Deutsches Institut für Bautechnik

Public-law institution jointly founded by the federal states and the Federation

European Technical Assessment Body for construction products

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European Technical Assessment ETA-22/0257 of 17 June 2025

English translation prepared by DIBt - Original version in German language

General Part

Technical Assessment Body issuing the European Technical Assessment:	Deutsches Institut für Bautechnik
Trade name of the construction product	Carl Stahl ARC cable net systems X-TEND
Product family to which the construction product belongs	Cable net systems
Manufacturer	Carl Stahl ARC GmbH Siemensstraße 2 73079 Süssen DEUTSCHLAND
Manufacturing plant	Herstellwerke Werk 1 und Werk 2
This European Technical Assessment contains	26 pages including 21 annexes which form an integral part of this assessment
This European Technical Assessment is issued in accordance with Regulation (EU) No 305/2011, on the basis of	EAD 200006-00-0302
This version replaces	ETA-22/0257 issued on 3 November 2022

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Specific Part

1 Technical description of the product

Subject of this assessment are prefabricated cable nets and associated fastening components with the designation "Carl Stahl ARC cable net systems X-TEND". The cable nets consist of wire ropes (net cables, lacing cables) made of stainless steel and associated net ferrules of types CXL, CXE and CXS. The associated fastening components are border cables with associated components for guiding and redirectioning border cables or border profiles with associated fastening components as the edge border of the cable nets.

The associated fastening components of the border cables are: "threaded fitting type F30 hammered", "threaded fitting type F50 hammered", "screw-in eye with internal thread swaged", "turnbuckle", eye bolt, eye nut, shackles, "rod cable holder", "fork head", "cable redirectioning element", "screw-on cross clamp two-part" and " screw-on cross clamp adjustable".

The related fastening components of the border profiles are: "frame holder U-bracket", "invisible holder" and "profile holder".

Drawings of the prefabricated cable nets and associated fastening components with details of materials and essential dimensions are given in the annexes to the ETA.

2 Specification of the intended use in accordance with the applicable European Assessment Document

The intended use of the cable nets with associated fasteners includes use under static or quasi-static loads and/or dynamic loads as described in more detail below:

- Static or quasi-static loads: The use of the cable net and its fasteners as a curtain wall or room divider to support static or quasi-static loads such as dead loads, wind loads and snow loads without dynamic loads
- Dynamic impact loads in case of impact of a person: Horizontal fall protection by a certain combination of cable net and fastening components, vertical fall protection by a certain combination of cable net and fastening components

For the use of the cable nets, the application of EN 1993-1-11:2006+AC2009 is foreseen, i. e. for the design value of the tensile strength F_{Rd}, at least section 6.2 (2) of this standard applies, based on the assessed breaking strengths according to section 3 as input parameters.

The products are not intended for reuse. The products shall be replaced if they have been subjected to dynamic loading or damage.

The performances in Section 3 can only be assumed if the cable nets with the associated fastening components are used in accordance with the specifications and under the boundary conditions given in Annex A, B1 to B3, C, D1 to D5, E1, E2, F1 to F6 and G1 to G3.

The verifications and assessment methods on which this European Technical Assessment is based lead to the assumption of a working life of the cable nets with fasteners of at least 25 years. The indications given on the working life cannot be interpreted as a guarantee given by the producer, but are to be regarded only as a means for choosing the right products in relation to the expected economically reasonable working life of the works.

3 Performance of the product and references to the methods used for its assessment

3.1 Mechanical resistance and stability (BWR 1)

Essential characteristic	Performance
Breaking strength, spinning loss factor and modulus of elasticity of single wire rope for static loads	No Performance Assessed (NPA)
Slipping breaking strength of net cable node connection for static loads	See Annex D2
Breaking strength of net cable node connection for static loads	See Annex D2
Transverse breaking strength of net cable node connections for static loads	See Annex D2
Breaking strength of edge connections for static loads	See Annex D4 and D5
Breaking strength of border cables with end connectors for static loads	See Annex F1 and F2
Breaking strength of border cable fasteners combined with kinked border cables for static loads	See Annex F3, F4, F5 and F6
Breaking strength of border frame fasteners for static loads	See Annex E2

3.2 Safety in case of fire (BWR 2)

Essential characteristic	Performance
Reaction to fire	Class A1 in accordance with EN 13501-1:2018

3.3 Safety and accessibility in use (BWR 4)

Essential characteristic	Performance
Drop height of dynamic impact load (fall protection) at horizontal installation	See Annex G3
Pendulum drop height of dynamic impact load (fall protection) at vertical installation	See Annex G1 and G2

4 Assessment and verification of constancy of performance (AVCP) system applied, with reference to its legal base

In accordance with EAD No. 200006-00-0302, the applicable European legal act is: Commission Decision 2018/771.

The system to be applied is: 1+

5 Technical details necessary for the implementation of the AVCP system, as provided for in the applicable EAD

Technical details necessary for the implementation of the AVCP system are laid down in the control plan deposited with Deutsches Institut für Bautechnik.

Issued in Berlin on 17 June 2025 by Deutsches Institut für Bautechnik

BD Dr.-Ing. Ronald Schwuchow
Head of Section

beglaubigt:
Bertram

Annex A

A.1 Assumptions concerning design

The design for static loads is carried out according to the national regulations of the respective member country. If there are no regulations, a design considering EN 1993-1-11:2006 + AC:2009 and EN 1990:2002 + A1:2005 + A1:2005/AC:2010 is recommended.

If the rope nets are used as fall protection, the absorbable dynamic load capacity (compliance with design and pendulum loading/fall heights - according to Annex G1 to G3) is observed and not exceeded in accordance with the regulations in force in the respective member state.

In the design of the components for guiding and redirectioning border cables as well as the fastening components for round and rectangular border profiles, it is noted that a linear interaction check must be performed for combined loading from tension and shear force.

The supporting structure to which the cable nets and/or fastening components are attached to is not part of the product (ETA) and is verified separately. The supporting structure is designed in such a way that it can absorb all stresses that occur and conforms to the European Technical Assessment (e.g. with regard to the stiffness of adjacent components).

A.2 Assumptions concerning installation

The installation is carried out according to the manufacturer's instructions. The manufacturer shall hand over installation instructions to the person carrying out the work, stating that all individual components must be checked for perfect condition before installation and that damaged components must not be used.

The installation is carried out in such a way that the rope nets with fastening components are accessible for maintenance and repair.

The person responsible for the installation checks and confirms that all components and connections comply with the manufacturer's specifications and the specifications of this European Technical Assessment and have been executed or are on the safe side from a technical point of view.

A.3 Assumptions concerning package and delivery

The packaging and the construction products are to be marked in such a way that confusion or incorrect or faulty installation are excluded as far as possible. All information relevant to the installation must be clearly indicated on the packaging or on an enclosed description. Illustrations should preferably be used for this purpose.

The rope nets with associated fastening components should only be packed and delivered together as one unit.

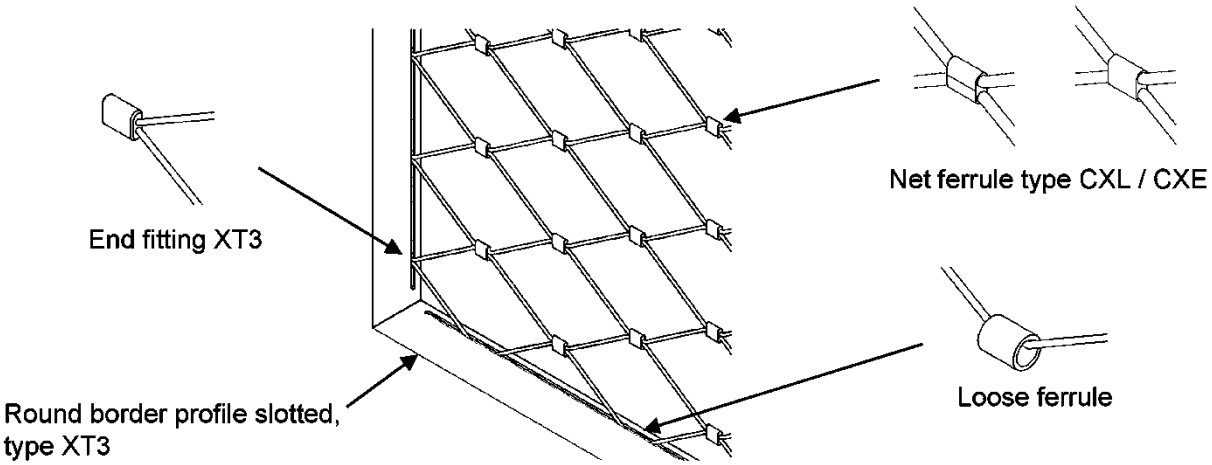
The properties and condition of the rope nets with fastening components in the fully installed condition, such as dimensions, tolerances, material properties and screw-in depths, are in accordance with the specifications of this European technical assessment.

A.4 Assumptions concerning maintenance

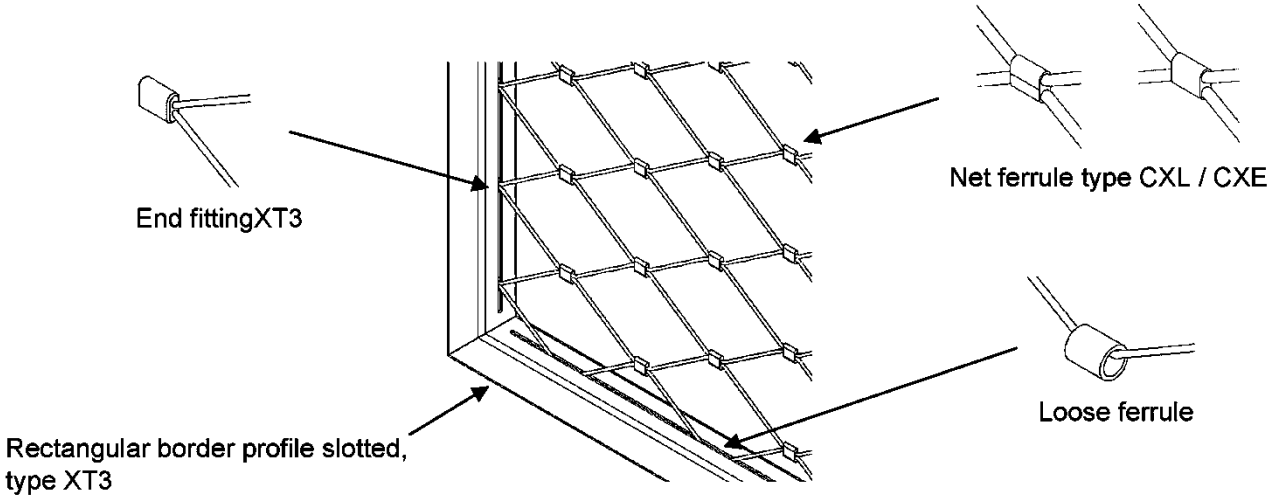
Cable nets damaged during use are repaired or replaced by a specialized company.

Cable nets with fastening components are regularly checked for damage. After a dynamic load has been applied by a falling or impacting person, the cable nets with fastening components are inspected and repaired or replaced if necessary.

Example 1: Border profile slotted, round with X-TEND net type CXL / CXE

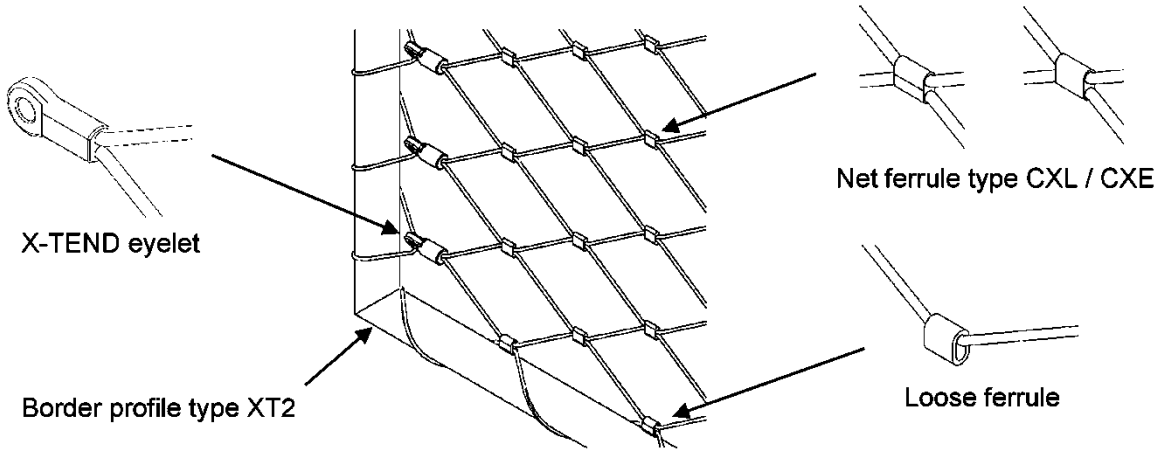


Example 2: Border profile slotted, rectangular with X-TEND net type CXL / CXE

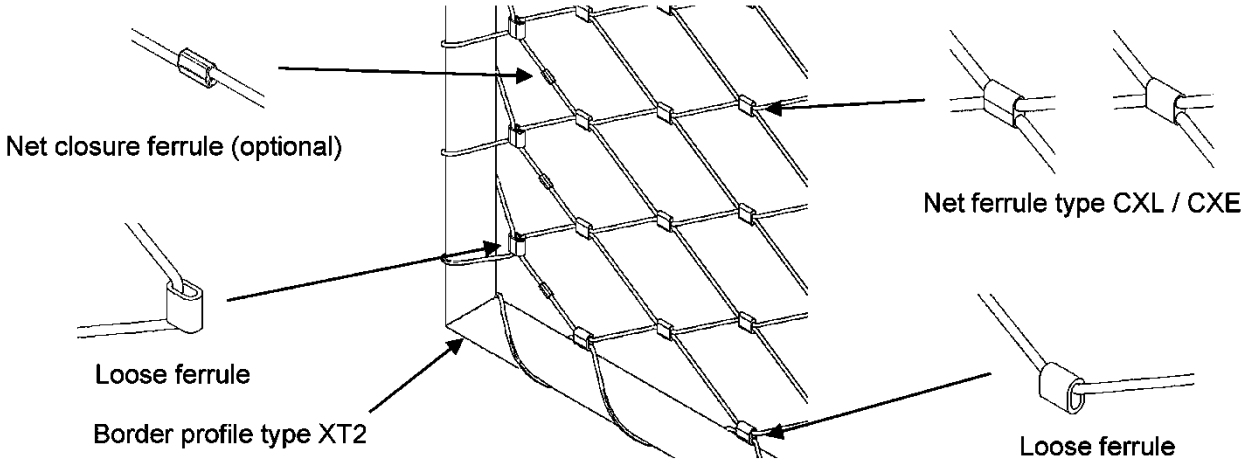


Carl Stahl ARC cable net systems X-TEND	**Annex B1**
Border connections: XT3 (CXL / CXE)	

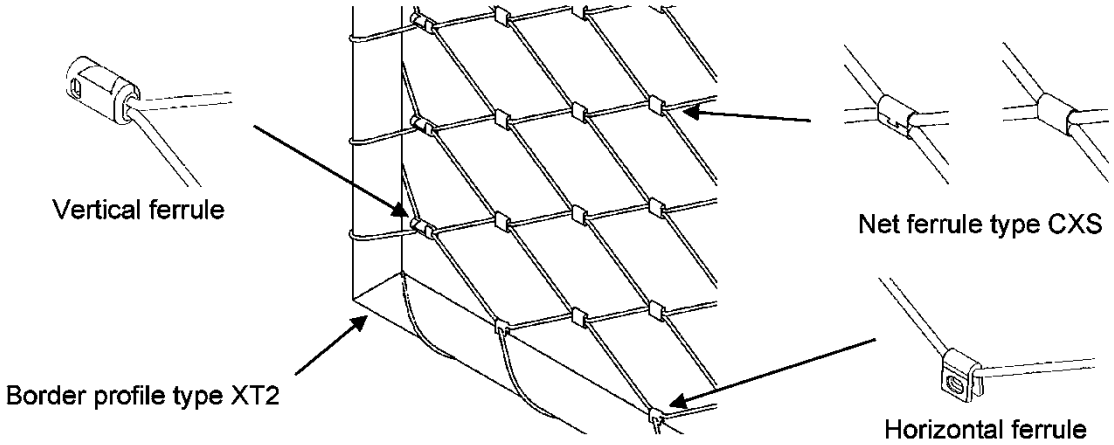
Example 3: Border profile with X-TEND net type CXL / CXE and X-TEND eyelets



Example 4: Border profile with X-TEND net type CXL / CXE and loose ferrules

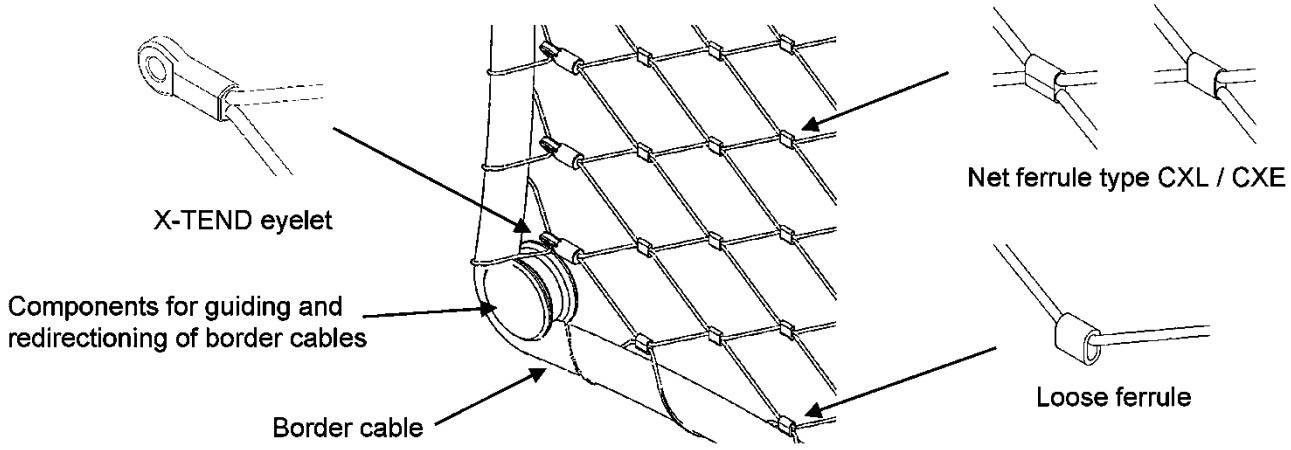


Example 5: Border profile with X-TEND net type CXS

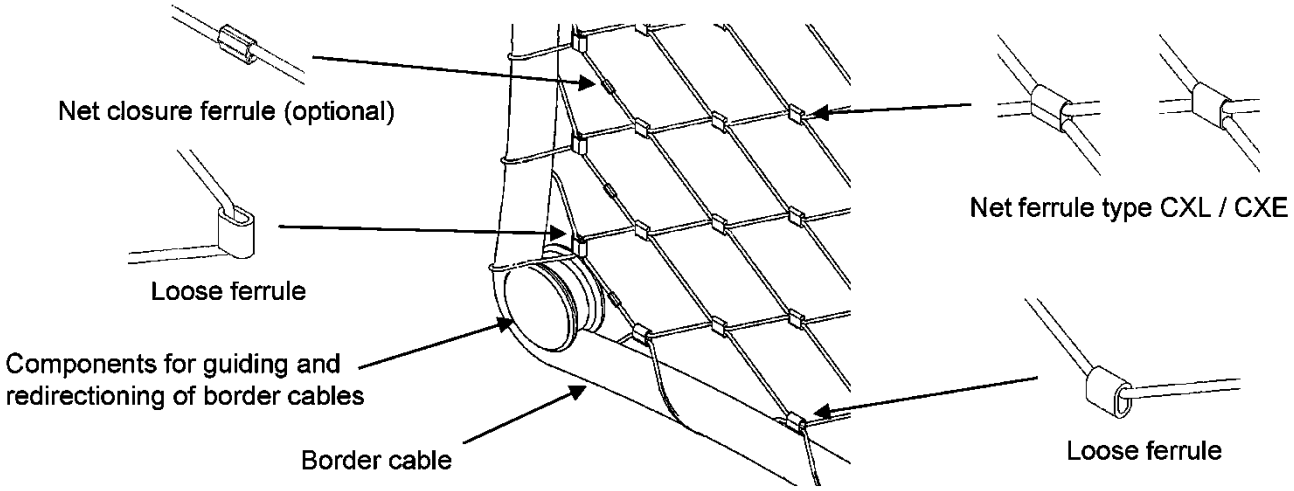


Carl Stahl ARC cable net systems X-TEND	**Annex B2**
Border connections: XT2 (CXL / CXE / CXS)	

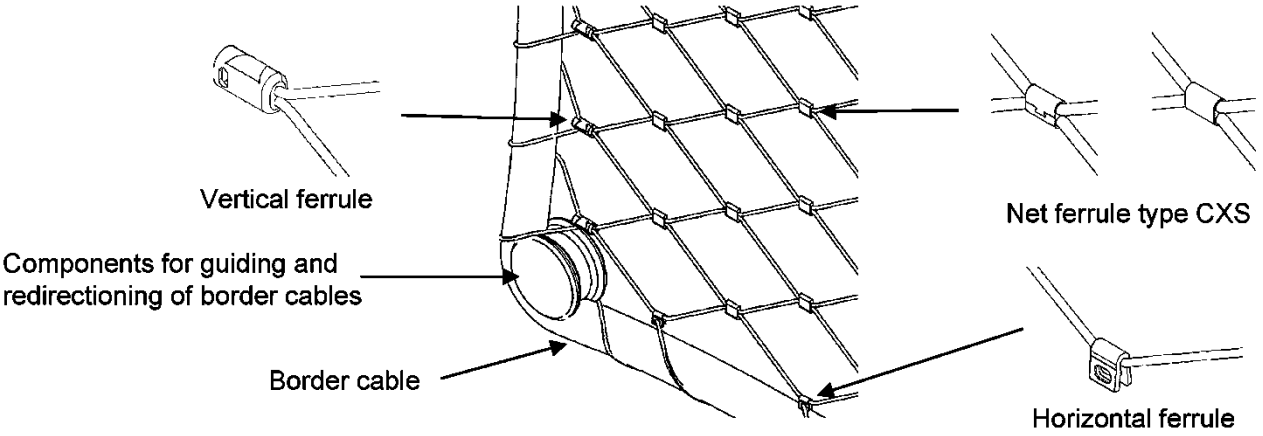
Example 6: Border cable with X-TEND net type CXL / CXE and X-TEND eyelets



Example 7: Border cable with X-TEND net type CXL / CXE and loose ferrules



Example 8: Border cable with X-TEND net type CXS



Carl Stahl ARC cable net systems X-TEND	**Annex B3**
Border connections: border cable (CXL / CXE / CXS)	

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Table 1: Net cables

Net cable construction	Net cable-Ø [mm]	E_Q [kN/mm²]	Wire tensile strength [N/mm²]	Metallic cross section [mm²]	Minimum breaking load [kN]
Round strand rope 7x7	1.0	90 ± 10	>1770	0.43	0.64
	1.5		>1770	0.97	1.86
	2.0		>1770	1.73	2.88
Round strand rope 7x19	1.5	90 ± 10	>1770	0.94	1.44
	2.0		>1770	1.67	2.56
	3.0		>1570	3.76	5.12
	4.0		>1570	6.69	9.09

Table 2: Border cables

Border cable construction	Border cable-Ø [mm]	E_Q [kN/mm²]	Wire tensile strength [N/mm²]	Metallic cross section [mm²]	Minimum breaking load [kN]
Round strand rope 7x7 [1)]	6.0	90 ± 10	>1570	15.42	21.9
	8.0		>1570	27.40	39.0
Round strand rope 7x19 [1)]	6.0	90 ± 10	>1570	14.92	20.5
	8.0		>1570	26.53	36.4
	10.0		>1570	41.45	56.8
	12.0		>1570	59.69	81.8
	16.0		>1570	106.12	145.5
Open spiral strand 1x19 [1)]	6.0	130 ± 10	>1570	21.49	29.7
	8.0		>1570	38.20	52.8
	10.0		>1570	59.69	82.5
	12.0		>1570	85.95	118.7
Open spiral strand 1x37 [1)]	16.0		>1470	150.80	192.9

[1)] Alternatively, tensile cable elements with a higher stated value for tensile loading and comparable material characteristics

Carl Stahl ARC cable net systems X-TEND	**Annex C**
Net and border cables	

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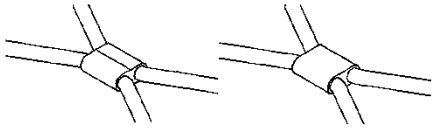
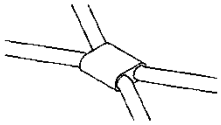
Net type CXL



Net type CXE



Net type CXS

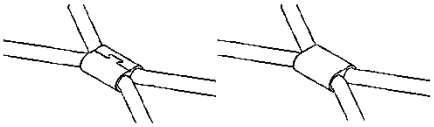
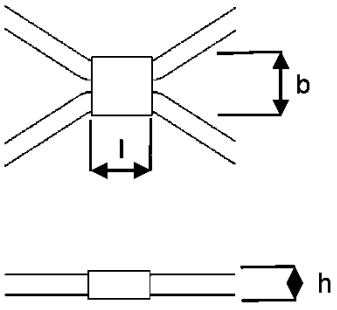


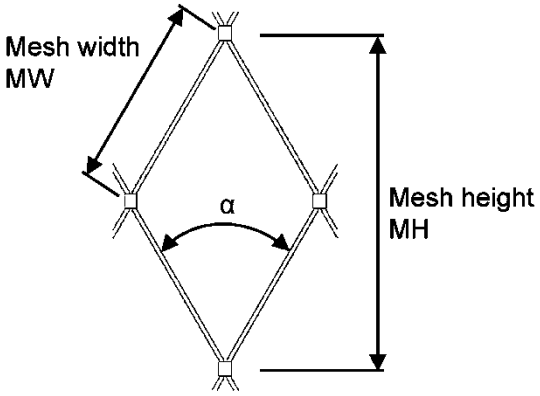
Table 3: Cable net types and net ferrules

Net type	Net cable-Ø [mm]	Net ferrule		Net cable construction	Dimensions compressed [mm]		
		Item number	Material		l	b	h
CXL	1.5	L11545	1.4571	7x7	5.4	6.6	2.1
	2.0	L12045		7x7	6.6	7.5	2.6
				7x19	6.6	7.5	2.7
	3.0	L13045		7x19	8.0	12.3	3.7
CXE	1.0	CCKLE100	1.4571	7x7	5.0	5.0	2.2
	1.5	CCKLE150L4.6MM		7x7	4.6	6.8	2.6
		CCKLE150SM		7x7	4.8	5.4	2.2
				7x19	4.8	5.4	2.1
	2.0	CCKLE200SM		7x7	6.0	6.7	2.5
				7x19	6.0	6.7	2.7
	3.0	CCKLE300SM		7x19	7.8	9.2	3.7
	4.0	CCKLE400		7x19	13.8	14.8	5.6
CXS	1.5	CXNK0150	1.4404	7x7	7.0	5.6	3.2

Net ferrule compressed



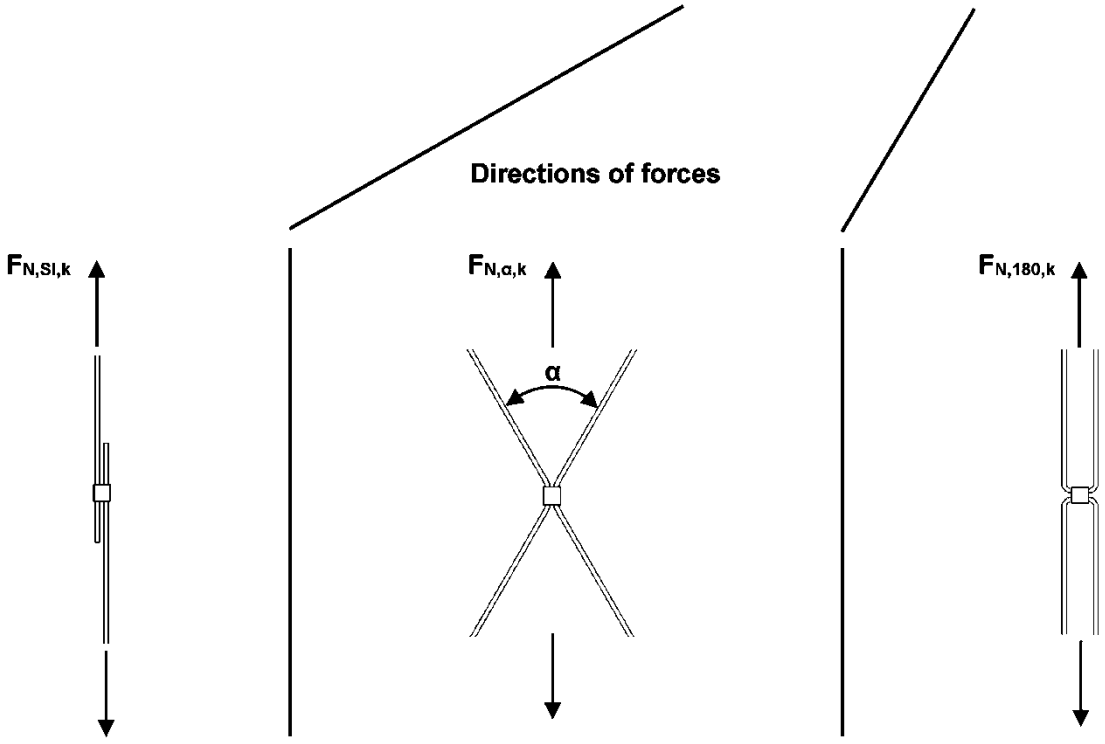
Mesh geometry



Carl Stahl ARC cable net systems X-TEND	**Annex D1**
Net types and net ferrules - Dimensions	

Table 4: Cable net types and net ferrules – characteristic values of tensile load capacity

Net type	Net cable-Ø [mm]	Item number net ferrule	Net cable construction	Characteristic values of tensile load capacity [kN]					
				$F_{N,Sl,k}$	$F_{N,\alpha,k}$				$F_{N,180,k}$
					45	60	75	120	
CXL	1.5	L11545	7x7	0.28	2.41	2.20	2.00	1.55	2.16
	2.0	L12045	7x7	0.22	3.73	3.56	3.07	2.53	3.16
			7x19	0.30	3.72	3.56	3.36	2.65	2.88
	3.0	L13045	7x19	0.37	7.06	6.34	5.77	4.37	5.10
CXE	1.0	CCKLE100	7x7	0.08	0.72	0.70	0.74	0.50	0.72
	1.5	CCKLE150L4.6MM	7x7	0.43	2.32	2.06	1.84	1.52	1.99
		CCKLE150SM	7x7	0.15	2.67	2.38	2.05	1.45	1.95
			7x19	0.16	2.03	1.96	1.64	1.25	1.41
	2.0	CCKLE200SM	7x7	0.34	4.15	3.66	3.50	2.65	2.84
			7x19	0.17	3.84	3.65	3.18	2.25	2.71
	3.0	CCKLE300SM	7x19	0.31	6.74	6.16	5.52	3.59	4.57
	4.0	CCKLE400	7x19	0.50	14.7	13.7	12.0	8.9	10.8
CXS	1.5	CXNK0150	7x7	1.10	2.48	2.22	2.28	1.69	1.97



Carl Stahl ARC cable net systems X-TEND

Net types and net ferrules – Characteristic values of the tensile load capacity

Annex D2

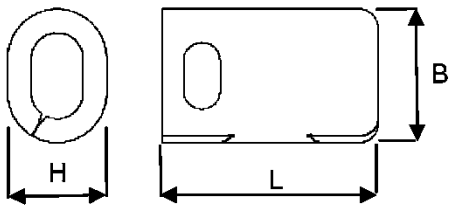
Table 5: Border connection components – net type CXL and CXE

Border cable / border profile	Border connection		
	Name	**Item number**	**Material**
Border cable & border profile	X-TEND eyelet	CXR0015	1.4404
		CXR0020	
		CXR00301 / CXR00302	
	Loose ferrule	as per net ferrule or larger	
	Single cable connection	CXEV0015	1.4571
		CXEV0020	
Border profile slotted	End fitting XT3	CX3-21015	1.4404
		CX3-21020	
	Loose Ferrule XT3	CCKLE300	1.4571

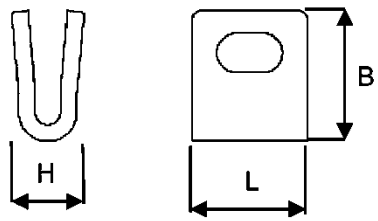
Table 6: Border connection components – net type CXS

Border cable / border profile	Border connection			Dimensions uncompressed [mm]		
	Name	**Item number**	**Material**	**L**	**B**	**H**
Border cable & border profile	Vertical ferrule CXS	CX900014-1 + CX900014-22	1.4404	14.6	9.0	6.7
	Horizontal ferrule CXS	CX900016-2	1.4401	7.0	8.0	4.4
	Diagonal ferrule CXS	CX900017-2	1.4401	9.4	10.5	4.6

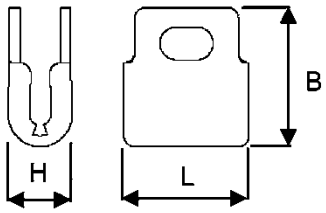
Vertical ferrule CXS



Horizontal ferrule CXS



Diagonal ferrule CXS



Carl Stahl ARC cable net systems X-TEND

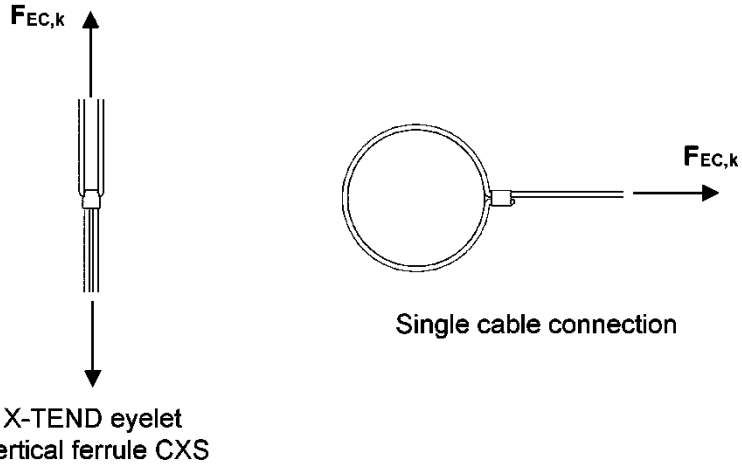
Border connections and components

Annex D3

Table 7: Border connection components – lacing cables and characteristic values of tensile load capacity

Border connection		Net cable-Ø [mm]	Cable construction	Lacing cable-Ø [mm]	Characteristic values of tensile load capacity [kN]
Name	Item number				$F_{EC,k}$
X-TEND eyelet	CXR0015	1.0	7x7	1.0/1.5	0.81
		1.5	7x7	1.5	2.16
			7x19		1.72
			7x7	2.0	3.30
			7x19		1.77
	CXR0020	2.0	7x7	2.0/3.0	3.37
			7x19		3.30
	CXR00301 / CXR00302	3.0	7x19	3.0	5.60
				4.0	6.74
Loose ferrule	As per net ferrule $F_{N,180,k}$				
Single cable connection	CXEV0015	1.5	7x7	--	1.25
			7x19	--	0.86
	CXEV0020	2.0	7x7	--	2.11
			7x19	--	1.89
Vertical ferrule CXS	CX900014-1 + CX900014-22	1.5	7x7	2.0	1.90
Horizontal ferrule CXS	CX900016-2	1.5	7x7	2.0	2.27
Diagonal ferrule CXS	CX900017-2	1.5	7x7	2.0	1.42

Directions of forces



Carl Stahl ARC cable net systems X-TEND

Border connections and components - Characteristic values of tensile load capacity border cable and border profile

Annex D4

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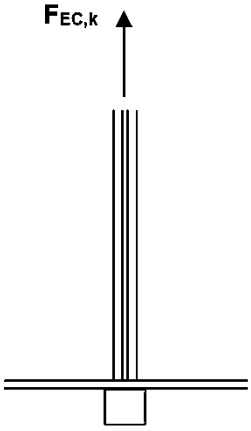
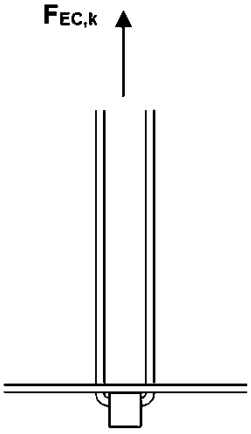
Table 8: Border connection components – characteristic values of tensile load capacity with slotted border profile

Border connection		Net cable-Ø [mm]	Cable construction	Characteristic values of tensile load capacity [kN]
Name	Item number			$F_{EC,k}$
End fitting XT3	CX3-21015	1.5	7x7	1.45
			7x19	1.33
	CX3-21020	2.0	7x7	1.12
			7x19	1.03
Loose ferrule XT3	CCKLE300	1.5	7x7	2.10
			7x19	1.70
	CCKLE300	2.0	7x7	1.62
			7x19	1.67

Directions of forces



End fitting XT3



Loose ferrule XT3

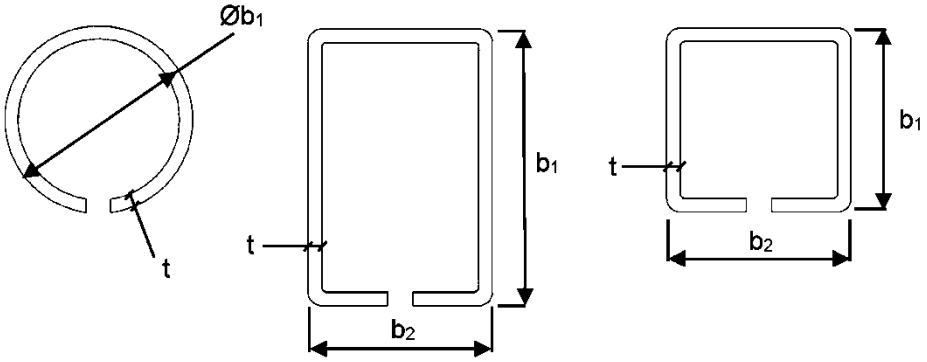
Carl Stahl ARC cable net systems X-TEND	Annex D5
Border connections and components - characteristic values of tensile load capacity border profile slotted (XT3)	

Table 9: Border profiles

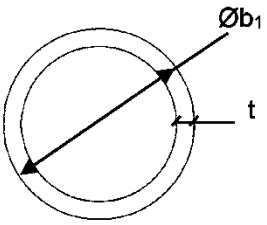
Design		Material	Minimal profile dimensions [mm]			
			b_1	x	b_2	Wanddicke t
Border profile slotted [1)]	round	1.4401	21.3			1.5
	square	1.4401	20	X	20	1.5
Border profile [1)]	round	1.4401	21.3			2.0

[1)] Alternatively, profiles with round, square or rectangular profile cross-section with a higher bending stiffness in the main direction of loading and comparable material characteristics

Border profile, slotted



Border profile



Carl Stahl ARC cable net systems X-TEND	**Annex E1**
Border profiles	

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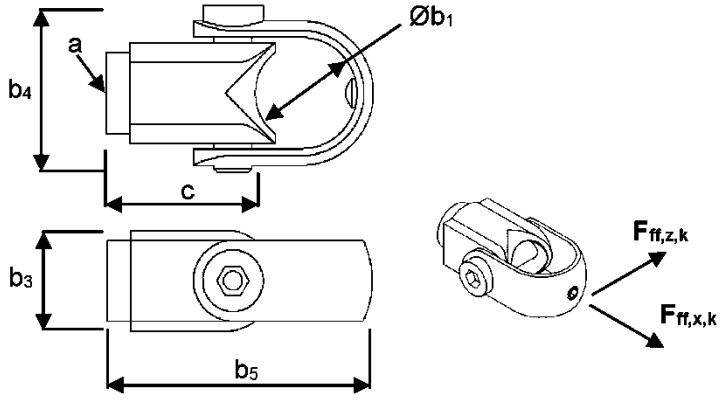
Table 10: Fastening components for holding round and square profiles

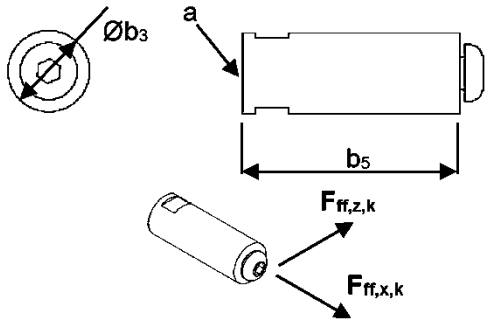
Profile	External profile dimensions [mm]		Name	Item number	Dimensions [mm]					Characteristic values of tensile load capacity [kN]		
					a	b_3	b_4	b_5	c	$F_{ff,x,k}$		$F_{ff,z,k}$
round	$Øb_1$	21.3	U-bracket	CX001002	for M8	21.3	35.0	57.0	32.0	16.2		2.76
			Profile holder	CX3-40213	for M8	Ø28.0	–	41.0	25 ± 2	1.92		2.81
			Invisible Holder	CX3-32027	M6	Ø12.0	–	27.0	–	4.52	-0.87[1)]	2.21
		26.9	Profile holder	CX3-40269	for M8	Ø35.0	–	44.5	25 ± 2	1.82		3.15
			Invisible Holder	CX3-33040	M8	Ø15.0	–	40.0	–	4.96	-0.52[1)]	1.25
square	b_1 x b_2	20x20	Profile holder	CX3-42020	for M8	25.0	30.0	47.5	25 ± 2	5.49		2.71
			Invisible Holder	CX3-32027	M6	Ø12.0	–	27.0	–	5.40	-1.86[1)]	2.08
		30x30	Profile holder	CX3-43030	for M8	30.0	40.0	58.0	25 ± 2	5.91		3.54
			Invisible Holder	CX3-33040	M8	Ø15.0	–	40.0	–	4.25	-1.74[1)]	1.26

[1)] pressure load

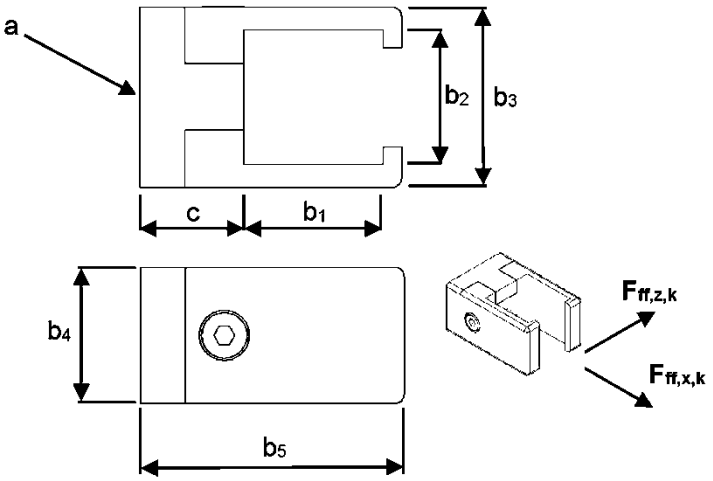
Profile holder U-bracket CX001002



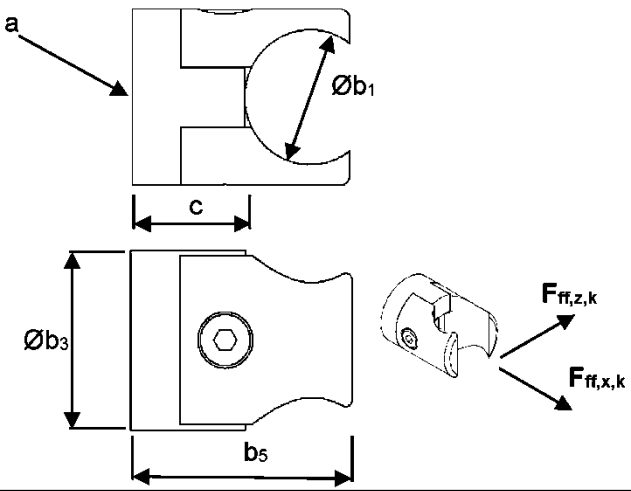
Invisible Holder CX3-32027 and CX3-33040



Profile holder CX3-42020 and CX3-43030



Profile holder CX3-40213 and CX3-40269



Carl Stahl ARC cable net systems X-TEND	Annex E2
Fastening components for holding round and square profiles	

Table 11: Threaded fitting type F30, hammered

Border cable-Ø [mm]	Name	Item number	Dimensions [mm]				Cable construction	Characteristic values of tensile load capacity [kN]
			a[1)]	b	c[2)]	Ød		$F_{B,end,k}$
6.0	Threaded fitting F30, hammered	948-0600-30	M8	58.0	30.0	8.0	7x7	19.0
							7x19	19.4
8.0		948-0800-30	M10	68.0	30.0	10.0	7x7	37.2
							7x19	37.7
10.0		948-1000-30	M12	76.0	30.0	12.0	7x19	33.6

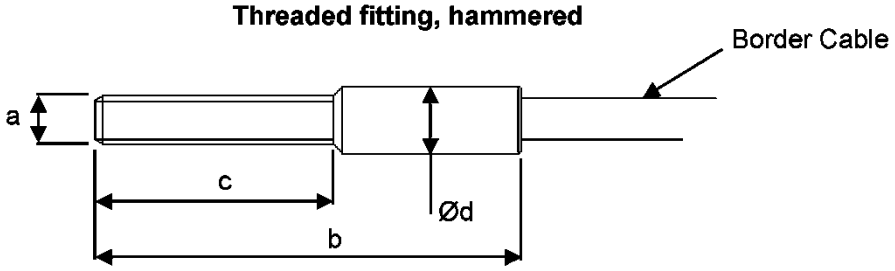
[1)] thread in right or left-hand design possible
[2)] minimum thread length

Table 12: Threaded fitting type F50, hammered

Border cable-Ø [mm]	Name	Item number	Dimensions [mm]				Cable construction	Characteristic values of tensile load capacity [kN]
			a[1)]	b	c[2)]	Ød		$F_{B,end,k}$
6.0	Threaded fitting F50, hammered	950-0600-30	M6	66.0	30.0	6.0	7x7	12.4
							7x19	12.2
8.0		950-0800-30	M8	90.0	30.0	8.0	7x7	22.6
							7x19	23.5

[1)] thread in right or left-hand design possible
[2)] minimum thread length

Threaded fitting, hammered



Carl Stahl ARC cable net systems X-TEND	**Annex F1**
End connector border cables - Threaded fittings	

Table 13: Eye with internal thread, swaged

Border cable-Ø [mm]	Name	Item number	Dimensions [mm]					Cable const-ruction	Characteristic values of tensile load capacity [kN]
			a[1)]	b[2)]	Ød$_1$	Ød$_2$	Tensioning adjustment[3)]		$F_{B,end,k}$
6.0	Eye with internal thread, swaged	814-0600-01	M8	135.0	10.0	8.5	+4.0 | -12.0	7x7	15.0
								7x19	16.5
8.0		814-0800-01	M10	248.0	13.0	10.5	+17.0 | -27.0	7x7	27.1
								7x19	31.3
10.0		814-1000-01	M14	295.0	20.0	13.0	+26.0 | -40.0	7x19	60.6

[1)] thread in right or left-hand design possible
[2)] depending on the tensioning distance
[3)] a minimum screw-in depth of 1,0 x a must be observed

Eye with internal tread, swaged

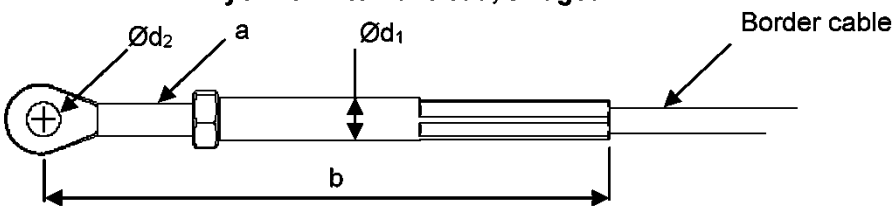
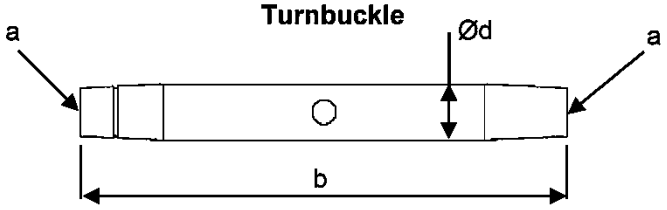


Table 14: Turnbuckle

Name	Item number	Dimensions [mm]			Characteristic values of tensile load capacity [kN]
		a	b	Ød	$F_{B,end,k}$
Turnbuckle left/right	875-0600	M6	92.0	10.0	10.2
	875-0800	M8	112.0	13.5	19.5
	875-1000	M10	120.0	17.2	32.7
	875-1200	M12	150.0	21.3	46.6

Turnbuckle



Carl Stahl ARC cable net systems X-TEND

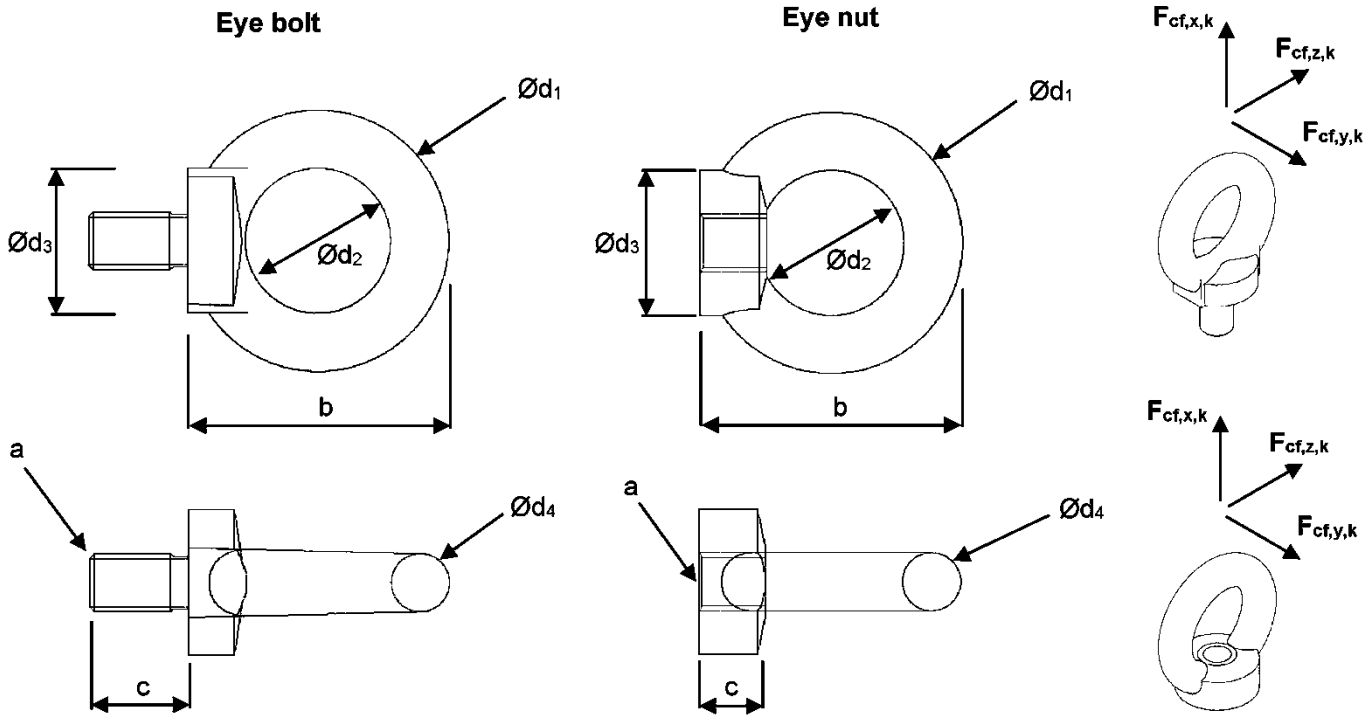
End connector border cables - Eye with internal thread, swaged and turnbuckle

Annex F2

Deutsches Institut für Bautechnik DIBt

Table 15: Eye bolt and eye nut

Name	Item number	Dimensions [mm]							Border cable-Ø [mm]	Border cable construction	Characteristic values of tensile load capacity [kN]		
		a	b	c	Ød1	Ød2	Ød3	Ød4			$F_{cf,x,k}$	$F_{cf,y,k}$	$F_{cf,z,k}$
Eye bolt (/eye nut)	837-0800 (838-0800)	M8	36.0	13.0 (8.0)	36.0	20.0	20.0	8.0 – 11.0	6.0	7x19	11.3	3.0	3.4
									8.0		11.4	2.9	6.0
	837-1000 (838-1000)	M10	45.0	17.0 (10.0)	45.0	25.0	25.0	10.0 – 13.0	6.0		18.7	4.8	9.4
									8.0		19.1	5.5	11.7
	837-1200 (838-1200)	M12	53.0	21.0 (11.0)	54.0	30.0	30.0	12.0 – 15.0	6.0		29.4	11.4	23.2
									8.0		51.2	11.2	20.8
									10.0		43.5	10.3	22.6
	837-1600 (838-1600)	M16	62.0	27.0 (13.0)	63.0	35.0	35.0	14.0 – 17.0	6.0		31.3	28.2	27.2
									8.0		56.0	18.9	43.1
									10.0		79.4	15.3	30.4
	837-2000 (838-2000)	M20	71.0	30.0 (15.0)	72.0	40.0	40.0	16.0 – 19.0	6.0		31.0	29.5	31.1
									8.0		57.9	53.5	46.3
									10.0		81.1	56.9	64.8
									12.0		114.8	53.9	45.0



Carl Stahl ARC cable net systems X-TEND

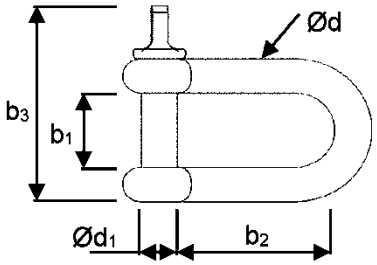
Components for guiding and redirectioning of border cables - Eye bolt and eye nut

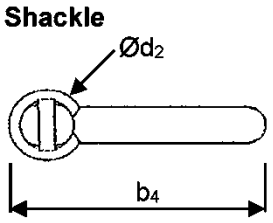
Annex F3

Deutsches Institut für Bautechnik DIBt

Table 16: Shackle

Name	Item number	Dimensions [mm]						Border cable-Ø [mm]	Border cable construction	Characteristic values of tensile load capacity [kN]	
		$Ød_1$	b_1	b_2	b_3	b_4	$Ød_2$			$F_{cf,x,k}$	$F_{cf,z,k}$
Shackle	835-12	M12	25.0	48.0	67.0	76.0	25.0	8.0	7x19	50.8	51.3
	835-16	M16	32.0	64.0	88.0	101.0	32.0	8.0		56.6	54.0
								10.0		82.4	78.7
								12.0		122.0	111.6
	835-20	M20	38.0	76.0	101.0	120.0	36.0	8.0		61.7	60.9
								10.0		86.4	82.3
								12.0		131.0	105.9
								16.0		188.4	193.8





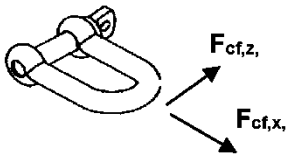
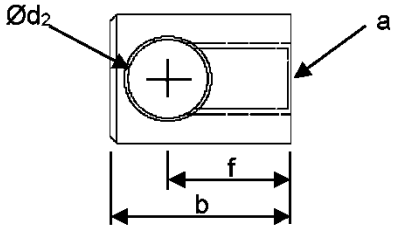


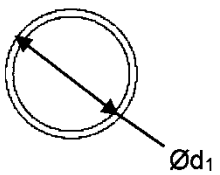
Table 17: Rod / Cable holder

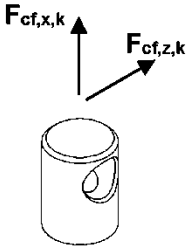
Name	Item number	Dimensions [mm]					Border cable-Ø [mm]	Border cable construction	Characteristic values of tensile load capacity [kN]	
		a	b	f	$Ød_1$	$Ød_2$			$F_{cf,x,k}$	$F_{cf,z,k}$
Rod / Cable holder[1)]	921-0600-12	M6	25.0	15.0	16.0	8.1	6.0	7x19	14.2	6.2
	921-0800-12	M10	25.0	17.0	18.0	11.0	8.0		34.0	16.9
	921-1000-12	M12	35.0	19.0	28.0	11.5	10.0		75.9	33.4
	921-1200-12	M12	35.0	19.0	28.0	15.0	12.0		91.4	29.0
Rod / Cable holder with radius edge	921-1200-13	M12	35.0	19.0	28.0	15.0			91.4	29.0

[1)] components only suitable for guiding of border cables

Rod / Cable holder







Carl Stahl ARC cable net systems X-TEND	**Annex F4**
Components for guiding and redirectioning of border cables - Shackles and rod cable holder	

Table 18: Fork head

Name	Item number	Dimensions [mm]						Border cable-Ø [mm]	Border cable construction	Characteristic values of tensile load capacity [kN]		
		a	c	g	h	Ød1	Ød2			$F_{cf,x,k}$	$F_{cf,y,k}$	$F_{cf,z,k}$
Fork head	921-1000-28	M12	13.0	12.0	48.0	28.0	11 ± 0.2	8.0	7x19	54.7	17.2	25.2
								10.0		52.5	17.0	25.2
	921-1200-28	M12	13.0	13.5	50.0	28.0	11 ± 0.2	12.0		42.2	14.0	25.2

Fork head

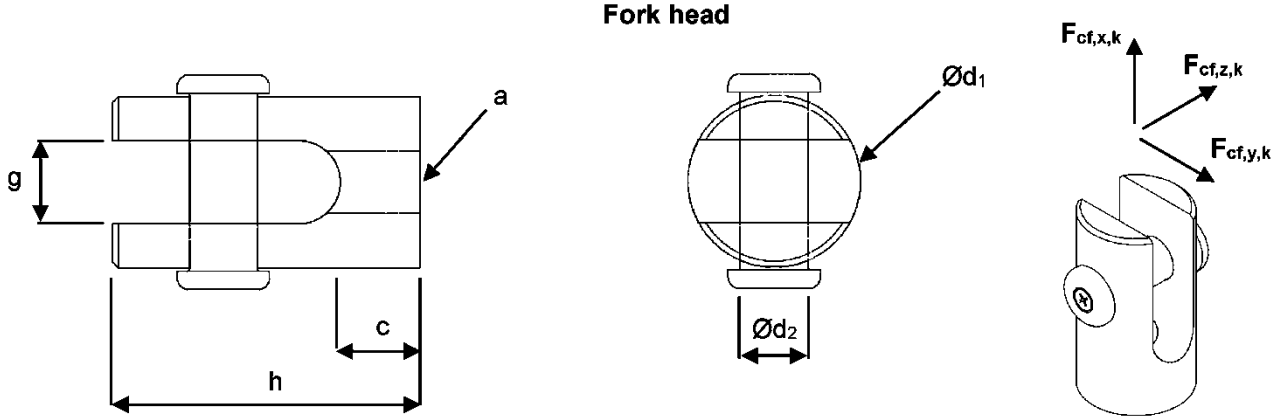
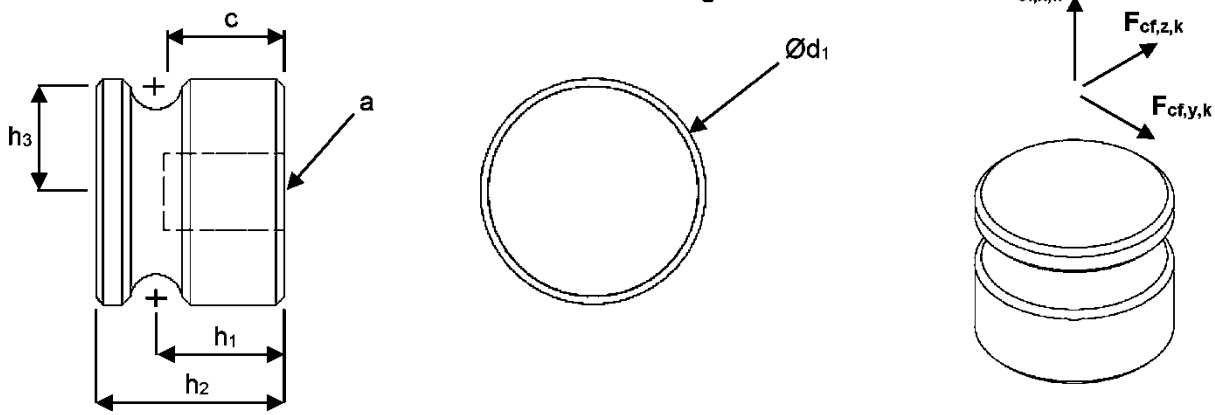


Table 19: Border cable redirectioning element

Name	Item number	Dimensions [mm]						Border cable-Ø [mm]	Border cable construction	Characteristic values of tensile load capacity [kN]	
		a	c	h1	h2	h3	Ød1			$F_{cf,x,k}$	$F_{cf,y,k}$ / $F_{cf,z,k}$
Border cable redirectioning element[1)]	921-0600-30	M10	16.0	17.0	25.0	14.5	30.0	6.0	7x19	38.6	30.2
	921-0800-30	M10	16.0	17.0	26.0	13.5	30.0	8.0		38.6	29.8

[1)] Component only suitable for redirectioning of border cables.

Border cable redirectioning element



Carl Stahl ARC cable net systems X-TEND

Components for guiding and redirectioning of border cables - Cable guiding fork head and cable redirectioning element

Annex F5

Table 20: Screw-on cross clamp, two-part

Name	Item number	Dimensions [mm]					Border cable-Ø [mm]	Border cable construction	Characteristic values of tensile load capacity [kN]	
		a	c	h_1	h_2	Ød_1			$F_{cf,x,k}$	$F_{cf,z,k}$
Screw-on cross clamp, two-part	858-0600-06	M8	16.0	25.0	15.0	40.0	6.0	7x19	23.3	21.5
	858-0800-06	M8	16.0	25.0	15.0	40.0	8.0		25.3	19.5
	858-1000-06	M8	16.0	25.0	15.0	40.0	10.0		25.6	18.1

Screw-on cross clamp, two-part

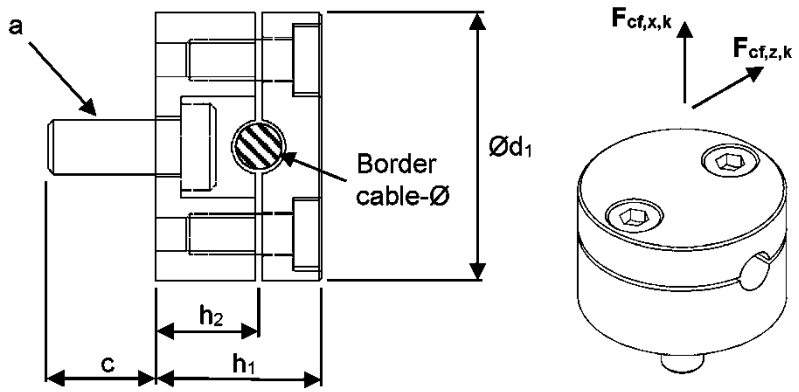
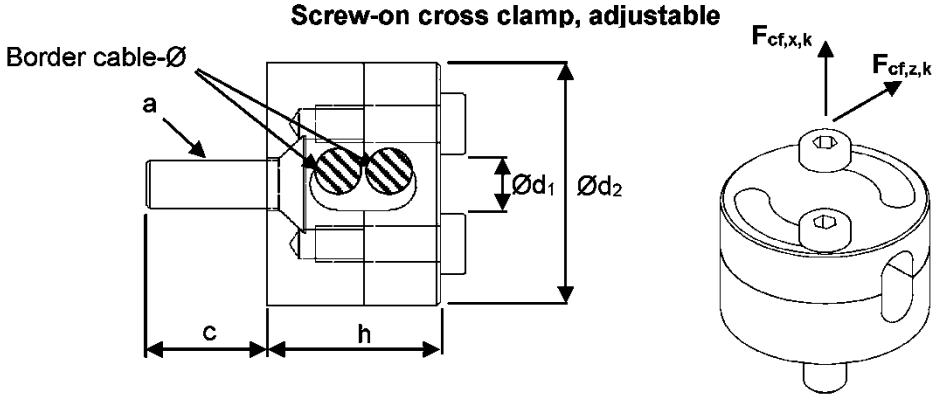


Table 21: Screw-on cross clamp, adjustable

Name	Item number	Dimensions [mm]					Border cable-Ø [mm]	Border cable construction	Characteristic values of tensile load capacity [kN]	
		a	c	h	Ød_1	Ød_2			$F_{cf,x,k}$	$F_{cf,z,k}$
Screw-on cross clamp, adjustable	858-0800-07	M8	19.0	27.0	8.5	40.0	8.0	7x19	25.0	16.6
	858-1000-07	M8	19.0	29.8	10.5	40.0	10.0		24.7	15.0

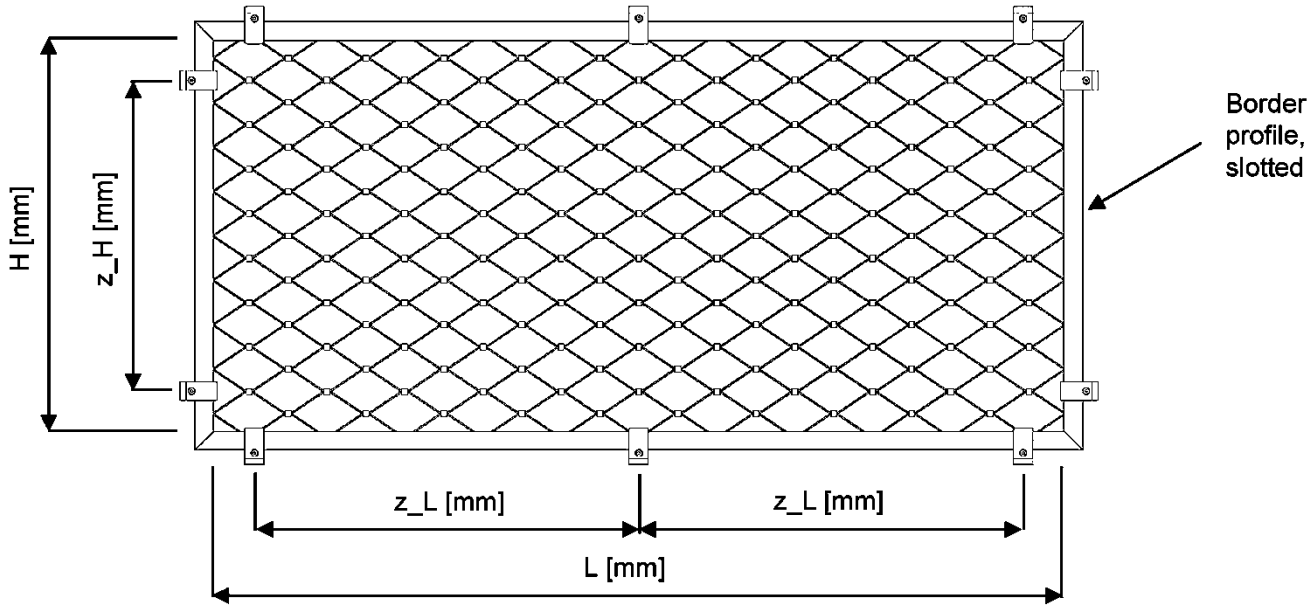
Screw-on cross clamp, adjustable



Screw-on cross clamps only suitable for loose guidance of border cables or end stops with threaded fittings.
Screw-on cross clamps are not suitable for statically defined clamping of border cables.

Carl Stahl ARC cable net systems X-TEND	**Annex F6**
Components for guiding of border cables - Screw on cross clamps	

Cable net system type XT3 as vertical fall protection[1)]



[1)] h_{v1} = 450 mm und h_{v2} = 190 mm tested drop heights, see EAD 200006-00-0302, section 2.2.10.

Table 22: Cable net configuration[1)] type XT3 as vertical fall protection

Net cable-Ø [mm]	Net type	Mesh width MW[2)] [mm]			Minimum field dimensions[3)] L [mm] x H [mm]
		von	-	bis	
1.5	CXL/CXE	25	-	60	750 x 750
2.0	CXL/CXE			80	

[1)] net components from table 22 according to Annex C and D1 - D5
[2)] horizontal mesh diamond orientation (along the long side)
[3)] Larger net fields have a positive effect on the load-bearing behavior in case of a person impact.

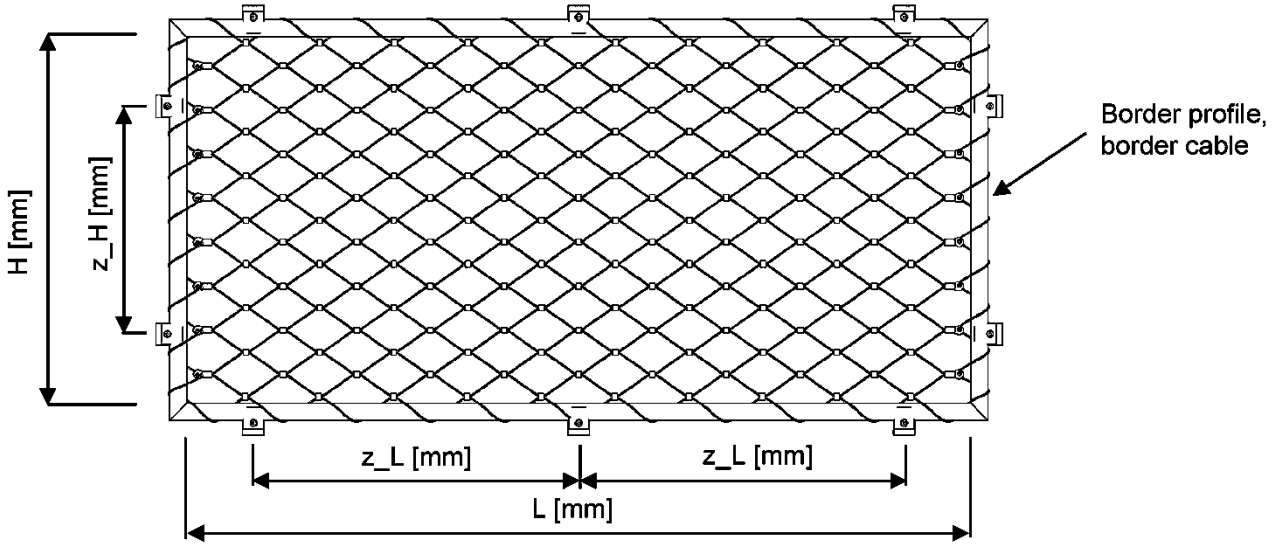
Table 23: Slotted profiles and distance between intermediate fixings as vertical fall protection type XT3

Border profile, slotted				Distance between intermediate fixings[2)] horizontal z_L and vertical z_H [mm]		
	Design	Dimensions [mm]	Wall thickness t [mm]	min.	-	max.
Border profile, slotted[1)]	round	21.3	1.5	350	-	1200
	square	20x20	1.5			

[1)] Alternatively, profiles with round, square or rectangular cross-section with a higher bending stiffness in the main direction of loading and comparable material characteristics.
[2)] fastening components for holding slotted profiles according to Annex E2

Carl Stahl ARC cable net systems X-TEND	**Annex G1**
Vertically mounted cable net systems as fall protection - XT3	

Cable net system type XT2 and border cable as vertical fall protection[1)]



[1)] h_{v1} = 450 mm und h_{v2} = 190 mm tested fall heights, see EAD 200006-00-0302, section 2.2.10.

Table 24: Cable net configuration[1)] type XT2 and border cable as vertical fall protection

Net cable-Ø [mm]	Net type	Mesh width MW[2)] [mm]			Minumim field dimensions[3)] L [mm] x H [mm]
		von	-	bis	
1.5	CXL/CXE/CXS	25	-	80	750 x 750
2.0	CXL/CXE			100	
3.0					
4.0					

[1)] net components from table 24 according to Annex C and D1 - D4
[2)] horizontal mesh diamond orientation (along the long side)
[3)] Larger net fields have a positive effect on the load-bearing behavior in case of a person impact.

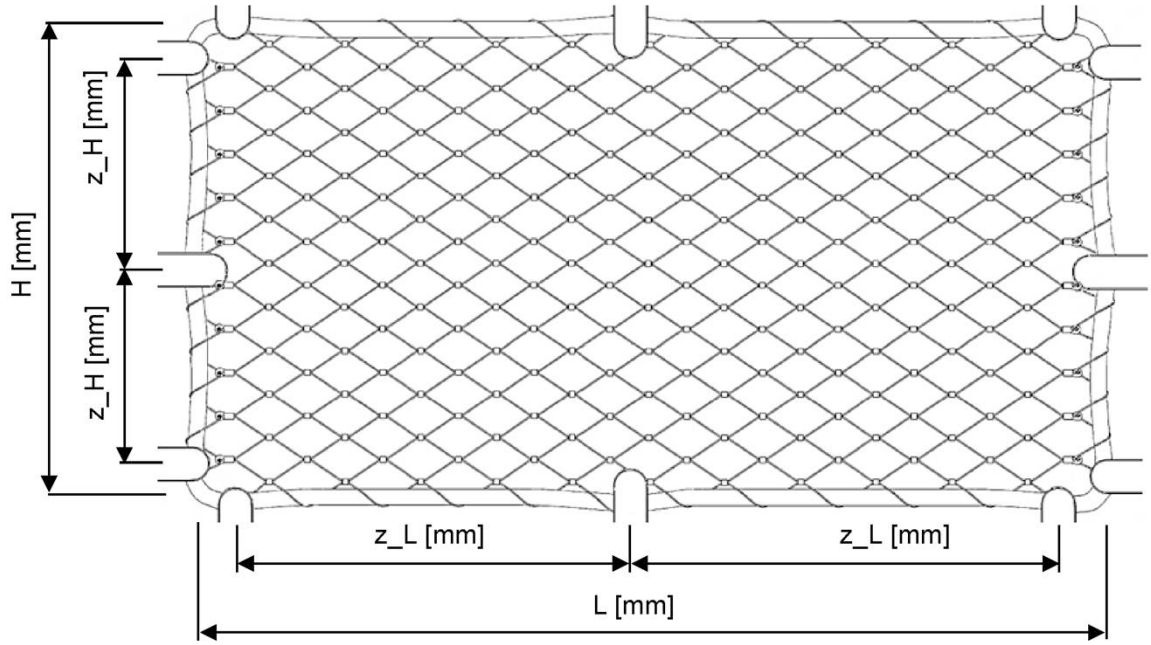
Table 25: Border profile type XT2, border cables and distance between intermediate fixings as vertical fall protection

Border profile / Border cable					Distance between intermediate fixings[3)] horizontal z_L and vertical z_H [mm]		
	Design	Dimension [mm]	Wall thickness t [mm]	Border cable construction	min.	-	max.
Border profile[1)]	round	21.3	2.0	--	350	-	1600
Border cable[2)]	--	6.0	--	7x19			2500

[1)] Alternatively, profiles with a higher bending stiffness in the main direction and comparable material characteristics.
[2)] Alternatively, tensile cable elements with a higher stated value for tensile loading and comparable material characteristics and compliance with the minimum deflection radii specified in EN 1993-1-11:2006+AC2009.
[3)] Fastening components for holding border profiles according to Annex E2. Components for guiding and redirectioning of border cables according to Annex F3 - F6.

Carl Stahl ARC cable net systems X-TEND	**Annex G2**
Vertically mounted cable net systems as fall protection - XT2 and border cable	

Cable net systems as horizontal fall protection[1)]



[1)] h_h = 1250 mm tested drop height, see EAD 200006-00-0302, section 2.2.9.

Table 26: Cable net configuration[1)] as horizontal fall protection

Net cable-Ø [mm]	Net type	Mesh width MW [mm]			Minimum field dimensions[2)] L [mm] x H [mm]
		von	-	bis	
3.0	CXL/CXE	40	-	100	1500 x 1500
4.0					

[1)] net components from table 26 according to Annex C and D1 - D4
[2)] Larger net fields have a positive effect on the load-bearing behavior in case of a person impact.

Table 27: Border cables and distance between intermediate fixings as horizontal fall protection

Border cable-Ø[1)] [mm]	Border cable construction	Distance between intermediate fixings horizontal z_L and vertical z_H [mm]			Components permitted with border cable deflection for guiding and redirectioning of border cables			
		min.	-	max.				
10.0	7x19	600	-	2500	837-1200	838-1200	837-1600	838-1600
12.0					837-2000	838-2000	835-16	835-20
16.0					921-1000-12	921-1200-12	921-1200-13	921-1000-28

[1)] Alternatively, with constant border cable diameter and identical border cable construction, tensile cable elements with a higher stated value for tensile loading and comparable material characteristics and compliance with the minimum deflection radii specified in EN 1993-1-11:2006+AC2009.

Carl Stahl ARC cable net systems X-TEND	**Annex G3**
Horizontally mounted cable net systems as fall protection	