



CALANSmartSpray
The Safety Solution

Low pressure - fine spray - extinguishing system

CALAN Smart Spray

to

protect horizontal cable tunnels, channels and ducts

User manual

for

Construction, Installation, Operation and Maintenance

It must be ensured that the relevant instructions described below are followed and compliant with the recognized laws and regulations.

The installation, testing, commissioning and maintenance of the extinguishing system must be carried out by appropriately trained and certified personnel.

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Introduction

This manual is provided for use by trained and certified CALANBAU Brandschutzanlagen GmbH staff.

This manual has information on the design, installation, operation and servicing of the lower pressure fine-spray extinguisher system "CALAN Smart Spray" to protect cable tunnels, channels and ducts.

CALANBAU Brandschutzanlagen GmbH reserves the right to make changes and improvements to the system, particularly if such changes are commercially standard or appear necessary, or if Calanbau Brandschutzanlagen GmbH is obliged to do so due to changes in legislation or case law. The information contained in this manual serves the purpose of describing the use of the system at the time of publication.

The system design described with the required system parts is designed to protect from risks in horizontal cable tunnels, channels and ducts.

All information contained in this document is to be treated as confidential and proprietary to CALANBAU Brandschutzanlagen GmbH.

Questions regarding the information contained in this manual should be directed to the following address:

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1. General information

The system described in this manual is a spray water extinguisher system in accordance with VdS 2109 with open fine spray nozzles for extinguishing applications.

The system must only be installed and operated in accordance with the requirements specified in this manual.

Unless differing or supplemental requirements are described in this manual, the following guidelines in their current versions must also be respected:

- VdS Guidelines 2109, Spray Water Extinguishing Systems
- VdS Guidelines 2496, Triggering of Fire-Extinguishing Systems
- VdS Guidelines 2095, Automatic Fire Detection and Fire Alarm Systems.

The recognition of the system is limited to the following risks:

- Cable tunnels
- Cable channels
- Cable ducts.

Therefore, when using this system manual, the recognized rules of technology, the requirements of VdS 2109 and all other relevant national regulations should be followed.

The absence of explicit requirements in the VdS guidelines and this manual does not justify specifications being set without prior approval of VdS Schadenverhütung.

1.1 Application

Due to the location of individual cables and the length of cable tunnels and cable ducts, protecting these areas represents a real fire protection challenge.

"CALAN Smart Spray" was developed to protect horizontal cable tunnels and channels. The effective use of this low pressure fine spray extinguishing systems has been tested in real fire tests.

1.2 Operational description

The low pressure - fine spray - extinguishing system "CALAN Smart Spray" works at the pressure common for water extinguishing systems.

As the low pressure - fine spray technology is similar to conventional sprinkler system technologies in terms of the structure and function, its components can be used. Thus it is possible to connect "CALAN Smart Spray" to existing water supplies of extinguishing and hydrant systems.

The pipework between the zone valve and the fine spray nozzles is to be pressureless and dry when on operational standby.

The system is automatically activated in the event of fire by separate fire detection.

When the "CALAN Smart Spray" system is activated the pipework is flooded with water and the mist generated from the individual nozzles covers the area to be protected.

The dimensioning and design of the extinguishing system are critically influenced by the size and arrangement of the cable racks / the cable channel (see point 2.2).

Because of the smaller droplet spectrum of the extinguishing water the total surface is significantly enlarged compared with conventional extinguishing nozzles. An efficient thermal bonding is then achieved so that the fire source is quickly and effectively cooled.

The "CALAN Smart Spray" system uses water as the extinguishing agent, for which normal firefighting water quality in accordance with the requirements of VdS 2109 is sufficient.

2. Assembly

The design and installation of the "CALAN Smart Spray" components are based on VdS 2109: "VdS – Guidelines for Spray Water Extinguishing Systems, Planning and Installation".

All system components and parameters not mentioned in this manual must be designed and installed so as to comply with the requirements of VdS 2109.

2.1 Fine spray nozzles used "CLB SS 3.2"

This is a nozzle in a spiral design with the following performance parameters (cf. Annex A)

- K- factor 3.18
- Spray angle 120 °
- Nozzle flow rate 8.4 l/min (at 7 bar)
- Material brass
- Connecting thread 1/4"

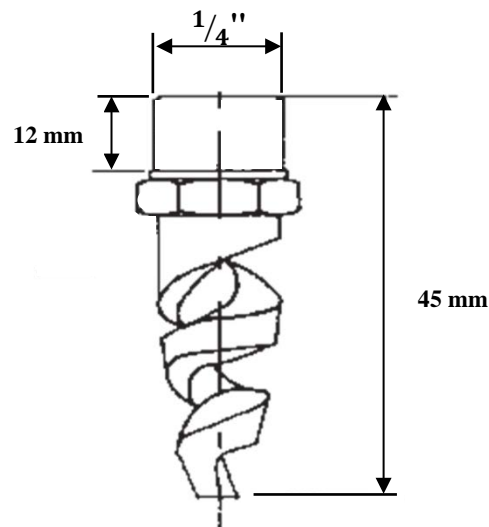


Image 01: Measurements of the fine spray nozzles for the system [cf. nozzle parameters, Tab. 01]

2.2 System design

- Water-discharge rate: 5 mm³/min
- Operating time: 30 min
- Minimum pressure at the nozzle: 7.1 bar
(The hydraulics should be arranged so that a system pressure of 7 bars is ensured at hydraulically unfavourable nozzles.)

- Effective area: $W = L * H$

W - effective area [m²]

L - length of the cable rack [m]

H - distance from the lower edge to the lowest cable rack to the upper edge of the highest cable rack [m], if $1.5 \text{ m} \leq H \leq 2.5 \text{ m}$, it is assumed that

$H = 2\text{m}$

The water supply to the extinguishing system must be fitted with the largest fire section or three connected groups.

2.3 Application limitations

- Cable rack (see also VdS 2109 / 6.3 - cable channels)
 - Vertical minimum distance between the cable racks
 - 200 mm
 - Minimum vertical distance from the lowest rack to the floor
 - 300 mm
 - Maximum vertical distance from the upper rack to the floor
 - 1700 mm
 - Maximum depth of the cable rack
 - 600 mm
 - Maximum connector height of the cable racks
 - 60 mm

Select the cable supports so that the cable support area can be opened at least 30% in accordance with VdS 2109.

- Internal dimensions shaft / tunnel / channel
 - Width: ≤ 3.0 m
 - Height: ≤ 2.5 m

- Arrangement of nozzles
 - Horizontal distance of the nozzles: 1.5 m
 - Side distance of the nozzles to the cable racks: 0.7 m
 - Direction of the nozzles (angle of rotation to the horizontal downwards): $10^\circ \pm 2.5^\circ$

Position the nozzles at the level of the lower edge of the upper rack (see image 02).

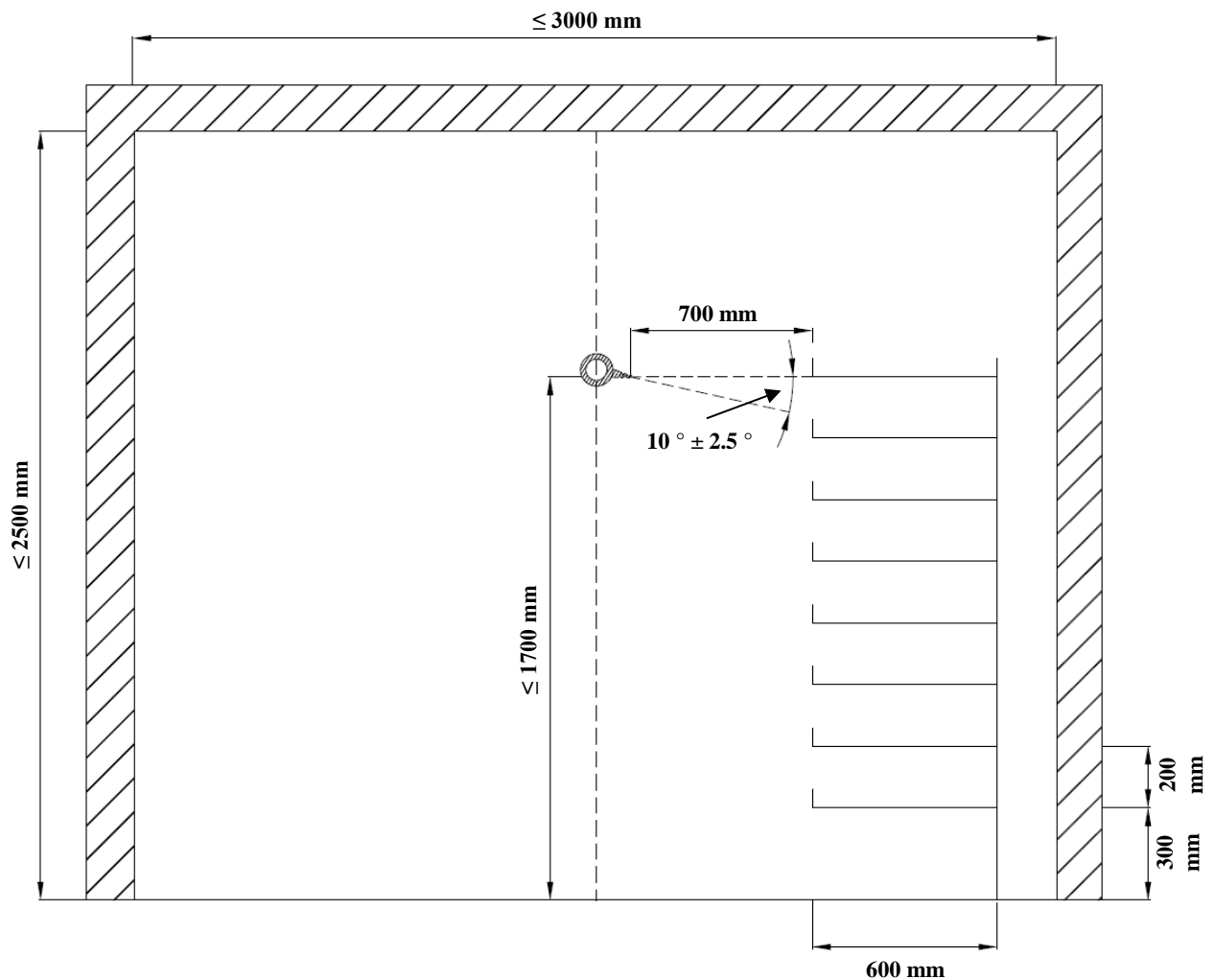


Image 02: System dimensions

3. Testing, Inspection and Maintenance

The system components of the "CALAN Smart Spray" are serviced and maintained in accordance with the manufacturer's instructions.

The "CALAN Smart Spray" must be maintained in accordance with the recognized rules of technology and the relevant guidelines such as DIN, VDE, VdS CEA, BG, etc.

Servicing work such as inspection and maintenance of the system may only be carried out by VdS-accredited installers.

Appendix A

Technical data - nozzle in spiral arrangement

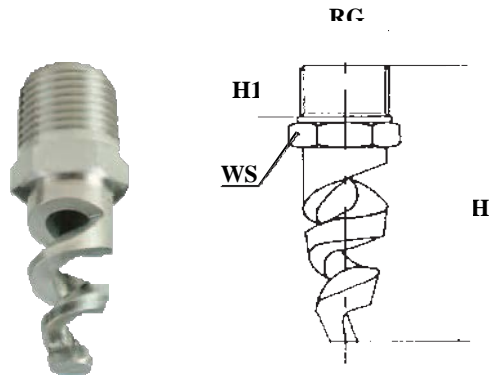


Image 03: Spiral nozzle form

	TYPE	RG inch	D mm	D1 mm	Nozzle flow rate at various pressure rates							Measurements in mm		
					l/min		bar		H	H1	WS			
					0.7	1.0	2.0	3.0	5.0	7.0	10			
120°	CLB SS 3.2	1/4	2.4	2.4	2.66	3.18	4.49	5.50	7.10	8.40	10.0	45	12	14

Table 01: Nozzle parameters