

Loss prevention standards

# Sprinkler Systems – Winter Precautions

Taking the right precautions throughout the cold winter months is essential to help reduce the risk of frost damage to your sprinkler system and damage to your premises.



# Sprinkler Systems – Winter Precautions



## Introduction

Water begins to form ice particles when temperatures fall to 4°C or lower. As water freezes it expands, and if this occurs within pipework such as a sprinkler system, the expansion can crack joints and damage sprinkler heads. When the temperatures increase, the ice melts and water escapes through the damaged sections of the system. If this occurs during occupied hours the water leakage may be manageable, but the damage caused will result in the sprinkler system having to be isolated for a period of time, as well as costly repairs to the sprinkler system.

If, however, the thaw occurs during unoccupied hours, the consequences could include severe damage to buildings and contents, an impact on the **organisation's business operations, along with expensive sprinkler pump repairs/replacement**, etc. The following precautions provide guidance on how to control and reduce the risks of frost damage occurring.



## Types of Systems

The precautions you take will depend on which type of installation you have. Wet systems remain charged with water at all times, while alternate systems are charged with air during the winter months.

### Wet Systems

- Prior to the onset of winter, review the heating provision in all areas of the building containing sprinkler pipework. **It's essential that sufficient heating be maintained throughout** the protected property at all times to prevent frost damage
- Pay particular attention to periods when your premises are not in use, such as outside of normal working hours, during weekends and holiday periods. Under normal working conditions machinery can cause the ambient temperature to rise, and this loss of heat when the premises are unoccupied must be allowed for when determining the level of heating required
- Automatic heating controlled by thermostats and frost-stats located in vulnerable areas must be well maintained. Settings of these controls should take into account that temperatures may drop suddenly in severe weather, and the heating will need to operate in good time to prevent frost damage
- Some sprinkler pipework may be protected by trace heating and lagging. Lagging should be examined and kept in good repair, must not obstruct the sprinkler heads, and when installed on external pipework it should be weatherproof. Electric trace heating systems should be circuit tested to ensure they are in good working order
- Close attention should be given to pipes in concealed and/or roof spaces, which may need additional lagging
- If subsidiary stop valves have been installed to control sprinklers in exposed positions, they should be closed and the pipework drained throughout winter
- Wherever possible during the winter period, keep all windows and doors tightly closed to prevent draughts into infrequently visited areas

## Alternate Wet and Dry Systems

- These installations should be changed from the summer water setting to a winter air setting. This must be undertaken by a competent engineer or an approved sprinkler contractor (for example, one approved by **the Loss Prevention Certification Board**) **in accordance with the valve manufacturer's service instructions**
- Once the system has been charged with air, a daily check must be made of the pressure gauges to ensure that any gradual escape of air is made good. If an automatic air supply is available, this should be checked weekly
- If the air supply is taken from any source other than a dedicated supply, the system pressure must be checked daily to ensure the system is not over pressurised
- Even when set for winter operation, the sprinkler control valves and pump houses have sections of **pipework that contain water**. It's essential that the valve chamber be heated to at least 4°C, and in the case of pump rooms containing diesel engines, a minimum temperature of 10°C must be maintained
- Areas that have trapped sections of pipework should be periodically bled (weekly) to ensure that any residual water that might accumulate is removed from the system

## Checklist

A generic Sprinkler Systems Winter Precautions Checklist is presented in Appendix 1 which can be tailored to your own organisation.

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## Additional Information

Relevant Loss Prevention Standards include:

- Sprinkler Systems – How They Operate
- Sprinkler Systems – Review of Hazard
- Sprinkler Systems – Flexible Connections



To find out more, please visit [Aviva Risk Management Solutions](#) or speak to one of our advisors.

Email us at [riskadvice@aviva.com](mailto:riskadvice@aviva.com) or call 0345 366 6666.\*

\*Calls may be recorded and/or monitored for our joint protection.

# Appendix 1: Sprinkler Systems – Winter Precautions Checklist



Location	
Date	
Completed by (name and signature)	

	Sprinkler Systems – Winter Precautions Checklist	Y/N	Comments
1.	Is the heating system operational and set to frost-stat control, to maintain a minimum temperature of 4°C at all times?		
2.	Is there sufficient heating provision in areas usually heated by operating machinery?		
3.	Is any trace heating in working order, in a good state of repair and maintained?		
4.	Are there areas of concealed pipework, such as in attics, above suspended ceilings, etc. that require trace heating and lagging?		
5.	Are all trace heating systems operational and set at the required temperature?		
6.	Is all pipework lagging in good condition (if not repair any damage)?		
7.	Have any areas changed occupancy, such as old boiler rooms/compressor houses, etc. that used to provide background heat but no longer do?		
8.	Are alternate systems changed over to air prior to the onset of winter?		
9.	Are dry and alternate systems checked regularly to ensure they have not tripped and filled with water?  <i>Areas which have trapped sections of pipework should be periodically bled (weekly), to ensure that any residual water which might accumulate is removed from the system.</i>		

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	Sprinkler Systems – Winter Precautions Checklist Contd.	Y/N	Comments
10.	Are the valve chamber(s) and pump house heated to at least 4°C?		
11.	For pump rooms containing diesel engines, is a temperature of at least 10°C maintained?		
12.	Additional comments:		

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