
|---|--|
| <p>Prior to carrying out any of the following tasks, the user should notify their insurers and ensure any building evacuation alarms and any fire signals transmitted off site to a remote central monitoring station are muted or disabled until after the tests are completed.</p> | |
| 1 | <p>TB203.3.4.1 requires the Yearly routines to be undertaken '...shall include all the tasks identified in the weekly (TB203.2.2), monthly (TB203.2.3), quarterly (TB203.3.2), and half yearly (TB203.3.3) routines...'</p> <p><i>The Quarterly and Half Yearly 'specialist' routines obviously repeat every 12 months, but the weekly and monthly user tasks also need to be carried out by the specialist to verify the user continues to carry these tasks out fully in accordance with the standard. An ongoing review by the specialist sprinkler maintenance contractor during subsequent quarterly, half yearly, and yearly service visits may be needed to establish whether the user needs any further refresher training on these tasks to continue to carry them out fully and correctly.</i></p> <p>Complete Appendix AA, A, B (if necessary), C, D, and G to record these routines and test results and Review Appendix E completed and issued by the system owner/user.</p> |
| 2 | <p>TB203.3.4.2 Where the sprinkler water supplies include a diesel-driven sprinkler pump(s), the 'failed to start' alarm shall be tested to ensure it functions correctly and raises a suitable alarm.</p> <p><i>The control system on diesel engine-driven sprinkler pumps will ensure the automatic start sequence will attempt to start these pumps six times before alarming and sending a repeat alarm to the pump remote alarm panel. This alarm is to initiate an immediate investigation as to why the pump has failed to start so that urgent remedial action can be taken. To simulate and test this alarm, the specialist sprinkler service and maintenance engineer will need to temporarily prevent the diesel pump from starting before initiating an automatic start sequence. After attempting to start six times, a 'failed to start' alarm should be raised on the pump control panel and at the pump remote alarm panel. Once completed, the automatic start facility shall immediately be enabled again and both an automatic and manual start sequence shall be performed to ensure these pumps start as normal.</i></p> <p>Complete the relevant section of Appendix I to record this task.</p> |
| 3 | <p>TB203.3.4.3 Where the sprinkler water supplies include a water storage tank, the equilibrium ball float valves shall be maintained in accordance with the manufacturer's instructions and checked to ensure they function correctly.</p> <p><i>Debris can flush through from the incoming town's main supply and collect at the end of the infill pipe in this float valve, possibly preventing it from opening when the water level in the tank drops or closing when the water is up to the normal level. This debris can also damage the rubber seals/metal seats of the valve. The rubber seals also deteriorate over time and therefore need renewing.</i></p> <p>Complete the relevant sections of Appendix K to record these tasks.</p> |
| 4 | <p>TB203.3.4.13 A specialist pump service engineer shall carry out a 12-monthly annual service on the sprinkler fire pumps, as generally outlined in TB203 - Appendix A of The LPC Rules and in line with the tasks listed in Table TB203.T2. The Table TB203.T2 checklist serves as a general guide but not all items will apply to some makes and models of pump sets.</p> <p>Similarly, some pump sets may require further maintenance activities specified by the manufacturer not specifically listed in Table TB203.T2.</p> <p><i>It is unlikely the sprinkler maintenance contractor's engineers will have the knowledge and experience to undertake this work; therefore, this is normally sub-let to a pump specialist.</i></p> <p><i>See 'Appendix J - Specialist Pump Service Task Report' at the end of this document, which is based on Table TB203.T2 in the LPC Rules.</i></p> <p>Complete the relevant sections of Appendix J to record these tasks. (If applicable, complete Appendix AA.)</p> |

Requirements and guidance for the tasks to be carried out Yearly

Prior to carrying out any of the following tasks, the user should **notify their insurers** and ensure any building evacuation alarms and any fire signals transmitted off site to a remote central monitoring station are muted or disabled until after the tests are completed.

| | |
|----|---|
| 5 | <p>TB203.3.4.4 A 'Review of Hazard' shall be undertaken. Where the Quarterly Review of Hazard takes the form of returns submitted by the user (as detailed in the 'Quarterly Routines' detailed above and the user completing and issuing Appendix E to the specialist sprinkler service and maintenance contractor), at least one review per year shall be carried out by a site inspection by a competent person, for example, the specialist sprinkler service and maintenance contractor, reporting on details defined in TB203.3.2.3/Appendix E.</p> <p>Appendix E can be used as an aide-memoire to assist the sprinkler specialist in undertaking this 'Review of Hazard' by a site inspection.</p> |
| 6 | <p>TB203.3.4.5 Sprinkler heads, multiple jet controls, and spray nozzles on the installation shall be inspected and checked for contamination or damage. Dust or other deposits can be removed if practical by cleaning very carefully, avoiding any damage. Where this can't be removed by careful cleaning or where there are any painted or distorted sprinkler heads, multiple jet controls, or spray nozzles found, these shall be removed from the system and replaced.</p> <p><i>Any deposits, paint contamination, or distortion can delay or prevent these sprinkler heads, multiple jet controls, or spray nozzles from operating; therefore, it is important to replace these items immediately.</i></p> <p>Complete Appendix L to record the findings of these tasks.</p> |
| 7 | <p>TB203.3.4.6 Sprinkler pipework and support brackets (including any protective coatings) shall be inspected for integrity and condition and, if necessary, rectified or replaced.</p> <p>Sprinkler pipework should be checked to ensure it is satisfactorily earthed.</p> <p><i>Sprinkler pipework shall not be used for earthing electrical equipment and any such earthing connections shall be removed immediately.</i></p> <p>Complete Appendix L to record the findings of these tasks.</p> |
| 8 | <p>TB203.3.4.7 The number and condition of replacement parts kept on site shall be checked.</p> <p><i>These replacement parts will always include spare sprinkler heads kept in the spares cabinet. The standard stipulates how many spare sprinkler heads shall be kept on site for immediate use if necessary. This total number should consist of a proportion of each different type of sprinkler head fitted in the installation and the appropriate manufacturer's spanner for each type of sprinkler head should also be kept with these spare sprinkler heads. If any shortages or damaged spares are found, they should be replaced.</i></p> <p>Complete Appendix L to record the findings of these tasks.</p> |
| 9 | <p>TB203.3.4.8 If the sprinkler system operated alarm is transmitted to either the local Fire and Rescue Service or a Remote Off-Site Central Monitoring Station, this electrical installation and signal shall be checked for correct function.</p> <p><i>This should include a test, agreed and coordinated with the Fire and Rescue Service/Remote Off-Site Central Monitoring Station to verify that they receive a fire signal when the sprinkler system operated alarm is initiated. Confirm with the receiving body when this test is complete to ensure any subsequent alarms transmitted/received are treated as genuine alarms and initiate the appropriate response.</i></p> <p>Complete the relevant sections of Appendix L and C to record the findings of these tasks.</p> |
| 10 | <p>TB203.4.4.9 All water supply stop valves, alarm valves, and non-return valves shall be examined and replaced or overhauled as necessary.</p> <p><i>This shall include any below-ground stop and/or non-return valves, either on the incoming town's main supply or any underground sectional isolating valves. The manufacturer's recommendations for the period of service between overhauling alarm control valves can vary and, therefore, the dates for this should be established and recorded in Appendix L to help ensure these valves are overhauled as required.</i></p> |
| 11 | <p>TB203.3.4.10 If water for the sprinkler system is drawn from a natural water course such as a reservoir or river, the settling chamber shall be inspected and any screens/filters taken out, inspected, cleaned, and/or repaired, as necessary.</p> <p>Complete the relevant sections of Appendix K to record these tasks.</p> |

Requirements and guidance for the tasks to be carried out Yearly

Prior to carrying out any of the following tasks, the user should **notify their insurers and ensure any building evacuation alarms and any fire signals transmitted off site to a remote central monitoring station are muted or disabled until after the tests are completed.**

| | |
|-----------|--|
| 12 | <p>TB203.3.4.11 Flow alarm devices (flow switches and/or pressure switches) fitted to systems designed in accordance with Annex D and F of the LPC Rules shall be checked for correct function.</p> <p><i>This shall include 'System Operated' pressure switches on the alarm control valve set (which are checked weekly during the alarm bell test) and any zone flow switches on systems designed to comply with Annex D of the LPC Rules. Flow switches on Zones designed to comply with Annex F of the LPC Rules are required to be checked and tested Quarterly and, therefore, in practice will be checked and tested Yearly, as covered in item 1 above.</i></p> <p style="text-align: center;">Complete Appendix F to record these checks and test results.</p> |
| 13 | <p>TB203.3.4.12 A 'Functional Test' shall be carried out to exercise all moving parts of Dry Alarm valves, Alternate Wet/Dry Alarm valves, Pre-Action valves, and any accelerators or exhausters, by tripping these valves in accordance with the manufacturer's instructions, by simulating a fire and ensuring all monitoring alarms and fire signals are transmitted and function correctly.</p> <p>Where a downstream stop valve is fitted, the procedure outlined below shall be carried out with this downstream valve closed to prevent water from flowing into the installation pipework during this test.</p> <p>For systems without these downstream stop valves, the alarm valve manufacturers' instructions shall be followed to ensure no water flows into the installation pipework during the test:</p> <ol style="list-style-type: none"> a) Dry and Alternate installations shall be tripped by opening the trim test valve to simulate one sprinkler head opening. b) Type B Pre-Action installations shall be tripped, firstly, by opening the trim test valve to simulate one sprinkler head opening and, secondly, by using the fire detection activation signal, so that both means of actuation are checked to ensure correct function. c) Type A Pre-Action shall be checked firstly by releasing the monitoring air pressure to ensure the valve remains closed when the air is evacuated and the low air alarm is raised, and then secondly by simulating the fire detection activation signal to ensure the valve opens in response and all alarms operate correctly. <p>The results of these performance/trip tests shall be recorded in a logbook provided for the system.</p> <p><i>(Note: For Alternate Wet/Dry Alarm Valves, this performance/trip test shall be carried out at the same time as the system is 'changed-over' from the dry to wet stage, so the water can be allowed to flow into and remain in the installation pipework upon completion.)</i></p> <p style="text-align: center;">Complete Appendix G to record these checks and tests.</p> |
| 14 | <p><i>In addition to the Yearly tasks listed above, any maintenance tasks required to be conducted yearly by equipment manufacturers of any other components used in the sprinkler system shall also be carried out.</i></p> |
| 15 | <p><i>The sprinkler service contractor shall provide signed and dated reports of these yearly inspections undertaken to the user upon completion and shall include advice of any rectification work carried out or needed (with recommended timescales/urgency) and details of any external factors, e.g., weather conditions, which may have affected the results.</i></p> |

Once the above tasks are complete, the user should **advise their insurers and ensure any building evacuation alarms and any fire signals transmitted off site to a Fire and Rescue Service/remote central monitoring station are reactivated to operational mode.**

6.5.2 System owner's/user's yearly routines

Yearly routine (to be carried out at intervals of no more than one calendar year)

The following yearly routine is to be arranged by the sprinkler system owner/user with an independent third-party specialist who should prepare a written report on the sprinkler system regarding the continued adequacy of the sprinkler protection for risk and compliance with the applicable standard.

(e.g., LPC Rules for Automatic Sprinkler Installation 2015, incorporating BS EN 12845.)

Requirements for an annual independent third-party inspection of the sprinkler system by a suitably qualified independent body

- | | |
|----------|---|
| 1 | <p>TB203.2.4 The sprinkler system shall be periodically inspected by a qualified person at least once a year. The inspection report shall assess whether the system is in accordance with this standard, with regard but not limited to maintenance, operation, and adequacy for the risk. Where appropriate, a list of deviations shall be issued for action. The criticality of each action shall be identified.</p> <p>When performing periodic inspection, it shall be undertaken by an independent body, e.g., not the system owner, building occupier, system installer (or competing installer), or service and maintenance provider (or competing service and maintenance provider).</p> <p>The qualified person is a designated individual, suitably trained and competent through knowledge with experience of all aspects of the LPC Rules for Automatic Sprinkler Installations 2015 incorporating BS EN 12845 in order to assess system compliance to standard and be able to perform practical tests if required.</p> <p><i>Inspections shall be undertaken by an independent body, suitably qualified. Inspections undertaken by insurers for their commercial and underwriting purposes cannot be assumed to fulfil the intent of this requirement.</i></p> |
|----------|---|

A written report of the Annual Sprinkler Inspection should be issued with deviations recorded so that remedial works can be undertaken where necessary.



Sprinkler heads, multiple controls and sprayers, checked, cleaned, and replaced if necessary



Flow alarm tests to be undertaken together with alarm testing/transmission onwards to a third party



Review the adequacy of replacement parts and replenish if necessary

6.6 Specialist’s Two-yearly Routines:

Two-yearly routine (to be carried out at intervals of no more than 24 months)

The following routines to be undertaken every two years shall be carried out by a specialist sprinkler pump service engineer under contract to the specialist sprinkler contractor.

| Requirements and guidance for the tasks to be carried out every two years | |
|---|--|
| <p>Prior to carrying out any of the following tasks, the user should notify their insurers and ensure any building evacuation alarms and any fire signals transmitted off site to a remote central monitoring station are muted or disabled until after the tests are completed.</p> | |
| 1 | <p>TB203.3.5.1 requires the Two-Yearly routines to be undertaken ‘ ...shall include all the tasks identified in the weekly (TB203.2.2), monthly (TB203.2.3), quarterly (TB203.3.2), half yearly (TB203.3.3), and Yearly (TB203.3.4) routines’.</p> <p><i>The Quarterly, Half Yearly, and Yearly ‘specialist’ routines obviously repeat every 2 years, but the weekly and monthly user tasks also need to be carried out by a specialist to verify the user continues to carry these tasks out fully in accordance with the standard. An ongoing review by the specialist sprinkler maintenance contractor during subsequent quarterly, half yearly, and yearly service visits may be needed to establish whether the user needs any further refresher training on these tasks to continue to carry these out fully and correctly.</i></p> <p style="text-align: center;">Complete Appendix AA, A, B (if necessary), C, D, F (if applicable) G, I, J, and L to record these routines and test results and Review Appendix E completed and issued by the system owner/user.</p> |
| 2 | <p>TB203.3.5.2 Every 2 years, in the case of sprinkler water storage tank(s), the accessible parts of the tank(s) shall be fully inspected by either the original tank manufacturer, an alternative specialist sprinkler water storage tank manufacturer, or by a specialist sprinkler water storage tank inspection/refurbishment contractor who shall assess the internal and external condition of the tank, in terms of any corrosion or deterioration of the tank shell/structure and any ancillary equipment and produce a detailed written report on any remedial works needed to maintain the future/ongoing serviceable life of the tank.</p> <p>Clause TB203.3.5.2 (a) provides a more detailed list of what would be expected to be assessed/considered during this 2-yearly inspection, although this list should not be considered exhaustive and individual manufacturers of sprinkler water storage tanks may have other specific requirements to cover in such inspections.</p> <p><i>(Note: A submersible camera (Remotely Operated Vehicle) could be used to assess the internal condition or cleanliness of the tank and any urgent remedial works identified may require the tank to be drained for the repairs/refurbishment to be carried out.)</i></p> <p>If the condition or cleanliness of the tank indicates the need, the tank shall be drained, cleaned as necessary, and examined internally and externally, generally in accordance with the aspects listed in TB203.3.5.2 (a) and have the fabric attended to as necessary and restored in accordance with the manufacturer’s recommendations.</p> <p><i>If there is only one water storage tank and the inspection determines this tank needs to be drained to carry out a more detailed inspection, the sprinkler system would be inoperable during these works, so any alternative fire precaution arrangements required to be put in place by the insurers during these works would need to be adopted. Depending on the capacity of the tank, drainage time, and infill rates to refill the tank after completion, this procedure is likely to take more than one day.</i></p> <p>As a minimum, the specialist sprinkler water storage tank inspection report should include details of the findings on the items listed in TB203.3.5.2 (a) and shall give recommendations for the date of the next scheduled tank inspection based on the condition of the tank once remedial works recommended in this written report are completed.</p> <p style="text-align: center;">Complete the relevant sections of Appendix K and L to record these tasks and a specialist Water Storage Tank supplier or maintenance contractors report.</p> <p>The frequency or subsequent tank inspections following this initial inspection after no more than two years, will be determined by continual assessment of the condition of the tank but should not be more than two years.</p> |

Requirements and guidance for the tasks to be carried out every two years

Prior to carrying out any of the following tasks, the user should **notify their insurers** and ensure any building evacuation alarms and any fire signals transmitted off site to a remote central monitoring station are muted or disabled until after the tests are completed.

- 3 TB203.3.5.3 Every 2 years, in the case of a diesel engine-driven sprinkler pump, the specialist pump service engineer needs to carry out the following tasks, in addition to those tasks carried out every six and/or 12 months, as stipulated in Table TB203.T2 of the LPC Rules
- a) Replace diesel engine hoses and engine coolant mixture (as per engine manufacturers' requirements).
 - b) Replace the diesel engine thermostat if the engine running temperature indicates this is required.
 - c) Visually check, clean, and report on the condition of the diesel engine air filter.
 - d) Visually check and adjust the drive belt tension.
 - e) Check the engine water pump and seals (check the operating temperatures, inspect the pump and hoses, remove the belt, and check for play). Replace the water pump if considered necessary.
- See 'Appendix J - Specialist Pump Service Task Report' at the end of this document, which is based on Table TB203.T2 in the LPC Rules.*

Complete the relevant sections of Appendix J to record these tasks.

- 4 *In addition to the 2 yearly tasks listed above, any maintenance tasks required to be conducted every two years by equipment manufacturers of any other components used in the sprinkler system shall also be carried out.*
- 5 *The sprinkler service contractor shall provide signed and dated reports of these two-yearly inspections undertaken to the user upon completion and shall include advice on any rectification work carried out or needed (with recommended timescales/urgency) and details of any external factors, e.g., weather conditions, which may have affected the results.*

Once the above tasks are complete, the user should **advise their insurers** and ensure any building evacuation alarms and any fire signals transmitted off site to a Fire and Rescue Service/remote central monitoring station are reactivated to operational mode.



Photograph shows typical end-suction diesel fire-pump



Photograph shows horizontal split case diesel fire-pump

6.7 Specialist's Three-yearly Routine:

Three-yearly routine (to be carried out at intervals of no more than three years)

The following three yearly routines shall be carried out by a specialist sprinkler maintenance contractor or, where relevant, a specialist water storage tank contractor under contract to the specialist sprinkler maintenance contractor.

| Requirements and guidance for the tasks to be carried out every three years | |
|--|---|
| Prior to carrying out any of the following tasks, the user should notify and agree these tasks with their insurers and ensure any building evacuation alarms and any fire signals transmitted off site to a remote central monitoring station are muted or disabled until after the tests are completed. | |
| 1 | <p>TB203.3.6.1 requires the Three-Yearly routines to be undertaken '....shall include all the tasks identified in the weekly (TB203.2.2), monthly (TB203.2.3), quarterly (TB203.3.2), half yearly (TB203.3.3), and Yearly (TB203.3.4) routines'.</p> <p><i>The Quarterly, Half Yearly, and Yearly 'specialist' routines obviously repeat every 3 years, but the weekly and monthly user tasks also need to be carried out by the specialist to verify the user continues to carry these tasks out fully in accordance with the standard. An ongoing review by the specialist sprinkler maintenance contractor during subsequent quarterly, half yearly, and yearly service visits may be needed to establish whether the user needs any further refresher training on these tasks to continue to carry these out fully and correctly.</i></p> <p>Complete Appendix AA, A, B (if necessary), C, D, F (if applicable) G, I, J, and L to record these routines and test results and Review Appendix E completed and issued by the system owner/user.</p> |
| 2 | <p>TB203.3.6.2 If water for the sprinkler system is drawn from a natural water course such as a reservoir or river, pump suction strainers and settling chambers and their screens shall be inspected and cleaned, as necessary.</p> <p>Complete the relevant sections of Appendix K to record these tasks.</p> |
| 3 | <p>TB203.3.6.3 Where the sprinkler water supplies include sprinkler pumps under suction lift conditions, the foot valves at the bottom of the pump suction pipes shall be serviced in accordance with the manufacturer's requirements and the associated strainer cleaned.</p> <p><i>To undertake this servicing of the foot valve, the suction pipe would need to be withdrawn from the water source, which would mean isolating the sprinkler pump and associated priming tank whilst the work is undertaken. If there is only one sprinkler pump for the system, this would render the sprinkler system inoperable during these works, so any alternative fire precaution arrangements required to be put in place by the insurers for the duration of these works would need to be adopted. Where there is more than one sprinkler pump for the system, these works would have to be arranged such that only one sprinkler pump is offline at any one time, unless agreed otherwise with the insurers.</i></p> <p>Complete the relevant sections of Appendix K to record these tasks.</p> |
| 4 | <p>TB203.3.6.4 A 'Full Trip Test' shall be carried out to fully operate Dry Alarm valves, Alternate Wet/Dry Alarm valves, Pre-Action valves, and any accelerators or exhausters, by tripping these valves in accordance with the manufacturer's instructions, by simulating a fire to ensure all monitoring alarms and fire signals are transmitted and function correctly, allowing water to fill the system pipework as would be the case in an actual fire situation:</p> <ol style="list-style-type: none"> a) This Full Trip Test of Dry and Alternate Installations shall be undertaken as specified in TB208.3.4/5 (as further detailed in TB208.4.1). This involves opening the test valve at the remote end of the installation and verifying the time taken for water to reach/discharge from this test valve. b) This Full Trip Test of a Type B Pre-Action installations shall be undertaken as specified in TB208.5.3 using both the fire detection activation signal and the manual trip valve separately, to ensure both means of actuation and all relevant alarm signals function correctly. c) The Full Trip Test of a Type A Pre-Action shall be checked firstly by releasing the monitoring air pressure to ensure the valve remains closed when the air is evacuated and the low air alarm is raised, and secondly by simulating the fire detection activation signal to ensure the valve opens in response, all alarms operate correctly, and the installation pipework fills with water. <p>The results of these performance/trip tests shall be recorded in a logbook provided for the system.</p> <p><i>(Note: For Alternate Wet/Dry Alarm Valves, this performance/trip test shall be carried out at the same time as the system is 'changed-over' from the dry to wet stage, so the water can be allowed to flow into and remain in the installation pipework upon completion.)</i></p> <p>Complete Appendix H to record these checks and tests.</p> |

Requirements and guidance for the tasks to be carried out every three years

Prior to carrying out any of the following tasks, the user should **notify and agree these tasks with their insurers** and ensure any building evacuation alarms and any fire signals transmitted off site to a remote central monitoring station are muted or disabled until after the tests are completed.

- | | |
|---|--|
| 5 | <i>In addition to the three-yearly tasks listed above, any maintenance tasks required to be conducted every 3 years by equipment manufacturers of any other components used in the sprinkler system shall also be carried out.</i> |
| 6 | <i>The sprinkler service contractor shall provide signed and dated reports of these three yearly inspections undertaken to the user upon completion and shall include advice of any rectification work carried out or needed (with recommended timescales/urgency) and details of any external factors, e.g., weather conditions, which may have affected the results.</i> |

Once the above tasks are complete, the user should **advise their insurers** and ensure any building evacuation alarms and any fire signals transmitted off site to a Fire and Rescue Service/remote central monitoring station are reactivated to operational mode.



Photograph shows a typical cylindrical '10-year' sprinkler tank



Typical 'Alternate' Control Valve Set



Typical 'Dry' Control Valve Set



Typical 'Pre-Action' Control Valve Set



Fire Detection System, linked to Pre-Action sprinkler system(s)

6.8 Specialist's Five-Yearly Routines:

Five-yearly routine (to be carried out at intervals of no more than five years)

The following five yearly routines shall be carried out by a specialist sprinkler maintenance contractor.

| Requirements and guidance for the tasks to be carried out every five years | |
|---|---|
| Prior to carrying out any of the following tasks, the user should notify and agree these tasks with their insurers and ensure any building evacuation alarms and any fire signals transmitted off site to a remote central monitoring station are muted or disabled until after the tests are completed. | |
| 1 | <i>In addition to the Yearly Routines outlined above, the following routines shall be carried out after five years and appropriate records prepared and issued to all concerned:</i> (Records of such routines will be very specific to the outcome of these routines, so no template forms are appropriate in this case.) |
| 2 | TB203.3.7.1 Where Dry Pendant Pattern Sprinkler Heads (those with dry drop pipe sections) have been installed in the system, the oldest and worst conditions shall be removed for functional testing. The minimal sample size to be tested shall be 5% of each batch of dry pendant pattern sprinkler heads installed or 20 heads (whichever is greater). Testing shall be undertaken at intervals of no more than five years unless the manufacturer's recommendation is less. <i>(The test undertaken on these samples shall be as listed under clause TB203.3.8.3.)</i> |
| 3 | TB213 Where Multiple Controls have been installed in the system, the oldest and worst conditions shall be removed for functional testing. The minimal sample size to be tested shall be 6% or three Multiple Controls (whichever is greater). Testing shall be undertaken at intervals of no more than five years or less depending on the design of Multiple Control, the type of use, the nature of the risk, and the condition to which the Multiple Control has been subjected, such as harsh corrosive atmospheres or where excessive dust and debris contaminates the Multiple Control, or in accordance with the manufacturer's recommendation period, if less. <i>Any failures to operate satisfactorily when tested shall either result in the replacement of all comparable Multiple Controls, overhauling of all Multiple Controls by the manufacturer, or testing of an increased sample size to establish whether replacement is essential.</i> |
| 4 | <i>Where other sprinkler head types are used in the system that are of non-standard, more complex type design where the LPCB Approval (relevant at the time of their listing) required sample testing at no more than five yearly intervals.</i> |
| 5 | <i>In addition to the 5 yearly tasks listed above, any maintenance tasks required to be conducted every 5 years by equipment manufacturers of any other components used in the sprinkler system shall also be carried out.</i> |
| 6 | <i>The sprinkler service contractor shall provide signed and dated reports of these five yearly inspections undertaken to the user upon completion and shall include advice of any rectification work carried out or needed (with recommended timescales/urgency) and details of any external factors, e.g., weather conditions, which may have affected the results.</i> |
| Once the above tasks are complete, the user should advise their insurers and ensure any building evacuation alarms and any fire signals transmitted off site to a Fire and Rescue Service/remote central monitoring station are reactivated to operational mode. | |



Multi-jet controller



Dry-pendant dropper

6.9 Specialist's 10-Yearly Routines:

10-yearly routine (to be carried out at intervals of no more than 10 years)

The following ten yearly routines shall be carried out by a specialist sprinkler maintenance contractor or, where relevant, a specialist water storage tank contractor under contract to the specialist sprinkler maintenance contractor.

| Requirements and guidance for the tasks to be carried out every ten years | |
|--|---|
| <p>Prior to carrying out any of the following tasks, the user should notify and agree these tasks with their insurers and ensure any building evacuation alarms and any fire signals transmitted off site to a remote central monitoring station are muted or disabled until after the tests are completed.</p> | |
| 1 | <p><i>In addition to the Yearly Routines outlined above, the following routines shall be carried out after no more than ten years service:</i></p> |
| 2 | <p>TB203.3.8 Where the sprinkler water supplies include a water storage tank complying with LPS1276, unless the condition of the tank indicates an earlier inspection is necessary:</p> <p>A 'Ten-Year Tank' shall be drained, cleaned as necessary, and examined internally and externally for corrosion and fitness for purpose in accordance with Clause TB203.3.5.2 (a), except that submersible, remotely operated camera equipment (ROVs) shall not be used for the examination of tanks that have been in service for ten years, plus, have the fabric attended to as necessary and restored in accordance with the manufacturer's recommendations.</p> <p><i>If there is only one water storage tank, the sprinkler system would be inoperable during these works, so any alternative fire precaution arrangements required to be put in place by the insurers during these works would need to be adopted. Depending on the capacity of the tank, drainage time, and infill rates to refill the tank after completion, this procedure is likely to take more than one day.</i></p> <p>Complete the relevant sections of Appendix K and L to record these tasks and a specialist Water Storage Tank supplier or maintenance contractors report.</p> <p>The frequency or subsequent tank inspections following this ten-year inspection will be determined by continual assessment of the condition of the tank but should not be more than two years.</p> |
| 3 | <p><i>In addition to the 10 yearly tasks listed above, any maintenance tasks required to be conducted every 10 years by equipment manufacturers of any other components used in the sprinkler system shall also be carried out.</i></p> |
| 4 | <p><i>The sprinkler service contractor shall provide signed and dated reports of these 10 yearly inspections undertaken to the user upon completion and shall include advice of any rectification work carried out or needed (with recommended timescales/urgency) and details of any external factors, e.g., weather conditions, which may have affected the results.</i></p> |
| <p>Once the above tasks are complete, the user should advise their insurers and ensure any building evacuation alarms and any fire signals transmitted off site to a Fire and Rescue Service/remote central monitoring station are reactivated to operational mode.</p> | |

6.10 Specialist's 25-Yearly Routines:

25-year routine

The following routines shall be carried out by a specialist sprinkler maintenance contractor when the system has been in service for 25 years (the frequency of subsequent routines may need to be annual, depending on the condition of the system) Task-specific written reports will need to be prepared for all the routines listed below, therefore no sample templates have been prepared in this regard.

Requirements and guidance for the tasks to be carried out after 25 years

Prior to carrying out any of the following tasks, the user should notify and agree these tasks with their insurers and ensure any building evacuation alarms and any fire signals transmitted off site to a remote central monitoring station are muted or disabled until after the tests are completed.

| | |
|---|---|
| 1 | TB203.3.9.1 Each installation shall be flushed through the flushing connection at the remote end of each distribution pipe array until the water being discharged runs clear. For installations comprising several terminal pipe arrays, this may need to be repeated for each section until both the specialist engineer and insurer are satisfied all arrays have been adequately flushed. |
| 2 | <p>TB203.3.9.1.1 A representative sample for each different pipe diameter (of at least 1.0 metre in length) shall be removed from the from the system and replaced with new pipe for an initial visual internal and external inspection to assess the condition of the pipe in terms of any partial blockage or corrosion. All pipework removed shall be retained on site for inspection by the building insurer unless sent away for specialist analysis. Consideration needs to be given to the locations in the installation from where these samples are taken, bearing in mind that different environmental conditions could lead to greater or lesser contamination or corrosion rates. For example, the conditions of pipes in an office environment are likely to be different to those in a production area or where trapped air is likely to collect and pipes in low-level areas could contain more debris than those taken from higher levels of the installation.</p> <p>This initial inspection shall be documented and include photographs of each pipe, together with records of the locations each pipe was removed from.</p> <p>Should this initial visual assessment indicate appreciable levels of debris and/or corrosion, further analysis of the conditions of the pipes shall be undertaken by an accredited independent testing laboratory.</p> <p><i>Findings from these initial investigations may determine whether further pipes need to be inspected or whether sections/ areas of installation pipework need to be replaced.</i></p> <p><i>Normal hydraulic pressure testing of system pipework to 12 bars is not recommended for systems that have been in service for 25 years and, therefore, any new sections of pipework should be pressure tested separately before connecting to the existing pipework.</i></p> |

Requirements and guidance for the tasks to be carried out after 25 years

Prior to carrying out any of the following tasks, the user should **notify and agree these tasks with their insurers** and ensure any building evacuation alarms and any fire signals transmitted off site to a remote central monitoring station are muted or disabled until after the tests are completed.

- 3 TB203.3.9.3 After 25 years service (or sooner if recommended by the manufacturers), a representative sample of sprinkler heads shall be removed from the system and replaced with new ones. The removed sprinkler heads should be inspected and functionally tested by an independent test house. The initial number of sprinklers removed for testing shall be taken from Table TB203.T1 of the LPC Rules for Automatic Sprinkler Installations 2015 incorporating BS EN 12845, based on the total number of sprinklers installed in the system, as below:

| Number of sprinklers to be inspected | |
|--------------------------------------|--------------------------------------|
| Total number of sprinklers installed | Number of sprinklers to be inspected |
| ≤5000 | 20 ⁽²⁾⁽³⁾ |
| ≤10000 | 40 ⁽³⁾ |
| ≤20000 | 60 ⁽³⁾ |
| ≤30000 | 80 ⁽³⁾ |
| ≤40000 | 100 ⁽³⁾ |

Note 1: Where there are different types of sprinkler heads installed that have been in service for 25 years, a minimum of 5 sprinkler heads of each different type shall be removed and tested.

Note 2: A batch of 20 sprinkler heads removed for testing shall consist of no more than 4 different sprinkler head types. Where more than 4 types are installed, 5 sample sprinkler heads for each additional type shall be tested (e.g., 6 different sprinkler head types would require a minimum of 30 sprinkler heads to be tested).

Note 3: Where there are sprinkler heads in the spares cabinet that are 25 years old, a minimum of 5 of these spare sprinkler heads shall be tested, in addition to the sample numbers listed in Notes 2 and 3.

Functional test failures shall be considered serious failures and all sprinkler heads of the same type as the samples tested should be replaced immediately. Until such a replacement programme is completed, the system should be considered impaired and the insurers and any other authority having jurisdiction shall be notified, and alternative interim fire safety precautions may need to be taken. Appropriate remedial action is to be agreed upon in consultation with the building owner/occupier(s) and authorities.

- 4 *The sprinkler service contractor shall provide signed and dated reports of these 25 yearly inspections undertaken to the user upon completion and shall include advice of any rectification work carried out or needed (with recommended timescales/urgency) and details of any external factors, e.g., weather conditions, which may have affected the results.*

Once the above tasks are complete, the user should **advise their insurers** and ensure any building evacuation alarms and any fire signals transmitted off site to a Fire and Rescue Service/remote central monitoring station are reactivated to operational mode.



Photographs demonstrating the need for 25 year inspection/ examinations

7 Appendices/Template Forms

The following series of templates provide a guide for the minimum level of data expected to be recorded on sprinkler service and maintenance reports. All form templates can be freely downloaded in Excel format from the FPA website by searching 'Sprinkler Template Forms'.

Specialist sprinkler service and maintenance contractors may use their own reports providing they contain at least the data recorded in the following templates.

Appendix AA

| Sprinkler system condition report | | |
|--|------------------------------|--------------------------------------|
| System Owner/User | Sprinkler Protected Premises | System Owner/User Contact |
| <p>The condition of the fire sprinkler system to operate reliably and continue to fulfil the specified design criteria is to be verified at least annually by a review of all relevant maintenance records. This assessment is to be completed by a sprinkler engineer whose competency has been verified by relevant third-party accreditation (e.g. LPS1048).</p> <p>This document shall also be used on the earlier identification of any deficiencies detracting from the performance or reliability of the sprinklers, to report such and the associated criticality of to the system owner/responsible person.</p> | | |
| <p>Limitations of Assessment: Record any limitations to the scope of this assessment or the extent of the system to which it applies.</p> | | |
| <p>Declaration: I/We, being the person(s) responsible for the inspection and testing of the sprinkler system, particulars of which are described in Appendix A, having exercised reasonable skill and care when carrying out the inspection and testing, hereby declare that the information in this report, including the observations and actions to be taken, provides an accurate assessment of the condition of the fire sprinkler system taking into account the above-referenced limitations of assessment.</p> | | |
| | | Sprinkler Contractor: |
| | | Engineer's Name: |
| | | Signature: |
| | | Date: |
| <p>Summary of Condition of the Sprinkler System: Overall assessment of the reliable operation of the sprinkler system to fulfil the specified design criteria. An unsatisfactory assessment indicates the identification of a deficiency significantly impeding the function or resilience of the fire protection (Codes C1, C2, or FI2).</p> | | |
| | | SATISFACTORY or UNSATISFACTORY |
| <p>Observations and Actions to be Taken: No deficiencies have been identified that adversely or</p> | | |
| | | N/A or tick |
| <p>The following observations detract from the reliable function of the sprinkler system and considered to necessitate corrective action</p> | | |
| | | N/A or tick |

Sprinkler system condition report

Deficiency Classification Codes:

| | | | |
|-----|-------------------------------|--|--|
| C1 | Immediate action required | Total impairment of fire protection. A defect presents an immediate danger to persons or property | <ul style="list-style-type: none"> Total loss/disablement of water supply Unsafe engine Substantial exhaust leak within pump room Unsafe pipework/supports |
| C2 | Urgent action required | Partial impairment detracting from the effectiveness and/or resilience of fire protection | <ul style="list-style-type: none"> Impairment to one of the elements of a duplicate water supply Pump underperforming by > 1.0 bar Inadequate engine cooling water flow or excessive temperature Failure of fire alarm device or signal Engine fuel level <3/4 Inadequate frost protection in cold weather periods |
| F12 | Urgent investigation required | Further investigation required of critical defect to identify cause and required corrective action | <ul style="list-style-type: none"> Unusual noise from fire pumps Failure of pump, control valve or alarm function test Frequent/continuous running of the jockey pump Excessive installation trip time Defect with fire alarm interface to pre-action installation |
| C3 | Corrective action required | Action required to maintain effective and reliable fire protection | <ul style="list-style-type: none"> Loose or missing pipe supports Damaged or missing range pipe/sprinklers Contaminated sprinkler heads Unsatisfactory sprinkler sample test report Inadequate pump room ventilation |
| F13 | Investigation required | Further investigation required of defect to determine cause and required corrective action | <ul style="list-style-type: none"> Suspected leakage from water storage tank |
| C4 | Corrective action recommended | Best practice improvement | <ul style="list-style-type: none"> None essential improvements to achieve parity with current standards but were not required at the time of installation |

| Item No. | Code | Observation/Corrective Action | Date Resolved |
|----------|------|-------------------------------|---------------|
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Sprinkler system condition report

| Item No. | Code | Observation/Corrective Action | Date Resolved |
|----------|------|-------------------------------|---------------|
| | | | |
| | | | |
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| | | | |
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| | | | |
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Additional Comments:

Appendix A

| Sprinkler system data | | |
|---|--|---------------------------|
| System Owner/User | Sprinkler Protected Premises | System Owner/User Contact |
| | | |
| Date of Original Installation/Commissioning: | | |
| Areas of building(s) sprinkler protected: | | |
| Hazard Classification(s): | | |
| Design Criteria | Pre-Calc/FHC: | |
| | Design Density: | |
| | Area of Operation: | |
| | ESFR: | |
| | In-Rack protection: | |
| | Category of storage: | |
| | Height of storage: | |
| | Other | |
| | Highest Sprinkler Head: | |
| | LPC Rules or BS EN 12845: | |
| | Life Safety or Property Protection: | |
| | Type of System – Wet/Dry/Pre-Action etc: | |
| | Water Supplies | Towns Main: |
| Req'd Flow and Pressure: | | |
| Pump(s) and Tank(s): | | |
| Electric/Diesel Pump(s): | | |
| Duty/Nominal Rating: | | |
| Q Max: | | |
| Water Storage Tank(s) Capacity: | | |
| Full or Reduced Capacity: | | |
| Service and Maintenance Criteria | TB203 or Clause 20 compliant: | |
| | Valve Set Overhaul due date: | |
| | Tank Spec - 3 year/10 Year due date: | |
| | Sprinkler head sample testing date: | |
| | 25-year inspection due: | |
| Has the client received training for weekly and monthly checks/tests and emergency procedures in accordance with TB203.4.2: | | |
| Yes/No: | | |
| Person(s) responsible: | | |
| Tasks and Records Verified: | | |

Appendix B

Sprinkler system drain down form

PART ONE

System Owner/User/premises address where drain down to take place:

Sprinkler Service Engineer carrying out the drain down:

Description of area to be drained down:

(E.g. Valve Set No. and System Description, Pumps, etc.)...

Time of Drain Down:

Date of Drain Down:

Anticipated Duration of Drain Down:

Reason for Drain Down:

Note: It is the System Owner/User's Responsibility to notify their Insurance Company of this drain down together with any other Authorities having Jurisdiction so that any special fire procedures that they may wish to be undertaken during the drain down period can be adopted.

System
Owner/User's
authorisation

Signature:

Name:

Position:

Time/Date the Authorities were notified:

Sprinkler
service
engineer

Signature:

Name:

Date:

PART TWO

Sprinkler system re-commissioned and left operational.

Date:

Time:

System Owner/User's Signature:

Sprinkler Service Engineer's Signature:

Note: It is the client's responsibility to notify the relevant authorities listed in Part 1 of this form that the system has now been re-commissioned.

Appendix E

Sprinkler system – review of hazard form

| Quarterly Review of Hazard (in compliance with TB203.3.2.2) | | | | |
|---|---|-----|----|-----|
| System Owner/User: | | | | |
| Address: | | | | |
| Form completed and issued by: | | | | |
| Contact details: | | | | |
| Building Ref: | | | | |
| Date: | | | | |
| Last Review Date: | | | | |
| Next Review Date: | | | | |
| | Change information required | Yes | No | N/A |
| 1 | Have any structural alterations been made since the last review which necessitate modifications to the sprinkler system (including e.g. low-level office installation or partition relocation)? If yes, provide details: | | | |
| 2 | Are there any new buildings, mezzanines, or extensions? If yes, provide details: | | | |
| 3 | Has there been any change of use to all or any part of the sprinkler protected building? If yes, provide details: | | | |
| 4 | Is the ambient temperature range still within acceptable limits for the design of the sprinkler system? If yes, provide details: | | | |
| 5 | Has any painting or decoration been undertaken since the last review/inspection? If yes, provide details: | | | |
| 6 | Are frost protection measures adequate? If yes, provide details: | | | |
| 7 | Have there been any significant changes to the plant or equipment (quantity or location), or changes in production? If yes, provide details: | | | |
| 8 | Is the storage type still consistent with the sprinkler system design (e.g. free-standing storage has not changed to rack storage)? If yes, provide details: | | | |
| 9 | Is the design of the rack sprinklers consistent with the storage category? If yes, provide details: | | | |
| 10 | Are flues (horizontal/vertical) within storage racks kept clear as designated by the design requirements? If yes, provide details: | | | |
| 11 | Are minimum clearances maintained between stored items and sprinkler heads (see BS EN 12845 Clauses 12.1 and 12.5.1)? If yes, provide details: | | | |
| 12 | Has the nature of the goods stored or their packaging changed? Does this alter the category of stored goods? If yes, provide details: | | | |

Sprinkler system – review of hazard form

| Change information required | | Yes | No | N/A |
|-----------------------------|--|-----|----|-----|
| 13 | Have there been any changes to the storage arrangements (plastic pallets, shelving, drum dollies, boxes, or totes)? | | | |
| | If yes, provide details: | | | |
| 14 | Have there been any changes to the storage heights? | | | |
| | If yes, provide details: | | | |
| 15 | Where a smoke or heat detection system interacts with the sprinkler system, is a suitable maintenance contract in force? | | | |
| | If yes, provide details: | | | |
| 16 | Have there been any problems with the sprinkler system? | | | |
| | If yes, provide details: | | | |
| 17 | Have there been any alterations to the sprinkler system? | | | |
| | If yes, provide details: | | | |

Appendix G

Sprinkler system – Dry, Alternate, and Pre-Action Systems Yearly Functional Test and Exercise Record

| System Owner/User | | Sprinkler Protected Premises | | System Owner/User Contact | |
|---|---|------------------------------|--|---------------------------|--|
| | | | | | |
| Service Engineer: | | | | Date of Visit: | |
| Yearly Functional Tests | | | | | |
| Arrangements: | | | | | |
| <ol style="list-style-type: none"> Where a downstream isolating valve is fitted, carry out functional tests with this valve closed to ensure water does not flood into the installation pipework during these tests. Where no downstream isolating valve is fitted, follow the manufacturer’s recommended procedure to ensure water does not flood into the installation pipework during these tests. | | | | | |
| <p><u>With the exception of Alternate Wet Dry Alarm Valve Set, the following procedures and records are based on there being a downstream isolating valve. For systems without downstream isolating valves, the procedures and records will need modifying in line with the manufacturer’s instructions.</u></p> | | | | | |
| Yearly Dry Alarm Valve Functional Test and Exercise: | | | | | |
| | Tasks | | | Result/Comment | |
| 1 | Close the dry alarm valve downstream isolating valve and verify electrical monitoring signal records a fault on the monitoring panel: | | | | |
| 2 | Close the air supply isolating valve upstream of the ‘Low Air Pressure’ pressure switch. Release air very slowly from downstream of the dry alarm valve until the ‘Low Air Pressure’ alarm is activated and note pressure: | | | | |
| 3 | Fully release all air from between the dry alarm valve and the downstream isolating valve. The dry alarm valve should open. Record that hydraulic gong and system activated alarm functioned to confirm dry alarm valve opens: | | | | |
| 4 | Fully drain dry alarm valve, re-commission system, together with all trim valves + downstream isolating valve to normal dry mode and record here: | | | | |
| Yearly Alternate Wet/Dry Alarm Valve Functional Test and Exercise: | | | | | |
| As Alternate Wet/Dry Alarm Valves need changing over from air to water setting each year, the functional test will be achieved by a full trip test, filling the system pipework with water in March/April each year, as follows: | | | | | |
| | Tasks | | | Result/Comment | |
| 5 | All Alternate Wet/Dry Alarm Valve trim valves, accelerator, air supply and main isolating valve to be left in dry mode setting (record in comments): | | | | |
| 6 | Note the air pressure in the installation: | | | | |
| 7 | Open the quick acting test valve on the remote test facility to release compressed air from the system, taking note of the time it takes from first opening test valve until water discharges from this test valve – note the time this takes here: | | | | |
| 8 | Close the quick acting test valve on the remote test facility. | | | | |
| 9 | Re-set trim valves on the Alternate Wet/Dry Alarm valve to summer or Wet mode and close isolating valve to accelerator. Hydraulic gong should silence: | | | | |
| 10 | Carry out normal weekly bell test with Alternate Wet/Dry Alarm Valve set to Wet mode to ensure all trim controls operate correctly: | | | | |
| Yearly Pre-Action Valve Set Functional Tests and Exercises | | | | | |

Sprinkler system – Dry, Alternate, and Pre-Action Systems
Yearly Functional Test and Exercise Record

| Type A Pre-Action Valve Set: | | |
|-------------------------------------|--|-----------------------|
| | Tasks | Result/Comment |
| 11 | Close the pre-action alarm valve downstream isolating valve and verify electrical monitoring signal records a fault on the monitoring panel: | |
| 12 | Close the air supply isolating valve upstream of the 'Low Air Pressure' pressure switch. Release air very slowly from downstream of the pre-action alarm valve until the 'Low Air Pressure' alarm is activated and note pressure: | |
| 13 | Fully release all air from between the pre-action alarm valve and the downstream isolating valve and verify the pre-action alarm valve remains closed by checking no water discharges from any suitable connection between the pre-action valve clack and downstream isolating valve. Record result here: | |
| 14 | Open the air supply isolating valve and recharge system pipework to normal air pressure. If air supply feed into the system is above the downstream isolating valve, slowly and partially open this valve to ensure air pressure is applied to the top of pre-action alarm valve. Record this pressure here: | |
| 15 | Close the pre-action alarm valve downstream isolating valve and record here: | |
| 16 | Initiate/test the fire detection panel to simulate a fire and send a signal to open the solenoid valve on the pre-action alarm valve trim. Verify the pre-action alarm valve has opened by checking for water discharge from any suitable test connection between the pre-action valve clack and downstream isolating valve. Close the test connection and record water pressure here: | |
| 17 | Drain and re-commission pre-action alarm valve set and verify all trim valves, air supply, solenoids, and fire detection system etc., are in normal pre-action set up mode and record here: | |
| Type B Pre-Action Valve Set: | | |
| | Tasks | Result/Comment |
| 18 | Close pre-action alarm valve downstream isolating valve and verify electrical monitoring signal records a fault on monitoring panel: | |
| 19 | Close the air supply isolating valve upstream of the 'Low Air Pressure' pressure switch. Release air very slowly from downstream of the pre-action alarm valve until 'Low Air Pressure' alarm is activated and note pressure: | |
| 20 | Fully release all air from between pre-action alarm valve and downstream isolating valve and verify the pre-action alarm valve has opened by checking water discharges from any suitable test connection between the pre-action valve clack and the downstream isolating valve. Record result here: | |
| 21 | Drain and re-set the pre-action alarm valve to normal mode and record here: | |
| 22 | Open the air supply isolating valve and recharge system pipework to normal air pressure. If air supply feed into the system is above the downstream isolating valve, slowly and partially open this valve to ensure air pressure is applied to the top of pre-action alarm valve. Record this pressure here: | |
| 23 | Close the pre-action alarm valve downstream isolating valve and record here: | |
| 24 | Initiate/test the fire detection panel to simulate a fire and send a signal to open the solenoid valve on the pre-action alarm valve trim. Verify the pre-action alarm valve has opened by checking for water discharge from any suitable test connection between the pre-action valve clack and downstream isolating valve. Close the test connection and record water pressure here: | |

Sprinkler system – Dry, Alternate, and Pre-Action Systems
Yearly Functional Test and Exercise Record

| | | |
|--------------------------|--|------------------------|
| 25 | Drain and re-commission pre-action alarm valve set and verify all trim valves, air supply, solenoids and fire detection system etc., are in normal pre-action set up mode and record here: | |
| Remedial works required: | | Reported by: |
| | | Reported to: |
| | | Date reported: |
| | | Urgency of works: |
| Works carried out by: | | Works completion date: |

Appendix H

Sprinkler system – Dry, Alternate, and Pre-Action Systems Three Yearly Full Trip Test and Exercise Record

| System Owner/User | | Sprinkler Protected Premises | | System Owner/User Contact | |
|---|---|------------------------------|--|---------------------------|----------------|
| | | | | | |
| Service Engineer: | | | | Date of Visit: | |
| Yearly Functional Tests | | | | | |
| Three Yearly Dry Alarm Valve Full Trip Test and Exercise | | | | | |
| | Tasks | | | | Result/Comment |
| 1 | All Dry Alarm Valve trim valves, accelerator, air supply and main isolating valve to be left in normal dry mode setting. Record air pressure in system: | | | | |
| 2 | Open quick acting test valve on remote test facility to release compressed air from system, taking note of time it takes from first opening test valve until water discharges from this test valve – note the time this takes here: | | | | |
| 3 | Close main isolating valve below Dry Alarm Valve, close supply isolating valve on air supply and close inlet valve on the accelerator (if applicable): | | | | |
| 4 | Ensure all water is drained from Dry Alarm Valve installation pipework, including any trapped sections of pipework. Record here: | | | | |
| 5 | Re-set the Dry Alarm Valve and recharge the system pipework with compressed air, re- set the trim valves, accelerator (if applicable) and record the status and air pressure here: | | | | |
| 6 | Slowly open main isolating valve below Dry Alarm Valve and verify Dry Alarm Valve remains closed and trim valves/system is fully set to dry mode: | | | | |
| 7 | Carry out normal weekly 'System Operated' test on Dry Alarm Valve to verify the alarm pressure switch (and alarm gong if fitted) operate correctly and record status of system here: | | | | |
| Three Yearly Alternate Wet/Dry Alarm Valve Full Test and Exercise: | | | | | |
| <u>Alternate Wet/Dry Alarm Valves need changing over from air to water setting each year, so the following full trip test should be conducted in March/April each year and installation pipework remain full of water when completed:</u> | | | | | |
| | Tasks | | | | Result/Comment |
| 8 | All Alternate Wet/Dry Alarm Valve trim valves, accelerator, air supply and main isolating valve to be left in dry mode setting, (record in comments): | | | | |
| 9 | Note the air pressure in the installation: | | | | |
| 10 | Open quick acting test valve on the remote test facility to release compressed air from the system, taking note of the time it takes from first opening test valve until water discharges from this test valve – note the time this takes here: | | | | |
| 11 | Close quick acting test valve on the remote test facility. | | | | |
| 12 | Re-set trim valves on Alternate Wet/Dry Alarm valve to summer or Wet mode and close isolating valve to accelerator. Hydraulic gong should silence: | | | | |
| 13 | Carry out normal weekly bell test with Alternate Wet/Dry Alarm Valve set to Wet mode to ensure all trim controls operate correctly: | | | | |

**Sprinkler system – Dry, Alternate, and Pre-Action Systems
Three Yearly Full Trip Test and Exercise Record**

Three Yearly Pre-Action Valve Set Full Trip Tests and Exercises

Type A Pre-Action Valve Set:

| | Tasks | Result/Comment |
|----|--|-----------------------|
| 14 | Close the air supply isolating valve upstream of the 'Low Air Pressure' pressure switch. Release air very slowly from downstream of the pre-action alarm valve until 'Low Air Pressure' alarm is activated and note pressure: | |
| 15 | Fully release all the air from the pre-action installation pipework and verify the pre-action alarm valve remains closed by checking no water discharges from any suitable connection point or drain valve downstream of the pre-action valve. Record result here: | |
| 16 | Open the air supply isolating valve and recharge installation pipework downstream of the pre-action alarm valve to normal air pressure. Record this pressure here: | |
| 17 | Initiate/test the fire detection panel to simulate a fire and send a signal to open the solenoid valve on the pre-action alarm valve trim. Verify the pre-action alarm valve has opened by checking the pressure above the pre-action alarm valve is the same as below the pre-action alarm valve and that water discharges from any suitable test connection or drain valve on the installation pipework. Close the test connection and record water pressure here: | |
| 18 | Drain and re-commission pre-action alarm valve set and verify all trim valves, air supply, solenoids and fire detection system etc., are in normal pre-action set up mode and record here: | |

Type B Pre-Action Valve Set:

| | Tasks | Result/Comment |
|----|--|-----------------------|
| 19 | Close the air supply isolating valve upstream of the 'Low Air Pressure' pressure switch. Release air very slowly from downstream of the pre-action alarm valve until 'Low Air Pressure' alarm is activated and note pressure: | |
| 20 | Open air supply isolating valve, recharge system pipework + record pressure: | |
| 21 | Open quick acting test valve on remote test facility to release compressed air from system, taking note of time it takes from first opening test valve until water discharges from this test valve - note the time this takes here: | |
| 22 | Drain and re-set the pre-action alarm valve to normal mode and record here: | |
| 23 | Open air supply isolating valve and recharge system pipework to normal air pressure and re-set all trim valves to normal mode. Record recharged air pressure here: | |
| 24 | Initiate/test the fire detection panel to simulate a fire and send a signal to open the solenoid valve on the pre-action alarm valve trim. Verify the pre-action alarm valve has opened by checking the pressure above the pre-action alarm valve is the same as below the pre-action alarm valve and that water discharges from any suitable test connection or drain valve on the installation pipework. Close the test connection and record water pressure here: | |
| 25 | Drain and re-commission pre-action alarm valve set and verify all trim valves, air supply, solenoids and fire detection system etc., are in normal pre-action set up mode and record status here: | |

Remedial works required:

Reported by:

Reported to:

Date reported:

Urgency of works:

Works carried out by:

Works completion date:

Appendix I

Sprinkler system – Water Supplies – Half Yearly Service Routines Report and Back-up Power Supplies Checks and Tests Report

| System Owner/User | | Sprinkler Protected Premises | | | | System Owner/User Contact | |
|--|----------------|------------------------------|---------------|------------------------------|---------------|---------------------------|--|
| | | | | | | | |
| Water Supplies Type/ Summary: | | | | | Engineer: | | |
| | | | | | Date: | | |
| Towns Main Water Supplies | | | | | | | |
| | Y/N | Dia of supply main | | Fed from both ends | | Fed from two networks | |
| Single Water Supply(Clause 9.6.1): | | | | | | | |
| Superior Single Water Supplies(Clause 9.6.2): | | | | | | | |
| Duplicate Water Supplies(Clause 9.6.3): | | | | | | | |
| Period of Peak Demand on the towns main network: | | | | Period/date test undertaken: | | | |
| Flow/Pressure test at control valve set(s) | Flow | Pressure | Flow | Pressure | Flow | Pressure | |
| Flow and Pressure Required: | | | | | | | |
| 1)Flow and Pressure Available/test results: | | | | | | | |
| 2)Flow and Pressure Available/test results: | | | | | | | |
| 3)Flow and Pressure Available/test results: | | | | | | | |
| For 'Single Water Supply' only one flow/pressure test required. For 'Superior Single Water Supply', 3 tests required to establish flow/pressure performance from both ends and then combined. For 'Duplicate Water Supply', 3 tests required to establish flow/pressure performance from each network and then combined. | | | | | | | |
| Sprinkler Fire Pumps | | | | | | | |
| Package Details and Settings | Pump No 1 | | Pump No 2 | | Pump No 3 | | |
| Driver Type: | Electric Motor | | Diesel Engine | | | | |
| Driver Manufacturer/Model No: | | | | | | | |
| Driver Serial No: | | | | | | | |
| Pump Manufacturer/Model No: | | | | | | | |
| Pump Serial No: | | | | | | | |
| Pump Name Plate Duty Point - (dm ³ /min - bars): | | | | | | | |
| Pump 'Cut In' Pressure (Switch No 1) - bars: | | | | | | | |
| Pump 'Cut In' Pressure (Switch No 2) - bars: | | | | | | | |
| Pump 'Closed Valve'/'Churn' Pressure - bars: | | | | | | | |
| Note: All pumps shall be set to start automatically at no less than 80% of close valve/churn pressure | | | | | | | |
| If two or more fire pumps are electric motor driven ensure back-up standby generator power supplies are tested to provide power to fire pumps(plus all other critical electrical equipment) in the event of mains power failure. | | | | | Test Results: | | |

**Sprinkler system – Water Supplies – Half Yearly Service Routines Report
and Back-up Power Supplies Checks and Tests Report**

| Pump No 1 | Flow | Delivery Pressure | Suction Pressure | Net Pressure | RPM | Amps | Oil Pressure | Engine Temp |
|-------------------------------|------|-------------------|------------------|--------------|-----|------|--------------|-------------|
| Closed Valve: | | | | | | | | |
| Flow No 1 | | | | | | | | |
| Flow No 2: | | | | | | | | |
| Flow No 3: | | | | | | | | |
| Rated Duty Flow: | | | | | | | | |
| Rated Flow x 110%, or Qmax | | | | | | | | |
| Pump No 2 | Flow | Delivery Pressure | Suction Pressure | Net Pressure | RPM | Amps | Oil Pressure | Engine Temp |
| Closed Valve: | | | | | | | | |
| Flow No 1 | | | | | | | | |
| Flow No 2: | | | | | | | | |
| Flow No 3: | | | | | | | | |
| Rated Duty Flow: | | | | | | | | |
| Rated Flow x 110%, or Qmax | | | | | | | | |
| Pump No 3 | Flow | Delivery Pressure | Suction Pressure | Net Pressure | RPM | Amps | Oil Pressure | Engine Temp |
| Closed Valve: | | | | | | | | |
| Flow No 1 | | | | | | | | |
| Flow No 2: | | | | | | | | |
| Flow No 3: | | | | | | | | |
| Rated Duty Flow: | | | | | | | | |
| Rated Flow x 110%, or Qmax | | | | | | | | |

Note: **If no suction compound gauge fitted**, allowance needs to be made for pump suction pressure based on pressure generated by head of water in water storage tank above centre line of pump. **The actual net pressure generated by the pump at each flow rate is the pump delivery pressure less the pump suction pressure.**

If the net pressure generated by pump(s) at the duty flow rate is more than 0.25bars below the duty pressure check the following:

| | |
|--|--|
| No compound gauge fitted to pump suction: | Fit compound gauge to pump suction and repeat flow/pressure test. |
| Compound gauge reading is lower than expected: | Replace compound gauge and repeat flow/pressure test. Check pump suction isolating valve is fully open Check for debris partially blocking suction pipe/vortex inhibitor. |
| Pump delivery gauge reading lower pressure: | Replace delivery pressure gauge and repeat flow/pressure test. Clean out ports and glass calibration tube of flow meter and re-test. Check and verify RPM of pump(s). Review report from last Half Yearly pump driver service for issued found. |

If none of the above simple checks result in the duty flow/pressure performance being achieved, the pump impellor may be warn and a pump service specialist may be needed to verify pump performance/identify the problem.

| | |
|-------------------------------|------------------------------------|
| Total pump run time recorded: | Diesel Fuel Tank Fill Level Check: |
|-------------------------------|------------------------------------|

**Sprinkler system – Water Supplies – Half Yearly Service Routines Report
and Back-up Power Supplies Checks and Tests Report**

| | | | |
|--|--|---|--|
| Battery charging rate check: | | Diesel Engine Oil Level Check: | |
| Pump cooling flow rate check: | | Diesel Pump Manual Start Test checked: | |
| Pump gland cooling flow check: | | Diesel Engine Six Attempt Start Function and Alarm Check: | |
| Electric pump run – 5 minutes | | Diesel Pump Run – 30 minutes: | |
| If pump controller includes Pump Data Logging facility, has the accuracy of Pressure Transducer Readings been verified – as specified in Clause TB203.3.3.6 – and any remedial works identified been undertaken: | | | |
| Are accessible sections of diesel exhaust pipe and manifold guarded/insulated to protect operator from burns risk: | | | |
| If motorised louvre provides pump room ventilation did louvre open when diesel pump started/close when stopped: | | | |

Jockey Pump

| Package Details and Settings | Jockey Pump |
|---|-------------|
| Manufacturer/Model No: | |
| Pump Serial No: | |
| Pump Name Plate Duty Point – (dm ³ /min – bars): | |
| Pump 'Cut In' Pressure – bars: | |
| Pump 'Cut Out' Pressure – bars: | |
| Pump 'Closed Valve'/'Churn' Pressure – bars: | |

Pump Remote Alarm Panel

| | | Check the following signals are received/monitored: |
|---|--|---|
| | | Electric Pump Power – all phases healthy |
| Location of Remote Alarm Panel: | | Electric pump on demand |
| Is the location permanently manned: | | Electric Pump Running |
| Check power supply to RAP is on: | | Diesel pump on demand |
| Check all lamps function using test button: | | Diesel pump running |
| Check audible signal for pump running and faults: | | Trouble at Engine Controller |
| | | Fire in Pump House (if applicable) |

| | | |
|--------------------------|-------------------|------------------------|
| Remedial Works Required: | Reported by: | |
| | Reported to: | |
| | Date reported: | |
| | Urgency of works: | |
| Works carried out by: | | Works completion date: |

Appendix J

Sprinkler System – Specialist Pump Service Tasks Report (Half Yearly, Yearly, and Biennially)

| System Owner/User | | Sprinkler Protected Premises | | | System Owner/User Contact |
|---|---|------------------------------|-------------------|---------------------|---------------------------|
| Pump Service Company: | | Engineer: | | | |
| | | Date: | | | |
| Specify service undertaken ('Interim', 'Annual' or 'Biennial') at this visit: | | | | | |
| Item | Service Task | Interval | | | Task Undertaken/Comments |
| | | 6 Month 'Interim' | 12 Month 'Annual' | 24 Month 'Biennial' | |
| Installation | | | | | |
| 1 | Confirm and record equipment details including pump set serial numbers, equipment types and full name plated pump duty details. | Y | Y | Y | |
| 2 | Visually check base plate plinth fixing bolts/packer and re- torque bolts. | Y | Y | Y | |
| 3 | Visually check condition of all equipment guards and ensure correctly secured in place. | Y | Y | Y | |
| 4 | Visually check condition of installation wiring and confirm no discernible defects are present. | Y | Y | Y | |
| 5 | Visually check control panel/starter enclosure and confirm no discernible defects are present. | Y | Y | Y | |
| 6 | Check and record incoming mains supply voltage for electric motor control panel (ie by 'phase healthy' indication and satisfactory pump performance). | Y | Y | Y | |
| Pump | | | | | |
| 7 | Carry out pump set alignment check, record results. | Y | Y | Y | |
| 8 | Visually check and report on condition of pump gland/ mechanical seal whilst stationary. | Y | Y | Y | |
| 9 | Check condition of pump gland packing. As necessary (from inspection findings, engineers report or OEM requirements) replace the pump gland packing. | | Y | Y | |
| 10 | Visually check pump gland leakage rate at duty condition and adjust. | Y | Y | Y | |
| 11 | Visually check and if required top up pump bearing oil level. | Y | Y | Y | |

Sprinkler System - Specialist Pump Service Tasks Report
(Half Yearly, Yearly, and Biennially)

| | | | | | |
|----|---|---|---|---|--|
| 12 | Confirm if pump and motor bearing grease nipples fitted and re-grease. | Y | Y | Y | |
| 13 | Check and clean (by dismantling) the pump differential bypass line assembly. | Y | Y | Y | |
| | Motor | | | | |
| 14 | Confirm and record motor manufacturer's name plate. Details | Y | Y | Y | |
| 15 | Confirm if pump and motor bearing grease nipples fitted and re-grease. | Y | Y | Y | |
| | Engine | | | | |
| 16 | Confirm and record engine manufacturer's name plate. Details | Y | Y | Y | |
| 17 | Check and record hours run for diesel engine driven pump, before and after test. | Y | Y | Y | |
| 18 | Check and clean (by dismantling) diesel engine differential bypass valve cooling line assembly. | Y | Y | Y | |
| 19 | Check, record levels and if necessary top up diesel engine battery electrolyte levels. | Y | Y | Y | |
| 20 | <p>Check condition of diesel fuel. Examples:</p> <p>a) Confirm with the user that a fuel of a specification suitable for use with the engine is used (see engine requirements, typically diesel fuel conforming to British Standard BS 2869).</p> <p>b) Confirm suitable fuel storage and filling arrangements (eg. good storage practice observed, protected from moisture or particulate ingress is provided).</p> <p>If not in accordance with the engine manufacturers' requirements advice accordingly. Provide data sheets for correct fuel to be used. Record advice given on a service sheet.</p> | Y | Y | Y | |
| 21 | Visually check and if required top-up the diesel engine oil. | Y | Y | Y | |
| 22 | Replace diesel engine oil and filter. | | Y | Y | |
| 23 | Visually check and if required top up the diesel engine coolant mixture. | Y | Y | Y | |

Sprinkler System - Specialist Pump Service Tasks Report
(Half Yearly, Yearly, and Biennially)

| | | | | | |
|------------------------|--|---|---|---|--|
| 24 | Replace diesel engine hoses and engine coolant mixture (as engine manufacturers' requirements). | | | Y | |
| 25 | Visually check and report on condition of diesel engine heat exchanger sacrificial anodes (if equipment design permits). Record suitable note on service report if not possible. | | Y | Y | |
| 26 | Replace diesel engine thermostat if engine running temperature indicates this is required. | | | Y | |
| 27 | Visually check, clean and report on condition of diesel engine air filter. | Y | Y | Y | |
| 28 | Replace diesel engine air filter. | | | Y | |
| 29 | Visually check and adjust the drive belt tension. | Y | Y | Y | |
| 30 | Replace diesel engine drive belts as required by engine manufacturer. | | | Y | |
| 31 | Visually check and report on condition of diesel engine fuel lines and fuel filter. | Y | Y | Y | |
| 32 | Replace diesel engine fuel filter. | | Y | Y | |
| 33 | Check and clean diesel engine crank case vent system. | | Y | Y | |
| 34 | Visually check and report on condition of engine mounting isolators. | Y | Y | Y | |
| 35 | Where fitted, visually check and if required lubricate diesel engine drive shaft. | Y | Y | Y | |
| 36 | Check engine water pump and seals (check operating temperatures, inspect pump and hoses, remove belt and check for play). Replace water pump if considered necessary. | | | Y | |
| Jockey Pump Set | | | | | |
| 37 | Confirm and record pump manufacturers' name plate details. | Y | Y | Y | |
| 38 | Carry out pump set alignment check, record results and confirm if within tolerance (If applicable to pump configuration). | Y | Y | Y | |
| 39 | Visually check and report on condition of pump gland/mechanical seal whilst stationary. | Y | Y | Y | |
| 40 | Confirm if motor bearing grease nipples fitted and re-grease. | Y | Y | Y | |

Sprinkler System - Specialist Pump Service Tasks Report
(Half Yearly, Yearly, and Biennially)

| | | | | | |
|---------------------------|--|---|---|---|--|
| 41 | Check functionality of pump casing air vent. | Y | Y | Y | |
| 42 | Visually check and record pump-set start and stop pressure (check with client prior to adjusting in case the settings are purposely different to requirements). | Y | Y | Y | |
| 43 | Check and confirm correct functionality and operation of starter. | Y | Y | Y | |
| Remote Alarm Panel | | | | | |
| 44 | Confirm whether dedicated Remote Alarm Panel (RAP) installed and its location. | Y | Y | Y | |
| 45 | Where possible check and confirm functionality of Remote Alarm Panel with assistance from the client's representative. | Y | Y | Y | |
| Fire Pump Testing | | | | | |
| 46 | Record pump set start/cut in pressure. | Y | Y | Y | |
| 47 | Conduct pump set performance test including: | | | | |
| 48 | <ul style="list-style-type: none"> Pump test to be conducted under load, minimum running time of 15mins for electric and 30mins for diesel. | Y | Y | Y | |
| 49 | <ul style="list-style-type: none"> Record results at closed valve and at least five additional flow rates, between closed valve and name plate flow rate. | Y | Y | Y | |
| 50 | <ul style="list-style-type: none"> Record pump suction pressure and discharge pressure, indicating the location of the pressure gauges. | Y | Y | Y | |
| 51 | <ul style="list-style-type: none"> Check and confirm pump shaft speed and engine rev counter speed at each flow rate. | Y | Y | Y | |
| 52 | <ul style="list-style-type: none"> Check and confirm motor current at each flow rate using calibrated clamp meter or similar. | Y | Y | Y | |
| 53 | <ul style="list-style-type: none"> Check and record engine oil pressure, engine water temperature and exhaust gas colour at nameplate flow rate. | Y | Y | Y | |
| 54 | Check and confirm correct functionality and operation of starter/control panel. | Y | Y | Y | |

Sprinkler System - Specialist Pump Service Tasks Report
(Half Yearly, Yearly, and Biennially)

| | | | | | |
|--|---|---|---|---|--|
| 55 | Complete 6 attempt cranking sequence cycle and confirm correct operation (NB. whilst the TB 203/ BS EN 12845 requires this test every 12 months, carrying this test out every six months is beneficial to verify that all batteries are of adequate condition to start the pump in an emergency). | | Y | Y | |
| 56 | Check and confirm if pump house ventilation is adequate and functions correctly. | Y | Y | Y | |
| 57 | Visually check and confirm diesel engine exhaust system is installed correctly and functioning properly. | Y | Y | Y | |
| 58 | Complete a visual assessment of the pump set during performance test, record any issues requiring further attention. | Y | Y | Y | |
| Pump Data Logging | | | | | |
| 59 | Check previous Pump Data Log-events records to confirm the weekly testing has been undertaken and any unexpected events have been registered and recorded. | Y | Y | Y | |
| 60 | Download a copy of the pressure maintenance records. | Y | Y | Y | |
| 61 | The Pump Data Log-event records shall be downloaded, extracted and a copy issued to the client with the service and maintenance service report suitably identified and filed with all other Maintenance records/ reports. | Y | Y | Y | |
| Any other manufacturers' requirements | | | | | |

Different manufacturers may require service task which vary from those listed above. Additional tasks should be recored below and carried out:

| | | | | | |
|----|--|--|--|--|--|
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Sprinkler System - Specialist Pump Service Tasks Report
 (Half Yearly, Yearly, and Biennially)

| | | | | | |
|--------------------------|--|--|--|------------------------|--|
| Remedial Works Required: | | | | Reported by: | |
| | | | | Reported to: | |
| | | | | Date reported: | |
| | | | | Urgency of works: | |
| Works carried out by: | | | | Works completion date: | |

Appendix K

Sprinkler system – Water Storage Tank/Water Source Yearly Routines Report

| System Owner/User | Sprinkler Protected Premises | | System Owner/User Contact |
|--|------------------------------|-----------------|---------------------------|
| | | | |
| Service engineer: | | Date of visit: | |
| Equilibrium Ball Float Valve(s) | | | |
| Tasks Required | | Action/Comments | |
| Clean body of ball valve(s): | | | |
| Lubricate all moving parts: | | | |
| Remove cover, clean seats/remove debris: | | | |
| Replace seals (as necessary): | | | |
| Check arm setting and float condition: | | | |
| Exercise valve to check open/shut off: | | | |
| Further remedial works identified: | | | |
| Water Storage Tank(s) | | | |
| Tasks Required | | Action/Comments | |
| Check tank identification plate attached to tank: | | | |
| Bottom section of access ladder removed/stored: | | | |
| Contents Gauge reading correctly: | | | |
| Physically check actual water level in tank: | | | |
| Clean, lubricate and exercise drain valve: | | | |
| Clean, lubricate, exercise and secure infill valve: | | | |
| Ball valve housing closed and secured: | | | |
| Flow test return pipe bracketed and drained: | | | |
| Check immersion heater function: | | | |
| Check condition of lagging to external pipes: | | | |
| Check trace heating to external pipes functions: | | | |
| Check condition of tank roof and supports: | | | |
| Check condition of tank access ladder and fixings: | | | |
| Check condition of tank shell: | | | |
| Check condition/function of level alarm switches: | | | |
| Check infill flow rate on reduced capacity tanks: | | | |
| Flow meter removed and stored during winter: | | | |
| Record due date for full internal inspection: | | | |
| Two-Yearly Routine (TB203.3.5.2) | | | |
| Tasks Required | | Action/Comments | |
| Has a 2-Yearly Inspection been carried out on tank in accordance with TB203.3.5.2 : | | | |
| Date tank was inspected: | | | |
| Has a fully detailed written report of this inspection been produced / issued to client: | | | |

Sprinkler system – Water Storage Tank/Water Source Yearly Routines Report

| | |
|---|------------------------|
| Was an ROV used to carry out this inspection: | |
| Was the tank fully drained to complete inspection: | |
| Were remedial works required: | |
| Have remedial works been completed: | |
| Scheduled date for next tank inspection: | |
| Ten-Yearly Routine (TB203.3.8) | |
| Tasks Required | Action/Comments |
| Has a 10-Yearly Inspection been carried out on tank in accordance with TB203.3.8: | |
| Date tank was inspected: | |
| Has a fully detailed written report of this inspection been produced / issued to client: | |
| Was the tank fully drained to complete inspection: | |
| Were remedial works required: | |
| Have remedial works been completed: | |
| Scheduled date for next tank inspection: | |
| Natural Water Source (Rivers, Reservoirs or other Inexhaustible sources) | |
| Tasks Required | Action/Comments |
| Pump suction strainers and settling chamber and their screens to be inspected, removed where possible and cleaned as necessary: | |
| Foot valves to be checked and if necessary removed, cleaned and serviced if required but at no more than every three years maximum: | |
| Remedial Works Required: | Reported by: |
| | Reported to: |
| | Date reported: |
| | Urgency of works: |
| Works carried out by: | Works completion date: |

Appendix L

| Sprinkler system – Sprinkler Installation – General Yearly Inspection Record | | | |
|---|------------------------------|------------------------|---------------------------|
| System Owner/User | Sprinkler Protected Premises | | System Owner/User Contact |
| | | | |
| Service engineer: | | Date of visit: | |
| Parts Inspected | | Observations/Comments | |
| All sprinkler heads and multiple controls checked for any paint contamination or impact damage/distortion: | | | |
| All areas throughout the sprinkler protected building are adequately heated to protect against freezing: | | | |
| All sprinkler head spacing checked and verified as conforming to the design criteria in the standard: | | | |
| Is there sufficient clearance below sprinkler heads (500mm clearance for LH and OH, 1000mm clearance for HHP and HHS): | | | |
| All areas of pipework checked for paint finish, corrosion, impact damage, vulnerable to future mechanical damage: | | | |
| All pipe supports checked for spacing, adequately fixed to structure, evidence of corrosion or impact damage: | | | |
| Check spare sprinkler head stocks kept on site to ensure there are: 6 Spare sprinklers + spanner for Light Hazard systems 24 spare sprinklers + spanner for Ordinary Hazard systems 36 spare sprinklers + spanner for HHP and HHS systems (The spare sprinkler heads need to include a suitable proportion of each different type of sprinkler on the system) | | | |
| Check the electrical installation, including pressure switches, control panel and auto-dialers forming part of the system transmitting the 'System Operated' alarm off site to the Fire and Rescue Service/Remote Central Monitoring Station (if applicable). | | | |
| Verify the date the alarm control valve was last overhauled and record the due date here for the next scheduled overhaul. | | | |
| Check the date when the sprinkler system was first commissioned and record here the due dates for: a) 'Two-Year' water tank maintenance inspection date b) Five year sample test date for dry pendent drop heads c) 'Ten Year' water tank maintenance inspection date d) 25 Year flushing, pipe and sprinkler sample test date | | | |
| Remedial works: | | Reported by: | |
| | | Reported to: | |
| | | Date reported: | |
| | | Urgency of works: | |
| Works carried out by: | | Works completion date: | |

Appendix M

| Sprinkler system – Service Scope Matrix | | | | | | | | | | | |
|--|---|---------|--------|-----------|-------------|--------|---------------------------|----------|----------|-----------|-----------|
| System Owner/User | Sprinkler Protected Premises | | | | | | System Owner/User Contact | | | | |
| Key to Table Below: | | | | | | | | | | | |
| - Indicates scope of checks, tests, and service and maintenance routines required by TB203/TB237 | | | | | | | | | | | |
| User | - Indicates checks and tests to be undertaken by the sprinkler system owner/user | | | | | | | | | | |
| Yes, No or N/A | - Indicates service and maintenance routines to be undertaken by the specialist service contractor ('No' - requires written explanation on technical grounds only, not financial or commercial reasons) ('N/A' - only applies if the feature/equipment is not part of the system) | | | | | | | | | | |
| Task/Routine to be undertaken | Weekly | Monthly | Yearly | Quarterly | Half Yearly | Yearly | 2 yearly | 3 yearly | 5 yearly | 10 yearly | 25 yearly |
| The following routines to be carried out either by system user or a specialist sprinkler service and maintenance contractor - (where applicable) | | | | | | | | | | | |
| Check pressure gauge readings | User | | | | | | | | | | |
| Check water levels | User | | | | | | | | | | |
| Check position of all stop valves | User | | | | | | | | | | |
| Carry out water motor alarm test | User | | | | | | | | | | |
| Carry out automatic pump starting test | User | | | | | | | | | | |
| Carry out diesel engine pump re-starting test | User | | | | | | | | | | |
| Check function of all trace heating and ambient heating | User | | | | | | | | | | |
| Check function of fire signal to Fire and Rescue Service | User | | | | | | | | | | |
| Check electrolyte levels in diesel pump lead acid batteries | | User | | | | | | | | | |
| Check water storage tank security | | User | | | | | | | | | |
| Check actual water level in water storage tank and contents gauge readings | | User | | | | | | | | | |
| Arrange Third Party Annual Sprinkler Inspection | | | User | | | | | | | | |
| The following routines to be carried out by a specialist sprinkler service and maintenance contractor (where applicable) | | | | | | | | | | | |
| Repeat and verify all system user's weekly & monthly checks / tests | | | | | | | | | | | |
| Carry out a 'Review of hazard' / arrange a formal desktop assessment | | | | | | | | | | | |

Sprinkler system – Service Scope Matrix

| Task/Routine to be undertaken | Weekly | Monthly | Yearly | Quarterly | Half Yearly | Yearly | 2 yearly | 3 yearly | 5 yearly | 10 yearly | 25 yearly |
|--|--------|---------|--------|-----------|-------------|--------|----------|----------|----------|-----------|-----------|
| Test flow alarms are initiated and transmitted correctly | | | | | | | | | | | |
| Manually test function of float valve in water storage tank and clean off any debris | | | | | | | | | | | |
| Check water storage tank for signs of leakage and visually check for corrosion etc | | | | | | | | | | | |
| Exercise all moving parts of all Alarm Valves, Pre-Action valves etc., | | | | | | | | | | | |
| Exercise all moving parts of accelerators and exhausters | | | | | | | | | | | |
| 'Interim' pump / associated equipment serviced in accordance with Table TB203.T2 | | | | | | | | | | | |
| Carry out flow and pressure test on sprinkler water supplies | | | | | | | | | | | |
| Test low water level switches on suction lift header tanks | | | | | | | | | | | |
| Exercise all stop + zone valves + monitoring controlling flow to sprinklers | | | | | | | | | | | |
| If Pump Data Logging Facility on pumps, check calibration of pressure transducer | | | | | | | | | | | |
| Full functional test of back-up / secondary electrical power supply | | | | | | | | | | | |
| 'Annual' & 'Biennial' pumps + equipment serviced in accordance with Table TB203.T2 | | | | | | | | | | | |
| Check and verify diesel engine driven pump - 'Failed-to-start' test / alarm | | | | | | | | | | | |
| Exercise and service float valve in water storage tanks | | | | | | | | | | | |
| Carry out a 'Review of Hazard' based on system / premises inspection | | | | | | | | | | | |
| Sprinkler heads, MJC's & Sprayers checked, cleaned or replaced as needed | | | | | | | | | | | |

Sprinkler system – Service Scope Matrix

| Task/Routine to be undertaken | Weekly | Monthly | Yearly | Quarterly | Half Yearly | Yearly | 2 yearly | 3 yearly | 5 yearly | 10 yearly | 25 yearly |
|---|--------|---------|--------|-----------|-------------|--------|----------|----------|----------|-----------|-----------|
| Pipework + hangers checked for integrity / condition and changed if needed | | | | | | ■ | | | | | |
| Replacement parts held as spares on site to be checked / replenished. | | | | | | ■ | | | | | |
| Check electrical installation for Fire & Rescue Service off site alarm system | | | | | | ■ | | | | | |
| Water supply stop, alarm, NRV's examined, replaced or overhauled. | | | | | | ■ | | | | | |
| Pump suction chamber + screens taken out and inspected as necessary | | | | | | ■ | | | | | |
| Performance test Dry, Alternate & Pre-Action Valves without filling system | | | | | | ■ | | | | | |
| 'Two-Year' tank inspection & report + remedial works if needed | | | | | | | ■ | | | | |
| Pump suction settling chambers/screens/strainers to be inspected & cleaned | | | | | | | | ■ | | | |
| Pump suction foot valves serviced | | | | | | | | ■ | | | |
| Performance trip test Dry, Alternate & Pre-Action Valves, filling system p/work | | | | | | | | ■ | | | |
| Dry Pendent Pattern sprinkler heads to be removed and sample tested | | | | | | | | | ■ | | |
| Sprinkler heads with approval condition which requires, to be sample tested | | | | | | | | | ■ | | |
| Flush U/G sprinkler pipework drawing water from reservoir / water course (TB237) | | | | | | | | | ■ | | |
| 'Ten-Year' tanks to be drained, cleaned, inspected + refurbished if needed | | | | | | | | | | ■ | |
| Flush U/G sprinkler pipework drawing water from reservoir / water course (TB237) | | | | | | | | | | ■ | |
| Carry out complete flushing of sprinkler installation though remote flushing valves | | | | | | | | | | | ■ |

Sprinkler system – Service Scope Matrix

| Task/Routine to be undertaken | Weekly | Monthly | Yearly | Quarterly | Half Yearly | Yearly | 2 yearly | 3 yearly | 5 yearly | 10 yearly | 25 yearly |
|--|---------------|----------------|---------------|------------------|--------------------|---------------|-----------------|-----------------|-----------------|------------------|------------------|
| Remove samples of each size pipework from installation for inspecting / testing | | | | | | | | | | | |
| Remove samples of sprinkler heads from system for performance testing | | | | | | | | | | | |
| Other fire suppression systems which require routine servicing & maintenance not covered under Technical Bulletin TB203 -(where applicable) – e.g Gas System, hydrants, dry risers, kitchen system, foam system | | | | | | | | | | | |
| | | | | | | | | | | | |
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