WITZENMANN

managing flexibility

Fire protection

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Witzenmann GmbH

Östliche Karl-Friedrich-Str. 134
75175 Pforzheim, Germany
Phone +49 - (0)7231 - 581- 0
Fax +49 - (0)7231 - 581- 820
wi@witzenmann.com
www.witzenmann.com

HYDRA

Quality by Witzenmann

SPRINKLER MOUNTING SYSTEMS

STAINLESS STEEL HOSES

AXIAL EXPANSION JOINTS

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SPRINKLER MOUNTING SYSTEMS

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AXIAL EXPANSION JOINTS

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WITZENMANN

Witzenmann is the European market leader with the most extensive product program for flexible metal elements. The parent company is both the centre of competence and innovation motor for the Group - as problem solver for decoupling vibrations, expansion compensation in line guides and flexible balancing of assembly inaccuracies.

FLEXIBLE, SIMPLE, SECURE. SPRINKLER MOUNTING SYSTEMS.

The precise mounting of sprinklers in suspended ceiling systems using conventional mounting methods is very laborious: the traditional "lining up" using rigid piping as per the predefined ceiling plan is very time consuming and costly.

The use of a specially prepared steel hose significantly minimises efforts required for installation purposes, because the flexibility of the hose enables you to freely choose the installation positions of the sprinkler within a circular area defined by the hose length.

For this reason, the exact positioning of sprinklers in suspended ceiling systems of a variety of designs is made possible without any problems.

Compared to the conventional installation technology used to date, this system results in significant time and cost savings. The supplied mounting brackets allow for a reliable and secure attachment of the sprinkler hose to the respective ceiling system substructure.

› Advantages at a glance

- **ONE system that fits all ceiling systems**
- **The system with the most flexible metal hoses (quick and easy installation)**
- **Wide ranging experience of a German market leader**
- **Sound technical advice**
- **Engineering and development competence**

Advantages

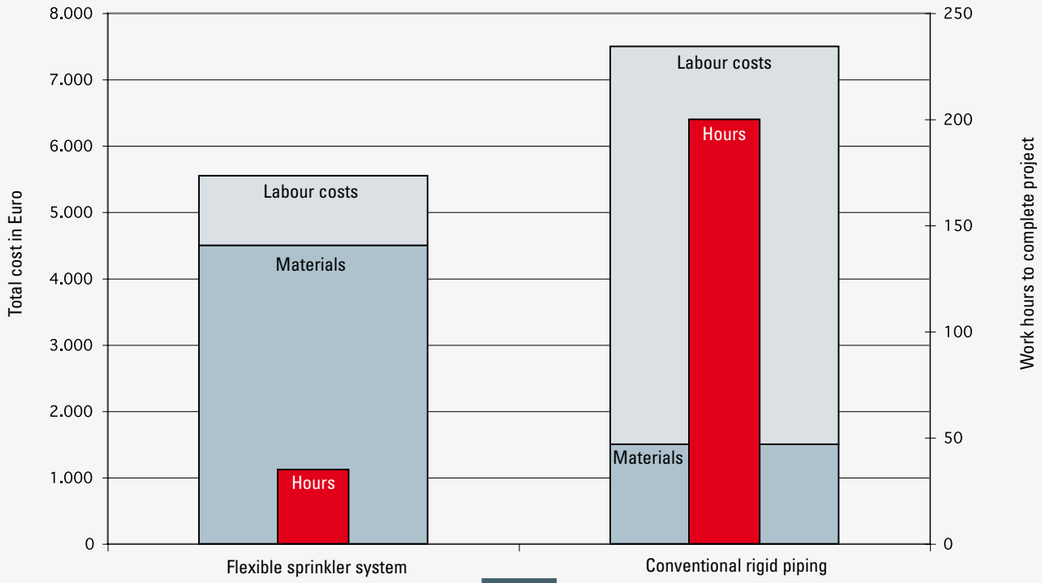
Simplified installation through flexibility, time savings during mounting and lower labour costs – the Witzenmann flexible sprinkler mounting systems offer some convincing arguments as compared to conventional rigid piping systems:

Criteria	Witzenmann flexible sprinkler mounting systems	Conventional rigid piping	Advantages of flexible mounting systems
Installation	Quick and easy installation due to flexible hose and all-in-one system	Complicated trimming of pipes, sealing of pipe bends etc. with traditional angles	Faster project completion/ lower time requirements
	Scaling allows for quick positioning of sprinklers	Elaborate sprinkler positioning process	Simple installation
	Easily bypass other building components & assemblies	Problems with pipe guidance if other building components or assemblies must be bypassed, or in the event of tight installation conditions	Sprinkler system is flexible to adjust to installation conditions
	Does not require completely new installation of sprinkler system during renovations or conversions	Requires extensive replacement of existing piping during renovations and conversions	Reduction in subsequent costs
Labour costs	Variable positioning in all directions possible	Difficult positioning within a ceiling element	Cost-effective sprinkler installation
	Very quick installation (7-8 minutes per sprinkler system), hence significantly more cost-effective	Very elaborate, high manual labour requirements	Provides builders with security
Quality & Safety	Lower labour requirements	Higher labour requirements	Increased customer satisfaction
	Leaks in the sprinkler system can already be detected during the installation – building still a shell	Risk of water damages, leaks which are often only noticeable once the installation has been completed	Prevents water damages

Price comparison

Save costs by working efficiently - Witzenmann's flexible sprinkler mounting system allow you to work significantly faster than with rigid piping, enabling you to do more in the same time period.

Sample project:
Office building with average number of storeys, installation of 300 sprinklers
System: Standard lay-in ceilings, number of installers: 4



Result: 26% reduction in overall costs with a significant reduction in time required for implementation

Areas of application

Areas of application:
Sprinkler mounting systems are recognised by VdS (VdS = Association of Damage Insurers Inc.) and approved for use in sprinkler wet systems with sprinklers R 3/8" (K 57), R 1/2" (K 80) and R 3/4" (K 115).

The pressure level of VdS-approved systems is PN 16 bar. The approval is only valid in connection with the ceiling systems outlined in our technical product descriptions. The sprinkler installation companies must ensure that the installation of sprinkler mounting systems is only carried out in conjunction with these ceiling systems.

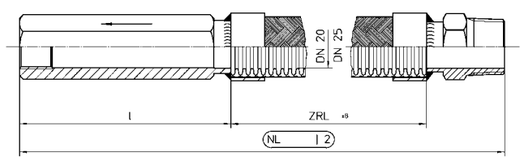
FM-approved sprinkler mounting systems are limited to DN 25 sprinkler hoses when using sprinklers R 1/2" (K 80) and R 3/4" (K 115). The pressure level of FM-approved products is 12 bar (175 psi).

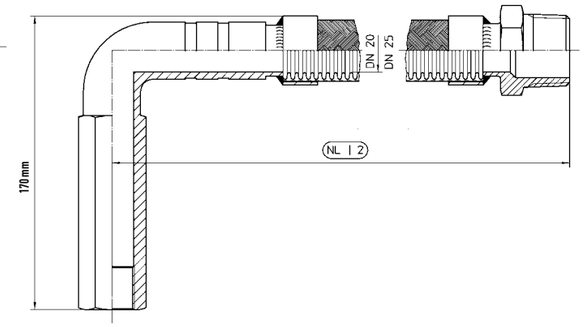
Fields of application:
- T-bar lay-in ceilings with mineral fibre panels or metal cassettes
- Plasterboard ceilings
- Sheet metal panel ceiling systems
- Clean room filter ceiling systems
- Strip grid ceiling constructions
- Aluminium meshed metal baffle ceilings
- Clamping profile ceiling systems

The design of the mounting bracket and associated sheet metal adapters is adapted to the respective ceiling system.

Approvals: VdS, Factory Mutual System Approved DN 25 UL in preparation

Approved solutions are available for ceiling systems by the following manufacturers:
- AMF
- Armstrong
- Daldrop & Dr. Huber
- Dampa Chicago Metallic
- Dipling
- Durlum
- Geipel
- Gema-Armstrong
- Hilti
- Knauf
- Lafarge
- Lindner
- M+W Zander
- Nagelstutz & Eichler
- Odenwald OWAcoustic
- Richter System
- Rigips
- Rockfon Pagos
- Suckow & Fischer
- USG Donn





Standard program

VdS, Factory Mutual System Approved DN 25

Sprinkler hose:
Type RS 339L92, DN20/DN25, flexible design with braiding, completely made of stainless steel, welded fittings

Sprinkler connection, straight design:
Stainless steel hexagon-socket 125 mm with pipe thread as per DIN EN 10226 (ISO 7/1), Rp 1/2" (SW 27) or Rp 3/4" (SW 30). Scaling for simple vertical sprinkler alignment.

Sprinkler connection, 90° elbow design:
90° stainless steel elbow with pipe thread as per DIN EN 10226 (ISO 7/1), Rp 1/2" (SW 27). Scaling for simple vertical sprinkler alignment. Used in tight installation conditions.

Installation height (x) only 170 mm above lower edge of suspended ceiling.

Connection to water supply line:
Stainless steel hexagonal nipple with pipe thread as per DIN EN 10226 (ISO 7/1, Rp 3/4" (SW 30) or R 1" (SW36)

Nominal length:
NL 1000 / 1200 / 1500 / 2000 (other lengths on request)

Operating pressure:
PN 16 bar, 100% tightness testing at plant with 24 bar nitrogen under water

DN	Nominal length	Sprinkler-discharge	Sprinkler-connection	Pipe connection	Minimum bending radius	Pressure loss*	Equivalent pipe length*	Weight water-filled approx. including Mounting bracket
20	1000 mm	straight	Rp 1/2"	R 3/4" / R 1"	70 mm	0.9 bar	8 m	approx. 2.0 kg
20	1200 mm	straight	Rp 1/2"	R 3/4" / R 1"	70 mm	1.0 bar	12 m	approx. 2.2 kg
20	1500 mm	straight	Rp 1/2"	R 3/4" / R 1"	70 mm	1.3 bar	12 m	approx. 2.4 kg
20	2000 mm	straight	Rp 1/2"	R 3/4" / R 1"	70 mm	1.7 bar	14 m	approx. 2.8 kg
20	800 mm	90° elbow	Rp 1/2"	R 3/4"	70 mm	0.8 bar	8 m	approx. 2.0 kg
20	1000 mm	90° elbow	Rp 1/2"	R 3/4"	70 mm	0.9 bar	8 m	approx. 2.2 kg
20	1200 mm	90° elbow	Rp 1/2"	R 3/4"	70 mm	1.0 bar	12 m	approx. 2.3 kg
20	1500 mm	90° elbow	Rp 1/2"	R 3/4"	70 mm	1.3 bar	12 m	approx. 2.6 kg
20	2000 mm	90° elbow	Rp 1/2"	R 3/4"	70 mm	1.7 bar	14 m	approx. 3.0 kg
25	1000 mm	straight	Rp 1/2" / Rp 3/4"	R 1"	85 mm	0.5 bar	8 m	approx. 2.3 kg
25	1200 mm	straight	Rp 1/2" / Rp 3/4"	R 1"	85 mm	0.6 bar	11 m	approx. 2.5 kg
25	1500 mm	straight	Rp 1/2" / Rp 3/4"	R 1"	85 mm	0.8 bar	11 m	approx. 2.8 kg
25	2000 mm	straight	Rp 1/2" / Rp 3/4"	R 1"	85 mm	1.0 bar	12 m	approx. 3.3 kg
25	800 mm	90° elbow	Rp 1/2"	R 1"	85 mm	0.5 bar	8 m	approx. 2.3 kg
25	1000 mm	90° elbow	Rp 1/2"	R 1"	85 mm	0.5 bar	8 m	approx. 2.5 kg
25	1200 mm	90° elbow	Rp 1/2"	R 1"	85 mm	0.6 bar	11 m	approx. 2.7 kg
25	1500 mm	90° elbow	Rp 1/2"	R 1"	85 mm	0.8 bar	11 m	approx. 3.1 kg
25	2000 mm	90° elbow	Rp 1/2"	R 1"	85 mm	1.0 bar	12 m	approx. 3.6 kg

* Pressure losses and equivalent pipe lengths correspond with VdS specifications

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Mounting system Type 1

Mounting system Type 1
For hanging-mounted standard sprinklers for T-bar lay-in ceilings we recommend a variable sprinkler mounting system for space-saving mounting with minimal installation height.
The mounting clips are designed in such a way that the square pipe rests directly on the substructure of the suspended ceiling.
The moveable sprinkler clip allows for variable sprinkler positions. The square pipe is attached to the ceiling profiles using the supplied Type 1 mounting clips.
The connectors are suitable for round or rectangular profiles (profile width > 5 mm) and allow for mounting on main and ancillary profile rails.

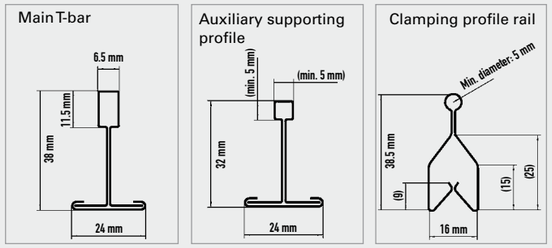
The standard program always uses a 15 x 15 mm square pipe as a transverse beam. The respective systems are specified with different mounting clips.

Area of application:
- T-bar lay-in ceiling systems with mineral fibre panels and metal cassettes (main and ancillary profiles
- Clamping profile ceiling systems
- Suspension-mounted standard sprinklers

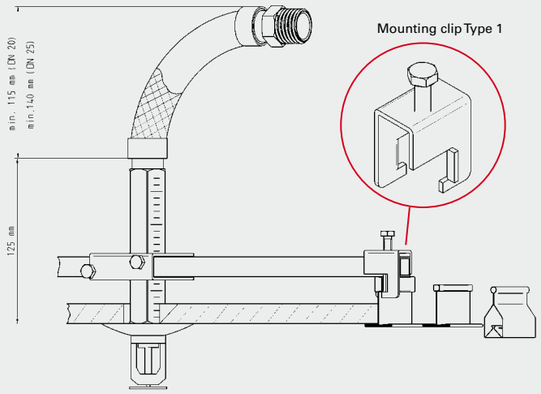
Ceiling systems:
- AMF
- Armstrong
- Dampa Chicago Metallic
- Dipling
- Durlum
- Geipel
- Gema-Armstrong
- Lindner
- Odenwald OWAcoustic
- Richter System 11.1 – 11.4
- Rockfon Pagos
- Suckow & Fischer
- USG Donn

Approvals: VdS, Factory Mutual System Approved DN 25, UL in preparation

Suitable ceiling profiles:



Mounting diagram:



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Scope of supply Type 1

Delivery scope for complete mounting system:

1 Sprinkler hose Type RS 339L92, DN 20 / DN 25,
1 Square pipe 700 mm
1 Moveable sprinkler clamp, closed
2 Mounting clips Type 1
1400 mm square pipe supplied on request

The standard scope of supply includes closed sprinkler clips. We recommend fold-away sprinkler clamps when using two-part rosettes, to ensure problem-free mounting of sprinkler hoses with pre-mounted sprinklers and rosettes on the square pipe.

Brackets separately:

Variable bracket Type 1 with closed sprinkler clamp
ID No.: 921125
- Square pipe 700 mm
- Sprinkler clamp, closed
- 2 Mounting clips Type 1
- Space-saving installation with minimal installation height

Variable bracket Type 1 with fold-away sprinkler clamp
ID No.: 952424 (FM in preparation)
- Square pipe 700 mm
- Fold-away sprinkler clamp
- 2 Mounting clips Type 1
- Space-saving mounting with minimal installation height
- For use with two-part rosettes

All sprinkler brackets featured here are compatible with the hose models on pages 17/18.
48 h delivery service within Germany.

Mounting the fold-away sprinkler clamp

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Mounting system Type 2

Mounting system Type 2
For hidden and recessed sprinklers we recommend a system with a larger installation height. The mounting clips used (multiclips) are designed in such a way that the square pipe is mounted approximately 25 mm above the supporting beam of the ceiling substructure and therefore provides sufficient installation height for mounting hidden or recessed sprinklers. This mounting system is also suitable and approved for suspended standard sprinklers. The sprinklers are attached to the ceiling profile with Type 2 mounting clips (multiclips), which are suitable for all conventional T-bar lay-in ceilings and plasterboard ceilings.

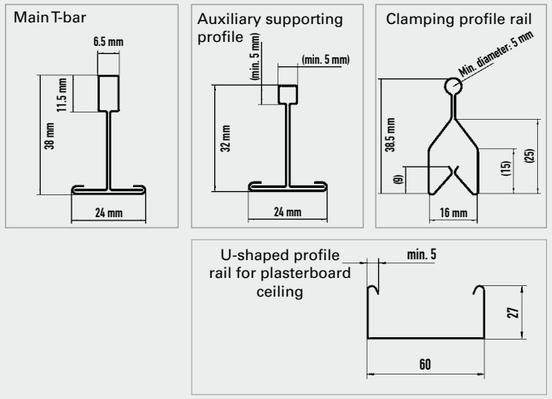
The standard program always uses a 15 x 15 mm square pipe as a transverse beam. The respective systems are specified with different mounting clips.

Area of application:
- T-bar lay-in ceiling systems with mineral fibre panels and metal cassettes (main and ancillary profiles)
- Clamping profile ceiling systems
- Plasterboard ceiling systems 60/27 (U-shaped profile rail)
- Suspension-mounted standard sprinklers
- Hidden and recessed sprinklers

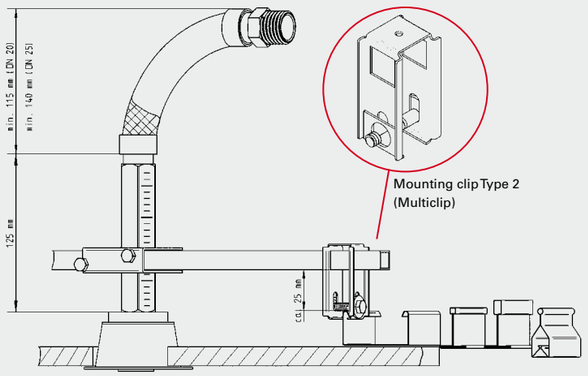
Ceiling systems:
- AMF
- Armstrong
- Dampa Chicago Metallic
- Dipling
- Durlum
- Geipel
- Gema-Armstrong
- Knauf
- Lafarge
- Lindner
- Odenwald OWAcoustic
- Richter System 11.1 – 11.4
- Rigips
- Rockfon Pagos
- Suckow & Fischer
- USG Donn

Approvals: VdS, Factory Mutual System Approved DN 25, UL in preparation

Suitable ceiling profiles:



Mounting diagram: (Example with hidden sprinkler)



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Scope of supply Type 2

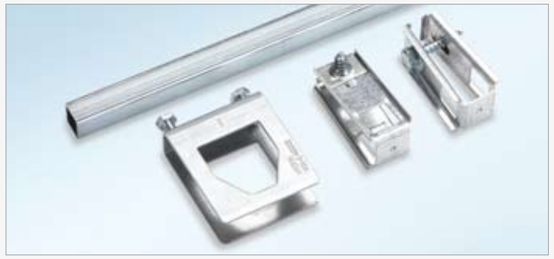
Delivery scope for complete mounting system:

1 Sprinkler hose Type RS 339L92, DN 20 / DN 25,
1 Square pipe 700 mm
1 Moveable sprinkler clamp, closed
2 Multiclips
1400 mm square pipe supplied on request

The standard scope of supply includes closed sprinkler clips. We recommend fold-away sprinkler clamps when using two-part rosettes, to ensure problem-free mounting of sprinkler hoses with pre-mounted sprinklers and rosettes on the square pipe.

Brackets separately:

Variable bracket Type 2 with closed sprinkler clamp
ID No.: 946370
- Square pipe 700 mm
- Sprinkler clamp, closed
- 2 Mounting clips, Multiclip Type 2



Variable bracket Type 2 with fold-away sprinkler clamp
ID No.: 951276 (FM in preparation)
- Square pipe 700 mm
- Fold-away sprinkler clamp
- 2 Mounting clips - multiclip Type 2
- For use with two-part rosettes

Mounting the fold-away sprinkler clamp

All sprinkler brackets featured here are compatible with the hose models on pages 17/18.
48 h delivery service within Germany.

HYDRA

Mounting system Type 3

Mounting system Type 3
For hanging-mounted standard sprinklers in plasterboard ceilings we recommend a variable sprinkler mounting system for space-saving mounting with minimal installation height.
The included Type 3 mounting clips are designed in such a way that the square pipe rests directly on the substructure of the suspended plasterboard ceiling.
The moveable sprinkler clamp allows for variable sprinkler positions. The square pipe is directly attached to the ceiling profiles or mounting rails using the mounting clips and subsequently screwed in place.

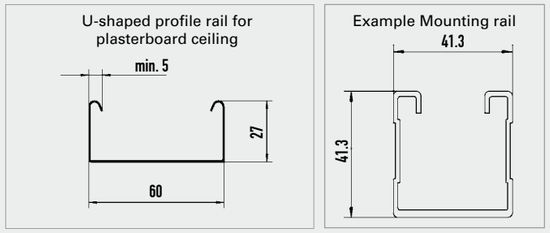
The standard program always uses a 15 x 15 mm square pipe as a transverse beam. The respective systems are specified with different mounting clips.

Area of application:
- Different mounting rails made of steel or stainless steel
- Plasterboard ceiling systems
- Hanging-mounted standard sprinklers

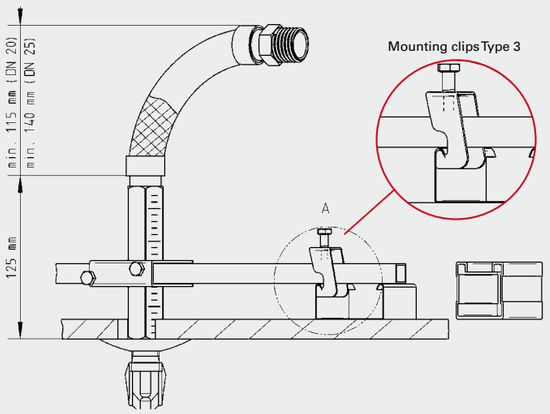
Ceiling systems:
- Knauf D112/D113
- Lafarge
- Rigips
- Hilti MQ 41

Approvals: VdS UL in preparation
FM in preparation

Suitable ceiling profiles:



Mounting diagram:



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Delivery scope Type 3

Delivery scope for complete mounting system:

1 Sprinkler hose Type RS 339L92, DN 20 / DN 25,
1 Square pipe 700 mm
1 Moveable sprinkler clamp, closed
2 Mounting clips Type 3
1400 mm square pipe supplied on request

The standard scope of supply includes closed sprinkler clips. We recommend fold-away sprinkler clamps when using two-part rosettes, to ensure problem-free mounting of sprinkler hoses with pre-mounted sprinklers and rosettes on the square pipe.

Brackets separately:

Variable bracket Type 3 with closed sprinkler clamp
ID No. 978843
- Square pipe 700 mm
- Sprinkler clamp, closed
- 2 Mounting clips Type 3
- Space-saving installation with minimal installation height

Variable bracket Type 3 with fold-away sprinkler clamp
ID No.: 978847
- Square pipe 700 mm
- Fold-away sprinkler clamp
- 2 Mounting clips Type 3
- Space-saving installation with minimal installation height
- For use with two-part rosettes

All sprinkler brackets featured here are compatible with the hose models on pages 17/18.
48 h delivery service within Germany.

Mounting the fold-away sprinkler clamp

Scope of supply of clean room filter ceiling systems

Clean room
Filter ceiling
systems

Clean room filter ceiling systems

Metal hose:
Type RS 331L12, stainless steel 1.4404 or 1.4541,
DN 25, braiding and end sleeves made of stainless steel 1.4301, welded design

Nominal length:
NL 1000 / 1200 / 1500 / 2000,
other nominal lengths on request

Approvals: VdS, FM Approved

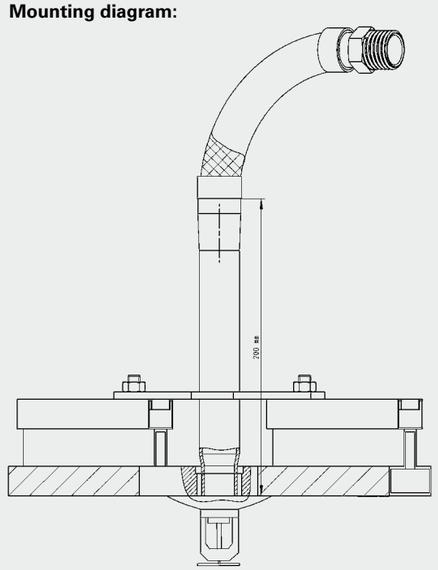
Sprinkler connection:
- Sprinkler socket 200 mm made of stainless steel 1.4301 (AISI 304) with internal thread Rp ½" or NPT ½"
- Ceiling guidance with fixed mounting plate
- Mounting into profile rails of filter ceilings
- Variable distance measure to sprinkler outlet

Connection to water supply line:
- Stainless steel thread connection for mounting to water supply line
- Designed as conical seal connection or fixed hexagonal nipple with connection thread R/RP 1"
- All components stamped with VdS approval number and FM logo

Ceiling systems:
- M+W Zander
- Daldrop & Dr. Huber

Installation:
Mounting is carried out via faceplate and t-bolts (not included in delivery scope) to aluminium profiles of suspended filter ceilings.

Mounting diagram:



Delivery-
program

Sprinkler hose, straight design with hexagonal sprinkler socket (standard design)

Straight sprinkler socket, 125 mm, continuous hexagonal bolt
Designs:
- DN 20: R ¾" threaded nipple x Rp ½" sprinkler connection
- DN 20: R 1" threaded nipple x Rp ½" sprinkler connection

or
- DN 25: R 1" threaded nipple x Rp ½" sprinkler connection
- DN 25: R 1" threaded nipple x Rp ¾" sprinkler connection

Available ex warehouse.
Graduated lengths: NL 1000, 1200, 1500, 2000

Sprinkler hose, straight design with round sprinkler socket

Round sprinkler socket, 125 mm, hexagonal surfaces only at sprinkler outlet
Designs:
- DN 20: R ¾" threaded nipple x Rp ½" sprinkler connection
- DN 20: R 1" threaded nipple x Rp ½" sprinkler connection

or
- DN 25: R 1" threaded nipple x Rp ½" sprinkler connection

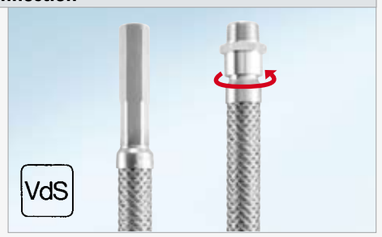
Available ex warehouse.
Graduated lengths: NL 1000, (1200), 1500, 2000

Sprinkler hose, straight design with hexagonal sprinkler socket, rotating threaded connection

Straight sprinkler socket, 125 mm, continuous hexagonal bolt,
rotating threaded connection on pipe
Designs:
- DN 20: R ¾" threaded nipple, rotating x Rp ½" sprinkler connection

or
- DN 25: R 1" threaded nipple, rotating x Rp ½" sprinkler connection

Available on request.
Graduated lengths: NL 1000, (1200), 1500, 2000
Easy, torsion-free mounting even in tight installation conditions.



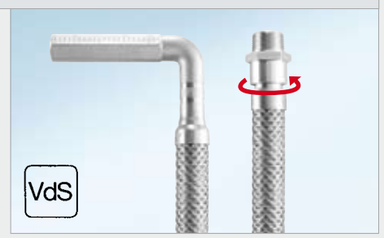
Delivery-
program

Sprinkler hose with 90° elbow

Sprinkler socket as 90° elbow, continuous hexagonal bolt
Designs:
• DN 20: R ¾" threaded nipple x Rp ½" sprinkler connection
• DN 20: R 1" threaded nipple x Rp ½" sprinkler connection
or
• DN 25: R 1" threaded nipple x Rp ½" sprinkler connection
Available ex warehouse.
Graduated lengths: NL 800, 1000, 1200, 1500, 2000

Sprinkler hose with 90° elbow, rotating threaded connection

Sprinkler socket as 90° elbow, continuous hexagonal bolt,
rotating threaded connection on pipe
Designs:
• DN 20: R ¾" threaded nipple, rotating x Rp ½" sprinkler connection
or
• DN 25: R 1" threaded nipple, rotating x Rp ½" sprinkler connection
Available on request.
Graduated lengths: NL 800, 1000, (1200), 1500, 2000
Easy, torsion-free mounting even in tight installation situation.



Other
systems

Strip grid ceiling systems

Scope of supply:
1 Galvanised sheet steel mounting bracket, dimensions
adapted to strip grid system
1 Sprinkler hose, Type RS 339L92, DN 20 / DN 25

Ceiling systems:
• Suckow & Fischer, various production series and designs
• DONN DP system

Installation:
The mounting brackets are mounted in the profile of the strip grid rails.
They feature sheet metal plates that protrude slightly from the side.
The bracket is mounted by simply pressing it into the profile rails until the
sheet metal plates lock in place.

Sheet metal panel systems

Scope of supply:
1 Galvanised steel sheet mounting bracket, dimensions 125 x 68 mm
1 Sprinkler hose Type RS 339L92, DN 20 / DN 25
2 Sheet metal adapter, adjusted to sheet metal panel dimension
The geometry of the sheet metal components is adjusted to the profile of the ceiling panels. Different sizes in different widths are also available on request.

Ceiling systems:
Nagelstutz & Eichler NE 1216 & 1241

Installation:
The sheet metal adapters which are included are simply hooked into the profile of the ceiling panel and firmly screwed to the mounting bracket using wing nuts.

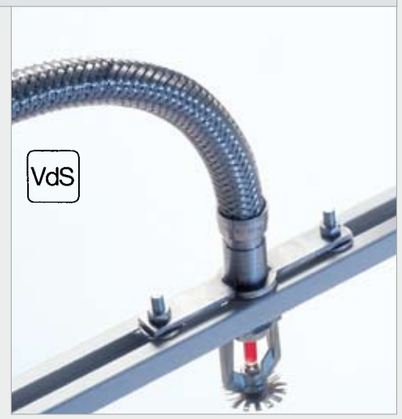
Other systems

Department store frame systems

Scope of supply:
1 Sprinkler hose Type RS 339L92, DN 20 / DN 25 with fixed faceplate
2 T-bolts, other mounting material

Ceiling systems:
- Suckow & Fischer System 1700 / DP 88
- Special design for aluminium meshed metal baffle ceilings, by Schmidt GmbH

Installation:
Mounted via face plate affixed to hose on the strip grid profile rails.
The required t-bolts are included with the delivery.



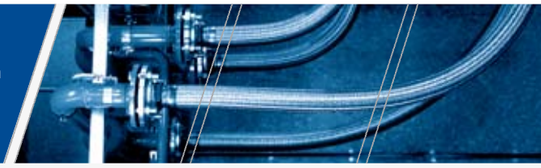
Plasterboard ceiling systems

Scope of supply:
1 Galvanised sheet steel mounting bracket, construction length 850 mm, non-symmetrical sprinkler feedthrough divided at 01:02 ratio
1 Sprinkler hose, Type RS 339L92, DN 20 / DN 25
2 Cross connectors 60/27

Ceiling systems:
- Knauf D 112 / D 113, Lafarge, Rigips
- The bracket can also be used with the Odenwald hidden raster ceiling system OWA S9 system when using original spring clips from ceiling accessories program

Installation:
The bracket is mounted to two parallel U-shaped profile rails of the ceiling substructure in a form-fit manner using the supplied cross connectors.

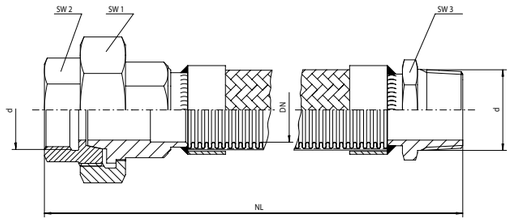
Production series LA, RS



Hundreds of thousands of sprinkler hoses have been used over many years, and are often used as "problem solvers" in sprinkler systems with movable equipment parts (e.g. high rack systems, double car garages, etc). The VdS-approved production series Type RS 331L12 and Type RS 341L12 range from DN 20 to DN 100 and can be supplied as per customer requirements with a variety of different fittings.

In addition to obtaining VdS approval, they have also been certified by the British Loss Prevention Certification Board (LPCB). The LPCB-approved production series Type RS 331/330L12 and Type RS 321L12 range from DN 16 to DN 100/. These can also be mounted with different fittings as per customer requirements.

In the area of passenger shipping, all reputable shipping classification organisations have provided their approval. Specialised solutions for suspended sheet metal panel ceilings are also available for this segment. Specially designed sprinkler hoses can also be used in high pressure atomised spray fire water extinguishing facilities up to an operating pressure of 140 bar.



LA 230

Stainless steel hoses with threaded connections

Hose pipeline
Type RS 331L12 with simple wire braiding.
One side conical seal screw coupling with internal thread, other side hexagon nipple with external thread, stamped with VdS authorisation number for use in fixed water extinguishing systems

Material:
- Hose: stainless steel, 1.4404 (AISI 316 L) or 1.4541 (AISI 321)
- Braiding: stainless steel, 1.4301 (AISI 304)
- End sleeve: stainless steel, 1.4301 (AISI 304)
- Threaded connections: malleable cast iron/steel, brazed or welded

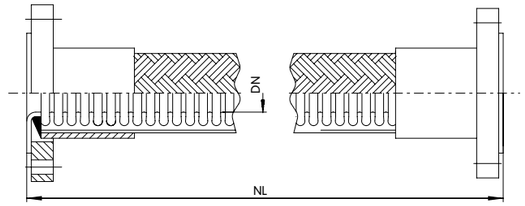
Approvals: VdS LPCB DVGW

Delivery:
Ex warehouse (subject to prior sale)
Other nominal lengths available on request.

When ordering, please specify:
type, DN, nominal length (NL)

Nominal diam.	Threaded Connection dim.		SW1	SW2	SW3	Nominal pressure	Nominal length	ID No.
	connection DIN EN 10226	Nipple DIN EN 10226					NL	
DN	ISO 7/1	ISO 7/1	mm	mm	mm	PN	mm	
20	Rp 3/4	R 3/4	48	31	32	12	300	012680
							500	012681
							800	071464
							1000	012683
							1500	009509
25	Rp 1	R 1	55	38	42	12	300	012684
							500	012685
							800	071465
							1000	012687
							1500	009511
32	Rp 1 1/4	R 1 1/4	67	48	50	12	500	012688
							1000	012690
							1500	009512
40	Rp 1 1/2	R 1 1/2	74	53	55	12	500	009498
							800	071467
							1000	009500
							1500	009513
50	Rp 2	R 2	90	65	70	12	500	009501
							800	071468
							1000	009505
							1500	009514

Other lengths are available on request.



LA 201

Stainless steel hoses with loose flanges

Hose lineType RS 331L12 with simple wire braiding.
Two-sided loose flange connection CA 82E, stamped with VdS authorisation number for use in stationary water extinguishing systems

Material:
- Hose: stainless steel, 1.4571 (AISI 316Ti) or 1.4404 (AISI 316 L)
- Braiding: stainless steel, 1.4301 (AISI 304)
- End sleeve: stainless steel, 1.4301 (AISI 304)
- Welding rim: stainless steel, welded
- Loose flange: St 37-2

Approvals: VdS LPCB DVGW

Delivery:
Ex warehouse (subject to prior sale)
Other nominal lengths available on request.

When ordering, please specify:
Type, DN, nominal length (NL)

Nominal diameter	Flange connection dimensions	Operating pressure	Nominal length	ID No.
DN	DIN 2501 DIN EN 1092-1	PN	NL mm	
20	PN 10/16	12	500	012609
			1000	012611
			1500	012612
			2000	012613
25	PN 10/16	12	300	012614
			500	012616
			1000	012618
			1500	012619
			2000	012620
32	PN 10/16	12	500	012623
			600	012624
			1000	012627
40	PN 10/16	12	300	012630
			500	012632
			700	012634
			1000	012636
			1500	012637
50	PN 10/16	12	300	012639
			500	012641
			800	012644
			1000	012645
			1500	012647
65	PN 10/16	12	500	012650
			850	012652
			1000	012653
			1500	012655
80	PN 10/16	12	500	012657
			100	012659
100	PN 10/16	10	500	012663
			1000	012664
			1100	012665
			1500	012666

Other lengths are available on request.

STAINLESS STEEL HOSE PIPELINES FOR SPRINKLER SYSTEMS

Type RS 331L12 standard corrugation

Type RS 341L12 wide corrugation

Stainless steel hoses, medium design

Hose line
Typ RS 331/341L12 with braiding

Design:
Type RS 331L12:
corrugated hose, standard corrugations with simple braiding
Type RS 341L12:
corrugated hose, wide corrugations with simple braiding

Material:
- Hose: stainless steel, 1.4571 (AISI 316Ti), 1.4541 (AISI 321) or 1.4404 (AISI 316 L);
- Braiding: stainless steel, 1.4301 (AISI 304)
- End sleeve: stainless steel, 1.4301 (AISI 304)

Approvals: VdS, LPCB, DVGW

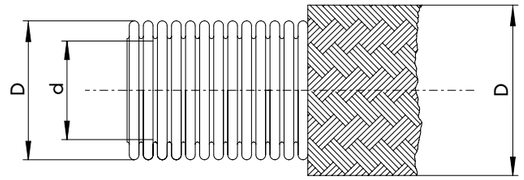
For applications with movable equipment parts, e.g. high racking system with movable equipment parts, we recommend a customised technical designs with our technology, adapted to the loading conditions that can be expected in operating conditions.

Text for tenders:

HYDRA corrugated hose, stainless steel 1.4571, 1.4541 or 1.4404
Type RS _____ L12
both sides _____ (connection type) _____ (Type)
one side _____ (connection type) _____ (Type)
other side _____ (connection type) _____ (Type)
All components stamped with VDS approval number for use in stationary water extinguishing systems

DN _____ NL _____

When ordering, please specify:
Type, DN, nominal length (NL)

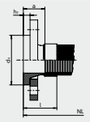
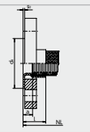
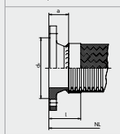
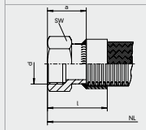
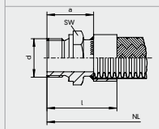
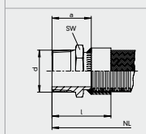
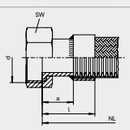


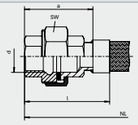
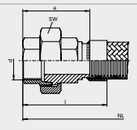
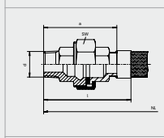
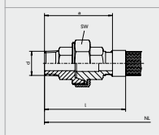
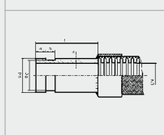
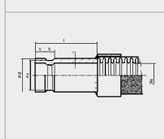
Type RS 331L12 standard corrugation

Type RS 341L12 wide corrugation

Nominal diameter DN	Type	Inside diameter d mm	Outside diameter D, D1 mm	Minimum bending radius r_{min} one-time bend mm	Nominal bending radius r_n frequent movement mm	Operating pressure PN	Weight approx. kg/m	Production length max. m
Medium version, standard corrugations								
20	RS 331L12	20.2	28.3	70	170	12	0.49	100
25	RS 331L12	25.5	34.2	85	190	12	0.79	100
32	RS 331L12	34.2	43.0	105	260	12	0.96	100
40	RS 331L12	40.1	52.0	130	300	12	1.46	30
50	RS 331L12	50.4	62.6	160	320	12	1.67	30
65	RS 331L12	65.3	81.2	200	460	12	2.88	20
80	RS 331L12	80.2	98.0	240	700	12	4.08	20
100	RS 331L12	100.0	119.4	290	750	10	4.54	20
Medium version, wide corrugations								
20	RS 341L12	20.7	28.1	70	225	12	0.54	100
25	RS 341L12	25.8	33.7	85	260	12	0.80	100
32	RS 341L12	34.6	43.0	105	300	12	0.82	100
40	RS 341L12	40.5	51.5	130	340	12	1.26	30
50	RS 341L12	50.8	62.5	160	390	12	1.47	30
65	RS 341L12	65.7	80.9	200	460	12	2.44	20
80	RS 341L12	80.6	97.4	240	660	12	3.52	20
100	RS 341L12	100.4	118.2	290	750	12	3.94	20

Overview

Connection	Description	Type
	Flange connection rotating welded-on collar with loose flange	Type AB DN 20 - DN 100
	Flange connection rotating Welding rim with loose flange	Type CA DN 20 - DN 100
	Flange connection fixed Welding neck flange	Type GB DN 20 - DN 100
	Hexagonal threaded socket fixed Pipe thread as per DIN EN 10226 (ISO 7/1)	Type LA DN 20 - DN 50
	Hexagonal threaded nipple fixed External thread as per ISO 228/1	Type MA DN 20 - DN 100
	Hexagonal threaded nipple fixed Pipe thread as per DIN EN 10226 (ISO 7/1)	Type MH DN 20 - DN 80
	Thread connection, rotatable, flat sealing collar connection with swivel nut, thread ISO 2208/1	Type NA DN 20 - DN 50

Connection	Description	Type
	Flat seal screw coupling Internal thread as per DIN EN 10226 (ISO 7/1)	Type QA DN 20 - DN 50
	Conical seal screw coupling Internal thread as per DIN EN 10226 (ISO 7/1)	Type QB DN 20 - DN 50
	Threaded connection flat sealing External thread as per DIN EN 10226 (ISO 7/1)	Type RE DN 20 - DN 50
	Conical seal screw coupling External thread as per DIN EN 10226 (ISO 7/1)	Type RF DN 20 - DN 50
	Victaulic system, Grooved pipe ends	DN 20 - DN 100
	Grinell system, Grooved pipe ends	DN 20 - DN 100

* End fittings in steel, high-grade steel or tempered malleable iron

Product Properties

Product diversity
Pipes can stretch or shorten when subjected to changes in temperature. These changes in lengths can result in significant stress on fixed installed piping systems and attachment and connection points. HYDRA expansion joints for the HVAC area are available in a variety of designs. Axial compensation joints are available in VdS-approved designs with guidance and protective piping for use in safety-relevant water extinguishing facilities.

Safety
Expansion joints are designed to safely manage pressures and temperatures. Axial expansion joints for stationary extinguishing systems (e.g. production series AFZ and ABZ) are designed for operating temperatures of up to 300°C and a nominal pressure of 16 bar. VdS approval, high-quality materials and DIN ISO 9001 / EN 29001 certified production and quality monitoring guarantee optimal functionality for these components.

Quality
Expansion joints are quality products. The basic components are temperature- and corrosion-resistant stainless steel bellows. All expansion joint production series are subject to extensive quality testing: from the testing of the raw material to comprehensive alternate load trials on product samples. HYDRA quality products provide a reliable performance – as unnoticeable as they are indispensable.

HYDRA

Type AFZ
Type ABZ

Axial expansion joints with VdS approval
for stationary water extinguishing systems

Production series AFZ:
DN 25 – DN 100
- With inner catalyst tube and protective pipe
- Fixed flange
- Pre-stressed

Production series AFZ
DN 125 – DN 300
- With outer protective pipe
- Rotating loose flange

Material/connections:
Multiple-layer bellows made of stainless steel 1.4571
Protective guide tubes made of stainless steel 1.4571
Flange steel RSt 37-2

Operating temperature:
up to 300° C

Nominal pressure:
16 bar

Approvals: VdS

Text for tenders:

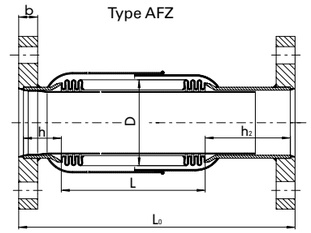
HYDRA axial expansion joint, high-grade steel 1.4571
Flange RSt 37-2
in VdS-approved design
for use in stationary water extinguishing systems
Type AFZ/ABZ _____ PN 16
DN _____
Overall length _____
Axial movement absorption _____

When ordering, please specify:
Type, nominal diameter (DN), axial movement absorption

HYDRA

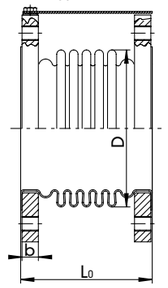
AXIAL EXPANSION JOINTS WITH VDS APPROVAL

Type AFZ



DN 25 – DN 100

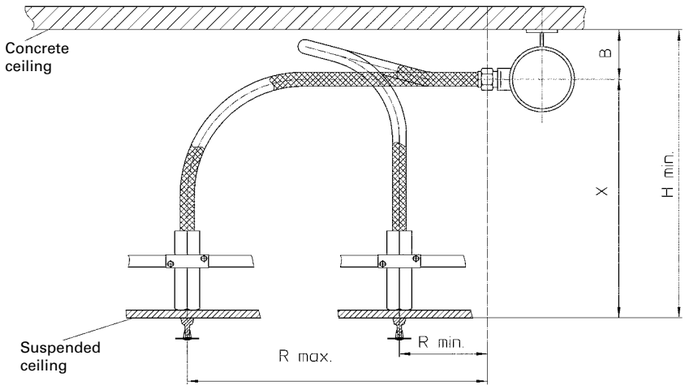
Type ABZ



DN 125 – DN 300

Type AFZ
Type ABZ

Nominal diam.	Pressure level	Movement absorption		Type	Production	Weight length approx.	Flanges			Bellows			Adjustment force
		axial nominal*	lateral		non stressed		Drilling template as per DIN 2501	Flange dia-meter	Sheet thick-ness	Outside dia-meter	Corrugated length	Effective cross-section	axial
DN	PN	$2d_N$ mm	mm	AFZ/ABZ	L_0 mm	G kg	PN	d mm	b mm	D mm	L mm	AC_d cm^2	N/mm
25	16	±20 = 40 ±32 = 64	0 0	16.0025.040.2 16.0025.064.2	230 312	3.0 3.2	10/16 10/16		16	43 43	110 160	10.6 10.6	40 27
32	16	±20 = 40 ±32 = 64	0 0	16.0032.040.2 16.0032.064.2	252 338	4.4 4.9	10/16 10/16		16	56 56	122 176	18.2 18.2	39 27
40	16	±18 = 36 ±32 = 64	0 0	16.0040.036.2 16.0040.064.2	248 418	5.1 6.1	10/16 10/16		16	60 60	118 238	21.3 21.3	55 42
50	16	±20 = 40 ±32 = 64	0 0	16.0050.040.2 16.0050.064.2	230 312	5.8 6.7	10/16 10/16		16	77 77	100 150	35.6 35.6	50 33
65	16	±20 = 40 ±40 = 80	0 0	16.0065.040.2 16.0065.080.2	260 362	8 9.4	10/16 10/16		16	92 92	130 200	52 52	133 85
80	16	±18 = 36 ±32 = 64	0 0	16.0080.036.2 16.0080.064.2	224 334	8.6 10.3	10/16 10/16		18	106 106	94 172	72.8 72.8	82 43
100	16	±22 = 44 ±40 = 80	0 0	16.0100.044.2 16.0100.080.2	240 394	10.1 12.8	10/16 10/16		18	130 132	110 214	115 115	109 102
125	16	±25 = 50 ±40 = 80	2 2	16.0125.050.3 16.0125.080.3	177 239	16 18	10/16	188	22	172 174	84 144	182 182	245 272
150	16	±28 = 56 ±40 = 80	2 2	16.0150.056.3 16.0150.080.3	187 226	20 23	10/16	212	24	203 204	90 128	260 261	240 220
200	16	±16 = 32 ±32 = 64	2 2	16.0200.032.3 16.0200.064.3	152 205	26 29	10	268	24	260 260	54 108	432 432	746 373
250	16	±20 = 40 ±35 = 70	2 2	16.0250.040.3 16.0250.070.3	187 244	38 41	10	320	26	318 318	76 133	665 665	567 324
300	16	±17 = 34 ±45 = 90	2 2	16.0300.034.3 16.0300.090.3	175 280	51 61	10	370	26	374 374	63 168	924 924	886 332



Suggestions for configuration and planning

1. During the configuration and planning stage please ensure that you are now below the minimum admissible bending radii for the sprinkler hoses, e.g. when bypassing other technical assemblies. The minimum clearance H (min.) between the concrete slab and suspended ceiling must be adhered to. It depends on the nominal diameter of the hoses which are used (see installation diagram). A special design featuring a 90° elbow is available for tight installation situations. In that case, the minimum required clearance H (min.) is only 170 mm.

2. The sprinkler hose outlets should be located on the side of the supply line, parallel to the concrete slab (see installation diagram).

3. A minimum clearance of 100 mm is recommended between the concrete slab and axis of the vertical sprinkler hose outlet. In tight installation situations the hose must be mounted in the form of a loop (see installation diagram). However, the distance between the concrete floor slab and the centre of the vertical sprinkler hose outlet should not be less than a dimension B (min.) of 50 mm.

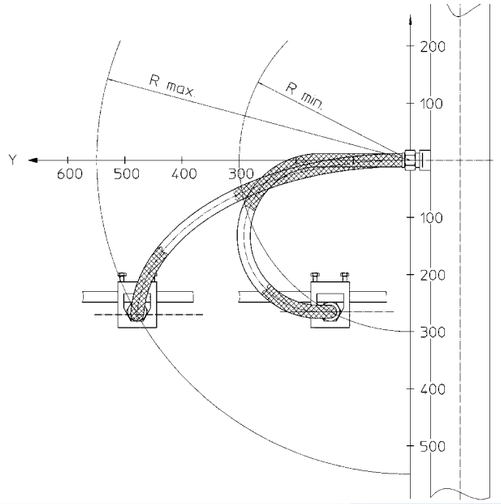
4. When preparing the hydaulic design of the sprinkler system, pressure losses and the resulting equivalent pipe lengths as per the table below must be taken into account. These values were compiled on the basis of VdS, using a flow rate of 5 m/sec.

5. When planning the installation points for sprinkler nozzles, take into account the installation dimensions shown in the table opposite.

Nominal width hose	Minimum bending radius	Minimum clearance H (min.)	
		straight design	90° elbow
DN 20	70 mm	240 mm	170 mm
DN 25	85 mm	265 mm	170 mm

Nominal length	DN 20		DN25	
	Δ p	L (eq.)	Δ p	L (eq.)
500 mm	0.8 bar	5 m	0.5 bar	4 m
1000 mm	0.9 bar	8 m	0.5 bar	8 m
1200 mm	1.0 bar	12 m	0.6 bar	11 m
1500 mm	1.3 bar	12 m	0.8 bar	11 m
2000 mm	1.7 bar	14 m	1.0 bar	12 m

Pressure losses and equivalent pipe lengths correspond with VdS measurement results



Suggestions for configuration and planning

Sprinkler hose nominal diameter DN 20

DN 20	x	R min.	R max.
NL 1000	< 200	0	800
	300	0	750
	400	0	700
	500	0	650
	600	0	600
	700	0	500
NL 1200	< 300	0	1000
	400	0	900
	500	0	850
	600	0	800
	700	0	700
	800	0	600
	900	0	500
NL 1500	< 300	0	1200
	400	0	1150
	500	0	1150
	600	0	1100
	700	0	1100
	800	0	1100
	900	0	1000
	1000	0	900
NL 2000	< 300	0	1750
	400	0	1700
	500	0	1700
	600	0	1650
	700	0	1650
	800	0	1600
	900	0	1550
	1000	0	1500

Sprinkler hose nominal diameter DN 25

DN 25	x	R min.	R max.
NL 1000	> 200	not recommended	
	300	not recommended	
	400	300	700
	500	200	650
	600	100	600
	700	0	500
NL 1200	< 300	0	1000
	400	0	900
	500	0	850
	600	0	800
	700	0	700
	800	0	600
	900	0	500
NL 1500	< 300	0	1200
	400	0	1150
	500	0	1150
	600	0	1100
	700	0	1100
	800	0	1100
	900	0	1000
	1000	0	900
NL 2000	< 300	0	1750
	400	0	1700
	500	0	1700
	600	0	1650
	700	0	1650
	800	0	1600
	900	0	1550
	1000	0	1500

X = Distance between centre of hose outlet and suspended ceiling