fischer

Fixing of sprinkler pipelines.

Fire protection is not the same as sprinklers!

Preventive fire protection

- Structural fire protection
- Technical fire protection

Fire protection objectives

On the one hand, fire protection provides personal protection, as a protection objective required in the building legislation of the respective countries (or feral states in the country). It is usually ensured by structural fire protection measures such as fire-resistant walls and ceilings, etc. Fire protection to protect property as a protection objective of the property insurance companies, such as the VdS or FM, not only use structural fire protection measures, but also primarily technical fire protection measures. Some requirements extend beyond those of the building legislation. Technical fire protection such as alarm systems and extinguishing systems, which also include sprinkler systems, must be installed with approved or listed components according to the selected directive or guidelines.

Sprinkler systems are alarm and extinguishing systems

Sprinkler systems are water extinguishing systems, which are usually installed extensively. I.e. sprinklers are installed in all rooms and along all escape routes of a building and are designed according to the necessary fire hazard. This fact also makes the sprinkler system an alarm/detection system, as the temperature-dependent opening of a sprinkler causes an audible alarm to be emitted and in general, this is also forwarded to the fire detection and alarm system. In addition, the extinguishing success of sprinkler systems has been very high for decades, which is why they are a standard feature in some types of buildings.

Fixing of sprinkler systems.

Sprinkler systems are designed and installed to different standards. For example, to the German VdS standard (VdS CEA 4001), to the American FM standard 1951 (Factory Mutual Insurance Company, FM Global), to the UL (Underwriters Laboratories, UL) based on the NFPA 13 standard (National Fire Protection Association, NFPA) or to the European standard EN 12845.

The European guideline CEA 4001 was introduced in 1995 by the insurance industry in collaboration with the manufacturers' association and in Germany in 2003 by "VdS Schadensverhütung GmbH" as VdS CEA 4001.

EN 12845 was created on the basis of the CEA 4001 of 1995 and the VdS CEA 4001 of 2003, so that the resulting standard is virtually the same. The EN 12845 is supplemented by the EN 12259 series of standards for the most important components but does not cover the further requirements of fixing products.

The American standards correspond with each other and with the European standards and guidelines regarding the fixing of pipework. The differences are in the detail and must be noted in the respective use.

Certification symbol

VdS CEA 4001 compliance symbol in concrete ceilings:

Requirements for pipe fixings.

Apart from pipe clamps or pipe loops, all other types of fixing elements such as plugs, anchors, beam clamps, trapezoidal sheet hangers, etc. belong tothe pipe hangers.
Depending on the standard, different load requirements apply to the hangers of sprinkler pipes, as test load or minimum load capacity, fixing spacings and connecting thread sizes for the use of steel pipes, which are listed in the tables on the next page for the most widely used guidelines. EN 12845 contains the same values as VdS CEA 4001.

Pipe clamps and pipe loops must be approved or meet the requirements.
Pipe clamps and pipe loops must be FM-approved and listed, the same is required by UL. The VdS standard and according to EN 12845, there are defined minimum requirements that must be met in addition to the load requirements shown on the next page.
If there are deviations from the requirements according to VdS CEA 4001, the product must be recognised by the VdS or must be available for the use.

Table of the minimum requirements for the material thickness and width of hangers

Nominal diameter of the pipe „d“	Flat iron holder (EN 12845) hanger material (VdS CEA 4001)		Pipe clamps (EN 12845) pipe loops (VdS CEA 4001)	
	Galvanised	Ungalvanised	Galvanised	Ungalvanised
[mm]	[mm]	[mm]	[mm]	[mm]
d ≤ 50	2.5	3.0	25 × 1.5	25 × 3.0[1)]
50 < d ≤ 200	2.5	3.0	25 × 2.5[1)]	25 × 3.0[1)]

[1)] According to VdS CEA 4001 the requirement for hanger materials applies here (s. left side of the table)

Loads

Load requirements, fixing spacings and connecting thread of the standards.

Pipe size	FM1951/FMDS0200				NFPA13				VdS CEA 4001 (EN 12845)			
	Test load	Max. spacing	Min. thread size		Calculated test load	Max. spacing	Min. thread size		Minimum load capacity	Max. spacing	Min. thread size	
DN	[kN]	[m]	[metric]	[inch]	[kN]	[m]	[mm]	[inch]	[kN]	[m]	[metric]	[inch]
15	n/a	n/a	n/a	n/a	1.4	3.7	10	3/8	2.0	4.0	M8	n/a
20	1.512	3.6	M10	3/8	1.5	3.7	10	3/8	2.0	4.0	M8	n/a
25	1.824	3.6	M10	3/8	1.7	3.7	10	3/8	2.0	4.0	M8	n/a
32	1.913	3.6	M10	3/8	1.9	3.7	10	3/8	2.0	4.0	M8	n/a
40	2.313	4.6	M10	3/8	2.4	4.6	10	3/8	2.0	4.0	M8	n/a
50	2.825	4.6	M10	3/8	2.9	4.6	10	3/8	3.5	4.0	M10	n/a
65	4.181	4.6	M10	3/8	3.8	4.6	10	3/8	3.5	4.0	M10	n/a
80	4.715	4.6	M10	3/8	4.8	4.6	10	3/8	3.5	4.0	M10	n/a
90	5.583	4.6	M10	3/8	5.7	4.6	10	3/8	3.5	4.0	M10	n/a
100	6.561	4.6	M10	3/8	6.7	4.6	10	3/8	3.5	4.0	M10	n/a
125	8.896	4.6	M12	1/2	9.2	4.6	13	1/2	5.0	4.0	M12	n/a
150	11.632	4.6	M12	1/2	12.0	4.6	13	1/2	5.0	4.0	M12	n/a
200	16.903	4.6	M12	1/2	18.3	4.6	13	1/2	8.5	4.0	M16	n/a
250	26.044	4.6	M16	5/8	26.7	4.6	16	5/8	10.0	4.0	M20	n/a
300	35.141	4.6	M16	5/8	36.1	4.6	20	3/4	12.5	4.0	M20	n/a

For the design of the hangers, the two American guidelines allow calculation of the loads which provides comparability of the load level and can be described as recommended or approved loads, as the basis for the products such as pipe loops and plugs.

Comparison of the sprinkler loads per pipe hanger								
Pipework, water-filled			Max. allowable spacings			Loads (kg) based on calculated pipe loads/table		
Dimensions		Schedule 40*	NFPA	FM	VdS	NFPA	FM	VdS
[DN]	[Inch]	[kg/m]	[m]	[m]	[m]	5-times+114kg	2-times+170kg	see table
25	1	3.1	3.7	3.6	4	170	192	200
32	1 1/4	4.4	3.7	3.6	4	195	201	200
40	1 1/2	5.4	4.6	4.6	4	238	219	200
50	2	7.6	4.6	4.6	4	289	240	350
65	2 1/2	11.7	4.6	4.6	4	384	278	350
80	3	16.1	4.6	4.6	4	484	318	350
90	3 1/2	20.1	4.6	4.6	4	575	355	350
100	4	24.4	4.6	4.6	4	675	395	350
125	5	34.9	4.6	4.6	4	917	491	500
150	6	47.2	4.6	4.6	4	1,199	604	500
200	8	71.0	4.6	4.6	4	1747	823	850

* Weight of 8" steel pipe Schedule 30 (NFPA specification)

The calculations described above in the table are based on the following subitems of the guidelines:
- NFPA 13, 17.1.2 (old: 9.1.1.2): Five times the water-filled pipe, plus 114 kg as preload.
- FM 1951, 3.3.3 A or FMDS0200 2.5.4.3.1: Twice the water-filled pipe, plus 170 kg as preload.
- EN 12845 specifies identical loads to CEA 4001, however, only up to DN200.

Plug and anchor requirements for fixing in concrete.

In the guidelines named above, the respective requirements are listed in the following.

Anchors according to CEA 4001 – 15.2.4 Anchoring in concrete ceilings.

Plugs must have a CE marking based on a corresponding ETA:

- For single fixings in cracked concrete (European Technical Assessment or approval according to ETAG 001/Part 1-4 Opt. 1-6 or EAD 330232-00-0601/Opt. 1-6).
- For multiple fixings of non-load-bearing constructions (European Technical Assessment or approval according to ETAG 001/Part 6 or EAD 330747-00-0601 in preparation).
- For comparable national approvals, such as the still valid national technical approvals of the Deutsche
- Institut für Bautechnik (DIBt) for plugs for anchoring lightweight ceiling linings and suspended ceilings are equated with the approvals according to ETAG 001/Part 6.

The anchors are designed according to the approval, whereby the relevant load equals 1.4 times the actual load. The plugs must meet the tensile capacity (steel failure, NRk,s) and threaded connection (if present) the requirements of the following table.

Use for fixing pipework with pipe nominal size D on ceilings with one anchor per fixing point	Minimum threaded connection of the anchor	Characteristic tensile capacity (steel failure) $N_{Rk,s}$ [N]
D ≤ DN 50	M8	≥ 6,000
DN 50 < D ≤ DN 100	M10	≥ 10,500
DN 100 < D ≤ DN 150	M12	≥ 15,000
DN 150 < D ≤ DN 200	M16	≥ 25,500
DN 200 < D ≤ DN 250	M20	≥ 30,000
DN 250 < D ≤ DN 300	M20	≥ 37,500

VdS CEA 4001 - Table 15.04: Minimum tensile capacity and minimum threaded connection

Anchors according to EN 12845: Design of hangers according to 17.2.3 Design.

- Unlike the VdS CEA 4001, minimum lengths are defined for anchor bolts, however, they include further conditions.
- Basically, plugs and anchors with corresponding ETA (see above regarding VdS CEA 4001) can be used, as they are legitimised in building law terms on the basis of the Construction Products Regulation(CPD).
- The VdS CEA values from the load requirements, fixing spacing and connecting thread table can be used as a requirement for the loads.

Anchors according to NFPA 13, 17.2.2 (old 9.1.3) Fixings in concrete (Basis for UL listing).

- Basically, NFPA 13, 17.2.2.1 (old 9.1.1.4) specifies that all components of the hangers, which hold the pipe and all products that connect the hanger to the structural substrate require a listing according to the UL guidelines.
- The required load capacity according to NFPA 13, 17.1.2 (old 9.1.1), as contained in the Load requirements (s. table), fixing spacings and connecting thread table, with the calculated test loads, also applies to plugs and anchors.
- Section 17.2.2 (old 9.1.3) also describes rules for the use of plugs (inserts) and anchors in different types of concrete such as lightweight concrete and similar.

Anchors according to FM1951 – 3.2 Technical and constructive properties.

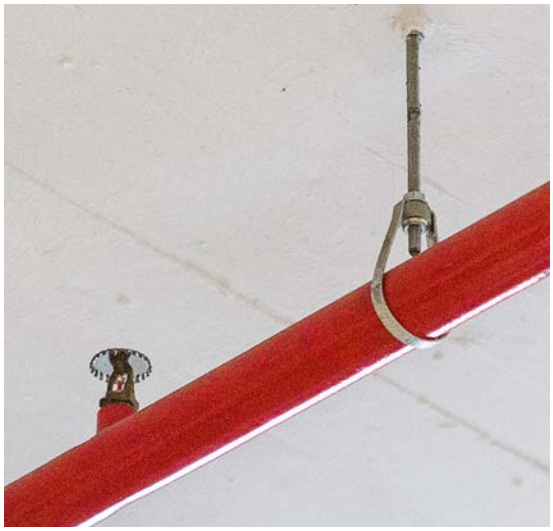
- The same provision applies as defined in NFPA 13, i.e. that all components of the hangers that hold the pipe and all products that connect the hanger to the structural substrate must be subjected to approval according to the FM guidelines and must be listed as FM-approved.
- Section 3.2.2 defines the requirements for anchors and plugs (parts of the hanger that connect to the structural substrate. The requirements are entered in the load requirements (s. table), fixing spacings and connecting thread table.

Summarising

If the test loads of the American standards and the characteristic loads of the European standards are compared, it can be stated that the load levels are harmonised and thus the same plugs and anchors can be used for the same sprinkler system applications, depending on the listing, approval or compliance with the guidelines.

Fixing plug and anchor requirements.

In addition to fixings in concrete, diverse lightweight concrete types and aircrete or other types of masonry are available as fixing substrates. Steel constructions with different forms of steel girders and wood constructions as fixing substrates are also available and are taken into consideration in the standards. Here, too, the fixing elements used must meet the requirements of the guidelines.



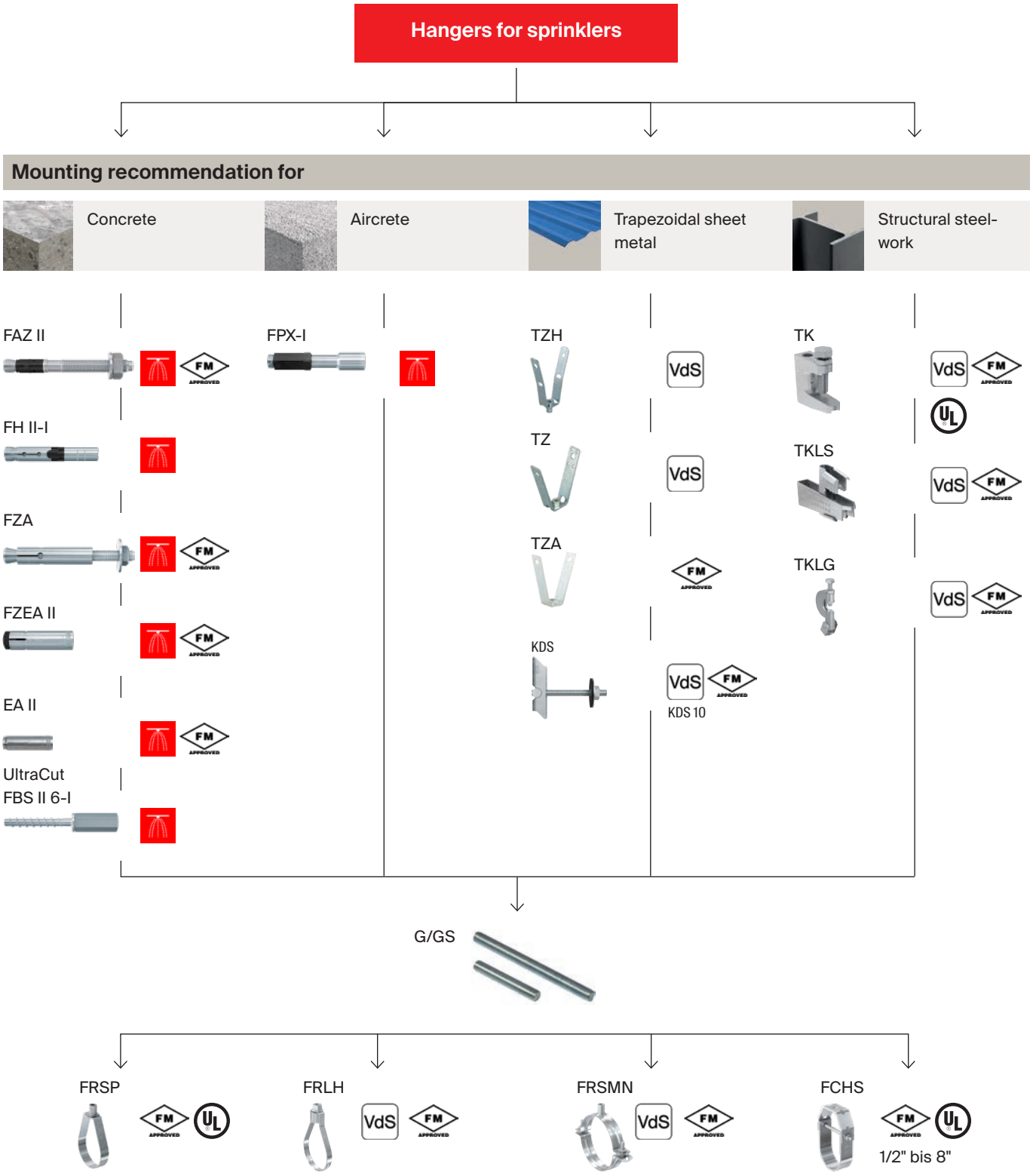
Approvals and usability for the sprinkler fixing.

Overview of the tests for plugs and anchors and their usability for sprinkler fixings

Type	ETA concrete, single	ETA concrete, multiple	ETA masonry	VdS compliant	FM approved
FAZ II, FAZ II Plus	Option 1	–	–	●	●
FH II	Option 1	–	–	●	●
UltraCut FBS II	Option 1	● (UltraCut FBS II 6)	–	● (Incl. UltraCut FBS II 6)	–
FZA	Option 1	–	–	●	–
FHB II	Option 1	–	–	●	●
FZEA II	Option 7	–	–	●	●
EA II	Option 1	●	–	●	–
FIS V/FIS V Plus/FIS VL	Option 1	–	●	●	–
FIS SB	Option 1	–	–	●	–
FNA II	–	●	–	●	–
FPX-I	–	–	● Aircrete	●	–
FDN II	–	●	–	●	–
SXR/SXRL	DIBT approval for single fixings in cracked concrete	●	●	●	–

ETA concrete, single, Option 1 = suitable for cracked and uncracked concrete,
ETA concrete, single, Option 7 = suitable for uncracked concrete
ETA concrete, multiple = suitable for cracked and uncracked concrete (redundant)

Fixing solutions for sprinklers.
Flexibility guaranteed.



Product range and technical data.

Profile hangers TZ/TZH


TZ


TZH

Item	Item. No.	VdS approved	FM approved	Thread	Max. rec load (cent tension) [kN]	Sales unit [pcs]
TZ M8	**064094**	●	–	M8	3.0	25
TZH M8	**079825**	●	–	M8	4.0	25
TZA M10	**524047**	–	●	M10	3.0	50
TZ M10	**064095**	●	–	M10	3.0	25
TZH M10	**079826**	●	–	M10	4.0	25

Steel girder clamp hanger TKLS


TKLS


SS-TKLS

Item	Zinc plated zp Item. No.	Stainless steel A4 Item. No.	VdS approved	FM approved	Hole-ø [mm]	Clamp area [mm]	Max. rec static load (cent tension) [kN]	Max. rec pipe ø to VDS CEA 4001	Sales unit [pcs]
TKLS ø 9	**531134**	**–**	●	–	9	8 – 20	2.00	≤ DN 50	25
TKLS ø 11	**531136**	**564391**	●	●	11	8 – 20	3.50	> DN 50 ≤ DN 100	25
TKLS ø 13	**531137**	**–**	●	●	13	8 – 20	5.00	> DN 100 ≤ DN 200	25
TKLS ø 17	**531138**	**–**	●	●	17	11 – 26	10.00	> DN 200 ≤ DN 250	16
SS-TKLS M10	**566855**		●	–	–	–	–	–	50
SS-TKLS M10		**564399**	●	–	–	–	–	–	25
SS-TKLS M12	**566856**	**–**	●	–	–	–	–	–	50
SS-TKLS M16	**566857**	**–**	●	–	–	–	–	–	50

Girder clamp hanger TKL

TKL

SS-TKL

Item	Zinc plated zp Item. No.	Hot-dip galvanised fvz Item. No.	VdS approved	FM approved	UL approved	Clamp area [mm]	Thread	Max. rec static load (cent tension) [kN]	Sales unit [pcs]
TKL L M8	064055	564392	●	–	–	0 – 18	M8	1.20	50
TKL M8	079687	–	●	–	–	0 – 23	M8	2.50	50
TKL L ø 9	077605	–	●	–	–	0 – 18	ø 9	1.20	50
TKL M10	079688	564393	●	●	●	0 – 20	M 10	2.50	50
TKL ø 11	079689	–	●	●	●	0 – 20	ø 11	2.50	50
TKL M12	020949	564394	●	●	●	0 – 26	M12	3.50	50
TKL ø 13	043275	–	●	●	●	0 – 26	ø 13	3.50	50
SS-TKL M10/M12	048154	1)	●	–	–	–	ø 10/ø 12	–	25

1) This article is only available in zinc plated finish. It is also suitable for HDG applications.

Swivel beam clamp TKLG

TKLG

SS-TKLG

Item	Item no.	VdS approval	FM approval	Clamping range D [mm]	Thread A	Max. recom. static load at 0-25° N_{rec} [kN]	Max. recom. static load at 25-45° N_{rec} [kN]	Tightening torque T_{inst} [Nm]	Sales unit [pcs]
TKLG M8	570846	●	–	3 - 17	M8	2,50	1,50	18	25
TKLG M10	570847	●	●	3 - 17	M10	2,50	1,50	18	25
SS-TKLG	573820	●	–	–	–	–	–	–	10

Heavy duty pipe clamp FRSMN

FRSMN

Item	Item no.	FM approval	VdS approval	Thread A	Size [in]	Clamping range D [mm]	Width x thickness clamp band b x s [mm]	Width B [mm]	Height H [mm]	Height Z [mm]	Locking screw	Installation torque T_{inst} [Nm]	Max. recom. static load (centr. tension) N_{rec} [kN]	Sales unit [pcs]
FRSMN 15-19 M8/M10	570152[1)]	–	–	M8 / M10	3/8	15 - 19	30 x 2,5	62	45,5	33,5	M6	2	2,50	50
FRSMN 20-24 M8/M10	570153	–	●	M8 / M10	1/2	20 - 24	30 x 2,5	71	50,5	36	M6	2	2,50	50
FRSMN 25-30 M8/M10	570154	●	●	M8 / M10	3/4	25 - 30	30 x 2,5	78	56,5	39	M6	2	2,50	50
FRSMN 31-35 M8/M10	570155	●	●	M8 / M10	1	31 - 35	30 x 2,5	84	59	37,5	M6	2	4,00	50
FRSMN 36-41 M8/M10	570156	–	●	M8 / M10	–	36 - 41	30 x 2,5	89	65	40,5	M6	2	4,00	50
FRSMN 40-45 M8/M10	570157	●	●	M8 / M10	1 1/4	40 - 45	30 x 2,5	94	69	42,5	M6	2	4,00	50
FRSMN 48-53 M8/M10	570158	●	●	M8 / M10	1 1/2	48 - 53	30 x 2,5	103	77	46,5	M6	2	4,00	50
FRSMN 55-59 M8/M10	570159	–	●	M8 / M10	–	54 - 59	30 x 2,5	108	83	49,5	M6	2	4,00	50
FRSMN 60-65 M8/M10	570160	●	●	M8 / M10	2	60 - 65	30 x 2,5	116	89	52,5	M6	2	4,00	50
FRSMN 67-72 M8/M10	570161	–	●	M8 / M10	–	67 - 72	30 x 2,5	123	96	56	M6	2	4,00	50
FRSMN 76-81 M10/M12	570162	●	●	M10 / M12	2 1/2	76 - 81	30 x 3,0	145,5	110,5	65,5	M8	3	5,00	25
FRSMN 82-85 M10/M12	570163[1)]	–	●	M10 / M12	–	82 - 85	30 x 3,0	153,5	114,5	67,5	M8	3	5,00	25
FRSMN 88-94 M10/M12	570164	●	●	M10 / M12	3	88 - 94	30 x 3,0	157	123,5	72	M8	3	5,00	25
FRSMN 95-102 M10/M12	570165	–	●	M10 / M12	–	95 - 102	30 x 3,0	168	131,5	76	M8	3	5,00	25
FRSMN 102-108 M10/M12	570166[1)]	–	●	M10 / M12	–	102 - 108	30 x 3,0	179	137,5	79	M8	3	5,00	25
FRSMN 110-116 M10/M12	570167	●	●	M10 / M12	4	110 - 116	30 x 3,0	184	145,5	83	M8	3	5,00	25
FRSMN 124-129 M10/M12	570168[1)]	–	●	M10 / M12	–	124 - 129	30 x 3,0	199,5	158,5	89,5	M8	3	5,00	25
FRSMN 133-140 M12/M16	570169	●	●	M12 / M16	5	133 - 140	40 x 4,0	216	175,5	100	M12	10	8,00	10
FRSMN 140-146 M12/M16	570170[1)]	–	●	M12 / M16	–	140 - 146	40 x 4,0	222	181,5	103	M12	10	8,00	10
FRSMN 149-155 M12/M16	570171[1)]	–	●	M12 / M16	–	149 - 155	40 x 4,0	232	190	107,5	M12	10	8,00	10
FRSMN 159-165 M12/M16	570173	–	●	M12 / M16	–	159 - 165	40 x 4,0	242	200,5	112,5	M12	10	8,00	10
FRSMN 167-173 M12/M16	570174	●	●	M12 / M16	6	167 - 173	40 x 4,0	249	208,5	116,5	M12	10	8,00	10
FRSMN 176-182 M12/M16	570128	–	–	M12 / M16	–	176 - 182	40 x 4,0	258	217,5	121	M12	10	8,00	10
FRSMN 188-194 M12/M16	570129[1)]	–	–	M12 / M16	–	188 - 194	40 x 4,0	270	229,5	127	M12	10	8,00	10
FRSMN 199-205 M12/M16	570131	–	–	M12 / M16	–	199 - 205	40 x 4,0	281	240,5	135,5	M12	10	9,00	10
FRSMN 207-216 M12/M16	570133[1)]	–	–	M12 / M16	–	207 - 216	40 x 4,0	292	251,5	138	M12	10	9,00	10
FRSMN 219-226 M12/M16	570134	–	–	M12 / M16	8	219 - 226	40 x 4,0	302	261,5	143	M12	10	9,00	10
FRSMN 219-226 M16 VdS	570135	–	●	M16	8	219 - 226	40 x 4,0	302	257,5	139	M12	10	9,00	10
FRSMN 227-236 M12/M16	570136[1)]	–	–	M12 / M16	–	227 - 236	40 x 4,0	312	271,5	148	M12	10	9,00	10
FRSMN 244-250 M12/M16	570137	–	–	M12 / M16	–	244 - 250	40 x 4,0	326	285,5	155	M12	10	9,00	10
FRSMN 251-261 M12/M16	570138[1)]	–	–	M12 / M16	–	251 - 261	40 x 4,0	337	296,5	160,5	M12	10	9,00	10
FRSMN 267-273 M12/M16	570139	–	–	M12 / M16	10	267 - 273	40 x 4,0	349	308,5	166,5	M12	10	9,00	10
FRSMN 267-273 M20 VdS	570140[1)]	–	●	M20	10	267 - 273	40 x 4,0	349	311	169	M12	10	9,00	10
FRSMN 278-284 M12/M16	570141[1)]	–	–	M12 / M16	–	278 - 284	40 x 4,0	360	319,5	172	M12	10	9,00	10
FRSMN 297-304 M12/M16	570142[1)]	–	–	M12 / M16	–	297 - 304	40 x 4,0	380	339,5	182	M12	10	9,00	10
FRSMN 305-316 M12/M16	570143	–	–	M12 / M16	–	305 - 316	40 x 4,0	392	351,5	188	M12	10	9,00	10
FRSMN 316-324 M16	570144	–	–	M16	12	316 - 324	50 x 5,0	431	358	191	M16	20	15,00	1
FRSMN 348-356 M16	570145[1)]	–	–	M16	13	348 - 356	50 x 5,0	463	390	207	M16	20	15,00	1
FRSMN 360-368 M16	570147[1)]	–	–	M16	–	360 - 368	50 x 5,0	475,5	402	213	M16	20	15,00	1
FRSMN 399-407 M16	570148[1)]	–	–	M16	16	399 - 407	50 x 5,0	514,5	441	232,5	M16	20	15,00	1
FRSMN 411-419 M16	570149[1)]	–	–	M16	–	411 - 419	60 x 8,0	531,5	459	241,5	M16	20	15,00	1
FRSMN 500-508 M16	570150[1)]	–	–	M16	20	500 - 508	60 x 8,0	620,5	548	286	M16	20	15,00	1
FRSMN 513-521 M16	570151[1)]	–	–	M16	–	513 - 521	60 x 8,0	633,5	561	292,5	M16	20	15,00	1

[1)] Lieferzeiten auf Anfrage.

Sprinkler loop hanger FRLH

FRLH

Item	Item no.	FM approval	VdS approval	Size [in]	Thread A	Clamping range D [mm]	Height H [mm]	Height Z [mm]	Width x thickness clamp band b x s [mm]	Max. recom. static load (centr. tension) N_{rec} [kN]	Sales unit [pcs]
FRLH 1/2“ M8	570175	–	●	1/2	M8	21,3	76	64	12 x 1,5	4,00	50
FRLH 3/4“ M8	570176	–	●	3/4	M8	26,9	80	65	12 x 1,5	4,00	50
FRLH 3/4“ M10	570177[1)]	●	●	3/4	M10	26,9	82	67	12 x 1,5	4,00	50
FRLH 1“ M8	570178	–	●	1	M8	33,7	83	65	12 x 1,5	4,00	50
FRLH 1“ M10	570179	●	●	1	M10	33,7	85	67	12 x 1,5	4,00	50
FRLH 1 1/4“ M8	570180	–	●	1 1/4	M8	42,4	88	65	12 x 1,5	4,00	50
FRLH 1 1/4“ M10	570181	●	●	1 1/4	M10	42,4	90	67	12 x 1,5	4,00	50
FRLH 1 1/2“ M8	570182	–	●	1 1/2	M8	48,3	96	70	12 x 1,5	4,00	50
FRLH 1 1/2“ M10	570183	●	●	1 1/2	M10	48,3	98	72	12 x 1,5	4,00	50
FRLH 2“ M8	570184	–	●	2	M8	60,3	112	80	12 x 1,5	4,00	50
FRLH 2“ M10	570186	●	●	2	M10	60,3	114	82	12 x 1,5	4,00	50
FRLH 2 1/2“ M10	570187	●	●	2 1/2	M10	76,1	140	99	15 x 2,5	6,00	25
FRLH 3“ M10	570188	●	●	3	M10	88,9	161	114	15 x 2,5	6,00	25
FRLH 4“ M10	570189	●	●	4	M10	114,3	205	145	15 x 2,5	6,00	25
FRLH 5“ M12	570240	●	●	5	M12	139,7	235	163	15 x 2,5	8,00	25
FRLH 6“ M12	570241	●	●	6	M12	168,3	287	200	15 x 2,5	8,00	25
FRLH 8“ M16	570242	●	●	8	M16	219,1	364	252	20 x 2,5	10,00	10
FRLH 10“ M20	570243[1)]	–	●	10	M20	273	470	330	20 x 3,0	11,00	1

[1)] Delivery time on request.

Solid pipe bracket FMPSU

FMPSU

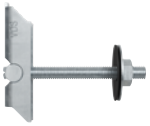
Item	Art.-Nr.	Nominal size [in]	Clamping range D [mm]	Length L_1 [mm]	Length L_2 [mm]	Thread A	Sales unit [pcs]
FMPSU 25	547929	1	38	70	40	M10	50
FMPSU 32	547930	1 1/4	46	76	50	M10	50
FMPSU 40	547931	1 1/2	52	86	50	M10	50
FMPSU 50	547933	2	64	109	50	M12	50
FMPSU 65	547934	2 1/2	82	125	50	M12	50
FMPSU 80	547935	3	94	138	50	M12	50
FMPSU 100	547937	4	120	171	60	M16	25
FMPSU 125	547939	5	148	191	60	M16	20
FMPSU 150	547941	6	176	217	60	M16	15
FMPSU 200	547942	8	228	283	70	M20	8
FMPSU 250	547943	10	282	334	70	M20	8

Threaded rod G

G

Item	Item. No.	Length [mm]	Thread	Sales unit [pcs]
G 8	079740	1000	M8	25
G 10	079744	1000	M10	25
G 12	020957	1000	M12	20
G 16	020958	1000	M16	10
G 20	557295	1000	M20	5
G 8/2	079741	2000	M8	25
G 10/2	079745	2000	M10	25
G 12/2	579746	2000	M12	25
G 10/3	557092	3000	M10	5
G 12/3	064056	3000	M12	5

Spring toggle fixing KDS



KDS

Item	Item. No.	VdS approved	FM approved	Thread	Thread length [mm]	Drillhole diameter, trapezoidal sheet [mm]	Allowable tensile load to VdS and FM [kN]	Allowable tensile load for non-VdS and FM. Relevant applications on trapezoidal sheet* [kN]	Max. rec tensile load without consideration of substrate [kN]	Sales unit [pcs]
KDS 8x100	563859	●	–	M8	100	22	0.8	1.0	8.0	50
KDS 8x200	563860	●	–	M8	200	22	0.8	1.0	8.0	25
KDS 8x300	563861	●	–	M8	300	22	0.8	1.0	8.0	25
KDS 8x500	563862	●	–	M8	500	22	0.8	1.0	8.0	25
KDS 10x100	563863	●	●	M10	100	25	0.8	1.0	8.5	25
KDS 10x200	563864	●	●	M10	200	25	0.8	1.0	8.5	25

* Note the allowable loadability of the trapezoidal sheet. Approved for use in stationary fire protection systems (for pipes up to 2“)

Riser pipe clamp RCWR

RCWR

Item	Item. No.	UL approved	Clamp area [mm]	Width [mm]	Width x thickness of clamp strap [mm]	Max. recommended transverse tensile load [kN]	Tightening torque of screws [Nm]	Sales unit [pcs]
RCWR 1/2"	516673	●	22	215	25 x 5.0	3.30	25	35
RCWR 3/4"	516674	●	28	229	25 x 5.0	3.30	25	30
RCWR 1"	516675	●	34	230	25 x 5.0	3.30	25	25
RCWR 1 1/4"	516676	●	43	241	25 x 5.0	3.30	25	25
RCWR 1 1/2"	516677	●	49	251	25 x 3.0	3.30	25	25
RCWR 2"	516678	●	62	262	30 x 5.0	3.30	25	25
RCWR 2 1/2"	532380	●	75	281	30 x 5.0	3.70	25	25
RCWR 3"	516679	●	91	299	30 x 5.0	4.60	25	20
RCWR 4"	516680	●	116	329	38 x 6.0	6.60	60	12
RCWR 5"	516681	●	144	362	38 x 6.0	8.90	60	12
RCWR 6"	516682	●	171	394	50 x 6.0	11.50	60	8
RCWR 8"	516683	●	223	464	50 x 9.5	18.00	100	4

FRSP sprinkler clamp

FRSP

Item	Item. No.	FM approved	UL approved	Nominal size [Inch]	Thread ø x Length [mm]	Height [mm]	Width x thickness of clamp strap [mm]	Max. rec static load (cent tension) [kN]	Sales unit [pcs]
FRSP 1/2"	**516662**	–	●	1/2"	M10 x 22.5	55	16 x 1.2	2.0	100
FRSP 3/4"	**516663**	●	●	3/4"	M10 x 22.5	62	16 x 1.2	2.0	100
FRSP 1"	**516664**	●	●	1"	M10 x 22.5	70	16 x 1.2	2.0	100
FRSP 1-1/4"	**516665**	●	●	1 1/4"	M10 x 22.5	78	16 x 1.2	2.0	100
FRSP 1-1/2"	**516666**	●	●	1 1/2"	M10 x 22.5	83	16 x 1.2	2.4	100
FRSP 2"	**516667**	●	●	2"	M10 x 22.5	93	16 x 1.2	2.9	100
FRSP 2-1/2"	**516668**	●	●	2 1/2"	M10 x 22.5	126	19 x 2.2	3.9	60
FRSP 3"	**516669**	●	●	3"	M10 x 22.5	147	19 x 2.2	4.9	60
FRSP 4"	**516670**	●	●	4"	M10 x 22.5	180	19 x 2.2	6.8	24
FRSP 5"	**532356**	●	●	5"	M12 x 26.8	210	19 x 2.5	9.2	24
FRSP 6"	**516671**	●	●	6"	M12 x 26.8	251	19 x 3.0	12.0	24
FRSP 8"	**516672**	●	●	8"	M12 x 26.8	301	19 x 3.0	17.4	12

Sprinkler clamp FCHS

FCHS

Item	Item No.	FM approved	UL approved	Size [inch]	Hole-Ø [mm]	Clamping range [mm]	Height [mm]	Width [mm]	Width x thickness clamp band [mm]	Max. recom. static load (centr. tension) [kN]	Sales unit [pcs]
FCHS 1/2"	532187	●	●	1/2"	10.5	19 - 23	51	49	19 x 2,0	3.00	100
FCHS 3/4"	532190	●	●	3/4"	10.5	24 - 29	58	55	19 x 2,0	3.00	100
FCHS 1"	532195	●	●	1"	10.5	33 - 37	70	61	19 x 2,0	3.00	100
FCHS 1-1/4"	532197	●	●	1 1/4"	10.5	40 - 45	84	74	25 x 2,0	3.00	100
FCHS 1-1/2"	532198	●	●	1 1/2"	10.5	47 - 52	100	80	25 x 2,0	3.00	50
FCHS 2"	516695	●	●	2"	10.5	60 - 65	114	93	25 x 2,0	3.00	50
FCHS 2-1/2"	516696	●	●	2 1/2"	13.5	73 - 78	133	107	30 x 2,5	5.00	50
FCHS 3"	516697	●	●	3"	13.5	88 - 93	153	126	30 x 2,5	5.00	25
FCHS 4"	516699	●	●	4"	16.8	108 - 116	192	158	30 x 3,0	5.00	25
FCHS 5"	516700	●	●	5"	16.8	138 - 145	238	213	30 x 4,0	6.00	15
FCHS 6"	516701	●	●	6"	20.5	165 - 172	272	248	38 x 5,0	9.00	10
FCHS 8"	516702	●	●	8"	20.5	219 - 225	333	305	38 x 5,0	9.00	6
FCHS 10"	516703	–	–	10"	24	267 - 273	400	372	50 x 6,0	16.00	2
FCHS 12"	516704	–	–	12"	24	320 - 328	479	426	50 x 6,0	16.00	2

U-bolt ETR

ETR

Item	Item. No.	Connecting thread	Length [mm]	Length [mm]	Nominal size [Inch]	Width [mm]	Sales unit [pcs]
ETR 8 - 13	024415	M6	30	20	1/4"	20	10
ETR 12 - 17	024416	M6	35	20	3/8"	24	10
ETR 15 - 21	024417	M6	40	25	1/2"	28	10
ETR 20 - 27	024418	M8	50	32	3/4"	36	10
ETR 26 - 34	024419	M8	55	32	1"	43	10
ETR 33 - 42	024420	M8	68	38	1 1/4"	51	10
ETR 40 - 49	024421	M8	70	38	1 1/2"	58	10
ETR 50 - 60	024422	M8	80	40	2"	69	10
ETR 60 - 70	024423	M10	100	43	–	82	10
ETR 66 - 76	024424	M10	110	50	2 1/2"	88	10
ETR 70 - 82	024425	M10	115	50	–	94	10
ETR 80 - 90	024426	M10	115	50	3"	102	10
ETR 90 - 102	024427	M12	145	55	3 1/2"	116	5
ETR 100 - 108	024428	M12	150	50	–	122	5
ETR 102 - 114	024429	M12	156	60	4"	128	5
ETR 121 - 127	024430	M12	170	60	–	141	5
ETR 126 - 133	024431	M12	180	70	–	147	5
ETR 131 - 140	024432	M14	185	70	5"	156	5
ETR 143 - 153	024433	M14	193	70	–	169	5
ETR 150 - 159	024434	M14	200	70	–	175	5
ETR 168	024435	M14	210	70	6"	184	5
ETR 193,7	024436	M14	232	70	–	209	5
ETR 219	024437	M14	270	70	8"	236	5

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