



Fire sprinkler systems for residential and domestic occupancies

This factsheet is a guide for housing developers/sprinkler installers who wish to install domestic and residential sprinkler systems into new or existing properties. It shows the preferred options available for the provision of water for fire fighting purposes.

The information in this factsheet is based on BS9251:2005 - 'Sprinkler systems for residential and domestic occupancies - code of practice'. We strongly recommend that this factsheet be used in conjunction with the BS publication. We also recommend that a qualified and experienced sprinkler contractor should carry out the installation of any system.

Please make sure that you refer to the requirements of BS6700 with special regard to backflow prevention and to BS1710 for guidance on identification and marking of pipework.

Introduction

Fire sprinkler systems for dwelling accommodations are designed to provide additional protection of life and property above that already achieved by the building design and the installation of smoke and/or fire detectors.

It is not possible to cover every factor or circumstance in this factsheet which may affect the installation of a dwelling accommodation sprinkler system. However, we outline eight options available to developers to fit sprinkler systems that are practical and realistic and will be suitable for almost all household and communal developments.

Minimum operating pressures and flows

The following pressures and flows are recommended as minimum standards in BS9251:2005 document.

Pressure

The minimum operating pressure at any sprinkler should not be less than 0.5 bar (5 metres head / 7.2psi).

Flow

A sprinkler system should be capable of flow rates at the sprinklers of not less than:-

a) For household dwellings

- (i) 60 l/min through any single sprinkler
- (ii) 42 l/min through each of two sprinklers operating simultaneously in a single room

b) For communal dwellings

- (i) 60 l/min through any single sprinkler
- (ii) 42 l/min for each sprinkler operating simultaneously up to a maximum of four sprinklers in a single room

There are additional flow rate requirements for systems served directly off water mains. These are detailed in Section 5.2.6 of BS9251:2005.

Preferred option (Figures 1 and 2)

From time to time, South East Water will carry out maintenance work on the water network system. We cannot guarantee to maintain a suitable pressure and flow for sprinkler systems 24 hours a day, 365 days per year. We therefore strongly recommend that a storage tank and booster pump be fitted when installing dwelling accommodation sprinkler systems.

Where a water storage tank is used for both sprinkler and domestic purposes, the stored volume should be at least 110% of that recommended for the sprinkler system.

Where a booster pump is used it should be:

- a) located such that it is unlikely to be affected by fire
- b) located where the temperature will be maintained above freezing
- c) protected electrically by suitable fusing
- d) protected against the effects of fire

Additional requirements are detailed in Section 5.2.8. of BS9251:2005.

Figure 1 - New House With Storage & Boosted Sprinkler Supply

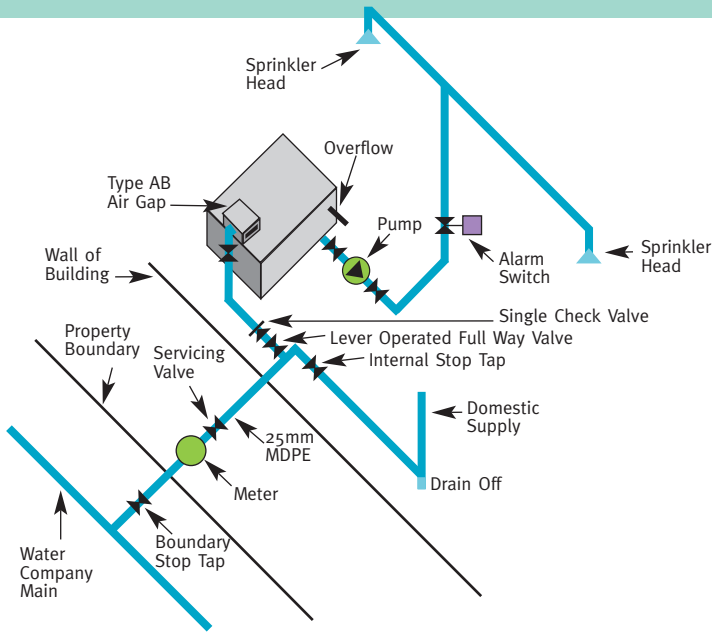
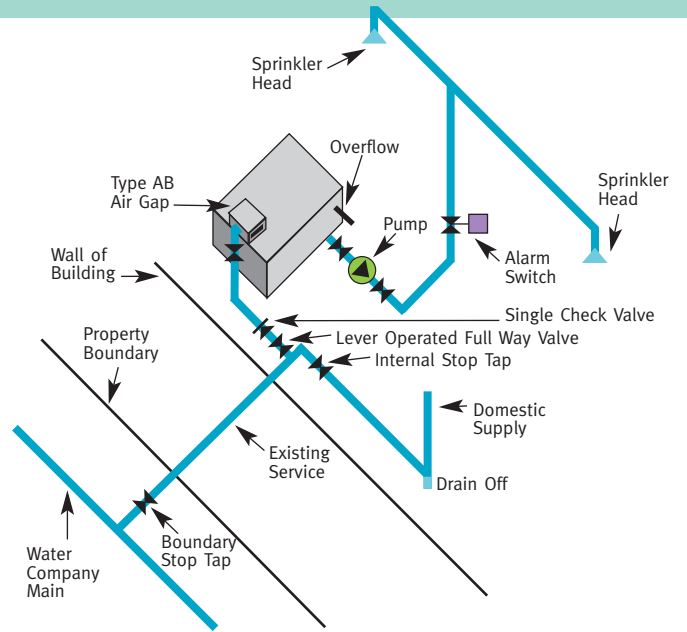


Figure 2 - Existing House With Storage & Boosted Sprinkler Supply From Existing Service Pipe



Direct connection to distribution main

For household and communal dwelling sprinkler systems requiring a supply direct from the water mains network, the pipework layout shown below is acceptable for properties using wall mounted meter boxes, Figure 3.

We recommend that you refer to Section 5.2.6. of BS9251:2005 which gives more information on the required flow rates for direct water supply arrangements.

We also advise that you refer to the requirements of BS6700 with special regard to backflow prevention and to BS1710 for guidance on identification and marking of pipework.

For multi-occupancy premises (Figures 4, 5 and 8) requiring a supply direct from our water mains network, the pipework layout shown is acceptable for properties using boundary water meter boxes. This arrangement is also acceptable for use with wall mounted boxes.

Again, more information on recommended flow rates can be obtained from Section 5.2.6. of BS9251:2005.

For households and communal dwellings sprinkler systems, requiring a supply direct from the water mains network, the pipework layout shown in Figures 6 and 7, is acceptable for properties using boundary water meter boxes.

This arrangement is also acceptable for use with wall mounted boxes.

Figure 3 - Pipework Layout To New House With External Meter

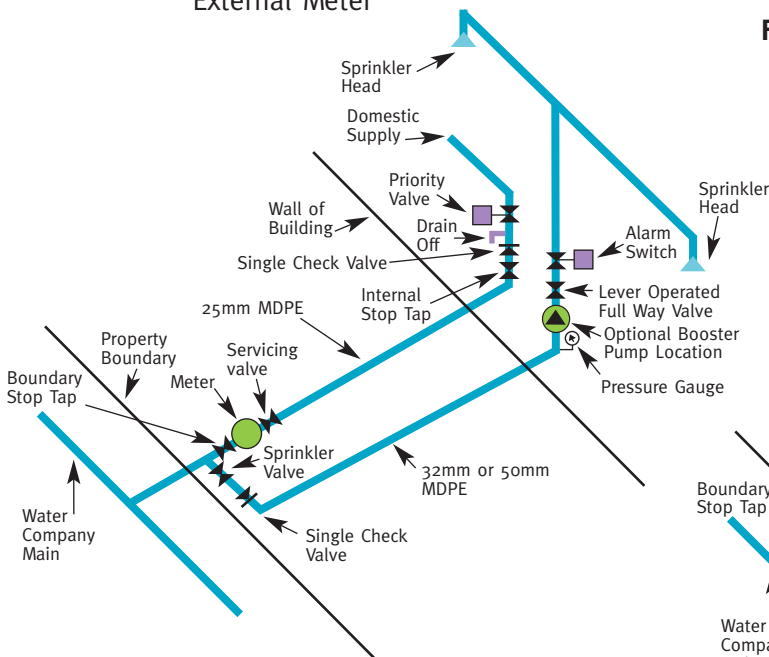


Figure 4 - New Residential Premises With Externally Sited Meter

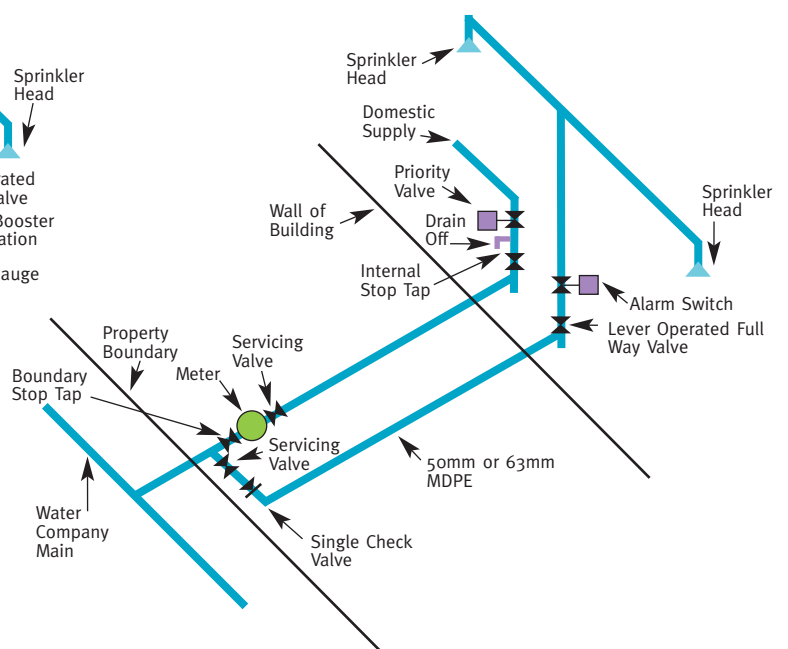


Figure 5 - New Residential Premises With Internal Meter

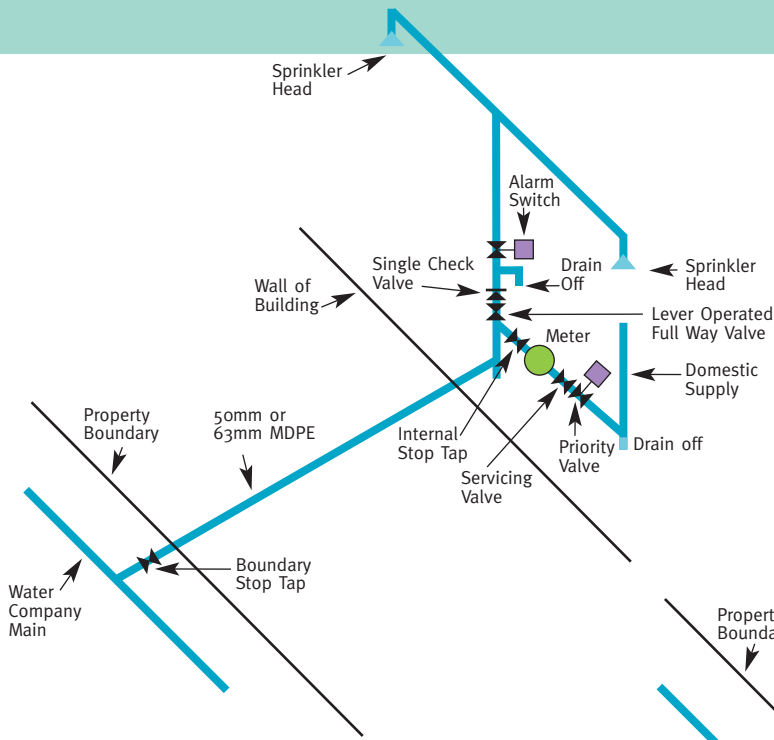


Figure 6 - Pipework Layout To New House With Internal Meter

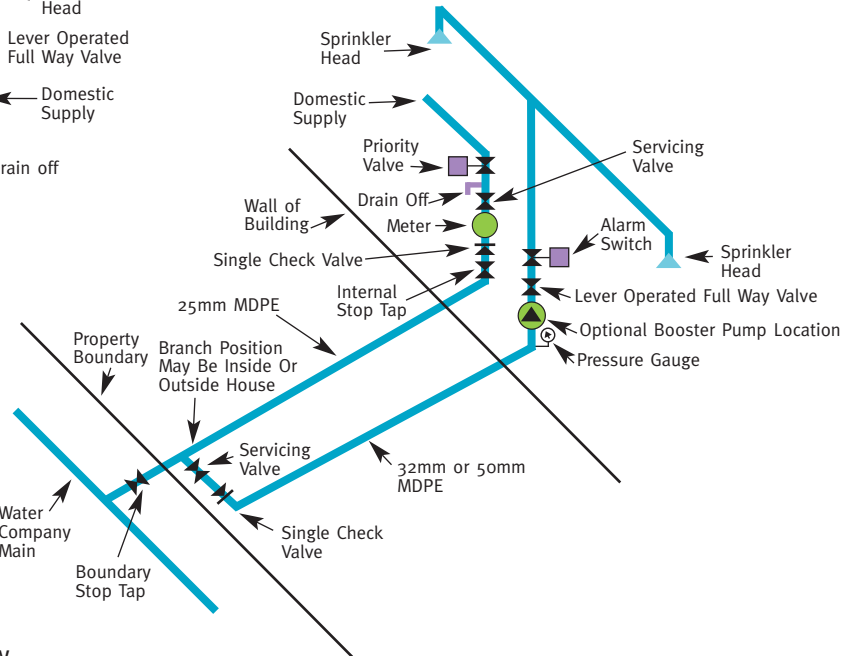


Figure 7 - Existing Domestic Dwelling With New Service Pipe & No Metering Provision

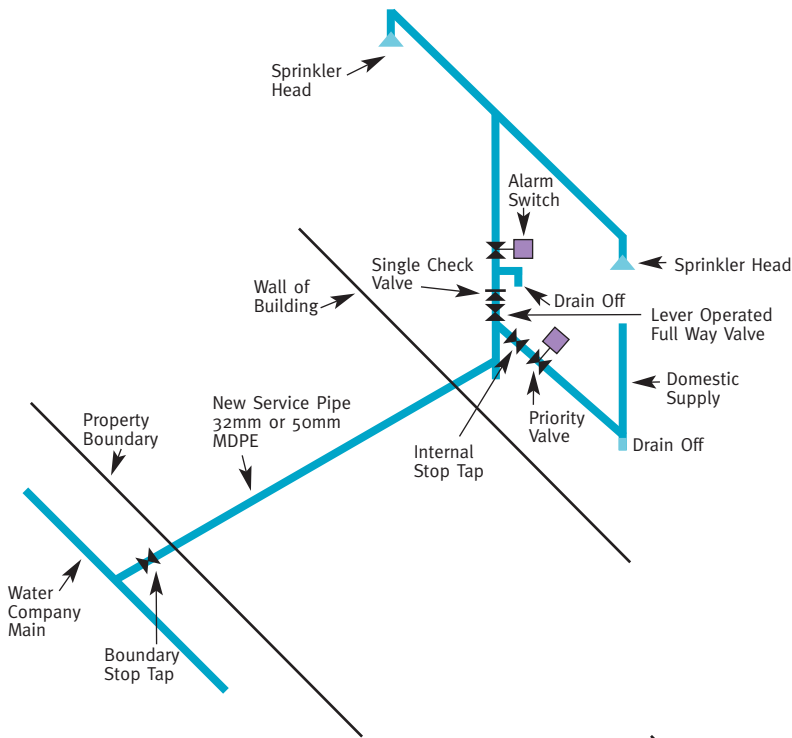
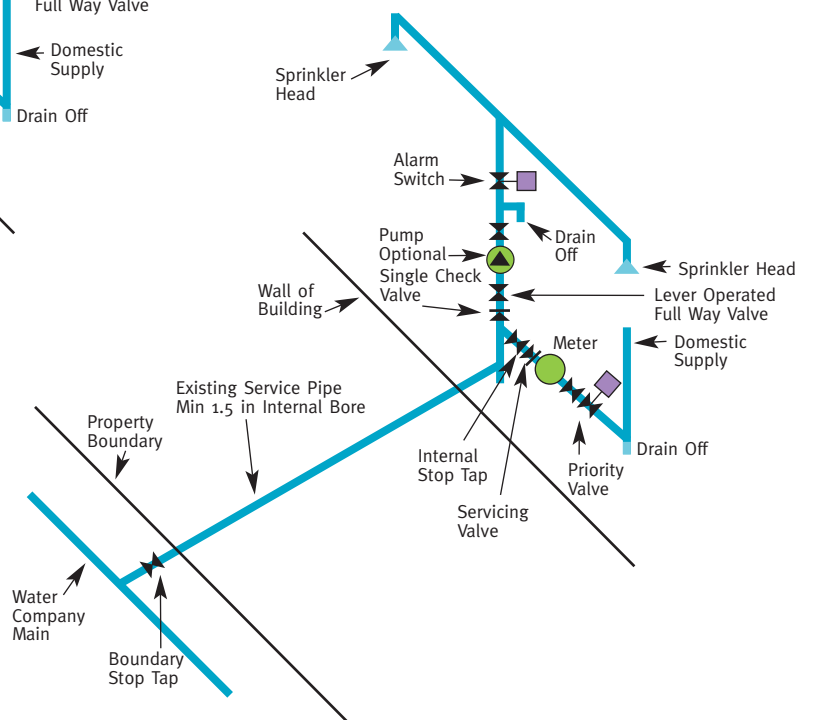


Figure 8 - Existing Residential Premises With Existing Service Pipe Feeding Sprinkler System



Available pressure and flow

We recommend that all household and communal sprinkler systems be fed from a storage tank and booster pump installed in a suitable location on the premises. This is detailed under the 'preferred option' guidelines. This option will ensure a readily available supply of water at adequate pressure and flow rates.

If it is proposed to fit a sprinkler which is supplied directly off the mains, please note, that the pressure in the water mains network varies between areas and throughout the day. Normally it is in the range 2 Bar - 3 Bar, with a minimum of approx. 1.5 Bar.

Developers/Installers must ensure that there is adequate pressure and flow for the proposed installation at each property. The quantity of water required for household and communal sprinklers as recommended in BS9251:2005 will normally be available in the mains network, but standard 25 or 32mm water service pipes may not be capable of delivering the required volumes. Depending on individual requirements and circumstances, larger connections may be desirable.

It is the developer's responsibility to provide the single check valve and chamber. It will normally be sited on private land.

It is the owner/occupier(s) responsibility to maintain the check valve and chamber.

It is the owner/occupier(s) responsibility to ensure the system is maintained annually.

Maintenance agreements are normally available from the sprinkler installation company.

As for all options, attention is drawn to the requirements of BS6700 and BS1710.

Notification

All sprinkler installations in new premises or alterations to sprinkler systems in existing premises, should be notified to the water supplier. This requirement also applies where a pump is to be installed in any installation.

Notification must include:

- the name and address of the person giving notice, and if different, the name and address of the person to whom consent should be given:
- a description of the proposed work:
- the location of the premises to which the proposal relates, and the use or intended use of those premises:
- a plan of those parts of the premises to which the proposal relates:
- a diagram showing the pipework and fitting to be installed; and
- where the work is to be carried out by an approved contractor, the name of the contractor.

Installation work should not commence without the consent of the water undertaker. Consent may be subject to conditions but it should not be withheld unreasonably. Consent shall be deemed to have been granted if no notice is given by the water undertaker within 10 working days, but this does not alter the obligation of the installer to comply with the regulatory requirements.

An approved contractor is a contractor approved by the water supplier who is able, by virtue of a recognised qualification, to furnish a signed certificate confirming the installation complies with the requirements of the Regulations.