



**SLOVENSKI STANDARD**  
**oSIST prEN 16925:2015**  
**01-december-2015**

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**Vgrajeni gasilni sistemi - Avtomatski sprinklerski sistemi za bivalne površine - Načrtovanje, vgradnja in vzdrževanje**

Fixed firefighting systems - Automatic residential sprinkler systems - Design, installation and maintenance

Ortsfeste Brandbekämpfungsanlagen - Automatische Sprinkleranlagen für Wohnbereiche - Planung, Installation und Instandhaltung

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**Ta slovenski standard je istoveten z: prEN 16925**

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**ICS:**

13.220.20      Požarna zaščita      Fire protection

**oSIST prEN 16925:2015**      **en,fr,de**



EUROPEAN STANDARD  
NORME EUROPÉENNE  
EUROPÄISCHE NORM

**DRAFT**  
**prEN 16925**

October 2015

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ICS 13.220.20

English Version

## Fixed firefighting systems - Automatic residential sprinkler systems - Design, installation and maintenance

Ortsfeste Brandbekämpfungsanlagen - Automatische  
Sprinkleranlagen für Wohnbereiche - Planung,  
Installation und Instandhaltung

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## European foreword

This document (prEN 16295:2015) has been prepared by Technical Committee CEN/TC 191 “Fixed firefighting systems”, the secretariat of which is held by BSI.

This document is currently submitted to the CEN Enquiry.

This document has been prepared under a mandate given to CEN by the European Commission and the European Free Trade Association, and supports essential requirements of EU Regulation 305/2011.

This draft standard is included in a series of European Standards:

- automatic sprinkler systems (EN 12259 (all parts) and EN 12845);
- gas extinguishing systems (EN 12094 (all parts));
- powder systems (EN 12416 (all parts));
- explosion protection systems (ISO 6184 (all parts));
- foam systems (EN 13565 (all parts));
- gas systems (EN 12094 (all parts));
- hydrant and hose reel systems (EN 671 (all parts));
- smoke and heat control systems (EN 12101 (all parts)).

For over 100 years, fire sprinklers have been proven to be an effective means of saving lives and property against the threat of fire. Fire sprinklers first benefited insurers and their clients by reducing fire damage and the resulting loss due to business interruption. In the 1970s, however, a campaign was started in the United States to investigate the life-saving benefits of sprinklers in the places where people live, notably in single family dwellings and manufactured homes.

The primary objective of the programme was to determine whether or not sprinklers could prevent flashover and therefore maintain tenability in the room of fire origin, improving the occupants’ chances of escape in a fire condition. In addition, the resulting “residential fire sprinkler systems” also need to be economical to design, install and maintain.

A series of 60 full scale fire tests in a single family dwelling of two levels and an additional 16 tests were carried out within a manufactured home. The results of this effort were used to adopt installation standards that not only focus on single family homes, but also cover multi-family dwellings including apartment buildings and flats, and other types of buildings, or parts of buildings, that contain typical residential occupancies. In addition, an entirely different type of sprinkler, the “residential sprinkler” was developed to meet the special needs of residential occupancies.

The full scale fire tests were conducted in rooms that were arranged with materials one would typically find in the living room, kitchen, or bedroom of a residential occupancy. A fire test protocol for residential sprinklers was developed using fire growth characteristics that were equal to or more challenging than the most severe fires that resulted during the full scale fire tests. This resulted in placing a shielded fire source of highly combustible material with rapid-fire growth characteristics in the corner of the test room. In addition, the sprinkler is tested at its minimum flow and pressure, and maximum area of coverage. In order to meet

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the test protocol criteria, no more than two sprinklers may operate and tenability criteria related to temperature need to be maintained. This fire test protocol is included in prEN 12259-14.

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## Introduction

An automatic residential sprinkler system is designed to detect a fire and control it with water in its early stages or hold the fire in check so that evacuation can be completed safely. The residential sprinkler system will also hold the fire in check so that the possibility of extinguishment by other means will increase.

A residential sprinkler system consists of a water supply, a control valve and a pipe array fitted with sprinkler heads. The sprinkler heads are fitted at specified locations at the roof, ceiling or walls.

The sprinklers operate at predetermined temperatures to discharge water over the affected part of the area below. The flow of water normally initiates an alarm signal depending on the type of occupancy in order to draw attention to the operating of the system. The operating temperature is generally selected to suit ambient temperature conditions.

Only sprinklers in the vicinity of the fire, i.e. those which become sufficiently heated, operate.

The residential sprinkler system is intended to extend throughout the premises with only limited exceptions.

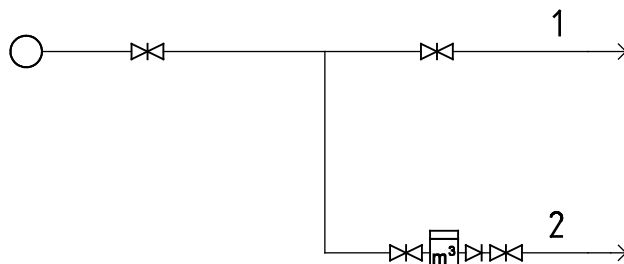
It should not be assumed that the provision of a residential sprinkler system entirely obviates the need for other means of detecting and fighting fires and it is important to consider the fire precautions in the occupancy as a whole.

Structural fire resistance, escape routes, smoke alarms, fire alarm systems, provision of portable fire extinguishers, training and information all need consideration. National legislation always needs to be fulfilled and will normally cover the need of other fire precautions in addition to the residential sprinkler systems.

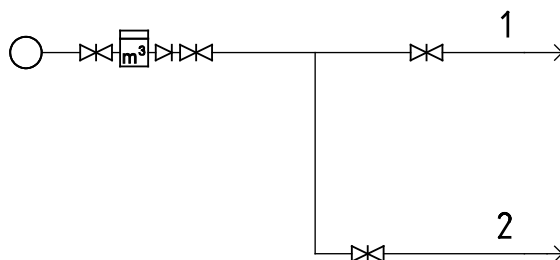
It is essential that residential sprinkler systems should be properly maintained and regularly tested to ensure operation when required. This routine is liable to be overlooked or given insufficient attention. It is, however, neglected at peril to the lives of occupants of the premises and at the risk of crippling financial loss. The importance of proper maintenance cannot be too highly emphasized.

When residential sprinkler systems are out of service extra attention should be paid to fire precautions and the residents informed.

Examples of Piping and Instrument Diagrams for Residential Sprinkler Systems (Figures 1 a), 1 b), 2, 3, 4, 5, 6, 7, 8, 9).



a) Typical town mains fed sprinkler system installation control details, unmetred sprinkler supply



b) Typical town mains fed sprinkler system installation control details, metred sprinkler supply

Key







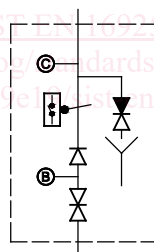
-  water meter
-  non-return valve
-  1 sprinkler system
-  town main
-  stop valve (normally open)
-  2 domestic service

Figure 1 — Typical town mains fed sprinkler system installation control details



Key






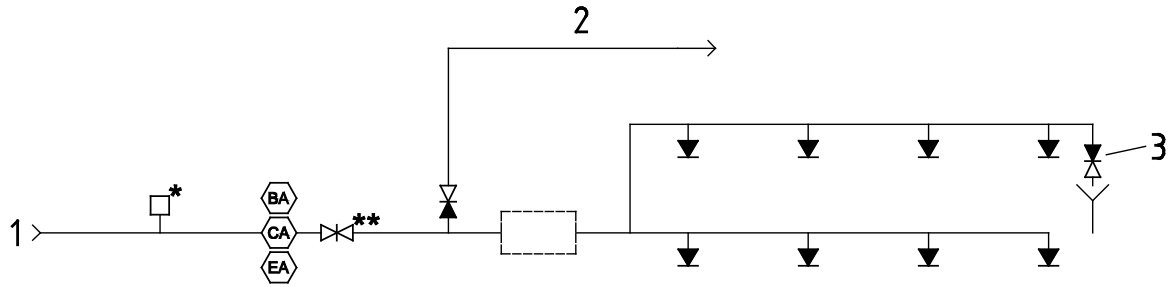
-  non-return valve
-  water flow alarm device
-  pressure gauge
-  stop valve (normally open)
-  test and drain valve

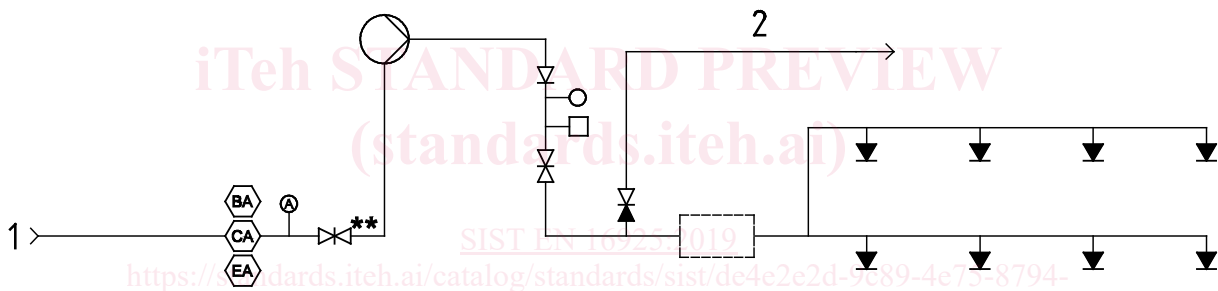
Figure 2 — Typical Control Valve Set details, non-return valve only in case of more than one riser, water flow alarm device optional for building type 1 systems



**Key**

1	sprinkler system input	▷	non-return valve	⬡	backflow prevention according to EN 1717	⚙	test and drain valve
2	to flow measuring device	⊘	stop valve (normally open)	*	for type 2 and 3 systems only	⊠	control valve set (see Figure 2)
3.	remote test valve (type 3 only)	⊘	stop valve (normally closed)	**	not needed for ⬡	⚡	sprinkler

**Figure 3 — Typical all building types town mains directly fed sprinkler system installation control details**

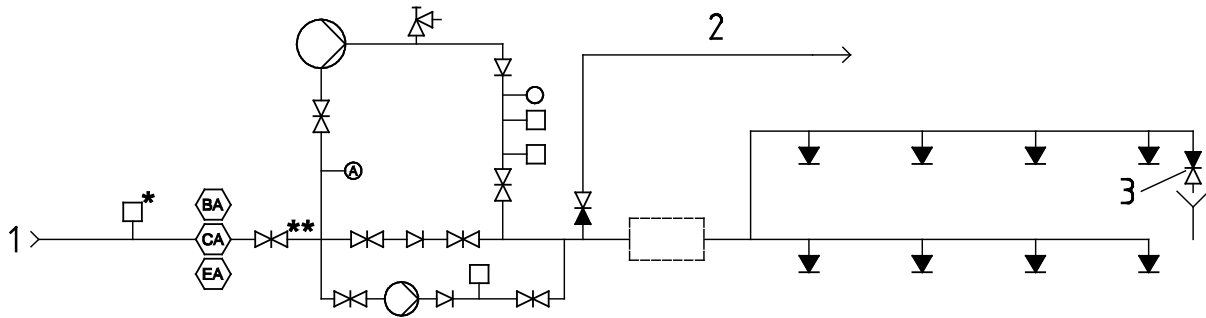


**Key**

▷	non-return valve	⬡	backflow prevention according to EN 1717	⊠	pressure switch/type 1: pump start device	1	sprinkler system input
⊘	stop valve (normally open)	**	not needed for ⬡	⊠	control valve set (see Figure 2)	2	to discharge test/flow measuring device
⊘	stop valve (normally closed)	⊙	fire pump	⚡	sprinkler	⊙	pressure gauge

**Figure 4 — Typical building type 1 mains and in-line booster fire pump fed sprinkler system installation control details**

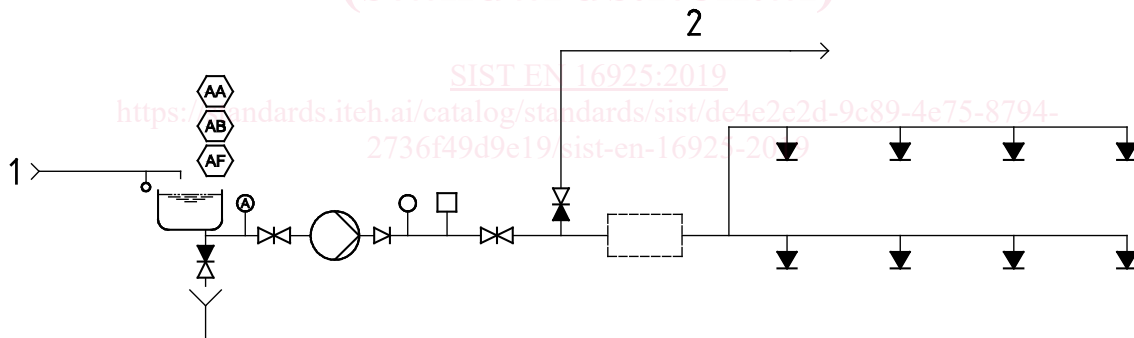
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**Key**

▷	non-return valve	⬡	backflow prevention according to EN 1717	◻	pressure switch/type 1: pump start device	1	sprinkler system input
⊗	stop valve (normally open)	**	not needed for ⬡	▭	control valve set (see Figure 2)	2	flow measuring device
⊗	stop valve (normally closed)	⊙	fire pump	▼	sprinkler	3	remote test valve (Type 3 only)
⊕	relief valve/safety valve	⊙	pressure gauge				

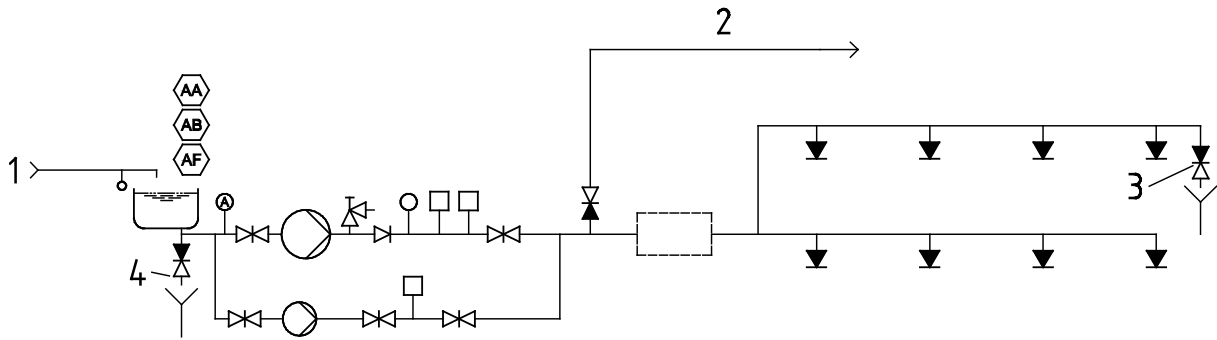
**Figure 5 — Typical building type 3 and 3 town mains and in-line booster fire pump fed sprinkler system installation control details**



**Key**

▷	non-return valve	⊙	fire pump	▭	control valve set (see Figure 2)	1	sprinkler system input
⊗	stop valve (normally open)	⊙	pressure gauge	▼	sprinkler	2	to discharge test/flow measuring device
⊗	stop valve (normally closed)	◻	pressure switch/type 1: pump start device	⊕	tank drain	⬡	backflow prevention according to EN 1717
		▭	storage tank w/ flotation valve				

**Figure 6 — Typical building type 1 stored water and fire pump fed sprinkler system installation control details**

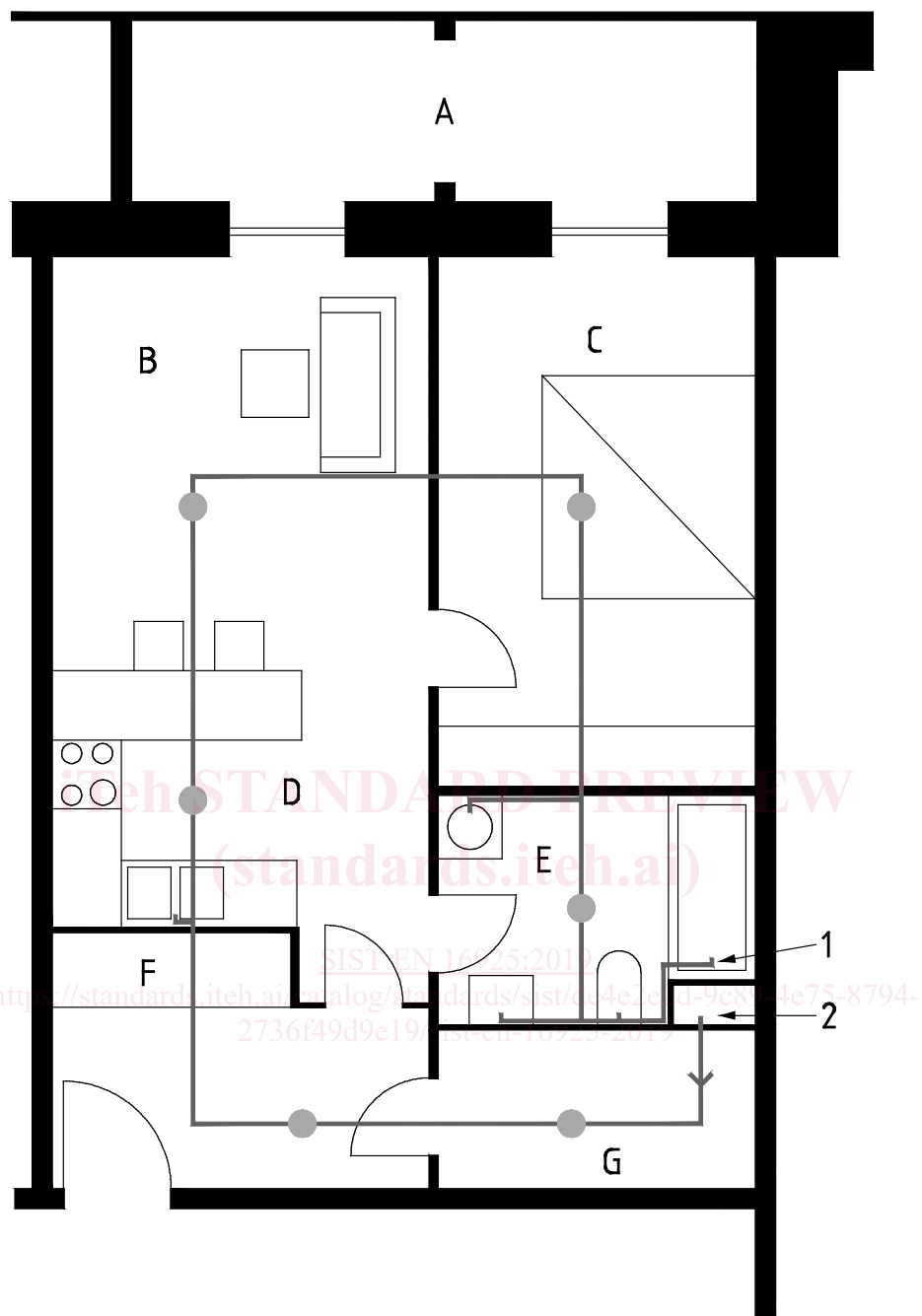


**Key**

▷	non-return valve	⊙	fire pump	⎓	control valve set (see Figure 2)	3	remote test valve (Type 3 only)
⊗	stop valve (normally open)	○	pressure gauge	↓	sprinkler	4	tank drain
⊗	stop valve (normally closed)	□	pressure switch/type 1: pump start device	1	sprinkler system input		
⬡	backflow prevention according to EN 1717	⊡	storage tank w/ flotation valve	2	to flow measuring device		
		⚠	relief valve/safety valve				

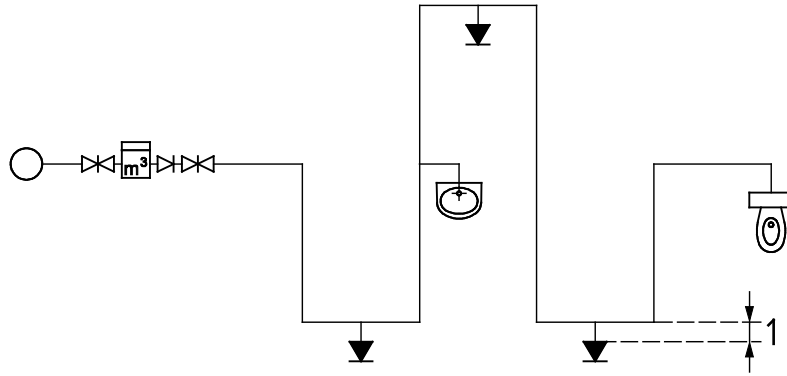
**Figure 7 — Typical building type 2 and 3 stored water and fire pump fed sprinkler system installation control details**

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**Key**

- residential sprinklers approved for use in potable water systems
- 1 last water tap
- 2 building's riser shaft

**Figure 8 — Lay-out proposal for typical multipurpose sprinkler system for domestic service combined with sprinklers, building type 1 only**

**Key**

▷	non-return valve	○	town main	▼	sprinkler		
⊠	stop valve (normally open)	1	< 10 × pipe diameter	◻ <sub>m³</sub>	water meter	○	permanent water usage (e.g. sink)
						◻	permanent water usage (e.g. toilet)

**Figure 9 — Typical multipurpose sprinkler system schematics for domestic service combined with sprinklers, building type 1 only**

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