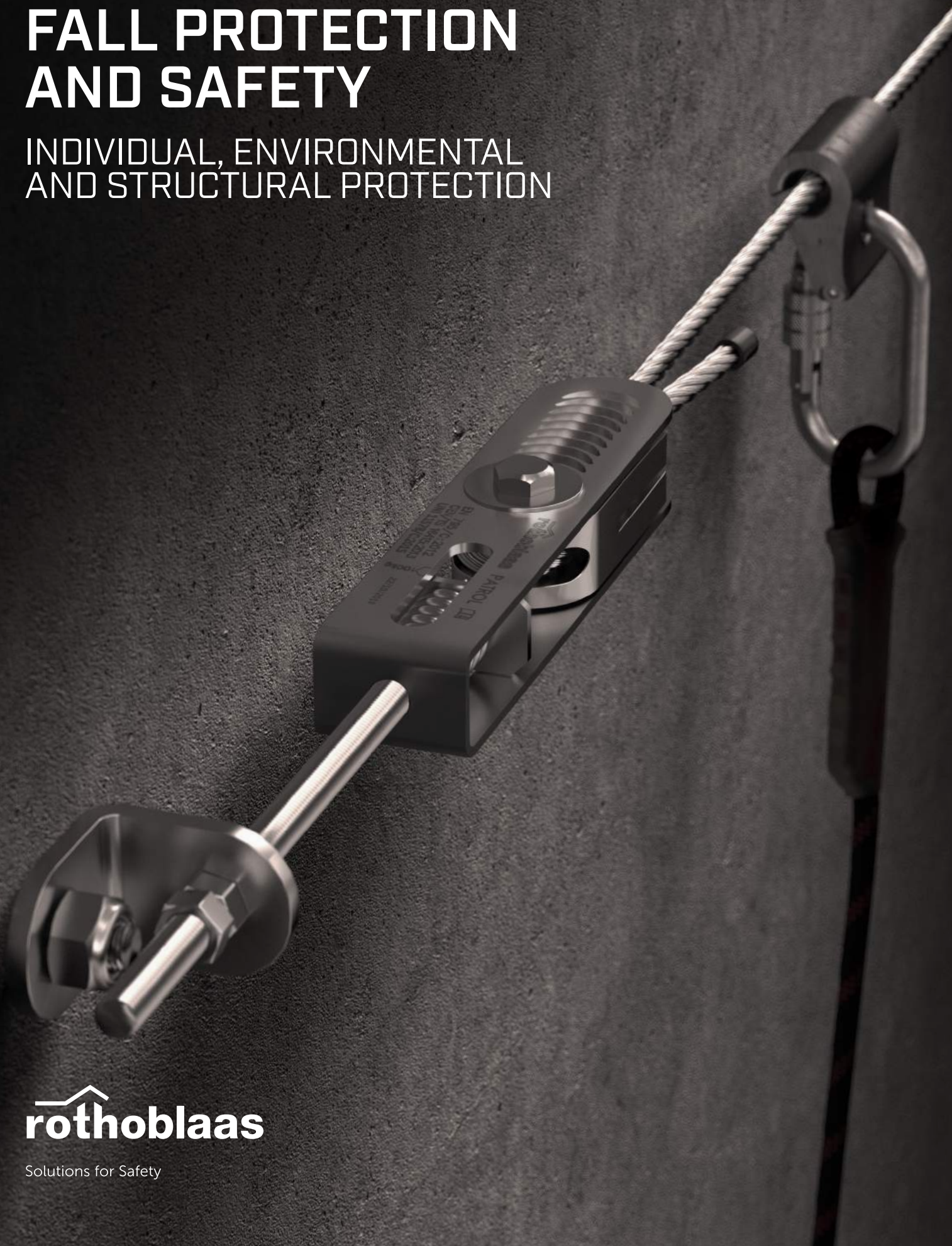


FALL PROTECTION AND SAFETY

INDIVIDUAL, ENVIRONMENTAL
AND STRUCTURAL PROTECTION



**rothoblaas**

Solutions for Safety

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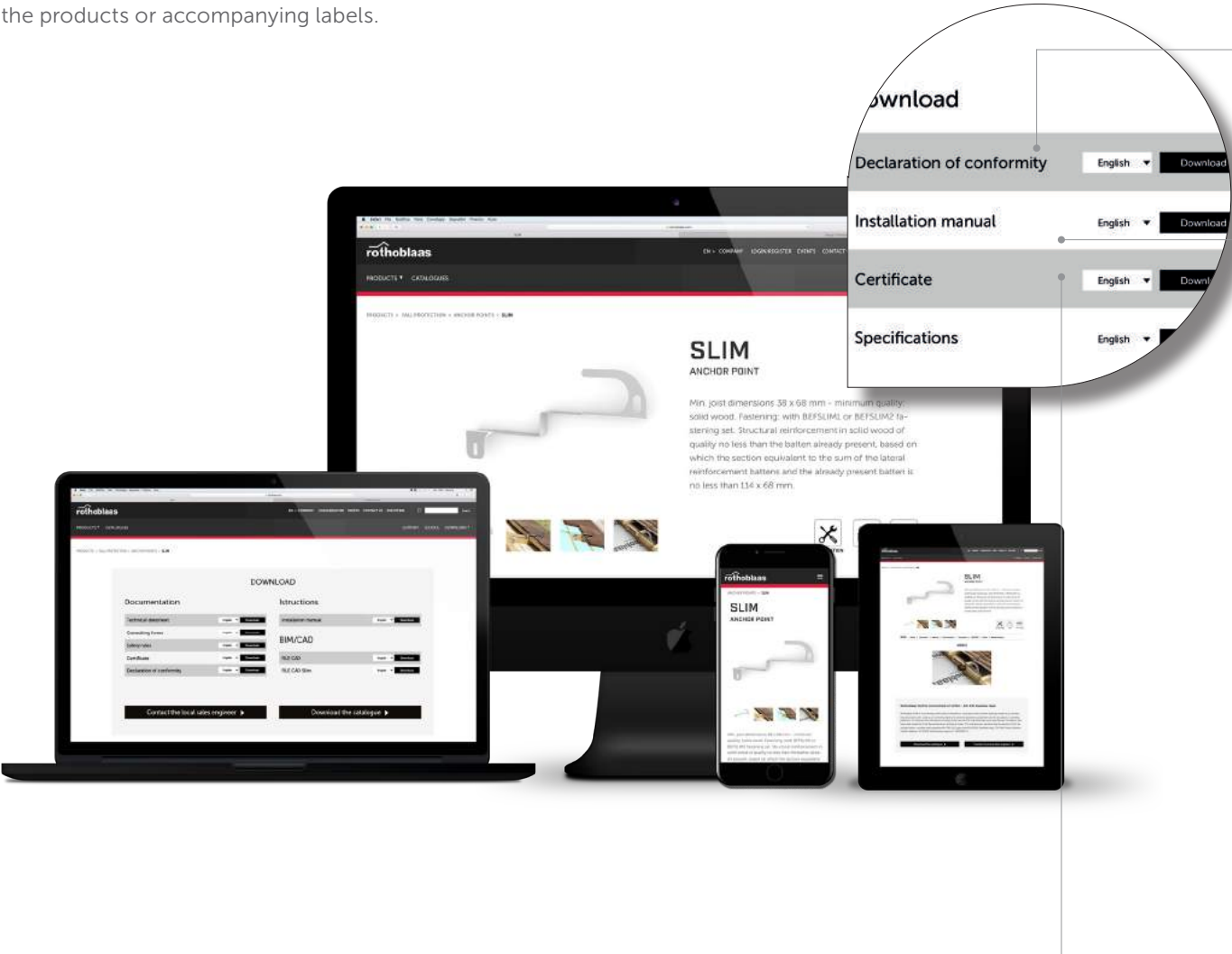
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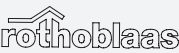
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RELIABILITY CERTIFIED

As the manufacturer, Rothoblaas is responsible for certifying its products. All the products documentation (certifications, technical data, assembly instructions and regulations) is available at www.rothoblaas.com, while information about traceability and utilisation is found directly on the products or accompanying labels.



HOW TO UNDERSTAND IT?

 rothoblaas

MANUFACTURER NAME

SLIM

PRODUCT NAME



MAXIMUM NUMBER OF USERS



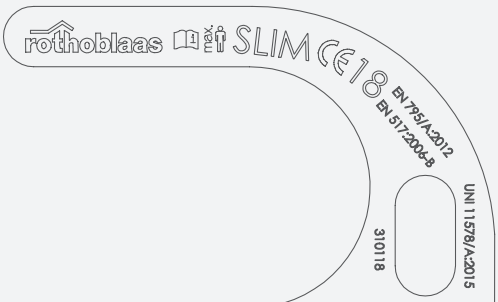
"READ THE INSTRUCTIONS"

EN 795/A: 2012
EN 517/B

REFERENCE STANDARD

XXXXYY

SERIAL NUMBER AND YEAR OF MANUFACTURE





DECLARATION OF CONFORMITY

It refers to:

- 01. the manufacturer
- 02. the product
- 03. the product use
- 04. directive
- 05. standard
- 06. the certificate document
- 07. the annual check method
- 08. the body carrying out the annual check
- 09. with the institution issuing the certificate

INSTALLATION MANUAL

Practical guide included in the package, with clear, detailed instructions for installation and use



On the website, you can also find information about safety regulations, guidance modules and specifications

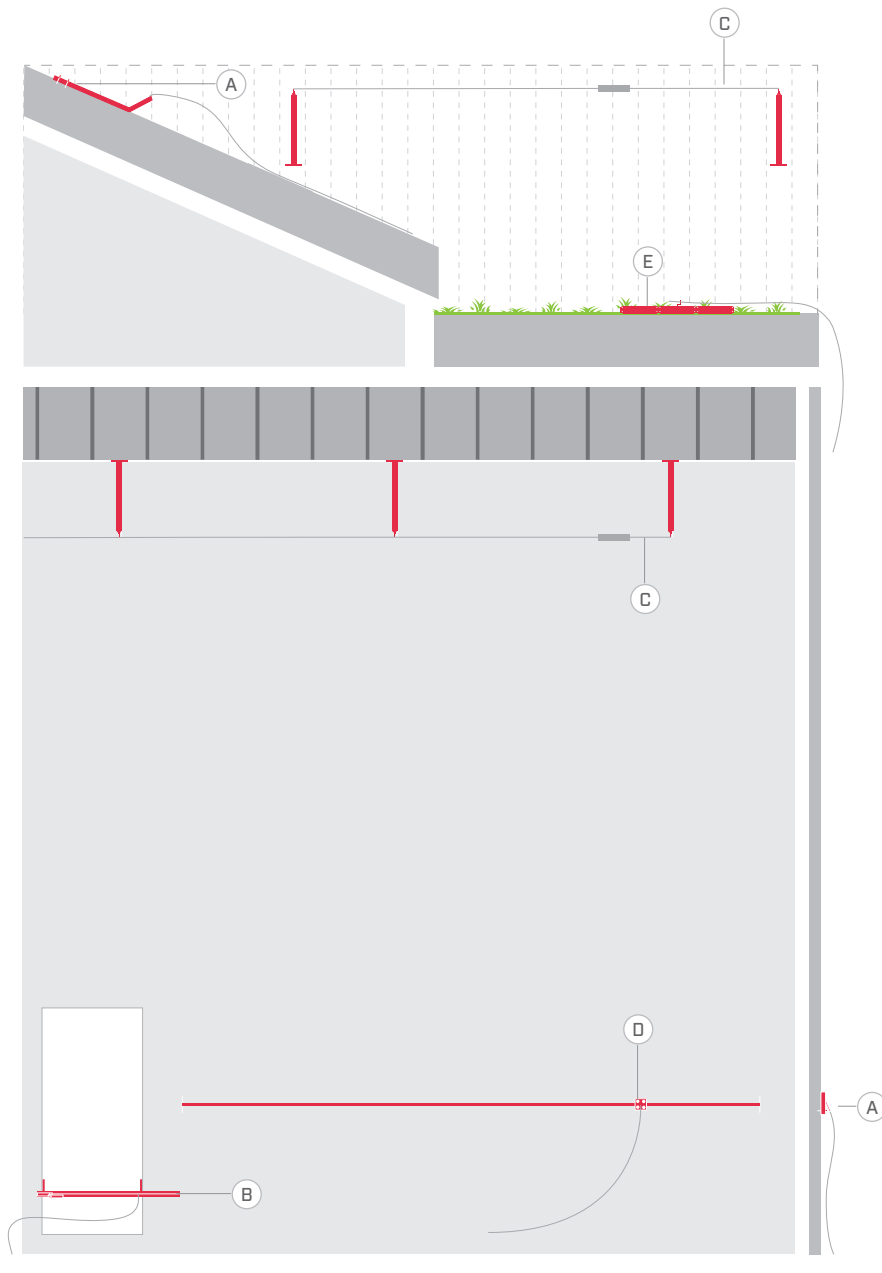
> www.rothoblaas.com



CERTIFICATE

- 01. type of certificate
- 02. certificate holder
- 03. product
- 04. model
- 05. parameters
- 06. directive
- 07. date, validity, test report number
- 08. information on the body notified
- 09. weight

FALL PROTECTION SYSTEM



ANCHOR DEVICES

To prevent the risk of falling while carrying out work at height, anchoring devices are used, which are applied to both new buildings of any type of use, and existing buildings, when refurbishing the roof. These devices must meet the requirements of standard EN 795 "Personal equipment for protection against falls - Anchoring devices," the EN standards contained therein and subsequent updates.

TYPE A - Anchoring device with one or more anchor points with a need for structural fastening.

TYPE B - Anchoring device with one or more anchor points without a need for structural fastening.

TYPE C - Anchoring device employing a flexible line that diverts from the horizontal by not more than 15°.

TYPE D - Anchoring device employing a rigid line that diverts from the horizontal by not more than 15°.

TYPE E - Anchoring device for use on surfaces diverting from the horizontal by up to 5° where performance is based solely on the mass and friction between the device itself and the surface.





PRODUCT TEST BASED ON EN 795:2012

Rothoblaas anchor devices, some of which are designed for controlled deformation, are certified in all directions (360°).

By stopping a fall, the device becomes deformed, absorbing some of the energy transmitted by the fall. Laboratory tests have shown that this deformation may favour fastening systems, which benefit from a reduction in the burden on them and on the underlying structure.

LOADS APPLIED DURING TESTS

In the absence of collective protection equipment, the law requires the use of personal protective equipment (PPE) in combination with anchoring systems tested and manufactured in accordance with EN 795:2012, in order to allow the operator to access, transit and carry out work safely.

Number of users	Static test for 3 minutes Q_s [kN]	Dynamic test Q_d [kN]
	12	9 (100-kg mass fall)
	13	12 (200-kg mass fall)
	14	9 dynamic + 2 static*
	15	9 dynamic + 3 static*

* The static load simulates the operator previously fallen and hanging to the anchoring device

TESTS REQUIRED BY STANDARD EN 795:2012

To obtain certification, anchoring devices have to undergo various tests:

- deformation test
- dynamic strength and integrity test
- static strength test

In addition to these tests, in order to certify the anchoring devices to be used by several operators, additional tests are performed according to the technical CEN/TS 16415 specification

Design values are specified in the individual product pages.

The products marketed by Rothoblaas have been tested on different substrates with different fastening systems. These features are specified in the technical sheets and installation manual of each product.

DID YOU KNOW...?

ARRESTING FORCES THROUGH ENERGY ABSORBER

Regarding the design action, quoting EN 795:2012 point 7.b:

"The user shall be equipped with a means of limiting the maximum dynamic forces exerted on the user during the arrest of a fall to a maximum of 6 kN". This requirement is also reported in all product manuals, therefore we consider this value as the design load for the calculation.

Observing real life situations has confirmed that, with the use of energy absorbers, retractable devices or guided-type fall protection, devices show an arresting force between approximately 4 and 4,5 kN.

ITALIAN STANDARDS UNI EN 355:2003

UNI EN 355:2003 establishes that in experimental tests, the braking force F_{mcs} necessary to stop a 100kg bodyweight mass in free fall from a height equal to 4m (h_{cl}) must not exceed 6 kN, and the arresting distance must be:

$$\text{arresting distance} < (2L_t + 1,75 \text{ m})$$

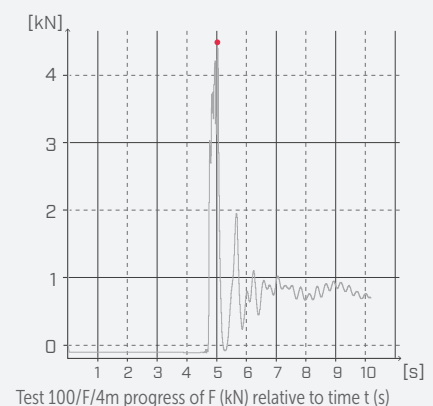
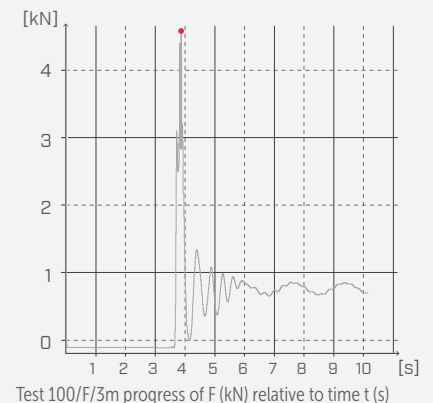
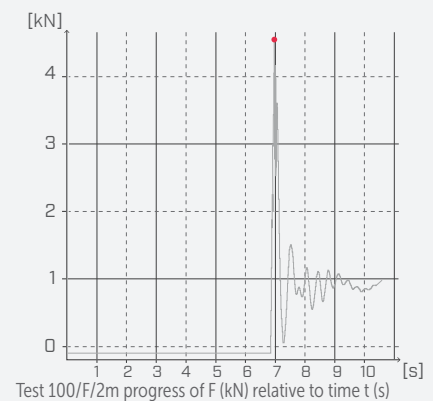
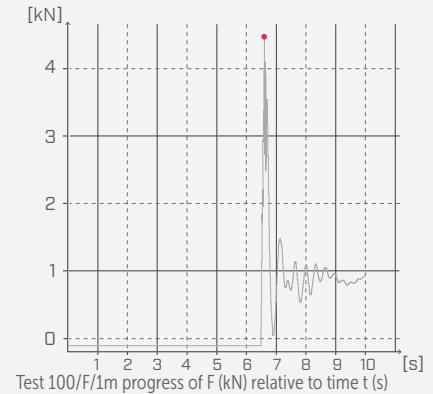
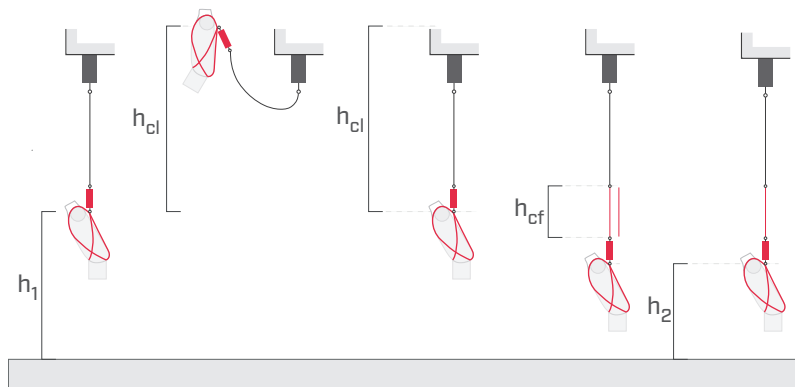
where:

L_t = total length of the energy absorber (including rope)

h_1 = attachment point distance - ground before the fall

h_2 = attachment point distance - ground after the fall

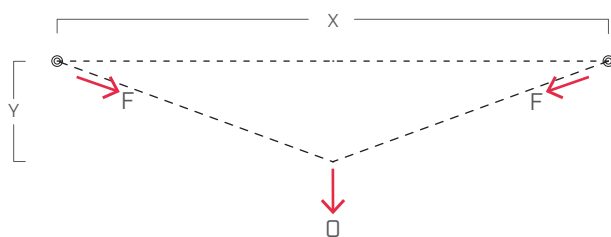
$h_{cf} = h_1 - h_2$ = braking length



DESIGN LOADS

ANCHOR LINE - TYPE C

In the anchor line systems, the design actions acting on supports vary depending on the geometry of the system and the type of support. The loads applied during tests act on the rope in the middle of the span as shown in the diagram. By varying the length of the span X and load Q , design actions F acting on supports are determined from laboratory tests.



SINGLE POINT - TYPE A

At the individual points, the load is directly transferred through the rope from the worker to the anchor device fixed to the structure.



In general, the worker fall load can be considered as variable load Q_k , equal to the arresting force, and the fall loads for the remaining suspended workers as additional variable loads equal to their weight increased by a safety coefficient. Using a semi-probabilistic approach, we obtain:

$$Q = Q_k + (n \times Q_{k,i}) \times \gamma_{q,q}$$

where:

Q_k = arresting force of the energy absorber

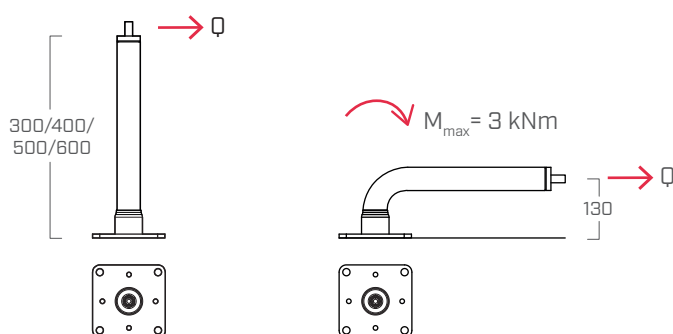
n = number of workers suspended

$Q_{k,i}$ = weight of each additional suspended worker

$\gamma_{q,q}$ = safety coefficient of hanging load

TOWER SUPPORT

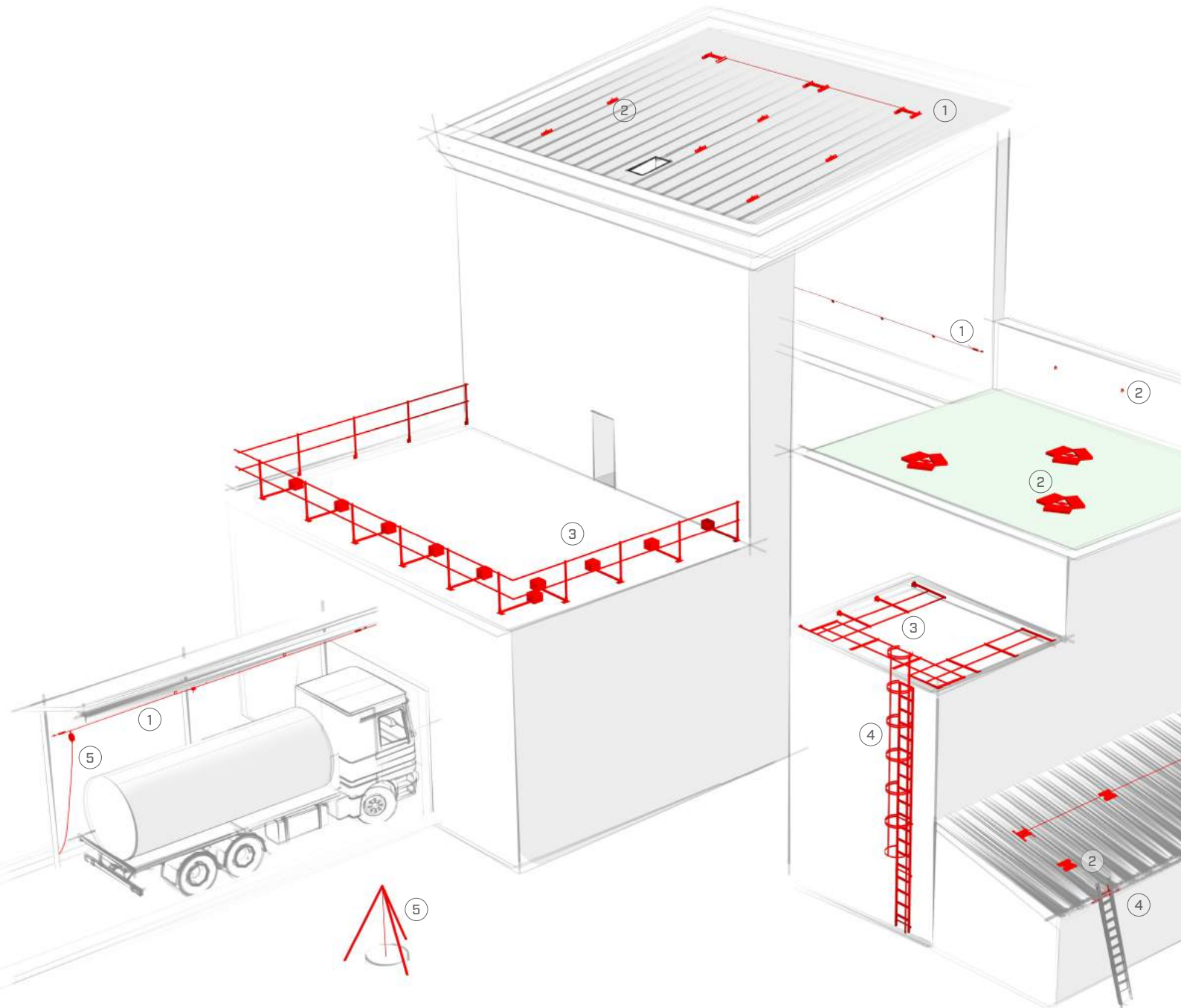
CONTROLLED DEFORMATION - FORCE MANAGEMENT



The TOWER element has a markedly elastic - plastic behaviour. Thus, for verification purposes, this behaviour must be considered differently from what usually happens when carrying out usual static checks.

This behaviour allows reducing the load on the fastening system/structure. The bending moment that generates the plastic hinge at the base of the metal pole is equal to 3 kNm.

WORKING AT HEIGHT HAS NEVER BEEN SO SAFE



COMPLETE RANGE

A wide range of access and transit solutions for working on roofs. Work at heights and in confined spaces in total safety, thanks to the completeness of the Rothoblaas range:

- 1. ANCHOR LINES
- 2. ANCHOR POINTS
- 3. COLLECTIVE PROTECTIVE EQUIPMENT (CPE)
- 4. ACCESSES
- 5. PERSONAL PROTECTIVE EQUIPMENT (PPE)

GENERAL PRINCIPLES WORK AT HEIGHT

WORK AT HEIGHT

"Working at height" means all those activities in which workers are subject to the risk of falling from a height.

Over the years, efforts to prevent falls from height have been aimed at finding solutions for eliminating this risk, or at least reducing it to a minimum, by adopting appropriate prevention measures, in compliance with the laws in force.

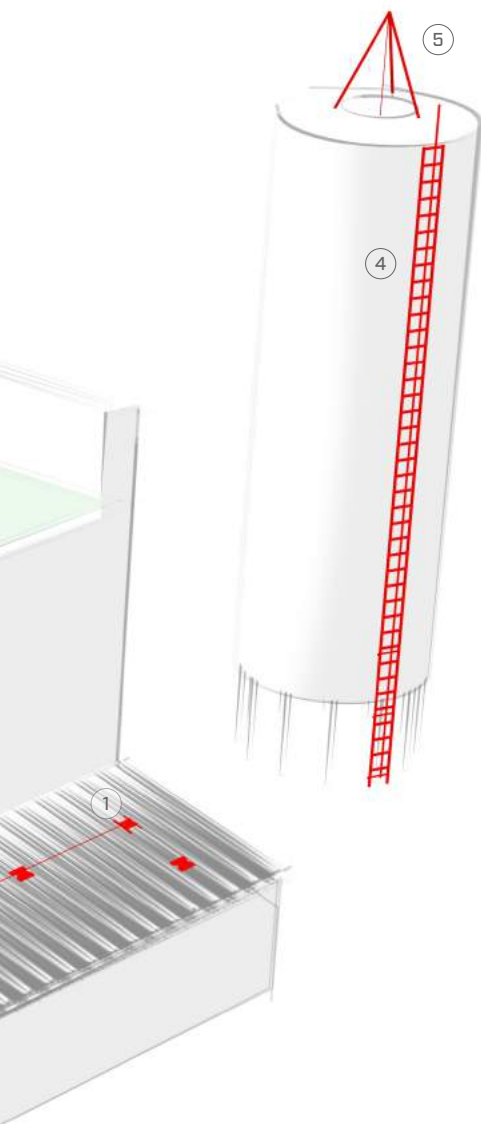
Protective measures which must be used during work at height can be divided into two major categories:

COLLECTIVE PROTECTIVE EQUIPMENT (CPE)

All devices used to protect more than one worker from falling. These include, for example, parapets, scaffolding and all other types of fixed protection.

PERSONAL PROTECTIVE EQUIPMENT (PPE)

All types of equipment designed to be worn or used by the worker to protect them from risks that could threaten their safety while working at height. This category also includes devices that allow them to properly perform their work, including ropes, helmets and harnesses.



**DID YOU
KNOW...?**

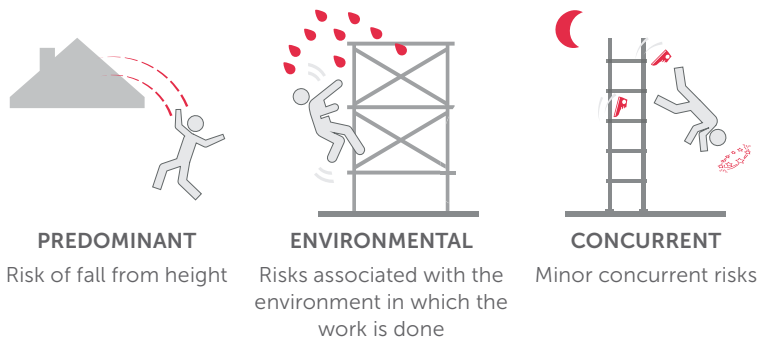
It is important to emphasise that when selecting protective equipment to be used during work at height, collective protection equipment is always to be preferred over personal protection equipment.

In situations where collective protection equipment cannot be used, access and positioning techniques utilising ropes must be used, which include the use of personal protection equipment to prevent falls from height.

RISKS

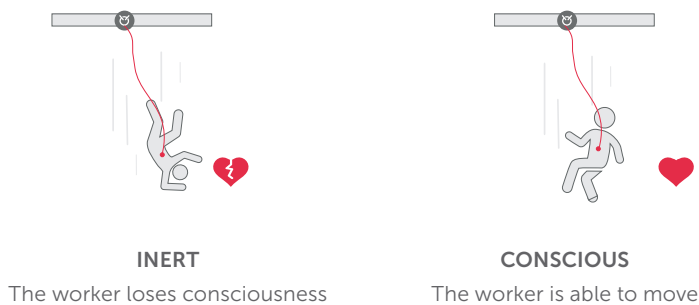
RISK OF FALLING FROM HEIGHT

It is possible to distinguish between the risks that may arise while working from height, based on the following classification:



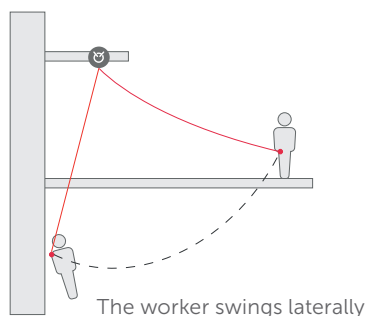
CONSEQUENTIAL RISKS: SUSPENSION OF THE BODY

Should a fall occur, suspension of the body in mid air is directly associated with consequential risks. In these cases, it is necessary to manage a serious emergency situation over the short term. Suspension can occur as:



PENDULUM EFFECT

The "pendulum effect" refers to a lateral movement that occurs after a fall when the anchor is not located vertically with respect to the worker. This situation can be dangerous, as it can cause the worker to collide with an obstacle located along the fall trajectory.



RISK ANALYSIS

Selection of the proper devices always depends upon careful risk analysis aimed at identifying the following aspects:

- Is access possible with the worker bringing their own work equipment?
- Is there a genuine necessity to carry out the work at height?
- Is it possible to adopt alternative solutions?
- Is there a time limit?
- Is it possible to change the conditions of the area where the work will be done?

Understanding these aspects is fundamental for properly selecting the precautionary measures to be adopted.

RISK REDUCTION

After analysing the risks, it is necessary to identify appropriate safety measures for access and positioning when work at height is done. During access, the most appropriate solution must be identified after considering frequency of circulation, the drop and the duration of the task.

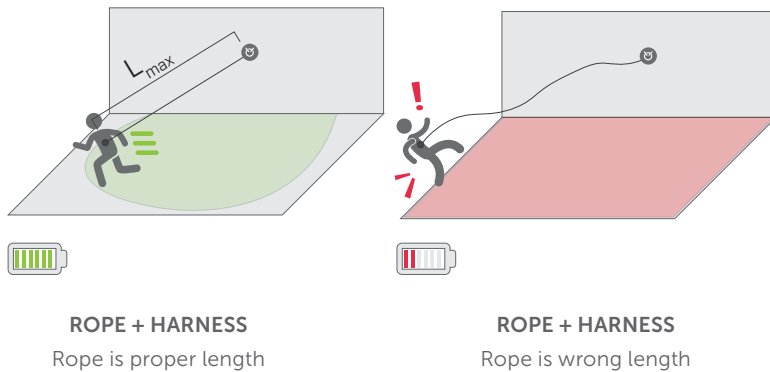
Additionally, other fundamental aspects that must be considered to reduce these risks include:

- the worker's psychological/physical fitness;
- adequate worker training for the work to be done;
- qualified worker preparation regarding operating, rescue and emergency techniques.

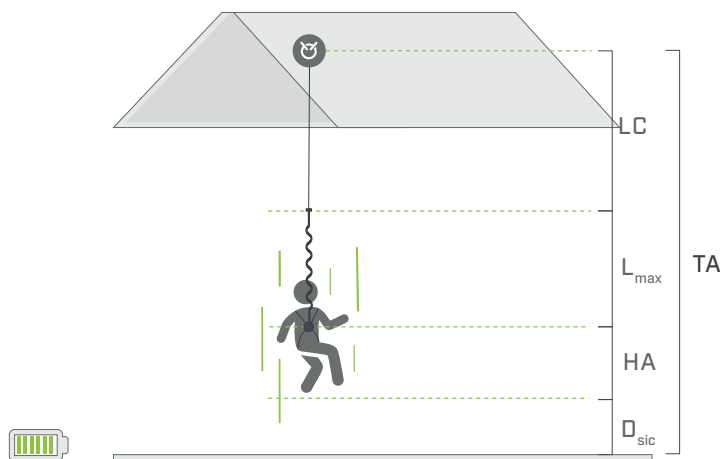
The worker must always be aware of additional residual risks that may be present, regardless of the adoption of the safety measures applied.

TECHNIQUES FOR WORK AT HEIGHT

WORK WITH RESTRAINT



FALL PROTECTION



If a fall arrest system is installed, which involves the installation of UNI EN 795 type A devices and a worker provided with PPE complete with an energy absorber, the following calculation must be made to obtain the air draught value:

$$TA = LC + L_{MAX} + HA + D_{sic} (+ f) \quad [m]$$

where:

TA	air draught
LC	length of the rope from the fixed anchoring point to the roof to the anchoring point of the harness at the moment the rope begins to stop the fall
L_{max}	maximum extension of the energy absorber (maximum 1,75 m)
HA	1,50 m, maximum height with respect to the worker's feet when upright, measured from the connection of the rope to the harness
D_{sic}	safety distance (minimum 1 m)
f	any strain generated by the fall on the type C anchor line

AVOID FALL-RELATED RISKS

Work with restraint involve a system that limits worker movement to prevent them reaching areas in which a fall from height could occur. This system does not arrest a fall from height, but instead prevents the fall.

This system is generally preferable compared to working with a fall protection system. Nonetheless, it cannot be used in cases where the worker must be suspended.

PREVENTING FALL-RELATED RISKS

The fall arrest system has the purpose of:

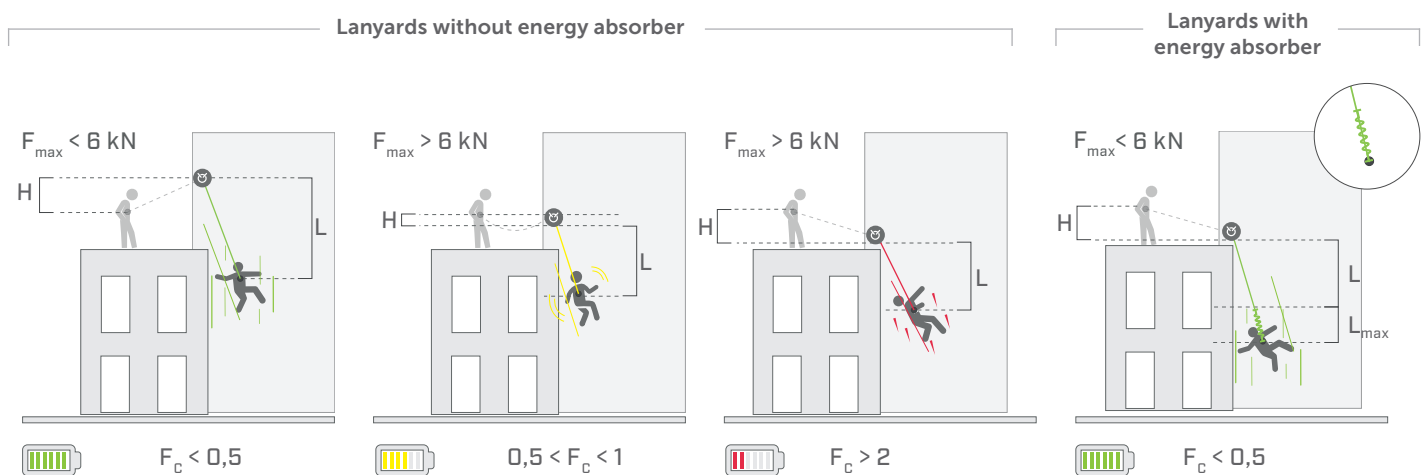
- reducing the distance required to arrest a fall
- absorbing the energy of the fall to limit the arresting force transmitted to the human body
- keeping the injured in an appropriate position to limit the effects of inert suspension

With the help of this system, the worker can carry out their work, accessing areas or positions that could potentially cause a free fall, and if a fall occurs, the system limits the length of the fall by arresting it.

For this reason, a fall arrest system must include an energy absorption device capable of containing the forces released by the fall to levels that can be supported by the human body.

Before using this system, it is important to consider the fall factor concepts and air draught concepts.

FALL FACTORS AND ENERGY ABSORBER



FALL FACTOR

To describe the degree of danger of the fall, it is necessary to introduce the concept of "fall factor". It can be defined as follows:

$$F_c = H / L$$

where:

- F_c fall factor
- H height fallen during the fall
- L length of the rope / connection device

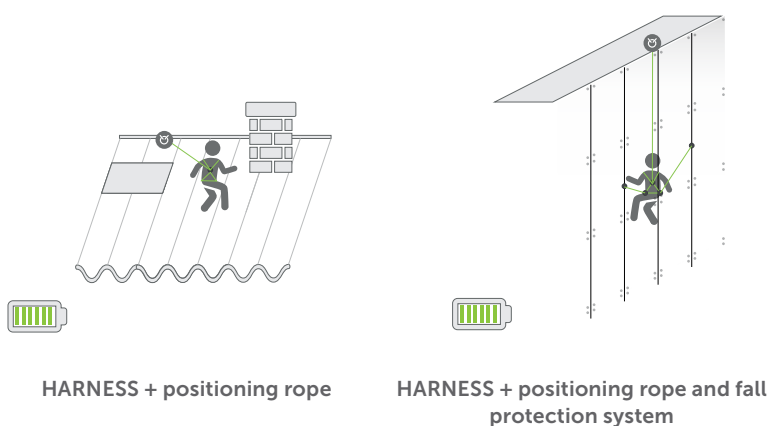
The value obtained from the equation must be between 0 and 2, with 2 representing the maximum fall factor acceptable for suspended work environments. In fact, a fall factor which exceeds 2 can give rise to deceleration that is too rapid for the human body to handle, which can cause serious injury to the worker, as well as damaging or breaking the devices in use due to the significant forces acting upon them at the time of impact.

During a fall, the user must in no way suffer an arresting force greater than 6 kN.

There are two possibilities:

- **make sure that the cords remain constantly attached to the anchor points above the level of the head**, so as the drop height and the arresting forces generated by it can be minimised;
- if the fall cannot be limited, **the arresting force must be absorbed via the most used energy absorbing PPE** (energy absorbers and dynamic rope systems).

POSITIONING AT WORK



Working technique that allows the operator to work under tension with its devices, hands free:

- **in the case where the risk of falling into the void is null:** sling and positioning cord;
- **in the case where there is a risk of falling:** harness, positioning rope and fall protection system.

ANCHOR LINES

ANCHOR LINES

I ANCHOR LINES

Types

PASSING LIFE LINE 21
pass-through anchor line

NOT PASSING LIFE LINE 29
non-pass-through anchor line

Supports and plates

TOWER 36
support for timber, concrete and steel roofs

TOWER PEAK 40
adaptor for double layer ridge piece for TOWER

TOWER SLOPE 41
fastening guide for rafter for TOWER

TOWLAT 42
adaptor for side starts for TOWER

TOPLATE 43
counterplate for TOWER

TOPLATE 2.0 43
adjustable plate for TOWER

TRAPO 44
support for bearing trapezoidal sheet metal roofs

SHIELD 48
support for corrugated sheet roofs

SIANK 52
support for sheet metal roofs with double crimps

COPPO 56
support for roofs with faux tiles

SEAMO 60
support for sheet metal roofs with round crimps

BLOCK 64
support with ballast

Wall and overhead

PASS-THROUGH WALL 69
pass-through anchor line for façades

PASS-THROUGH AIR 79
overhead pass-through anchor line

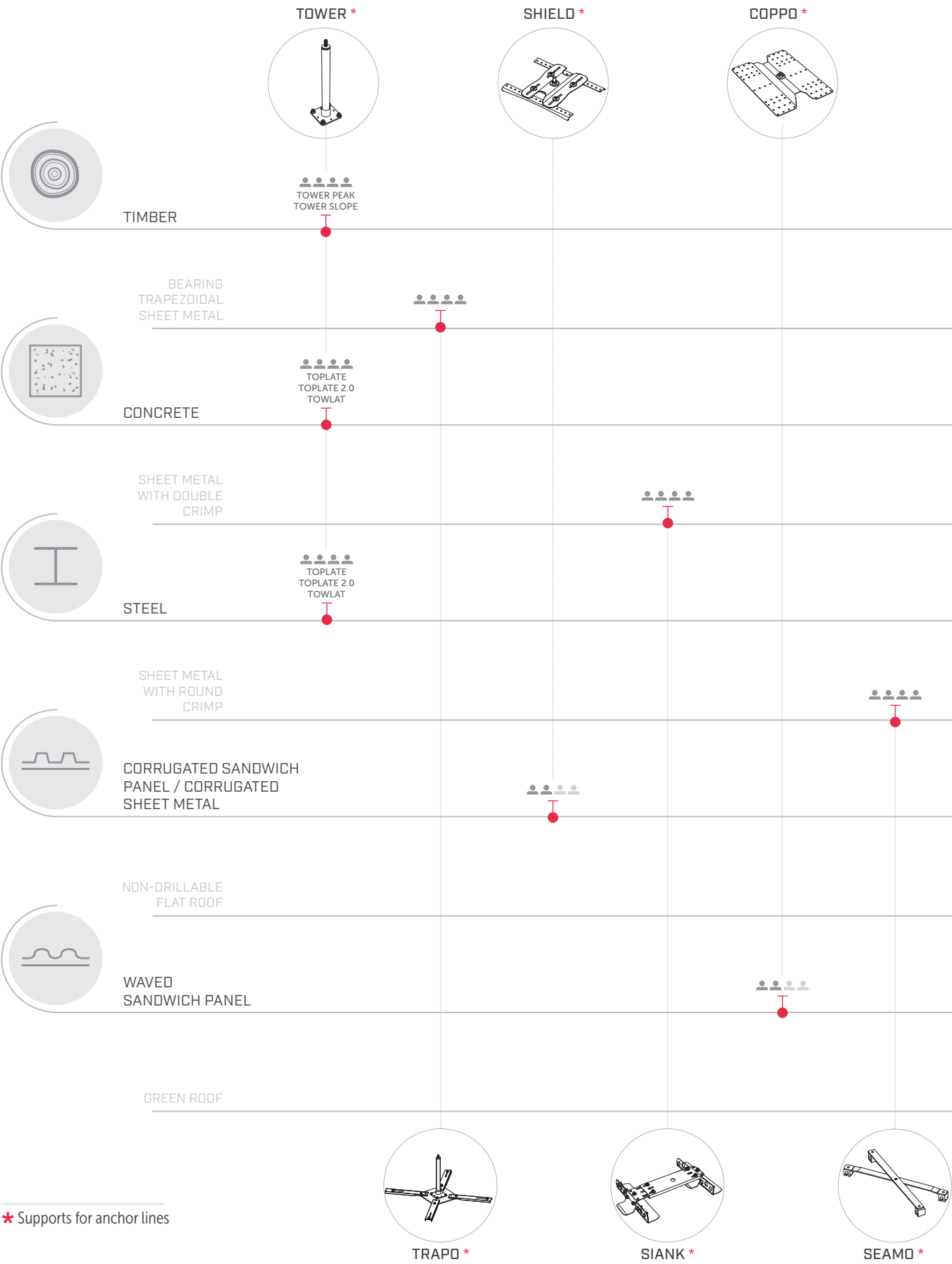
For green roof

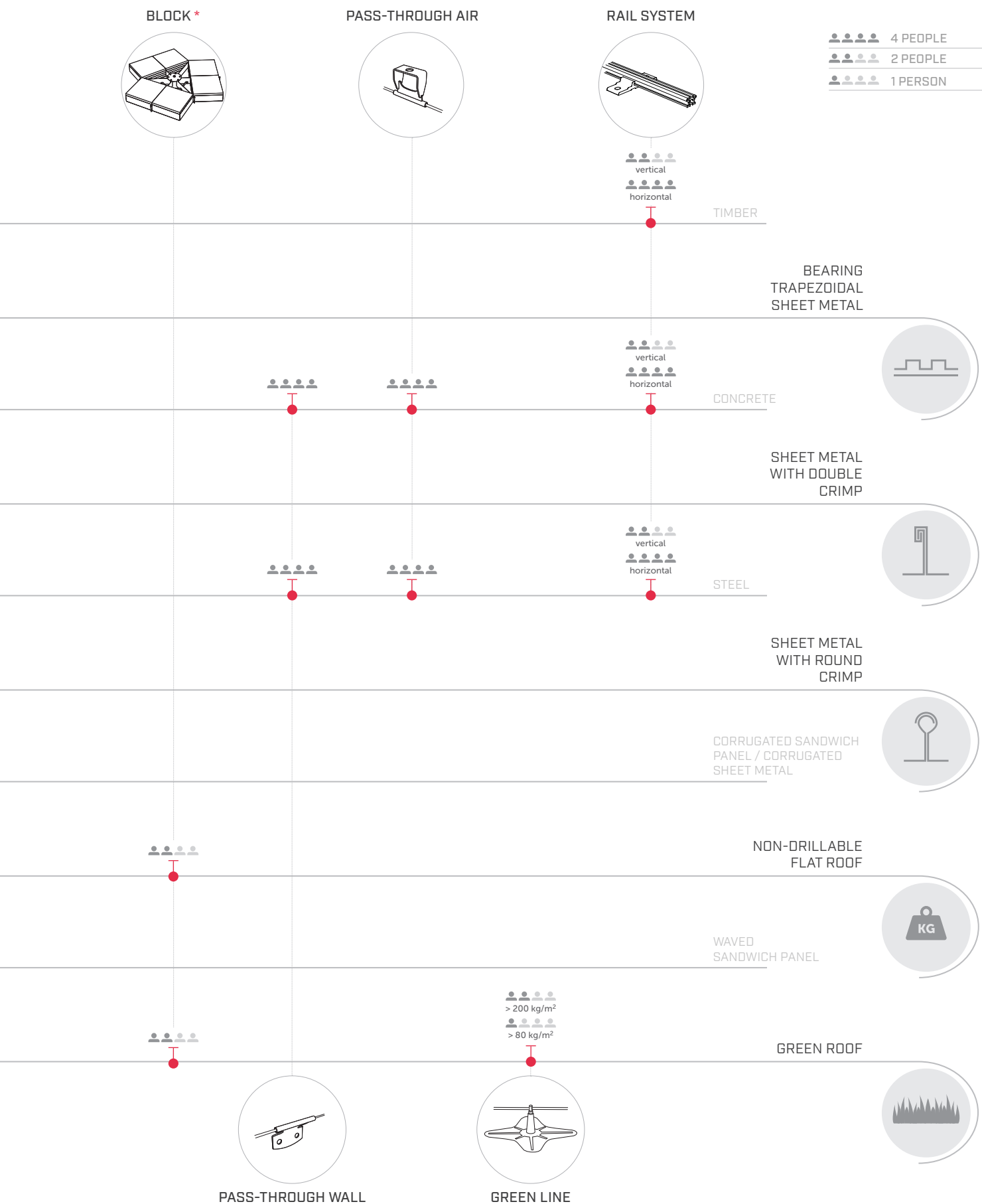
GREEN LINE 86
anchor line with support

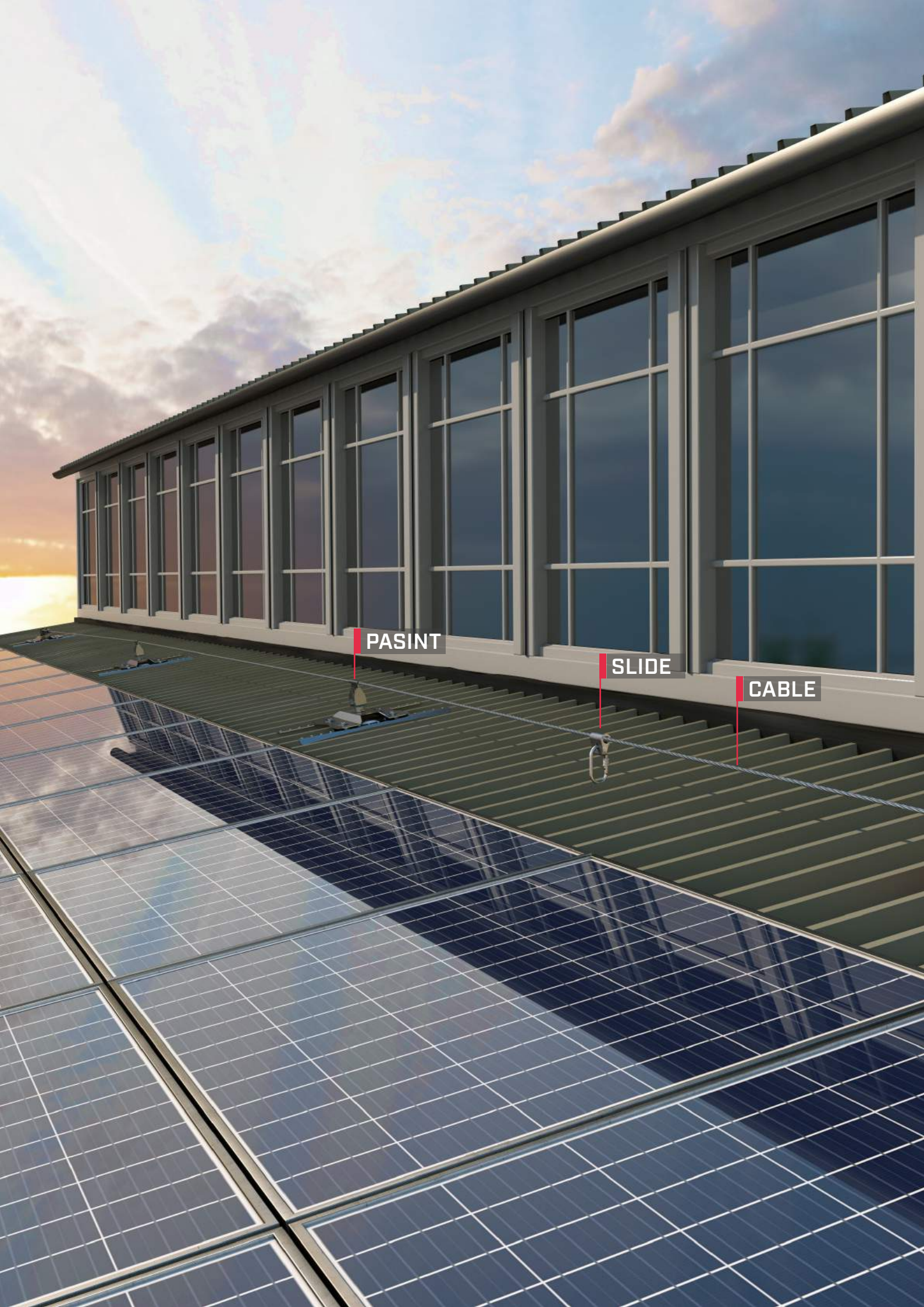
On rail

RAIL SYSTEM 92
anchor line on rail

FOR EVERY STRUCTURE THE RIGHT ANCHOR LINE







PASINT

SLIDE

CABLE



PATROLSTOP

SPEAR

PATROLTERM

| PASSING LIFE LINE

PASSING LIFE LINE

PASS-THROUGH ANCHOR LINE

PRACTICAL

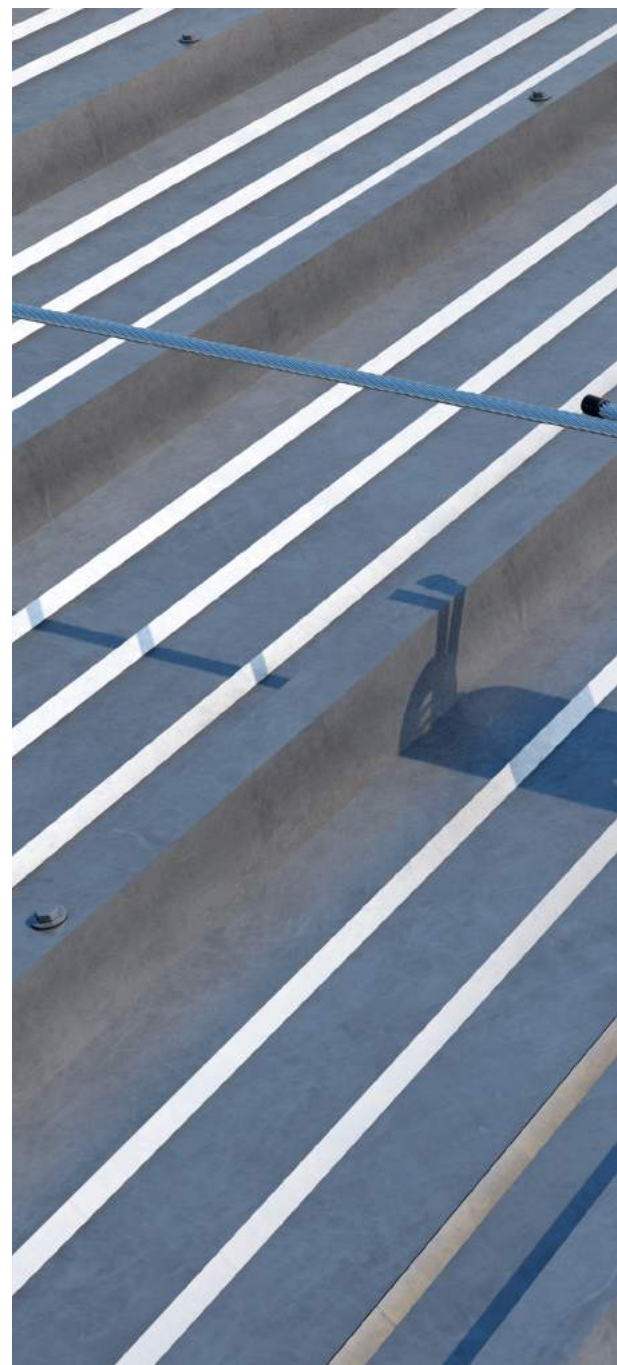
Thanks to the pass through elements and shuttle, the anchor line can be used along the entire length, without the need for unhooking.

PATROL ANCHOR LINE COMPONENTS

CODE	description
SPEAR	tensioner and energy absorber
SPEAR2	tensioner and energy absorber on crimped roofs
PATROLTERM	terminal element
PATROLTERML	long terminal
PASANG	angular pass-through element
PASINT	pass-through intermediate element
SLIDE1	removable sliding device
SLIDE2	fixed sliding device
CABLE	Ø8 7 x 7 stainless steel rope
PATROLSTOP	limit switch
TARGA	system information plate

SUPPORTS FOR ANCHOR LINE

TYPE	description	p.
TOWER	for timber, concrete and steel roofs	36
TRAPO	for bearing trapezoidal sheet metal roofs	44
SHIELD	for corrugated sheet roofs	48
SIANK	for sheet metal roofs with double crimps	52
COPPO	for roofs with faux tiles	56
SEAMO	for sheet metal roofs with round crimps	60
BLOCK	with ballast	64

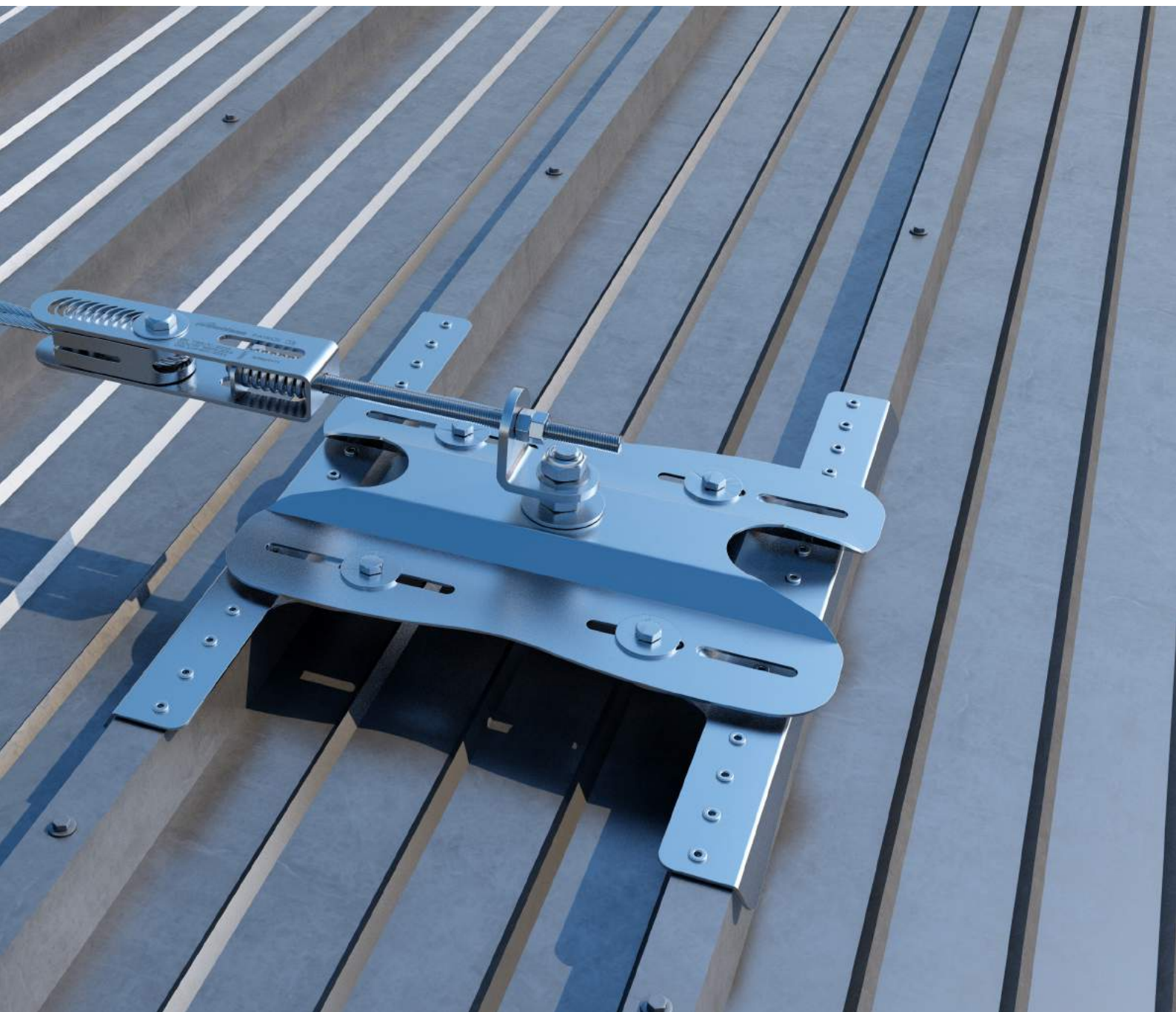


< VERSATILE

Intermediate pass through elements can be installed both on horizontal supports and on overhead anchor lines.

INSTALLATION >

With SLIDE1 and SLIDE2 shuttles, it is possible to choose between a removable sliding device and a fixed one.



FIELD OF USE

- Timber / concrete / steel structure
- Corrugated sandwich panel / corrugated sheet metal
- Waved sandwich panel
- Bearing trapezoidal sheet metal
- Sheet metal with double crimp
- Sheet metal with round crimp
- Non-drillable flat roof
- Green roof

SPEAR

TENSIONER AND ENERGY ABSORBER

CODES AND DIMENSIONS

CODE	material	pcs.
SPEAR	stainless steel - AISI304 alloy EN AW-6082	2
SPEAR2	stainless steel - AISI304 alloy EN AW-6082	2

The **SPEAR2** anchor line tensioner and energy absorber are only for use on crimped roofs



SPEAR



SPEAR2

PATROLTERM

TERMINAL ELEMENT

CODES AND DIMENSIONS

CODE	material	pcs.
PATROLTERM	stainless steel - AISI304	1



PATROLTERML

LONG TERMINAL

CODES AND DIMENSIONS

CODE	material	pcs.
PATROLTERML	stainless steel - AISI304	1



PASANG

ANGULAR PASS-THROUGH ELEMENT

CODES AND DIMENSIONS

CODE	material	pcs.
PASANG	stainless steel - AISI304	1



I PASINT

PASS-THROUGH INTERMEDIATE ELEMENT

I CODES AND DIMENSIONS

CODE	material	pcs.
PASINT	stainless steel - AISI304	1



I SLIDE 1

REMOVABLE SLIDING DEVICE

I CODES AND DIMENSIONS

CODE	material	pcs.
SLIDE1	stainless steel - AISI304	1

Carabiner included in the package



I SLIDE 2

FIXED SLIDING DEVICE

I CODES AND DIMENSIONS

CODE	material	pcs.
SLIDE2	stainless steel - AISI304	1

Carabiner included in the package



I CABLE

Ø8 7 x 7 STAINLESS STEEL ROPE

I CODES AND DIMENSIONS

CODE	material	m.
CABLE	stainless steel - AISI316	-



PATROLSTOP

LIMIT SWITCH

CODES AND DIMENSIONS

CODE	material	pcs.
PATROLSTOP	plastic - rubber	1



TARGA

SYSTEM INFORMATION PLATE

CODES AND DIMENSIONS

CODE	pcs.
TARGA	1



PATROL KIT 10

ANCHOR LINE KIT, 10 m

CODES AND DIMENSIONS

CODE	content	pcs.
	PATROLTERM	2
PATROLKIT10	SPEAR	2
	CABLE [10 m]	1



PATROL KIT 15

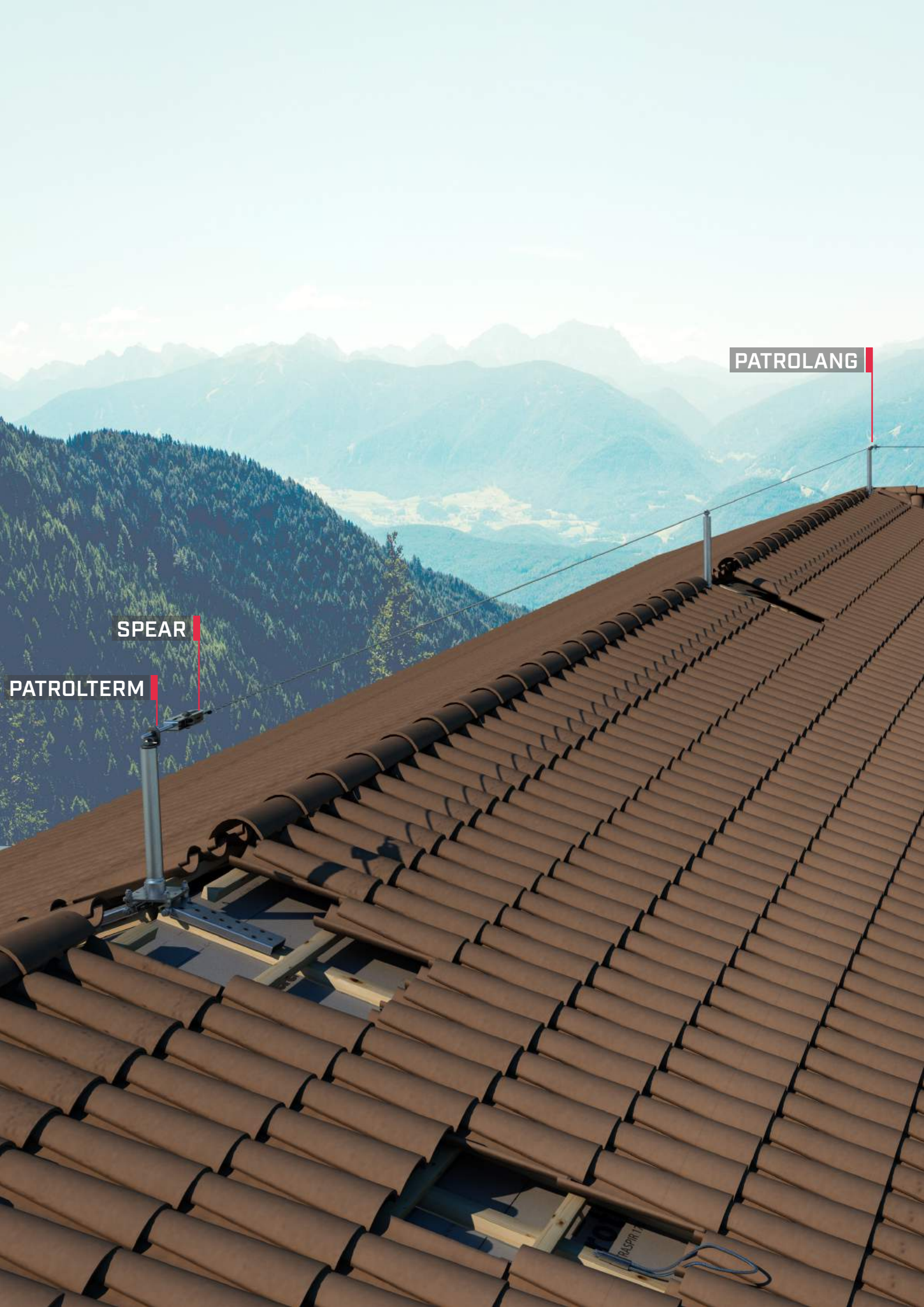
ANCHOR LINE KIT, 15 m

CODES AND DIMENSIONS

CODE	content	pcs.
	PATROLTERM	2
PATROLKIT15	SPEAR	2
	CABLE [15 m]	1







PATROLANG

SPEAR

PATROLTERM

PASPR 1



CABLE

PATROLMED

! NOT PASSING LIFE LINE

NOT PASSING LIFE LINE

NON-PASS-THROUGH ANCHOR LINE

SIMPLE

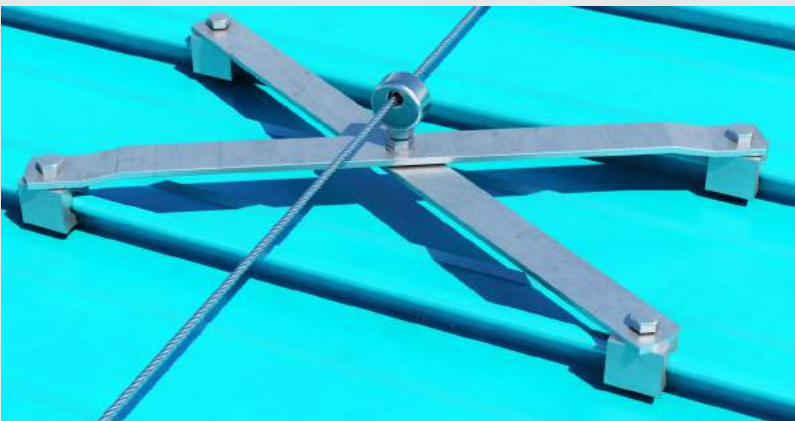
The system was designed to create short anchor lines for infrequent use.

PATROL ANCHOR LINE COMPONENTS

CODE	description
SPEAR	tensioner and energy absorber
SPEAR2	tensioner and energy absorber on crimped roofs
PATROLTERM	terminal element
PATROLTERML	long terminal
PATROLANG	non-pass-through angle bracket
PATROLMED	non-pass-through intermediate element
PATROLINT	semi-pass-through intermediate element
CABLE	Ø8 7 x 7 stainless steel rope
PATROLSTOP	limit switch
TARGA	system information plate

SUPPORTS FOR ANCHOR LINE

TYPE	description	p.
TOWER	for timber, concrete and steel roofs	36
TRAPO	for bearing trapezoidal sheet metal roofs	44
SHIELD	for corrugated sheet roofs	48
SIANK	for sheet metal roofs with double crimps	52
COPPO	for roofs with faux tiles	56
SEAMO	for sheet metal roofs with round crimps	60
BLOCK	with ballast	64

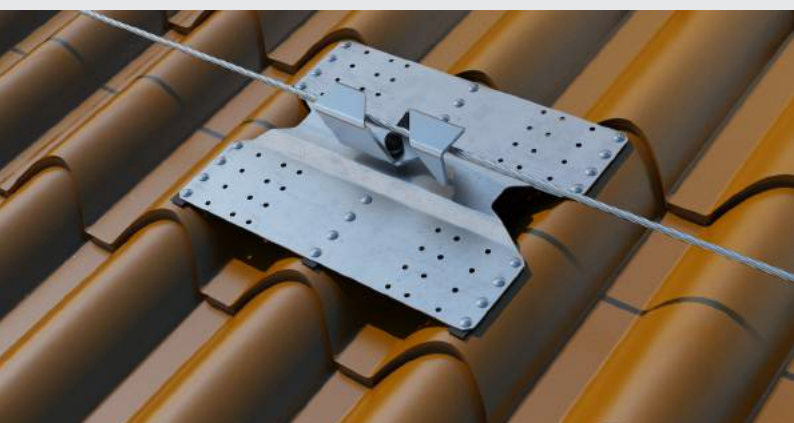
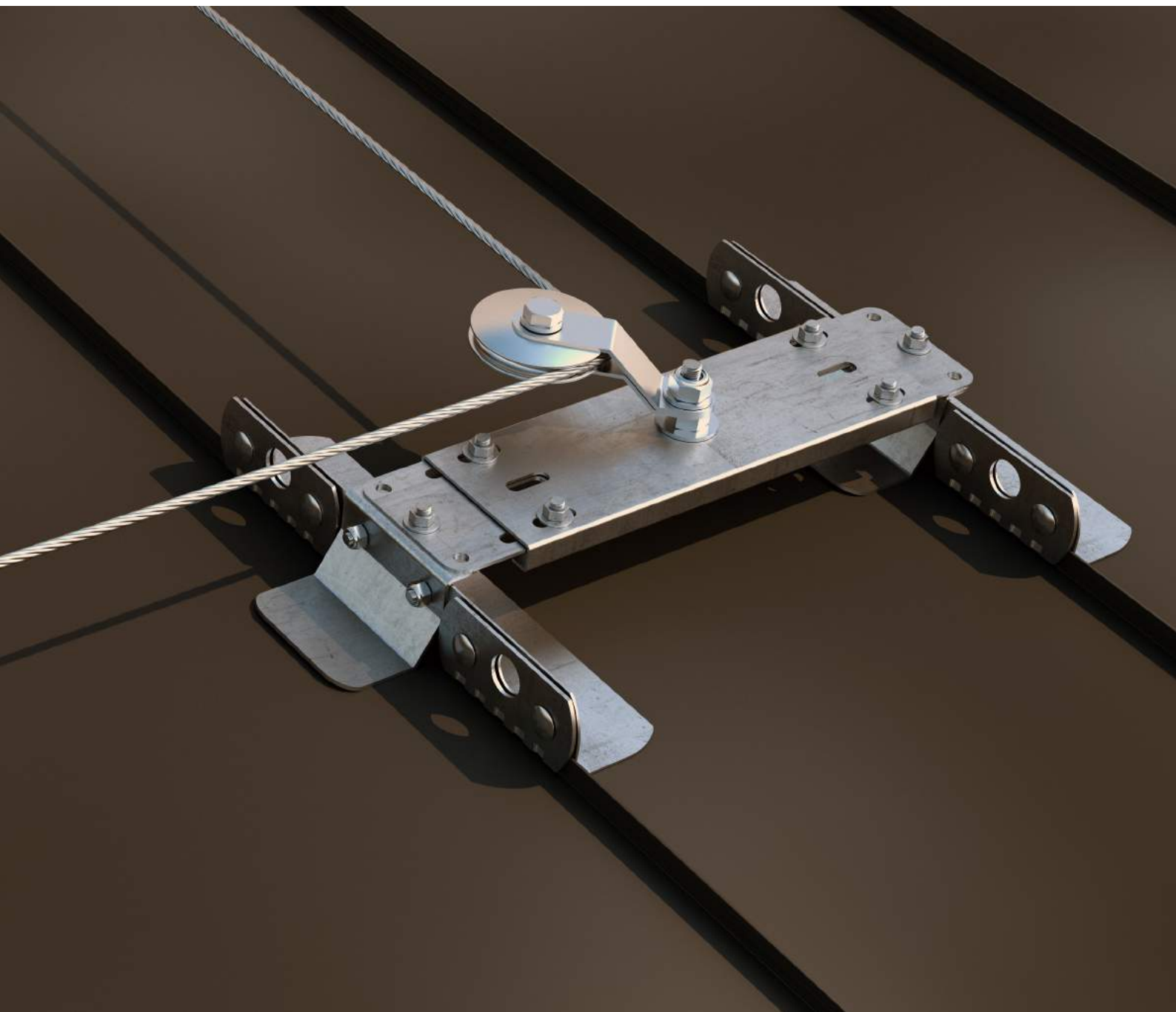


< CHOICE

There are two models of intermediate elements for the non-pass through anchor line: PATROMED (shown at left) and PATROLINT, which can be passed through with a carabiner (shown at the right).

INSTALLATION >

Can be installed on all types of substructures.



FIELD OF USE

- Timber / concrete / steel structure
- Corrugated sandwich panel / corrugated sheet metal
- Waved sandwich panel
- Bearing trapezoidal sheet metal
- Sheet metal with double crimp
- Sheet metal with round crimp
- Non-drillable flat roof
- Green roof

SPEAR

TENSIONER AND ENERGY ABSORBER

CODES AND DIMENSIONS

CODE	material	pcs.
SPEAR	stainless steel - AISI304 alloy EN AW-6082	2
SPEAR2	stainless steel - AISI304 alloy EN AW-6082	2

The **SPEAR2** anchor line tensioner and energy absorber are only for use on crimped roofs



SPEAR



SPEAR2

PATROTERM

TERMINAL ELEMENT

CODES AND DIMENSIONS

CODE	material	pcs.
PATROTERM	stainless steel - AISI304	1



PATROTERMML

LONG TERMINAL

CODES AND DIMENSIONS

CODE	material	pcs.
PATROTERMML	stainless steel - AISI304	1



PATROLANG

NON-PASS-THROUGH ANGLE BRACKET

CODES AND DIMENSIONS

CODE	material	pcs.
PATROLANG	stainless steel - AISI304	1



PATROLMED

NON-PASS-THROUGH INTERMEDIATE
ELEMENT

CODES AND DIMENSIONS

CODE	material	pcs.
PATROLMED	stainless steel - AISI304 alloy EN AW-6082	1

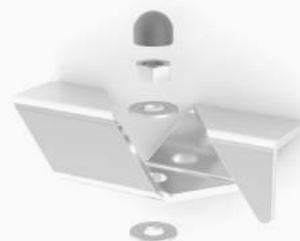


PATROLINT

SEMI-PASS-THROUGH INTERMEDIATE
ELEMENT

CODES AND DIMENSIONS

CODE	material	pcs.
PATROLINT	stainless steel - AISI304	1



CABLE

Ø8 7 x 7 STAINLESS STEEL ROPE

CODES AND DIMENSIONS

CODE	material	m.
CABLE	stainless steel - AISI316	-



PATROLSTOP

LIMIT SWITCH

CODES AND DIMENSIONS

CODE	material	pcs.
PATROLSTOP	rubber - plastic	1



TARGA

SYSTEM INFORMATION PLATE



CODES AND DIMENSIONS

CODE	pcs.
TARGA	1

PATROL KIT 10

ANCHOR LINE KIT, 10 m

CODES AND DIMENSIONS

CODE	content	pcs.
	PATROLTERM	2
PATROLKIT10	SPEAR	2
	CABLE [10 m]	1



PATROL KIT 15

ANCHOR LINE KIT, 15 m

CODES AND DIMENSIONS

CODE	content	pcs.
	PATROLTERM	2
PATROLKIT15	SPEAR	2
	CABLE [15 m]	1



PATROL KIT 25

ANCHOR LINE KIT, 25 m

CODES AND DIMENSIONS

CODE	content	pcs.
	PATROLTERM	2
	SPEAR	2
PATROLKIT25	PATROLMED	1
	CABLE [25 m]	1





SUPPORT FOR ANCHOR LINE ON TIMBER, CONCRETE AND STEEL ROOFS

PRACTICAL

Support height between 300 and 600 mm to adapt to different roofing thicknesses.

EFFECTIVE

Device with controlled deformation to limit load transfer to the structure.

UNOBTRUSIVE

Small-sized cylindrical system, minimizes the visual impact in the roofing.

CODES AND DIMENSIONS

CODE	material	H [mm]	pcs.
TOWER300	S235JR zinc-plated steel	300	1
TOWER400	S235JR zinc-plated steel	400	1
TOWER500	S235JR zinc-plated steel	500	1
TOWER600	S235JR zinc-plated steel	600	1
TOWERA2300	stainless steel 1.4301 / AISI304	300	1
TOWERA2400	stainless steel 1.4301 / AISI304	400	1
TOWERA2500	stainless steel 1.4301 / AISI304	500	1
TOWER22500	S235JR zinc-plated steel	500	1

TOWER22500 ideal for installation on the layer

COMPLEMENTARY PRODUCTS

FASTENING

CODE	description	p.
TOPLATE	counterplate	43
TOPLATE2	adjustable plate	43
TOWERPEAK	adaptor for double layer ridge piece	40
TOWERSLOPE	fastening guide for rafter	41
TOWLAT	adaptor for lateral starts	42



< VERSATILE

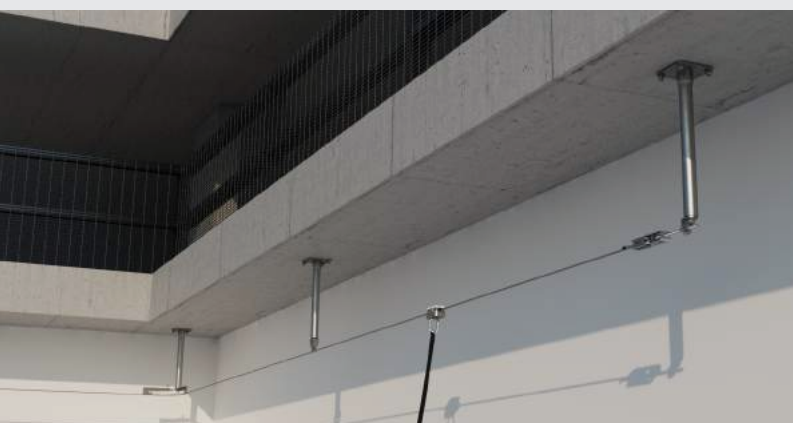
The system can be installed directly on wood, concrete and steel.

INSTALLATION >

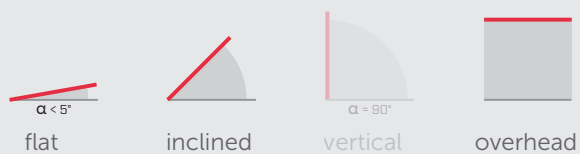
Installed upside down, it can also be used to create overhead anchor lines.



TOWER22500



SURFACE INCLINATION

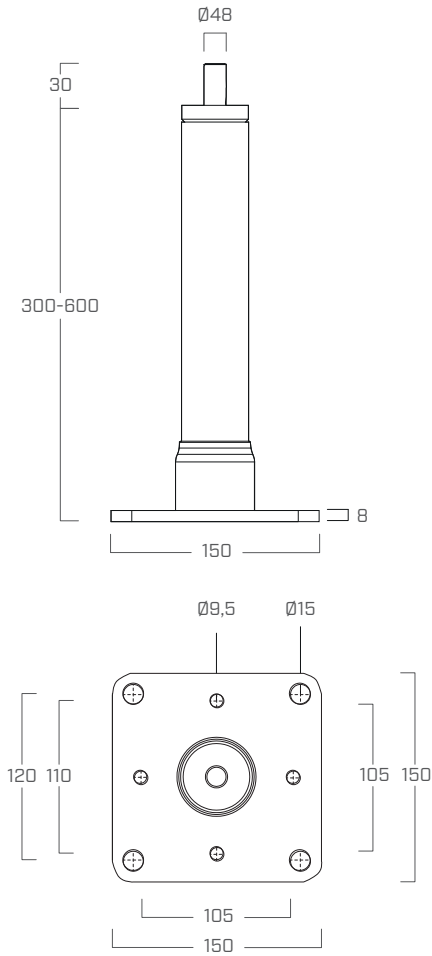


FIELD OF USE

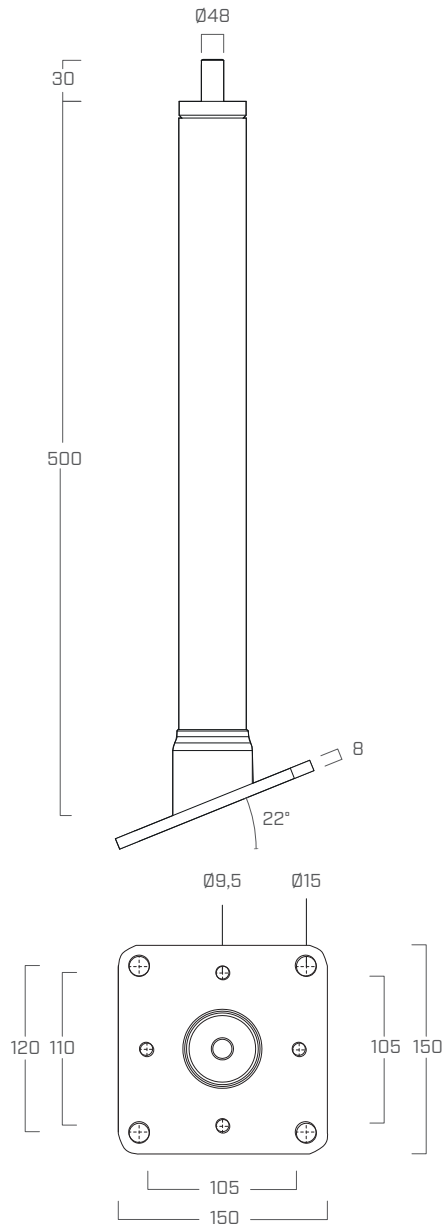
- Min. timber structure: 160 x 160 mm
- Min. concrete structure: 140 mm
- Min. steel structure: 6 mm

GEOMETRY

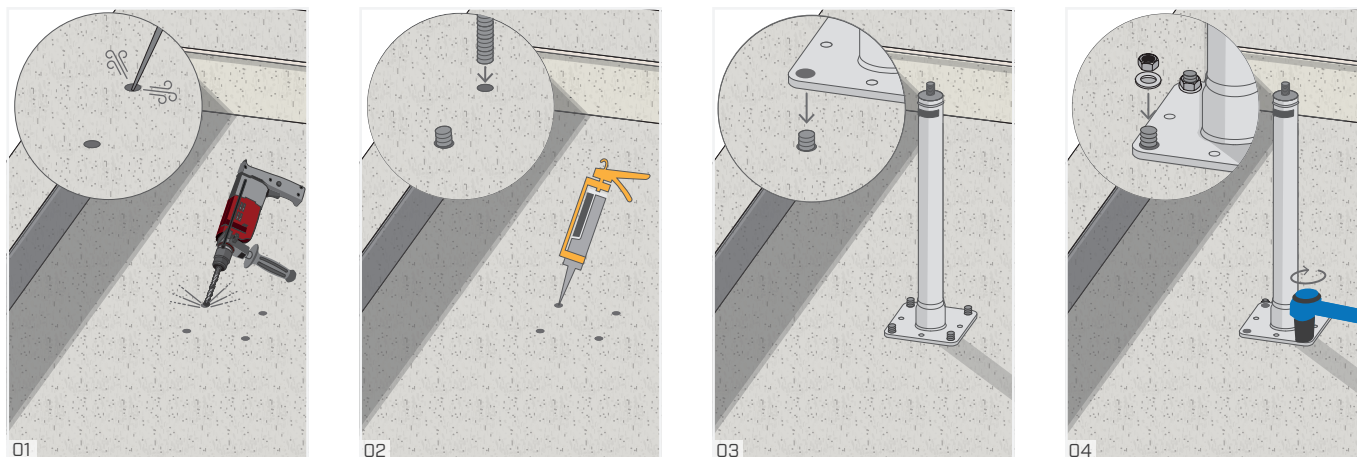
TOWER - TOWERA2



TOWER22500

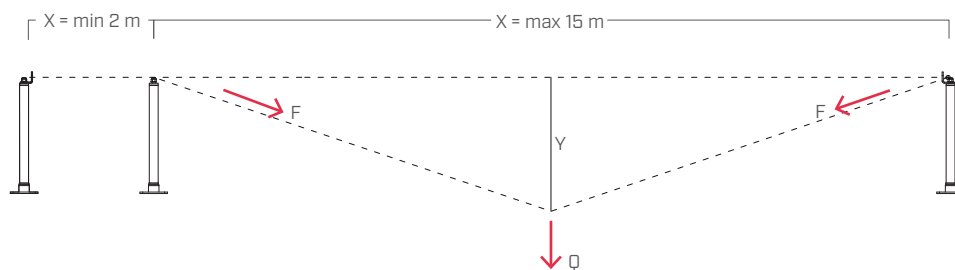


APPLICATION INSTRUCTIONS



For more information about product installation, please see the corresponding manual.

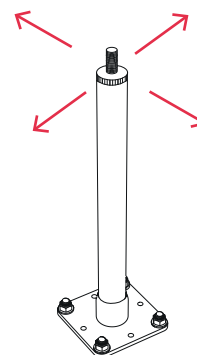
TECHNICAL DATA



		L _{of span} X [m]					
		2	6	8	10	12	15
Strain Y [m]	TOWER300	1,26	1,55	1,77	1,97	2,15	2,40
	TOWER600	1,33	2,10	2,40	2,66	2,90	3,26

LABORATORY STRENGTHS

Data	Standard	Value
Q _s	EN 795:2012 CEN/TS 16415:2013	15 kN
Q _{d1}	EN 795:2012 CEN/TS 16415:2013	12 kN



TOWER PEAK

ADAPTOR FOR DOUBLE LAYER RIDGE PIECE FOR TOWER

INTELLIGENT

Accessory that allows for anchor line assembly even on a closed roof package, without the need for opening.

ROBUST

The TOWER PEAK adaptor makes it possible to provide safety for up to four workers.



EN
795:2012
A + C

CEN/TS
16415:2013



CODES AND DIMENSIONS

CODE	material	L [mm]	B [mm]	H [mm]	pcs.
TOWERPEAK	S235JR zinc-plated steel	350	100	30	1

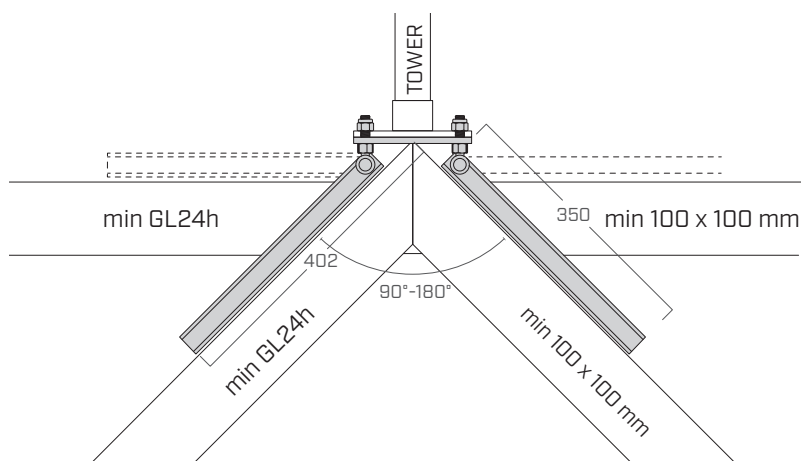
Fastening screws not included in the package.

COMPLEMENTARY PRODUCTS

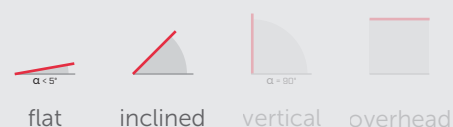
FASTENING

n.	TYPE	description	d ₁ [mm]	p _{min} [mm]	p.
24	HBS	screw for timber	8	80	180

INSTALLATION



SURFACE INCLINATION



FIELD OF USE

- Min. timber structure: 100 x 100 mm

TOWER SLOPE

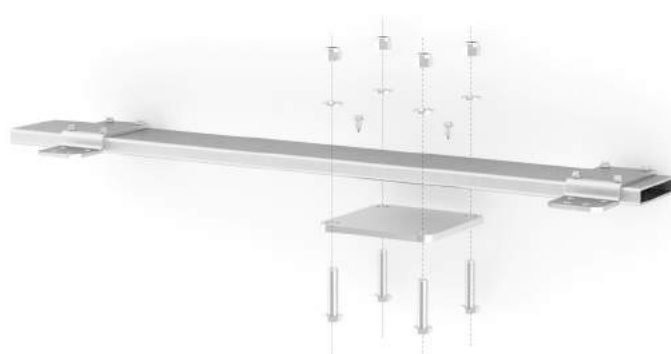
FASTENING GUIDE FOR RAFTER FOR TOWER

VERSATILE

Allows the anchor system to be placed in any point on the roof.

UNIVERSAL

Due to the range of action from 50 to 100 cm, it can cover the most common spaces between beams.



CODES AND DIMENSIONS

CODE	material	L [mm]	B [mm]	H [mm]	pcs.
TOWERSLOPE	S235JR zinc-plated steel	1200	100	20	1

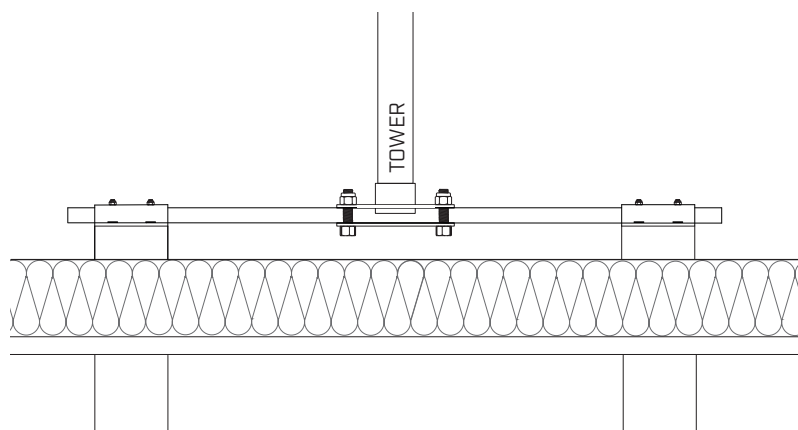
Fastening screws not included in the package.

COMPLEMENTARY PRODUCTS

FASTENING

n.	TYPE	description	d ₁ [mm]	p _{min} [mm]	p.
16	HBS	screw for timber	8	80	180

INSTALLATION

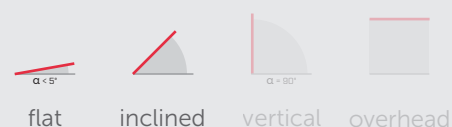


EN
795:2012
A+C

CEN/TS
16415:2013



SURFACE INCLINATION



FIELD OF USE

- Min. timber structure: 100 x 100 mm

ADAPTOR FOR SIDE STARTS FOR TOWER

INGENIOUS

Allows the creation of anchor lines on TOWER supports even in unusual situations.

RELIABLE

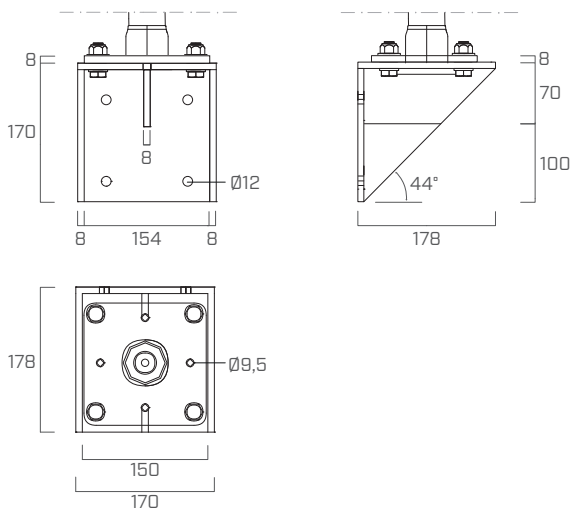
Supports all the required forces for an anchor line, based on EN 795:2012 C.



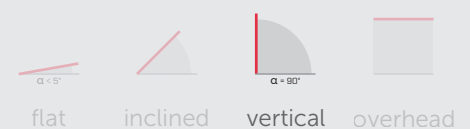
CODES AND DIMENSIONS

CODE	material	B [mm]	L [mm]	H [mm]	pcs.
TOWLAT	S235JR zinc-plated steel	170	178	170	1

GEOMETRY



SURFACE INCLINATION



FIELD OF USE

- Concrete structure
- Steel structure

TOPLATE

COUNTERPLATE FOR TOWER



CODES AND DIMENSIONS

CODE	material	B [mm]	L [mm]	s [mm]	pcs.
TOPLATE	S235JR zinc-plated steel	150	150	8	1

Bolts for fastening include in package

COMPLEMENTARY PRODUCTS

FASTENING

TYPE	description	Ø [mm]	p.
MGS	threaded rod	M12	191



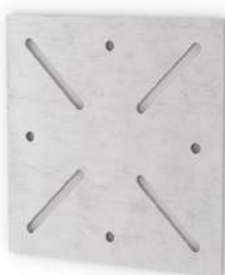
EN
795:2012
A + C

CEN/TS
16415:2013



TOPLATE 2.0

ADJUSTABLE PLATE FOR TOWER



CODES AND DIMENSIONS

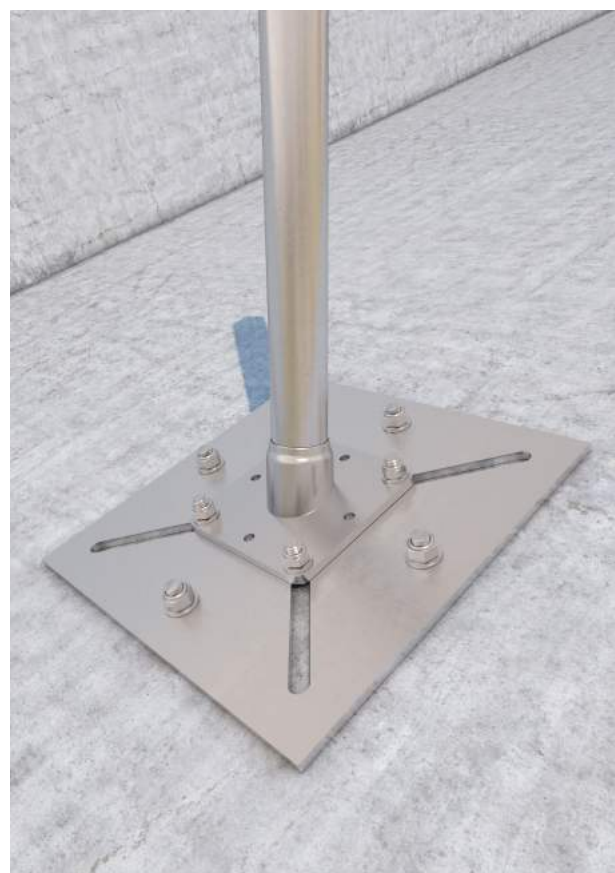
CODE	material	B [mm]	L [mm]	s [mm]	pcs.
TOPLATE2	S235JR zinc-plated steel	350	350	8	1

Bolts for fastening include in package

COMPLEMENTARY PRODUCTS

FASTENING

TYPE	description	Ø [mm]	p.
MGS	threaded rod	M12	191
ULS - MUT	washer - nut	M12	192
BEFPLATE	fastening set for TOPLATE 2.0	M12	215



SUPPORT FOR ANCHOR LINE ON BEARING TRAPEZOIDAL SHEET METAL ROOFS

UNIVERSAL

Can be installed on various types of bearing trapezoidal sheet metal, with or without insulation.

ADJUSTABLE

Allows the height of the anchor to be adjusted based on the thickness of the insulation.



CODES AND DIMENSIONS

CODE	material	H [mm]	pcs.
TRAPO300	stainless steel 1.4016 - AISI430	300	1
TRAPO500	stainless steel 1.4016 - AISI430	500	1

The **BEFPLATE** fastening kit for connection to the pole with the **TRAPO** is included in the package.

COMPLEMENTARY PRODUCTS

FASTENERS

CODE	description
BEFTRAP1	composite set 1
BEFTRAP2	composite set 2

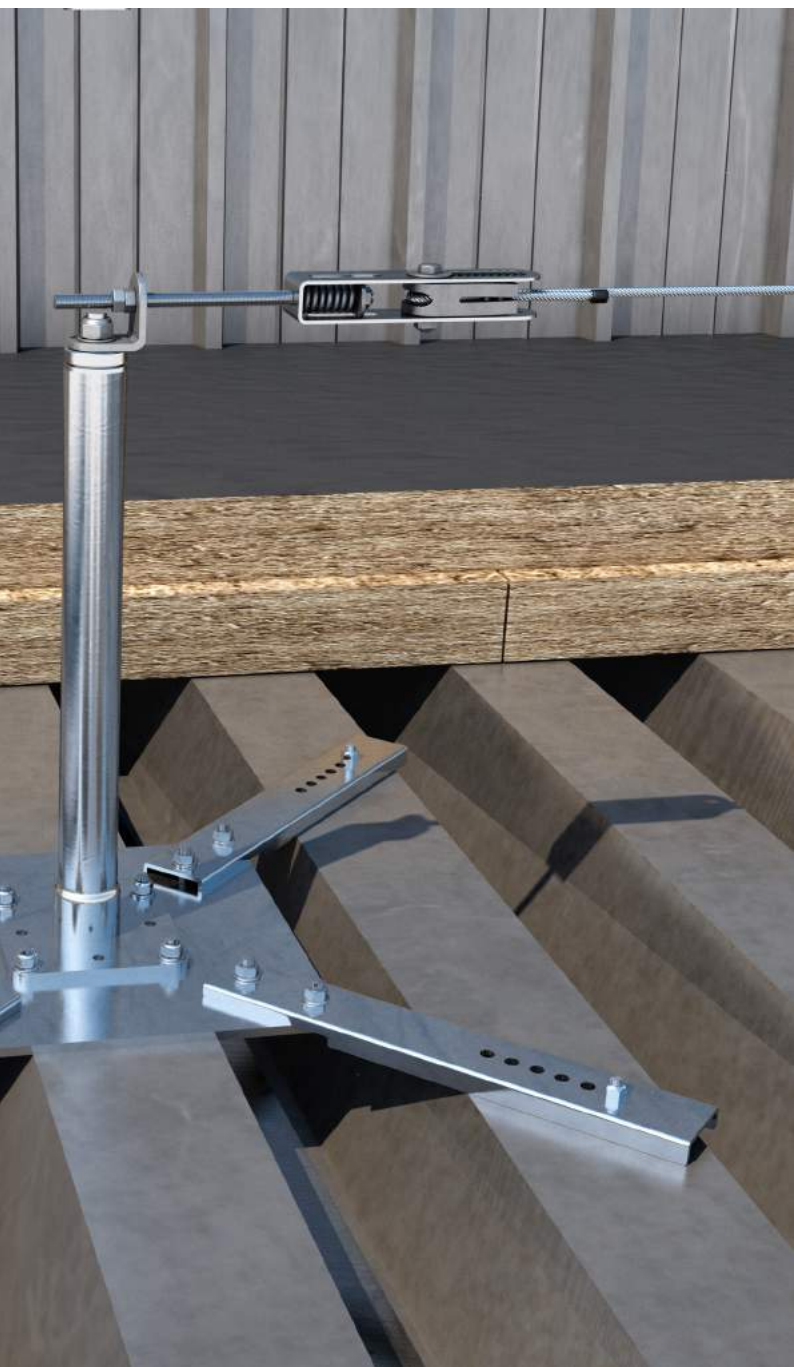


< PRACTICAL

It is possible to secure the system in two different ways: using composite sets that can be ordered separately.

INSTALLATION >

The connection between the pole and plate is created with the **BEFPLATE** fastening kit, included in the package.



SURFACE INCLINATION



$\alpha < 5^\circ$

flat



inclined



$\alpha = 90^\circ$

vertical



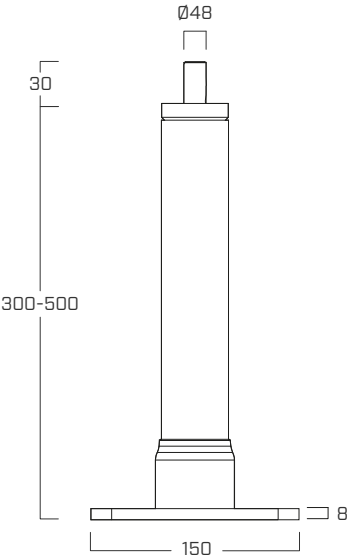
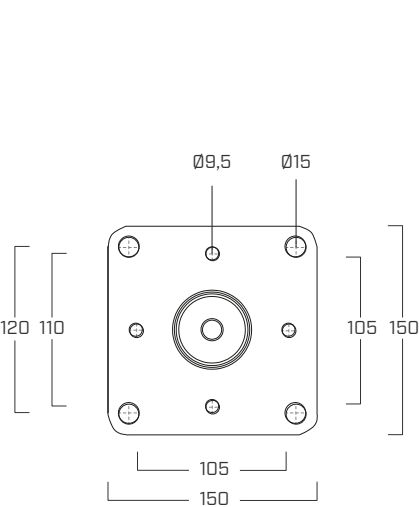
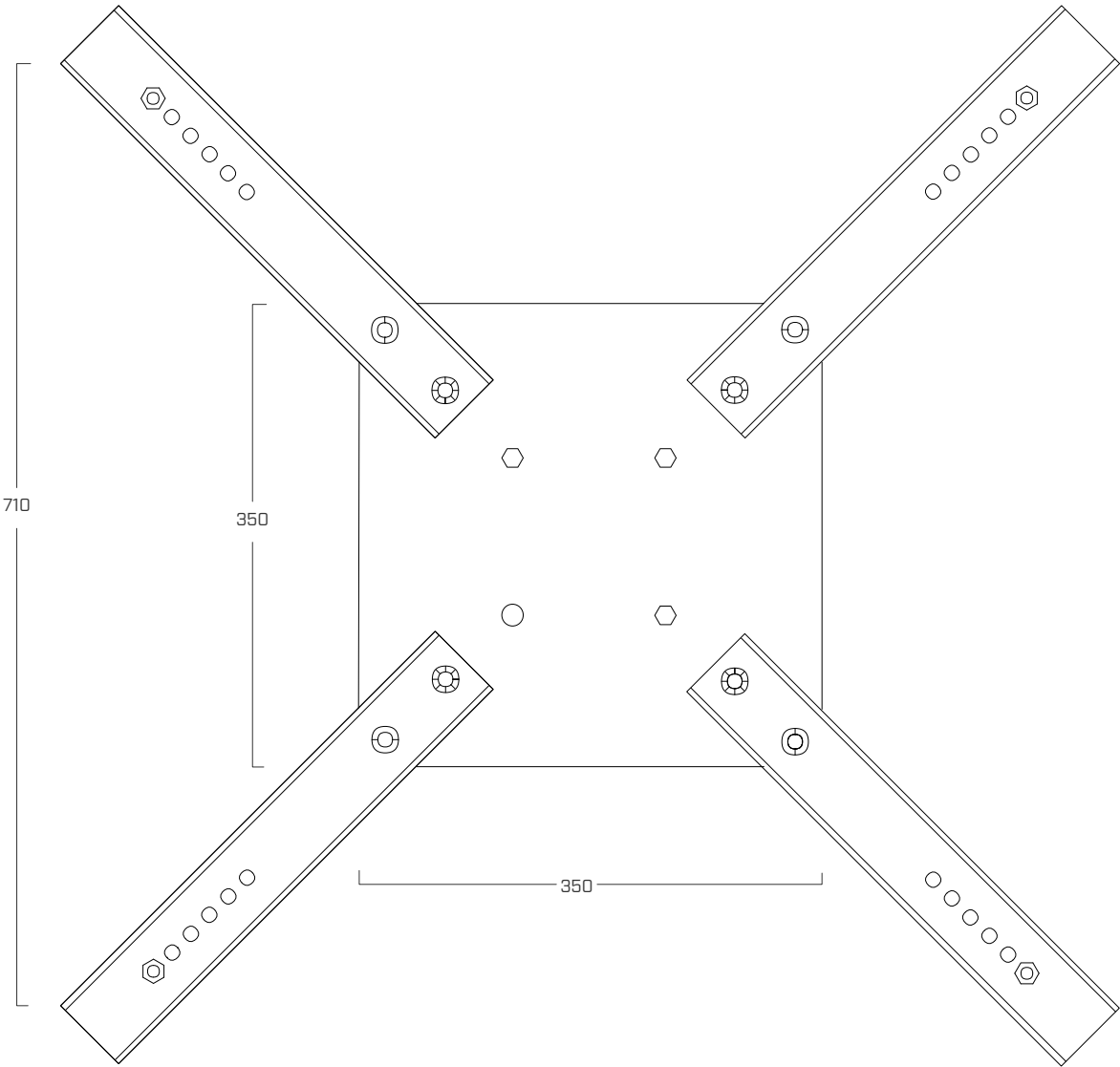
overhead

FIELD OF USE

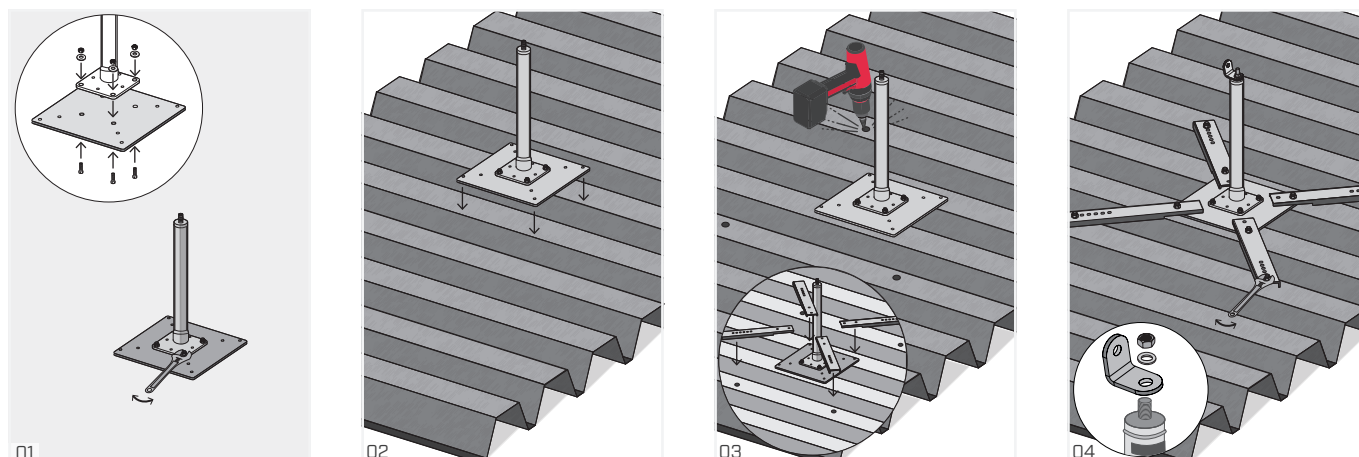
- Bearing trapezoidal sheet metal

GEOMETRY

TRAPO

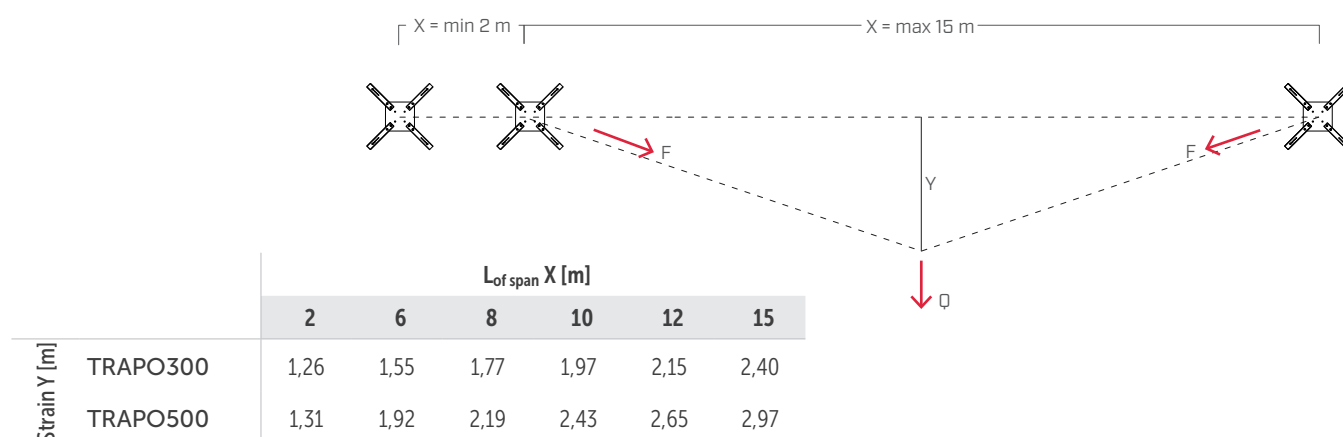


APPLICATION INSTRUCTIONS



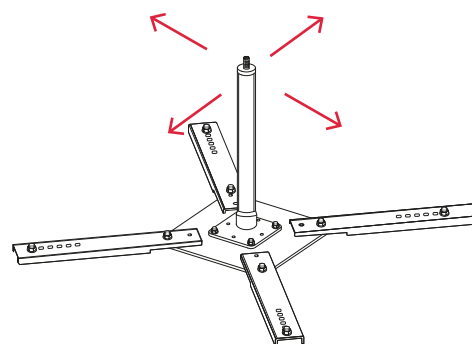
For more information about product installation, please see the corresponding manual.

TECHNICAL DATA



LABORATORY STRENGTHS

Data	Standard	Value
Q_s	EN 795:2012 CEN/TS 16415:2013	15 kN
Q_{d1}	EN 795:2012 CEN/TS 16415:2013	12 kN



SUPPORT FOR ANCHOR LINE ON CORRUGATED SHEET METAL ROOFS

ADJUSTABLE

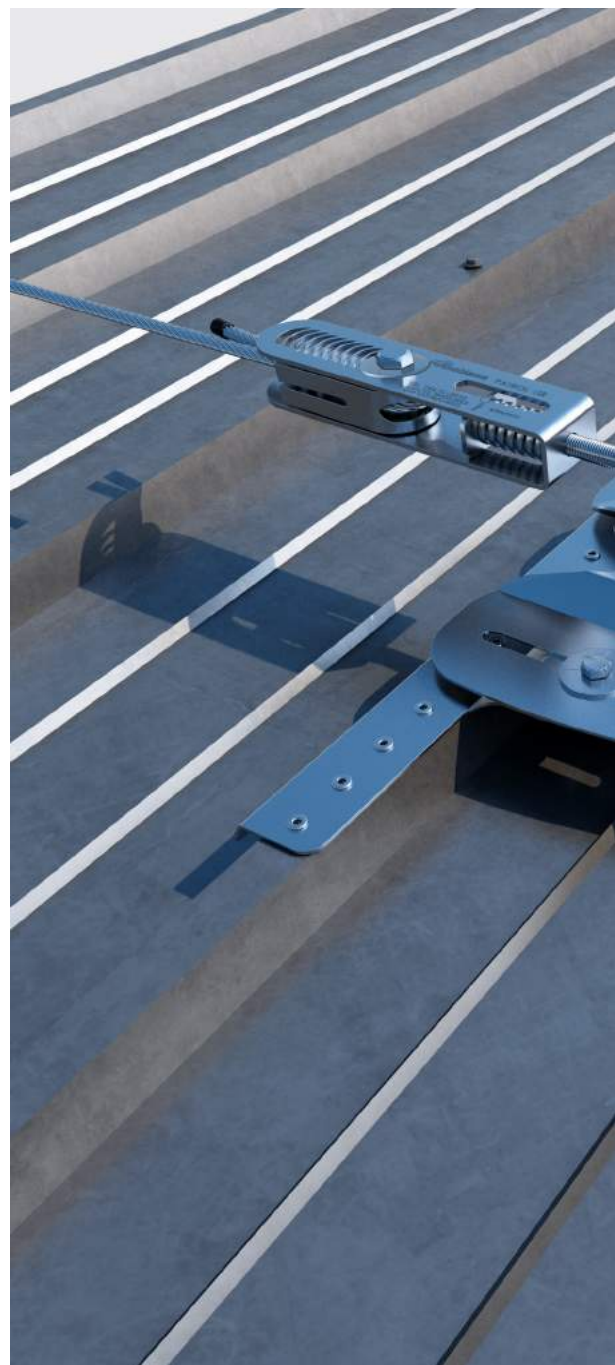
Used on all roofs in corrugated sheet with centre distance between frets of up to 420 mm.

UNOBTRUSIVE

The device ensures a reduced visual impact thanks to its small size.

PACKAGING

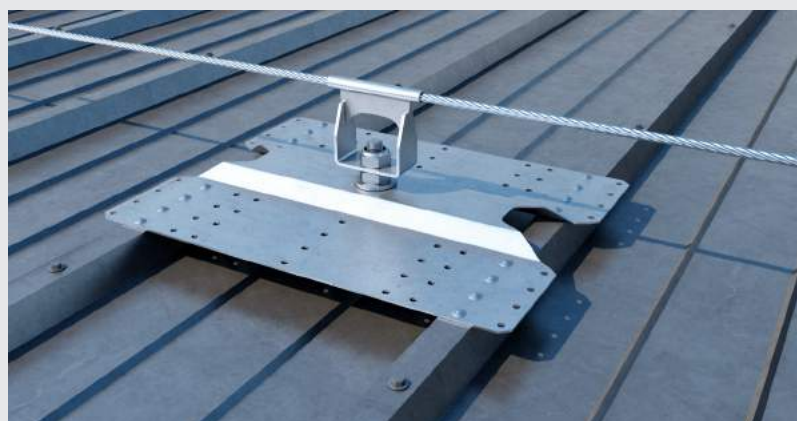
Supplied complete with mounting rivets and cellular rubber seals for perfect waterproofing.



CODES AND DIMENSIONS

CODE	material	i [mm]	L [mm]	pcs.
SHIELD	stainless steel 1.4301 - AISI304	180 - 420	476	1
SHIELD2	stainless steel 1.4301 - AISI304	200 - 400	420	1

Fasteners are included in the package

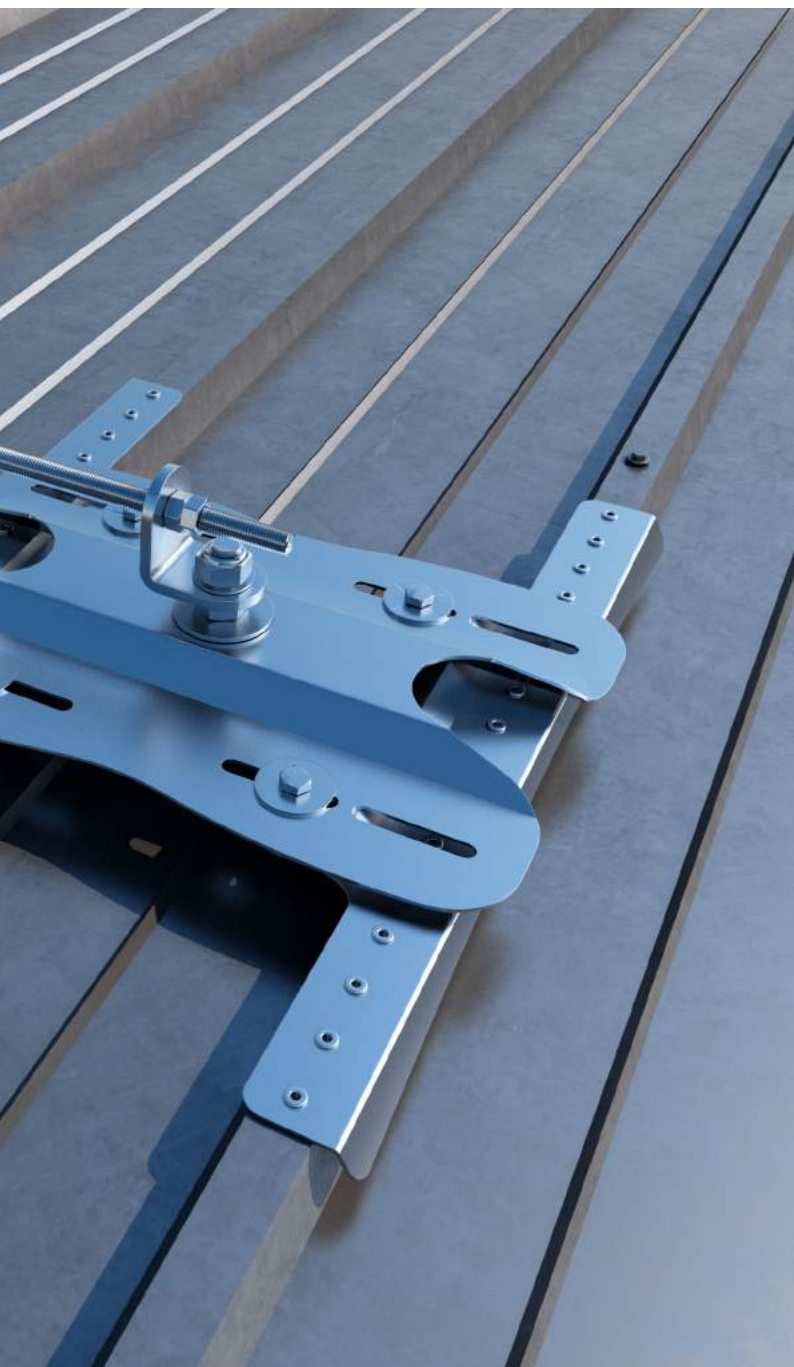


< VERSATILE

Possibility of setting up rectilinear and angular anchor lines with the aid of suitable accessories, according to the needs.

INSTALLATION >

Consists of two main elements: the wings used to fasten to the roof and the base plate, on which the PATROL anchor line components are installed. This guarantees simple and fast installation.



SHIELD



SHIELD2



SURFACE INCLINATION



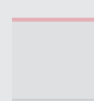
flat



inclined



vertical



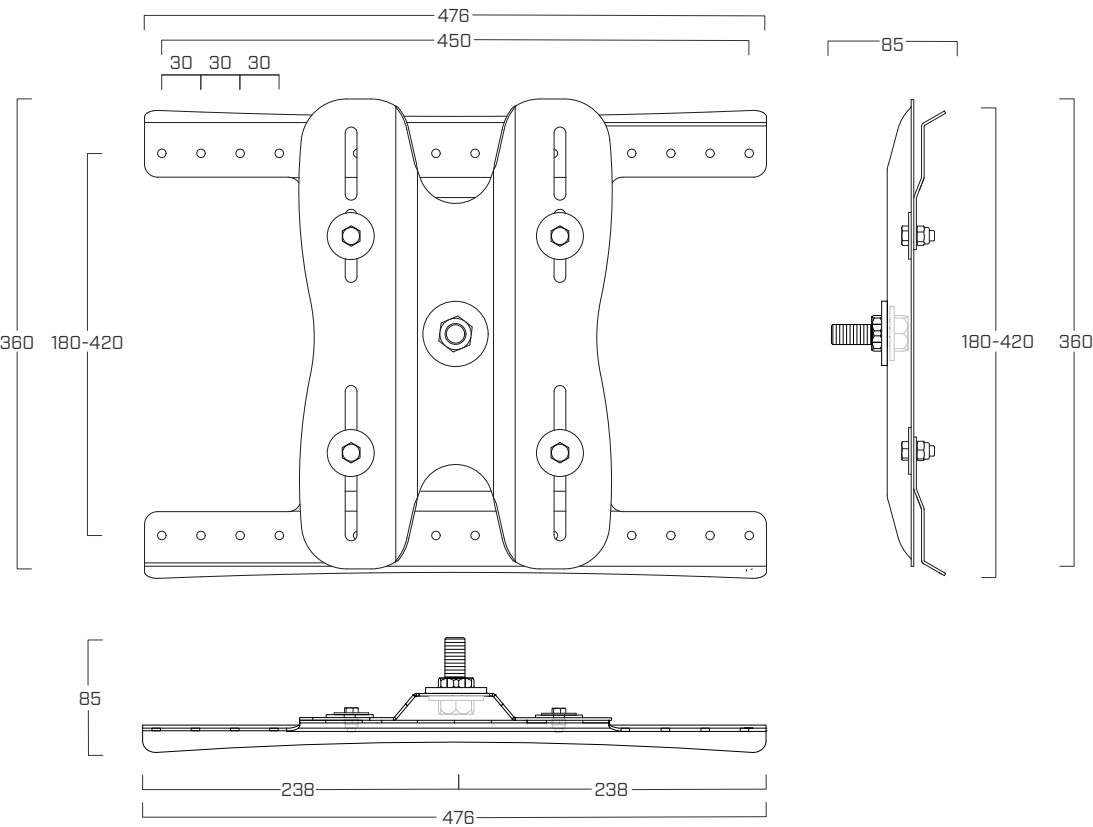
overhead

FIELD OF USE

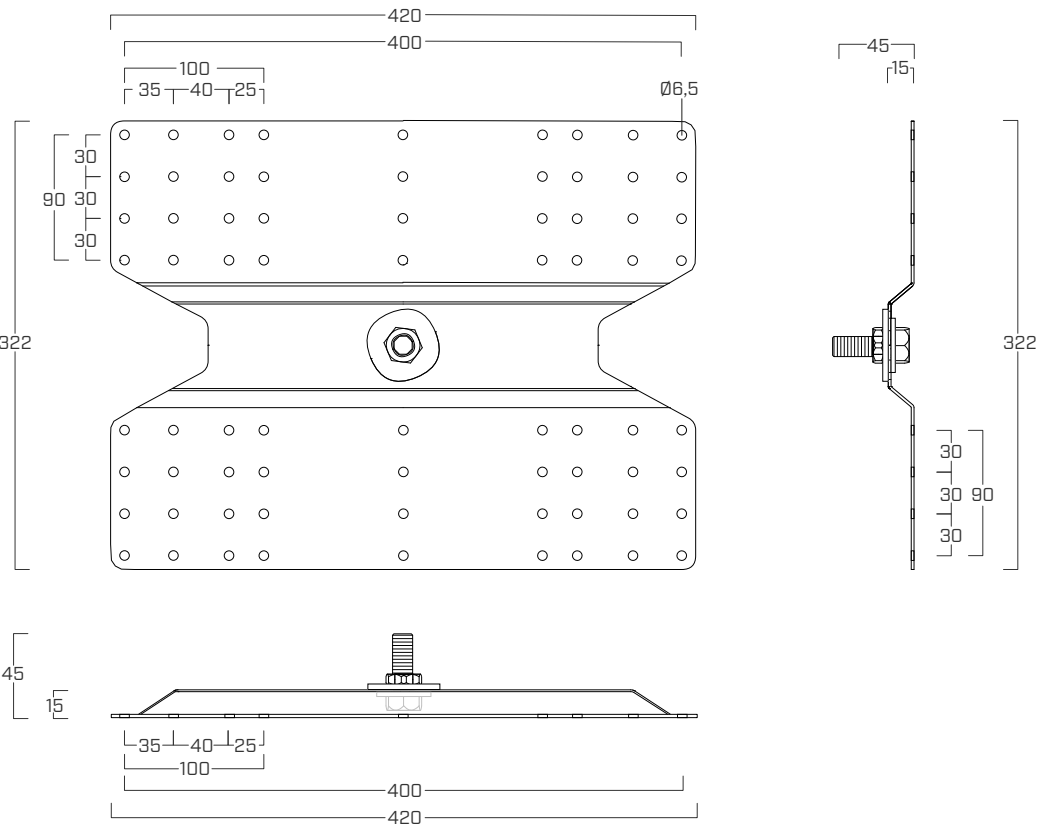
- Corrugated sandwich panel / corrugated sheet metal
 - min. steel: 0,5 mm
 - min. aluminium: 1 mm

GEOMETRY

SHIELD

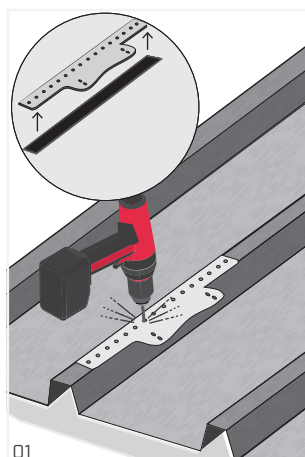


SHIELD2

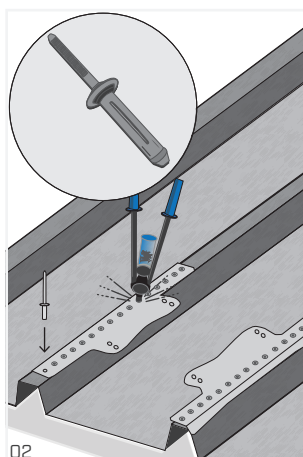


APPLICATION INSTRUCTIONS

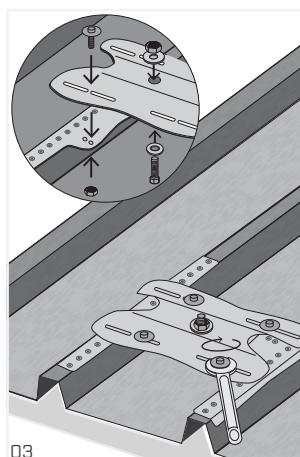
SHIELD



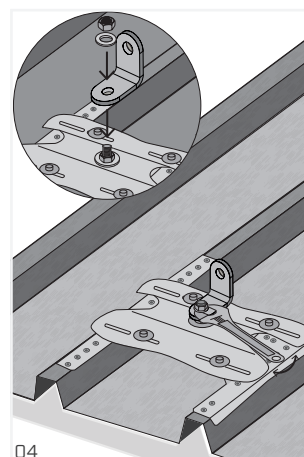
01



02

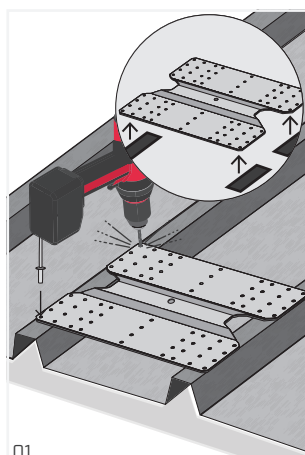


03

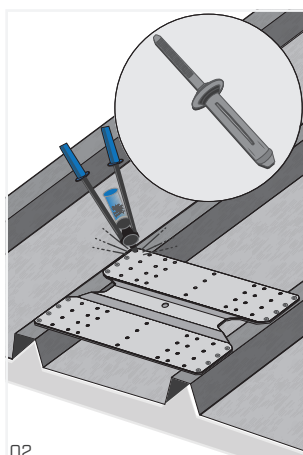


04

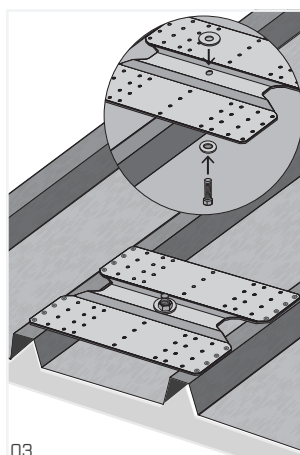
SHIELD2



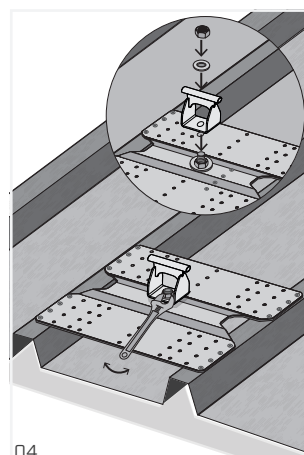
01



02



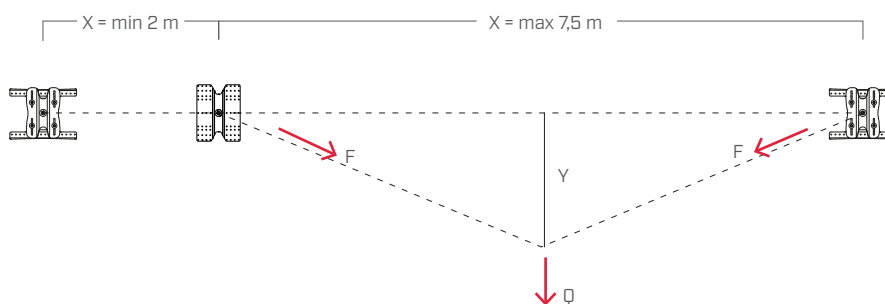
03



04

For more information about product installation, please see the corresponding manual.

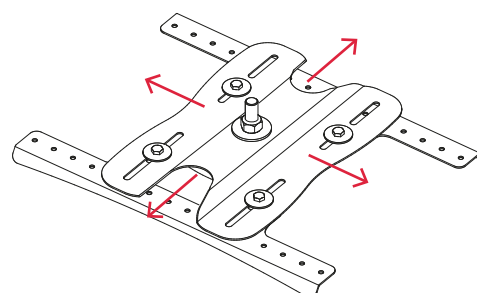
TECHNICAL DATA



	L _{of span} X [m]	
	2	7,5
Strain Y [m]	0,62	1,44

LABORATORY STRENGTHS

Data	Standard	Value
Q_s	EN 795:2012 CEN/TS 16415:2013	13 kN
Q_{d1}	EN 795:2012 CEN/TS 16415:2013	12 kN



SUPPORT FOR ANCHOR LINE ON SHEET METAL ROOFS WITH DOUBLE CRIMP

ROBUST

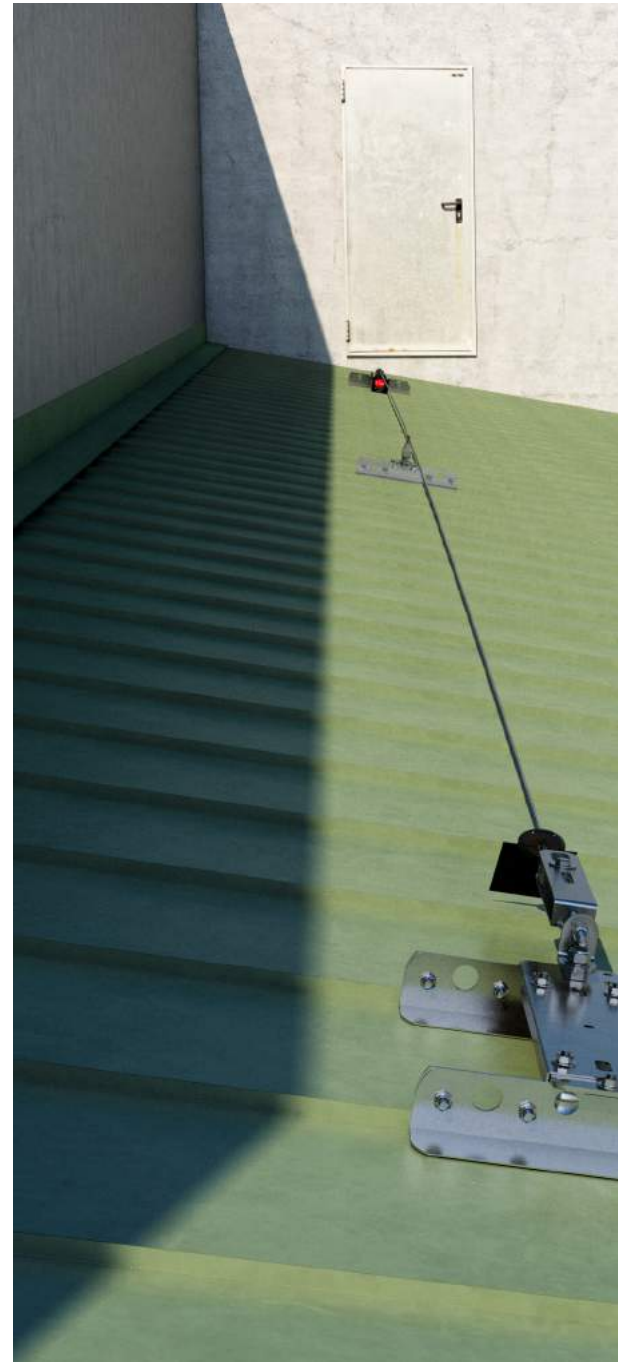
Terminals are installed on two edges using the SIANK4 element, for greater resistance.

UNOBTRUSIVE

Because of its smaller size, in terms of height and flat surface, SIANK has little visual impact.

PERFORMING

Up to four workers can be attached at the same time.



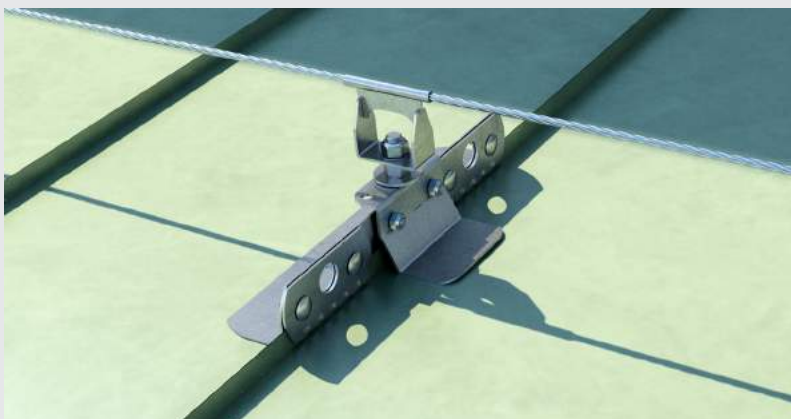
CODES AND DIMENSIONS

FOR TERMINALS AND ANGLE BRACKETS

CODE	material	i [mm]	pcs.
SIANK4	stainless steel 1.4301 - AISI304	430 - 600	1

FOR INTERMEDIATE ELEMENTS

CODE	material	L [mm]	B [mm]	pcs.
SIANKINT	stainless steel 1.4301 - AISI304	400	163	1

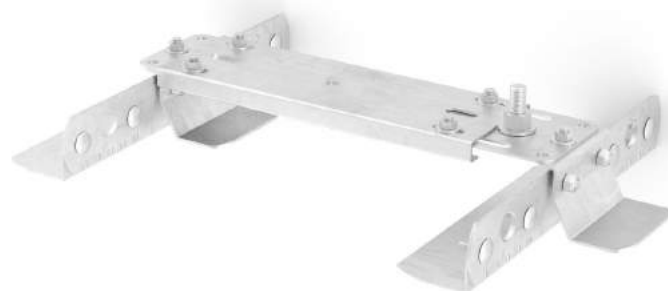


< VERSATILE

The SIANKINT element must be used as an intermediate element for a better cost/performance ratio and lower visual impact on the roof.

INSTALLATION >

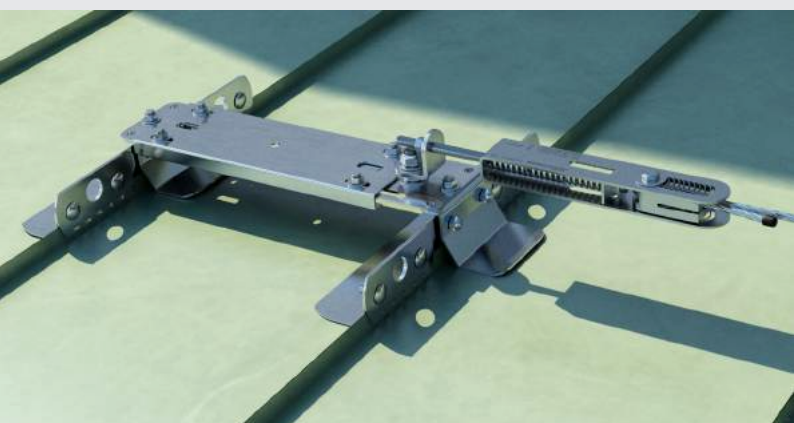
The SIANK4 element must be installed at the start and end of the anchor line to allow for absorption of forces.



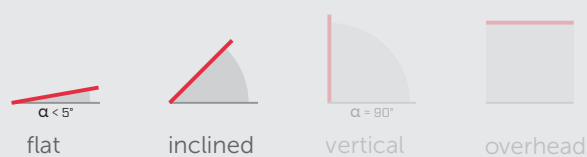
SIANK4



SIANKINT



SURFACE INCLINATION

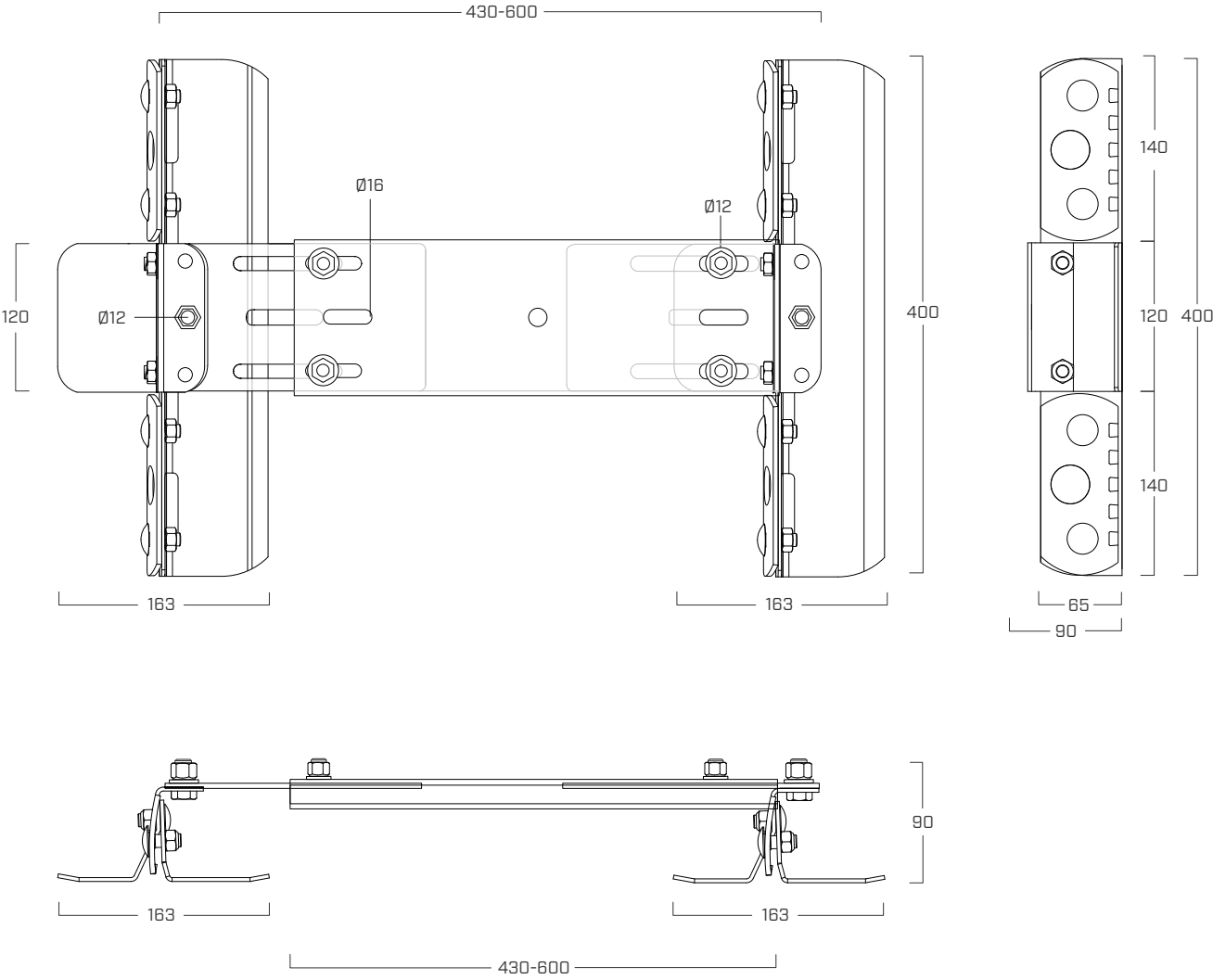


FIELD OF USE

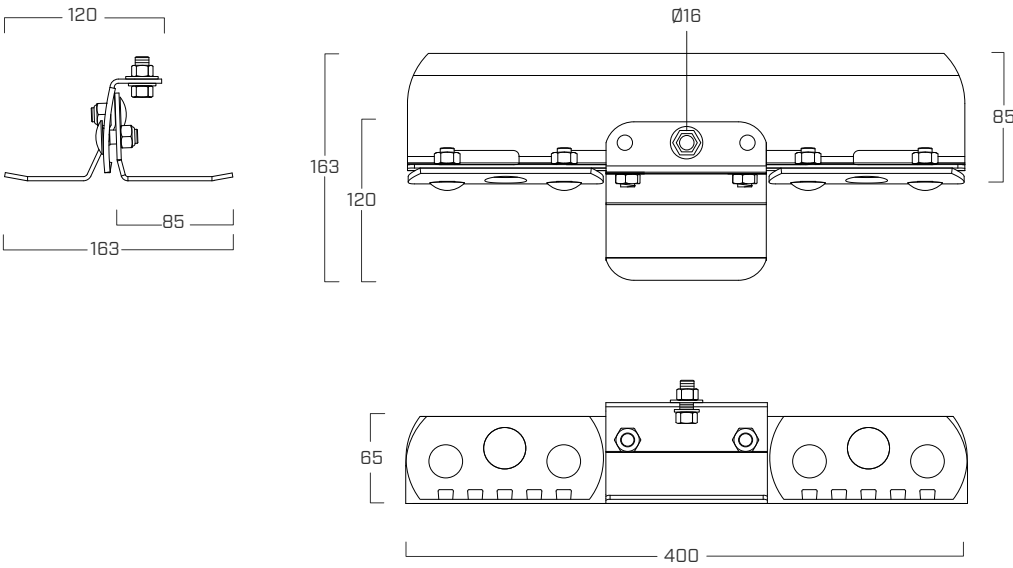
- Sheet metal with double crimp
 - min. steel: 0,5 mm
 - min. aluminium: 0,7 mm
 - min. copper: 0,5 mm
 - min. zinc - titanium: 0,65 mm

GEOMETRY

SIANK4

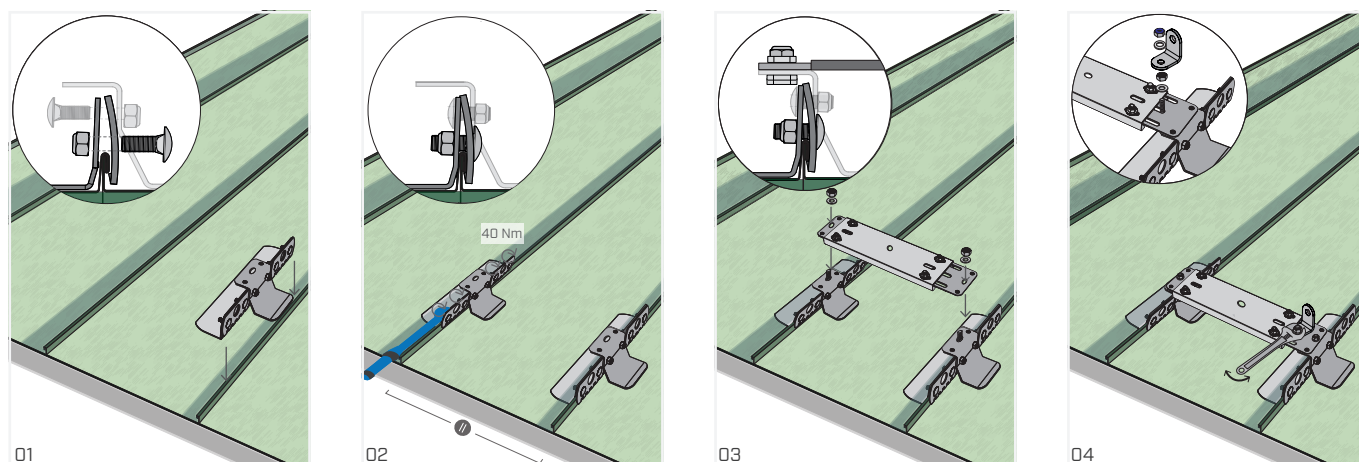


SIANKINT

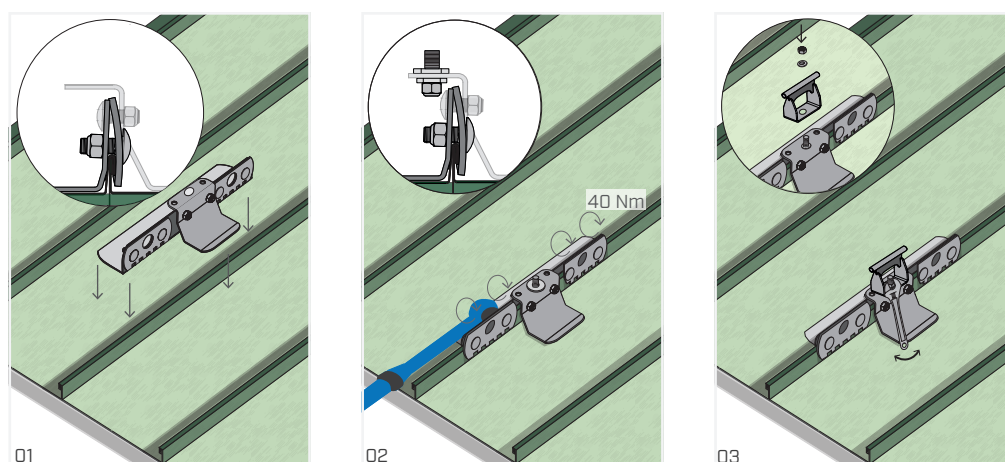


APPLICATION INSTRUCTIONS

SIANK4

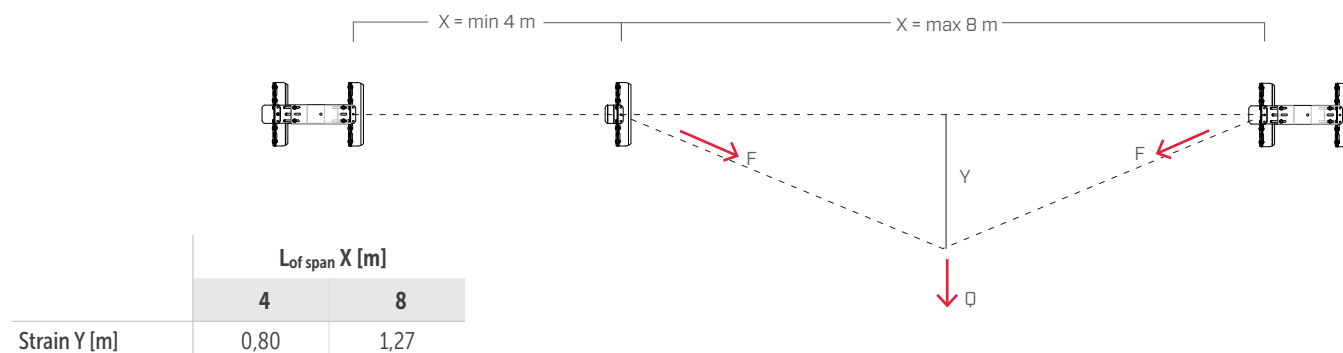


SIANKINT



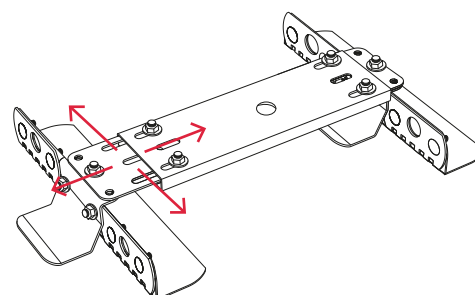
For more information about product installation, please see the corresponding manual.

TECHNICAL DATA



LABORATORY STRENGTHS

Data	Standard	Value
Q _s	EN 795:2012 CEN/TS 16415:2013	15 kN
Q _{d1}	EN 795:2012 CEN/TS 16415:2013	12 kN



SUPPORT FOR ANCHOR LINE ON ROOFS WITH FAUX TILES

FAST INSTALLATION

Easy and quick installation, thanks to the shape obtained with a single plate.

PACKAGING

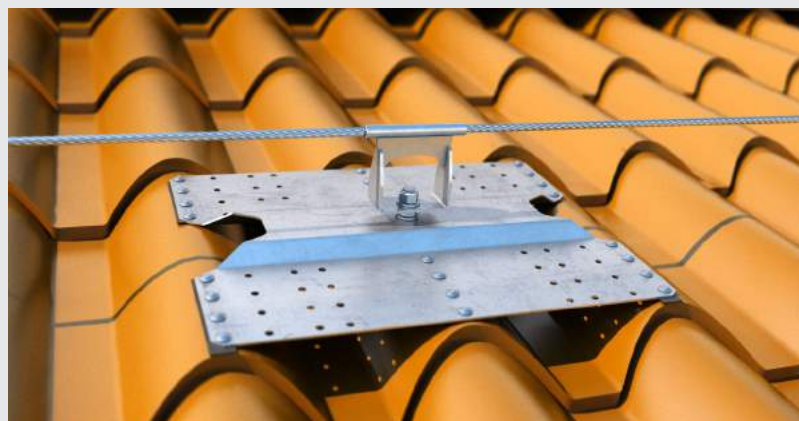
The package includes fasteners and cellular rubber seals, to ensure waterproofing.



CODES AND DIMENSIONS

CODE	material	i [mm]	L [mm]	pcs.
COPPO	stainless steel 1.4301 - AISI304	330 - 400	420	1

Fasteners are included in the package

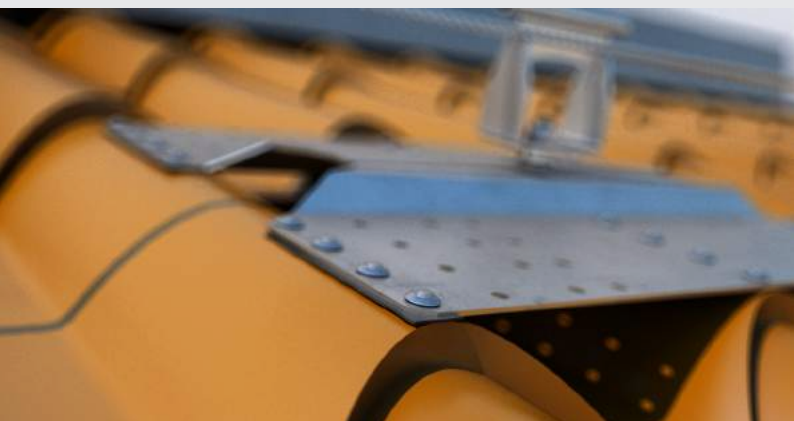
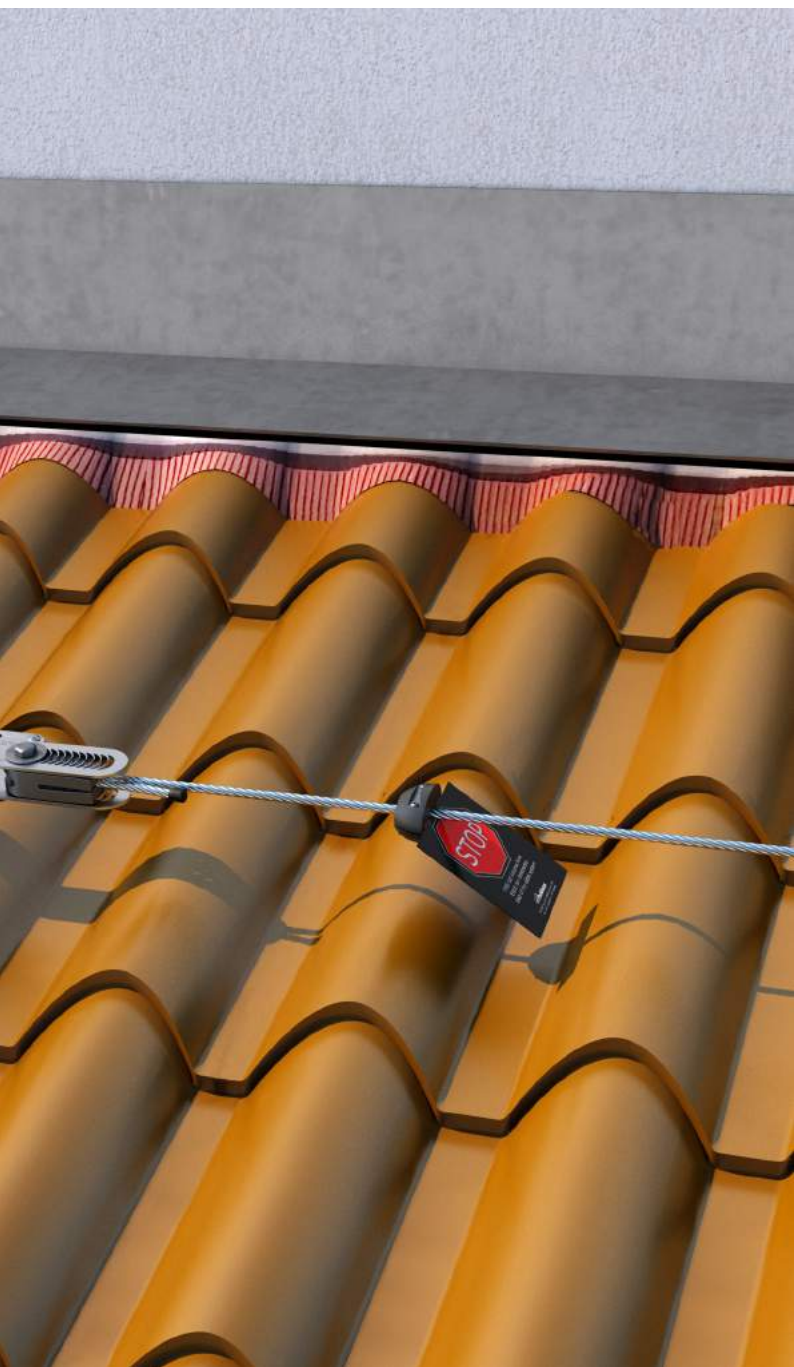


< UNIVERSAL

Compatible with accessories from the pass-through and non-pass-through anchor lines.

ADJUSTABLE >

The various distances between the holes for fastening provides excellent flexibility in installation.



SURFACE INCLINATION



flat



inclined



vertical

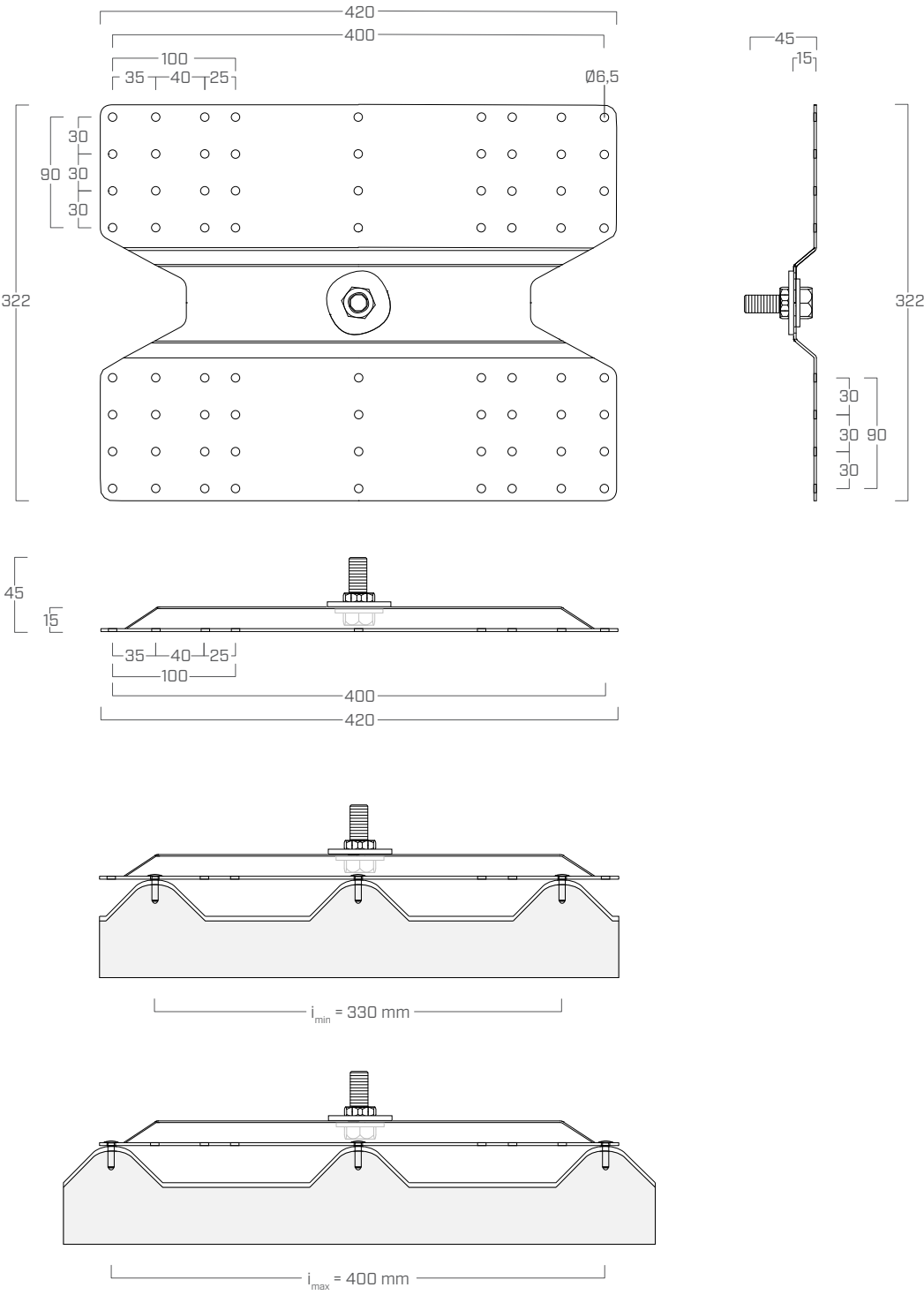


overhead

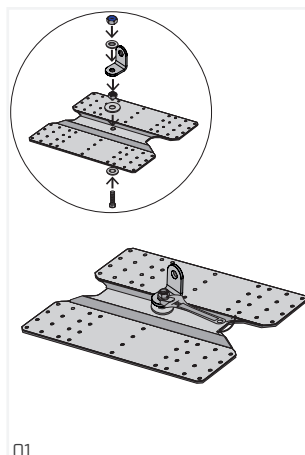
FIELD OF USE

- Waved sandwich panel
 - min. steel: 0,5 mm
 - min. aluminium: 0,7 mm

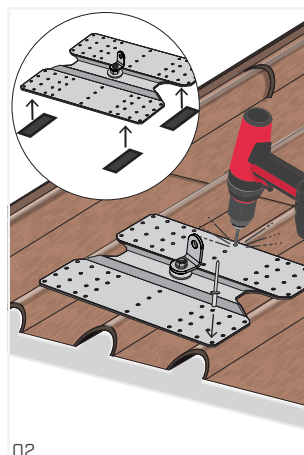
GEOMETRY



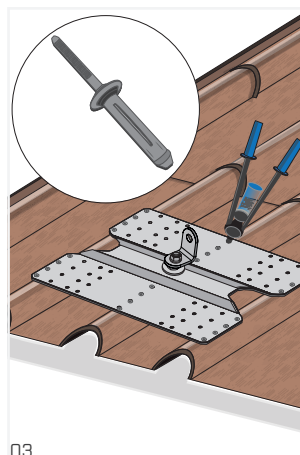
APPLICATION INSTRUCTIONS



01



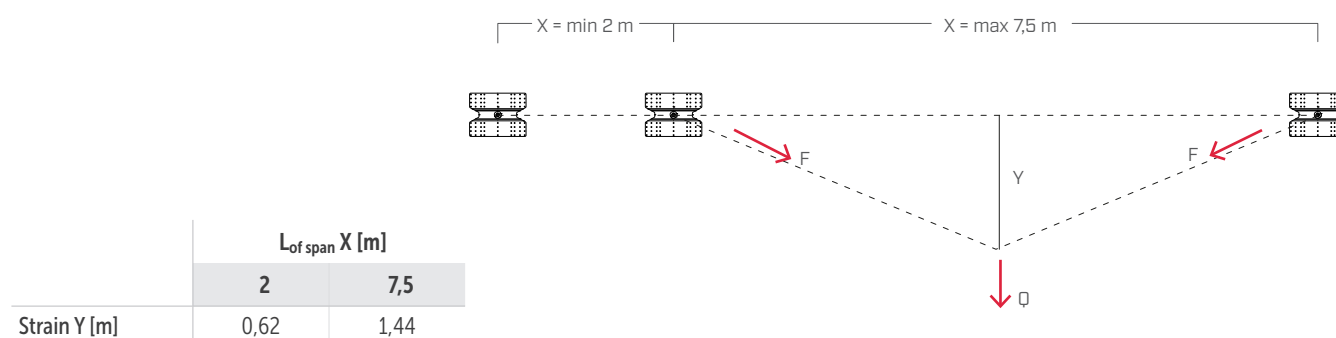
02



03

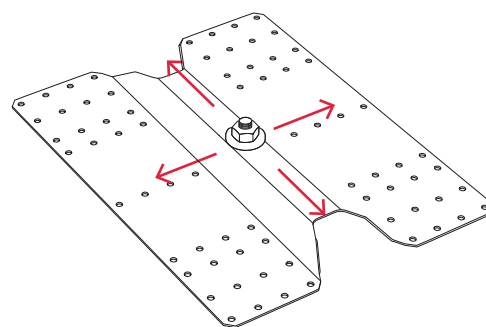
For more information about product installation, please see the corresponding manual.

TECHNICAL DATA



LABORATORY STRENGTHS

Data	Standard	Value
Q _s	EN 795:2012 CEN/TS 16415:2013	13 kN
Q _{d1}	EN 795:2012 CEN/TS 16415:2013	12 kN



SUPPORT ANCHOR LINE ON SHEET METAL ROOFS WITH ROUND CRIMP

SIMPLE

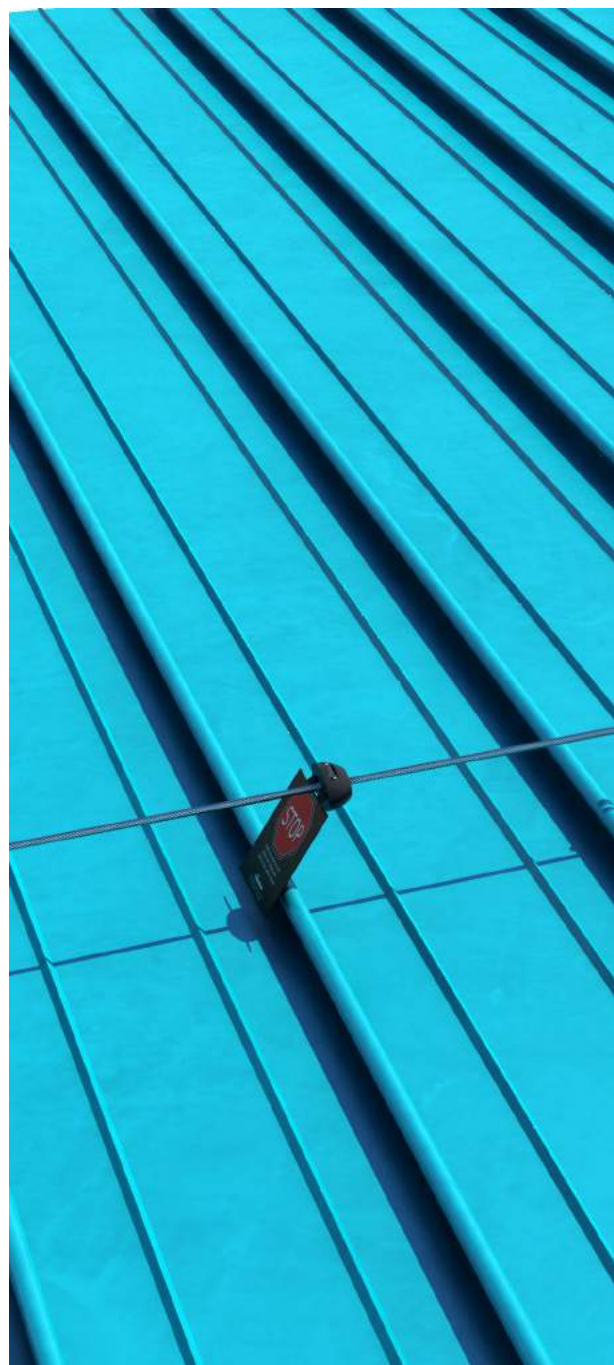
Fastened to the crimp with four clamps, without the need to make openings in the sheet metal.

ROBUST

Fastening is done on two ends, for improved resistance.

INSTALLATION

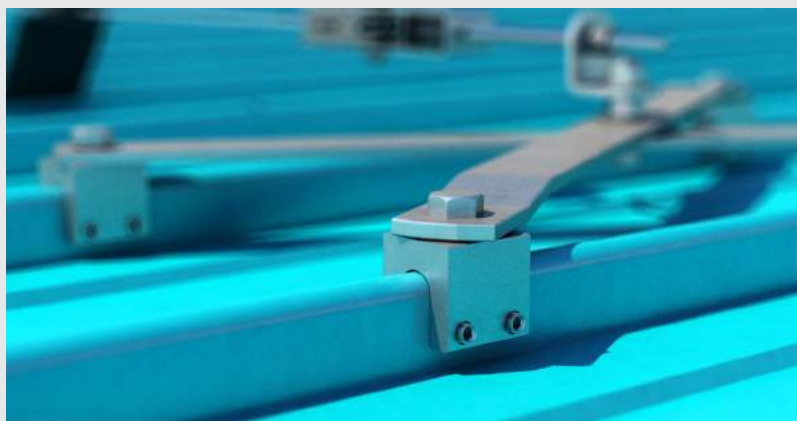
Adapts perfectly even when the ends are not parallel to the crimped sheet metal.



CODES AND DIMENSIONS

CODE	material	opening [mm]	pcs.
SEAMO	stainless steel 1.4301 - AISI304	305 - 500	1

Fasteners are included in the package.



< ADJUSTABLE

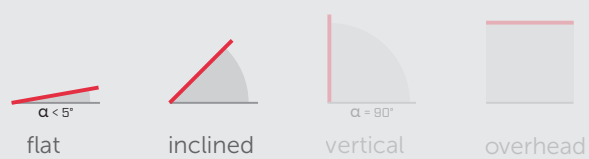
The aluminium clamps guarantee perfect adjustability to the shape of the round crimp.

VERSATILE >

Compatible with accessories from the pass-through and non-pass-through anchor lines.



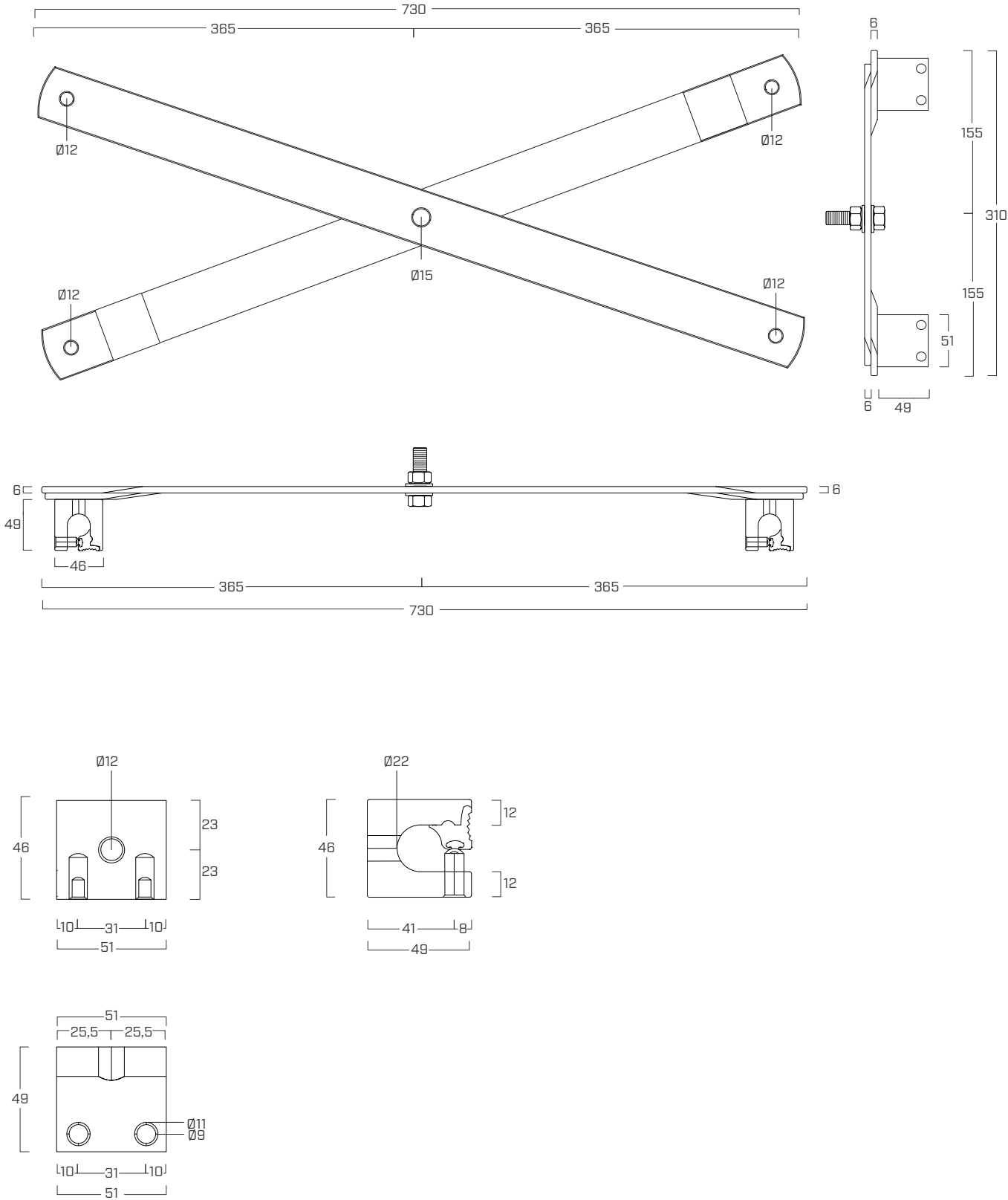
SURFACE INCLINATION



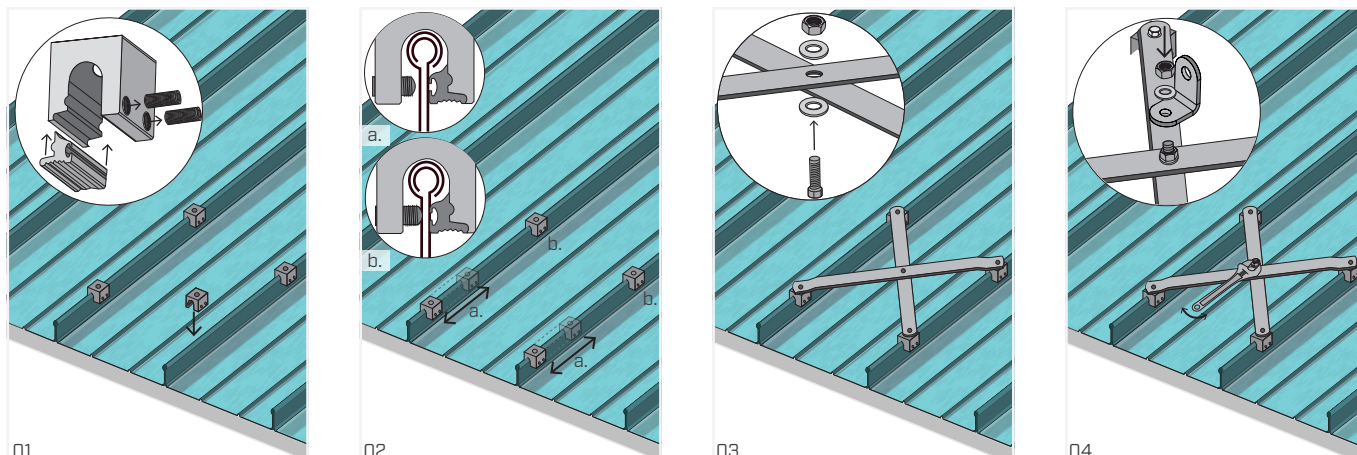
FIELD OF USE

- Sheet metal with round crimp
- min. aluminium: 0,8 mm

GEOMETRY

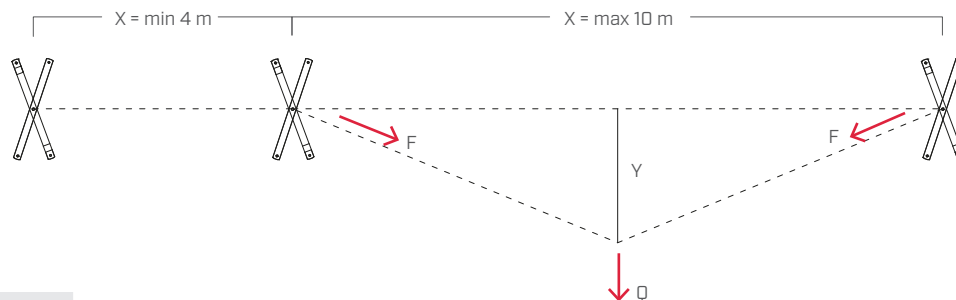


APPLICATION INSTRUCTIONS



For more information about product installation, please see the corresponding manual.

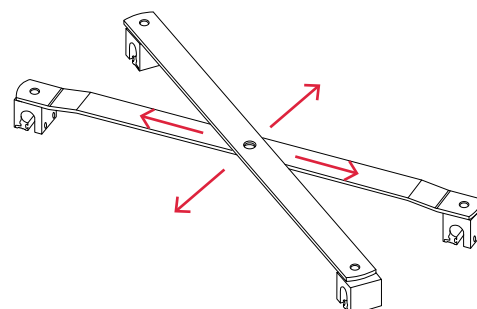
TECHNICAL DATA



	L _{of span} X [m]	
	4	10
Strain Y [m]	0,77	1,28

LABORATORY STRENGTHS

Data	Standard	Value
Q_s	EN 795:2012 CEN/TS 16415:2013	15 kN
Q_{d1}	EN 795:2012 CEN/TS 16415:2013	12 kN



SUPPORT FOR ANCHOR LINE WITH BALLAST

FLAT ROOFS

Designed for flat roofs with inclines up to 5°.

OPTIMISED SUPPLY

The system is provided in a compact and practical package that is easy to transport.



CODES AND DIMENSIONS

CODE	material	r [mm]	pcs.
BLOCK	stainless steel 1.4301 - AISI304	940	1

Cement slab (500 x 500 mm) for ballast not included in the package.
Mats included in the box.



< UNOBTUSIVE

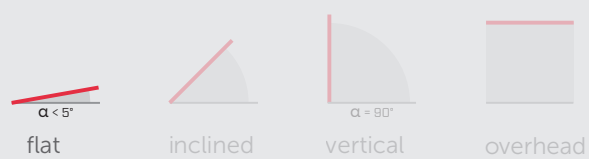
Installation does not require drilling the roof, which is not altered.

VERSATILE >

Offers installation on both a pass-through and non-pass through anchor line.



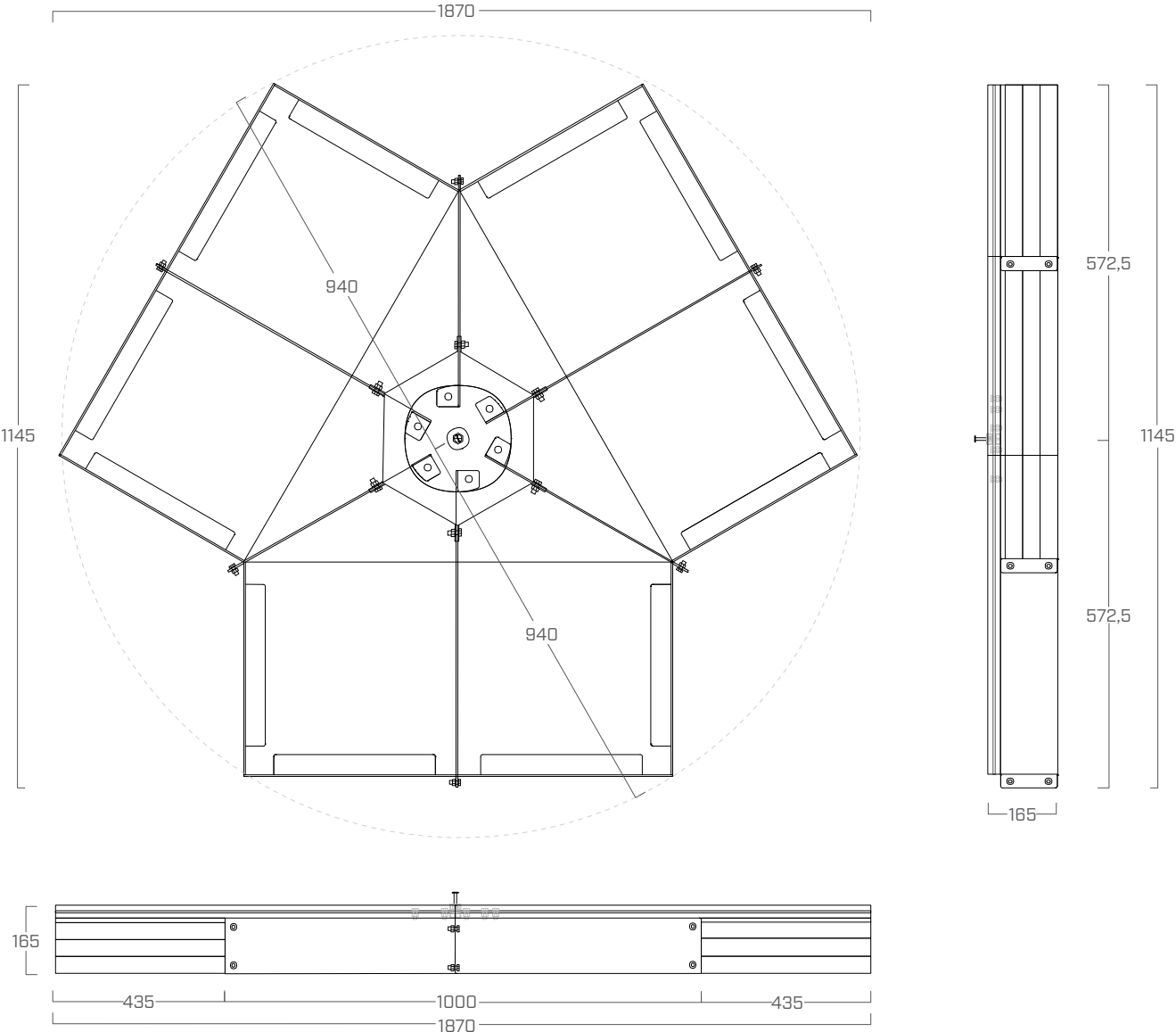
SURFACE INCLINATION



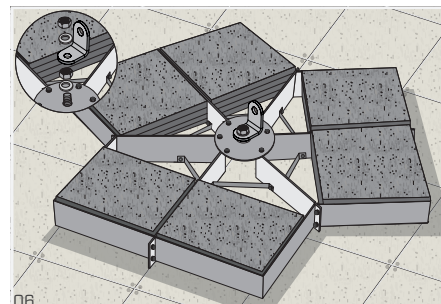
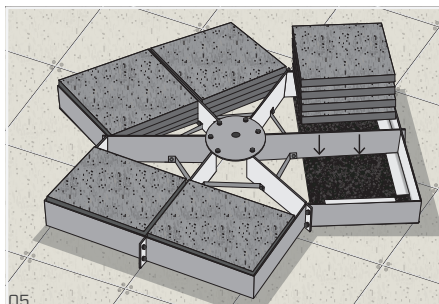
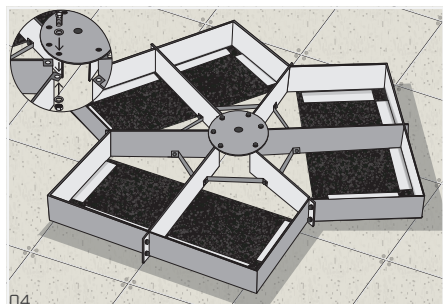
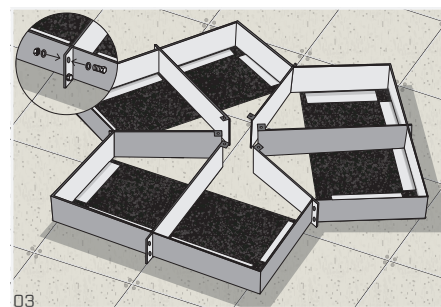
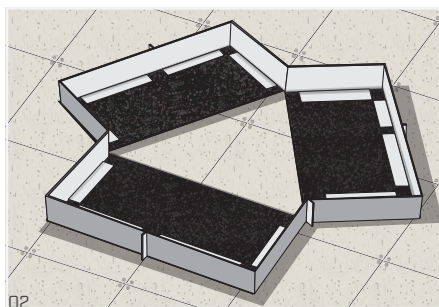
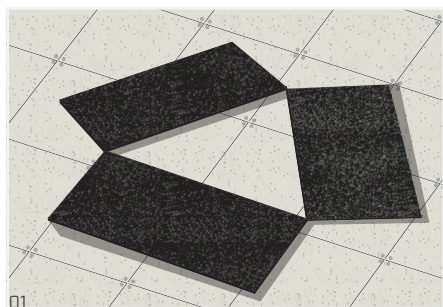
FIELD OF USE

- Non-drillable flat roof
- Green roof

GEOMETRY

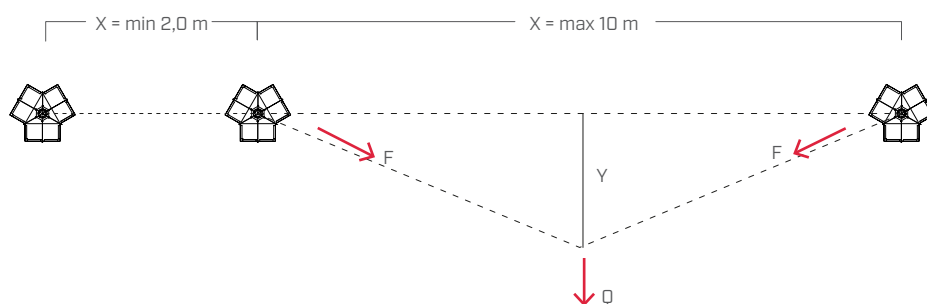


APPLICATION INSTRUCTIONS



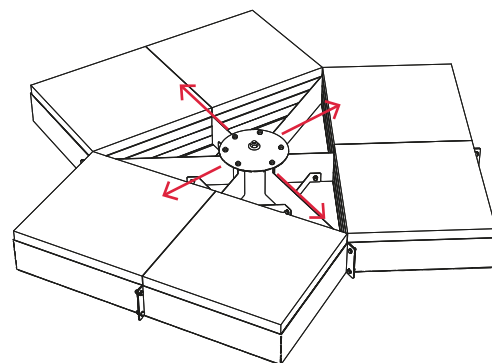
For more information about product installation, please see the corresponding manual.

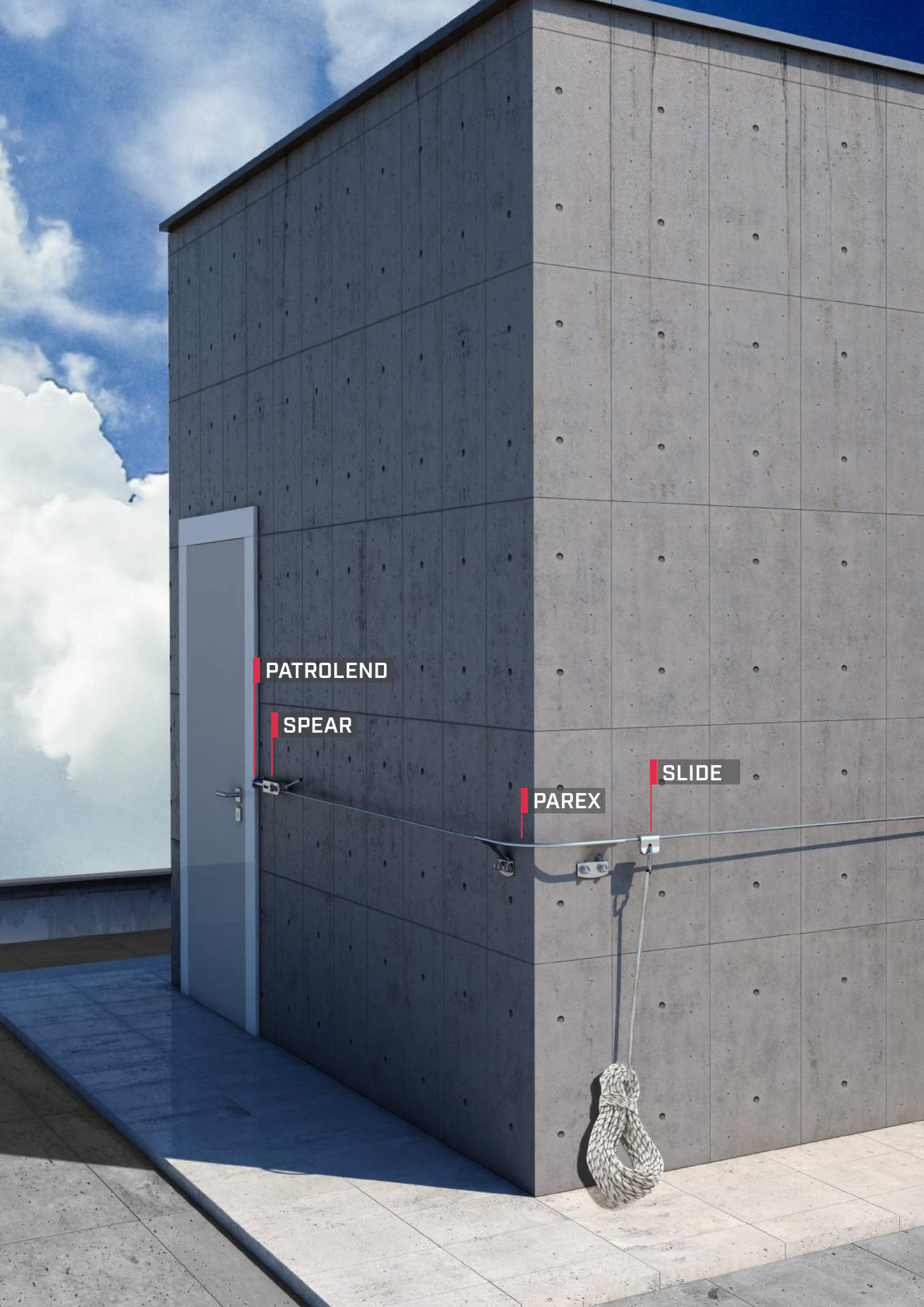
TECHNICAL DATA



LABORATORY STRENGTHS

Data	Standard	Value
Q_s	EN 795:2012 CEN/TS 16415:2013	13 kN
Q_{d1}	EN 795:2012 CEN/TS 16415:2013	12 kN



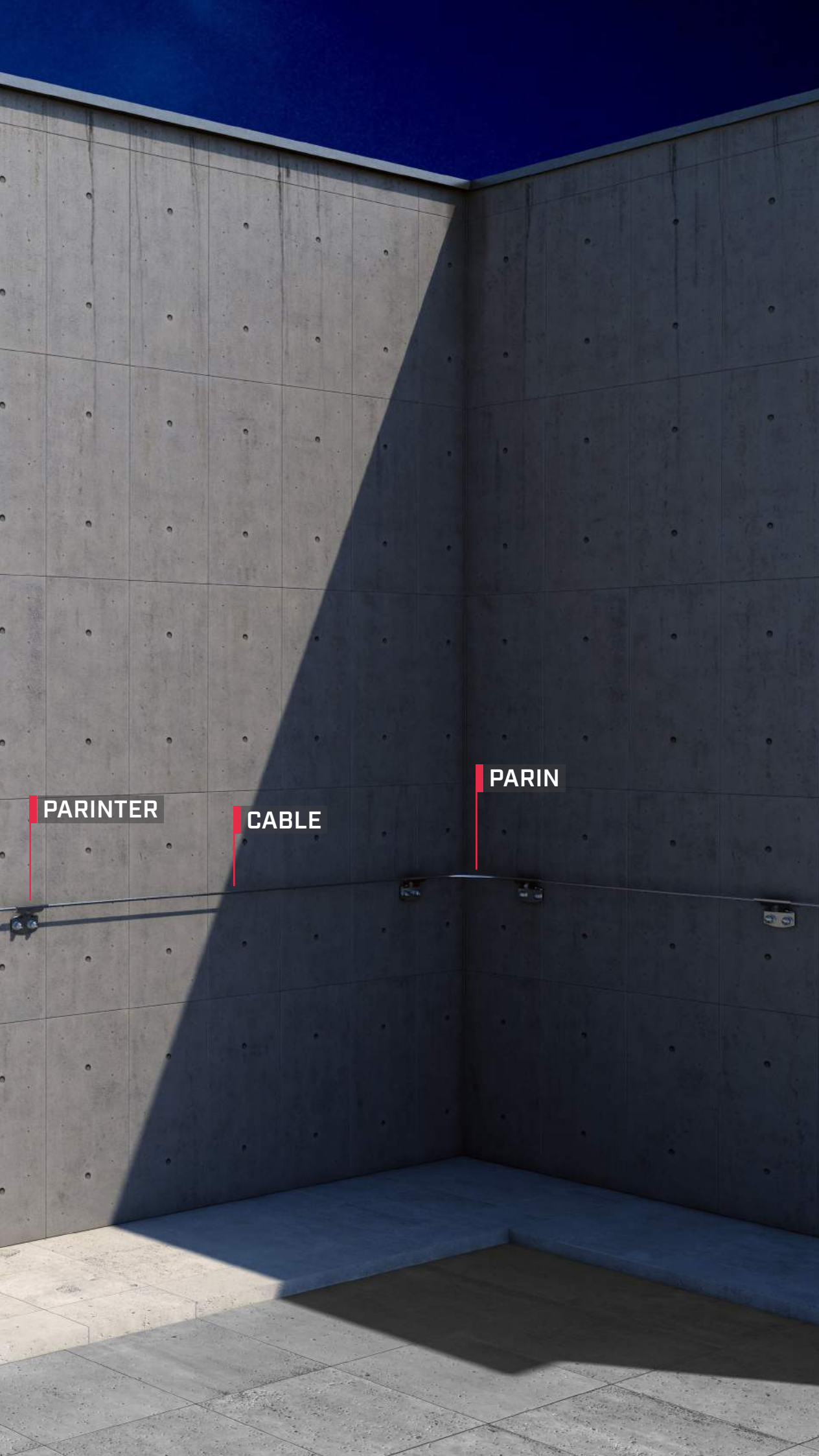


PATROLEND

SPEAR

PAREX

SLIDE



PARINTER

CABLE

PARIN

| PASS-THROUGH WALL

PASS-THROUGH WALL

PASS-THROUGH ANCHOR LINE FOR FAÇADES

SAFE

With the aid of the sliding devices, it is possible to overstep intermediate and angular elements without disconnecting from the system.

MULTIPURPOSE

Possibility of direct installation on different types of structures (concrete and steel).

VERSATILE

Based on requirements, either the removable or fixed shuttle can be used.



UNI
11578

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795/C:2012

CEN/TS
16415:2013



COMPONENTS

CODE	description
SPEAR	tensioner and energy absorber
PATROLEND	terminal element
PAREND	terminal element with 4 feet per side
PARIN	internal pass through angle bracket for façades
PAREX	external pass through angle bracket for façades
PARINTER	pass through intermediate element for façades
SLIDE1	removable sliding device
SLIDE2	fixed sliding device
CABLE	Ø8 7 x 7 stainless steel rope
PATROLSTOP	limit switch
TARGA	system information plate

COMPLEMENTARY PRODUCTS

FASTENING

TYPE	description	Ø [mm]	p.
MGS	threaded rod	M12	191
VIN-FIX PRO	vinylester chemical anchor	-	206
ULS - MUT	washer - nut	M12	192



< PRACTICAL

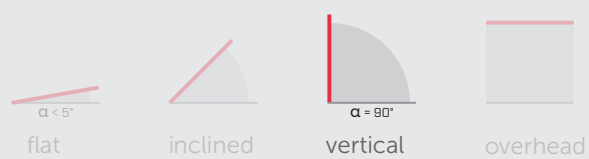
Thanks to the harmony between the elements, it is possible to slide the entire line, even pulling the rope to which the worker is fastened from a distance.

INGENIUS >

The PAREND terminal makes it possible to start the anchor line perpendicularly with respect to the vertical plane on which it is installed.



SURFACE INCLINATION



FIELD OF USE

- Min. concrete structure: 200 mm
- Min. steel structure: 5 mm

| SPEAR

TENSIONER AND ENERGY ABSORBER



| CODES AND DIMENSIONS

CODE	material	pcs.
SPEAR	stainless steel - AISI304 alloy EN AW-6082	2

| PATROLEND

TERMINAL ELEMENT



| CODES AND DIMENSIONS

CODE	material	pcs.
PATROLEND	stainless steel - AISI316	1

| PAREND

TERMINAL ELEMENT WITH 4 FEET PER SIDE



| CODES AND DIMENSIONS

CODE	material	pcs.
PAREND	stainless steel - AISI316	1

| PARIN

INTERNAL PASS THROUGH ANGLE BRACKET FOR FAÇADES



| CODES AND DIMENSIONS

CODE	material	pcs.
PARIN	stainless steel - AISI316	1

PAREX

EXTERNAL PASS THROUGH ANGLE BRACKET
FOR FAÇADES



CODES AND DIMENSIONS

CODE	material	pcs.
PAREX	stainless steel - AISI316	1

PARINTER

PASS THROUGH INTERMEDIATE ELEMENT
FOR FAÇADES



CODES AND DIMENSIONS

CODE	material	pcs.
PARINTER	stainless steel - AISI316	1

SLIDE 1

REMOVABLE SLIDING DEVICE

CODES AND DIMENSIONS

CODE	material	pcs.
SLIDE1	stainless steel - AISI304	1

Carabiner included in the package



SLIDE 2

FIXED SLIDING DEVICE

CODES AND DIMENSIONS

CODE	material	pcs.
SLIDE2	stainless steel - AISI304	1

Carabiner included in the package



CABLE

Ø8 7 x 7 STAINLESS STEEL ROPE



CODES AND DIMENSIONS

CODE	material	m.
CABLE	stainless steel - AISI316	-

PATROLSTOP

LIMIT SWITCH



CODES AND DIMENSIONS

CODE	material	pcs.
PATROLSTOP	rubber - plastic	1

TARGA

SYSTEM INFORMATION PLATE



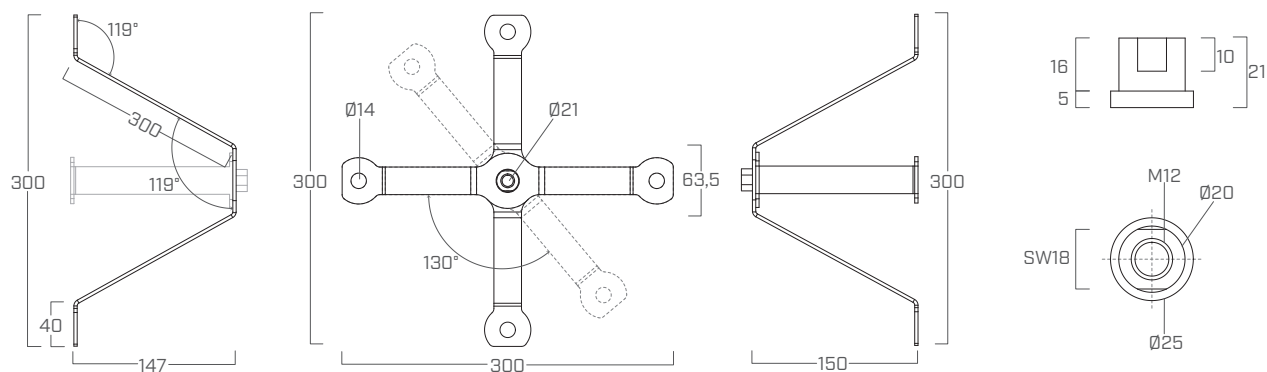
CODES AND DIMENSIONS

CODE	pcs.
TARGA	1

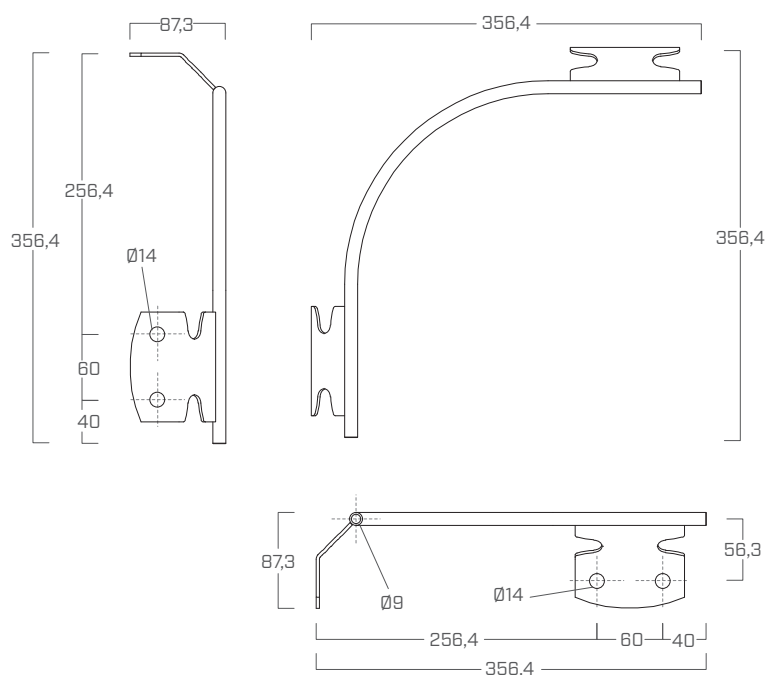


GEOMETRY

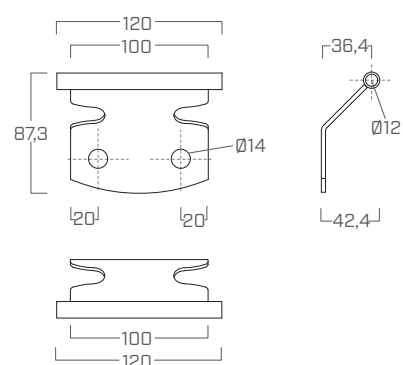
PAREND



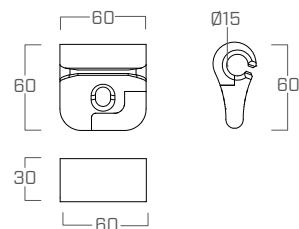
PARIN



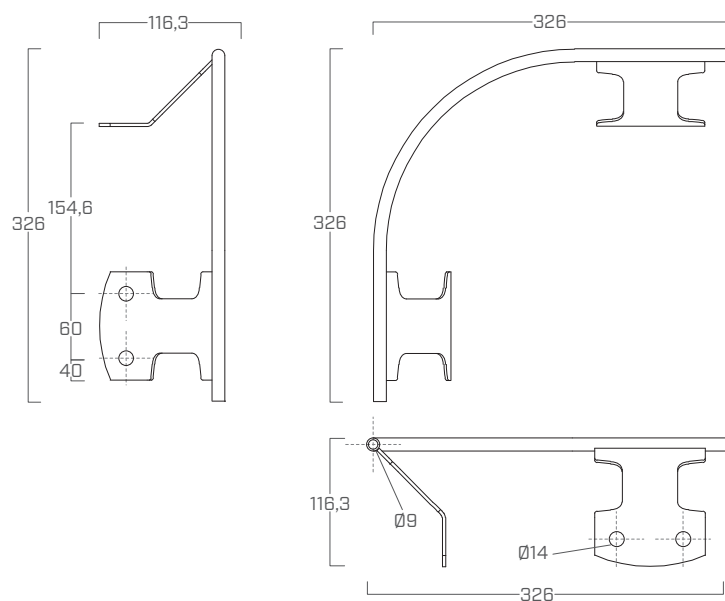
PARINTER



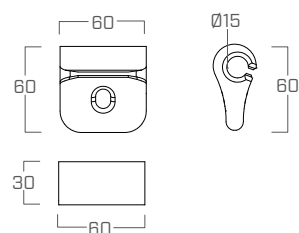
SLIDE 1



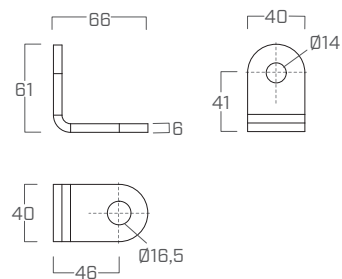
PAREX



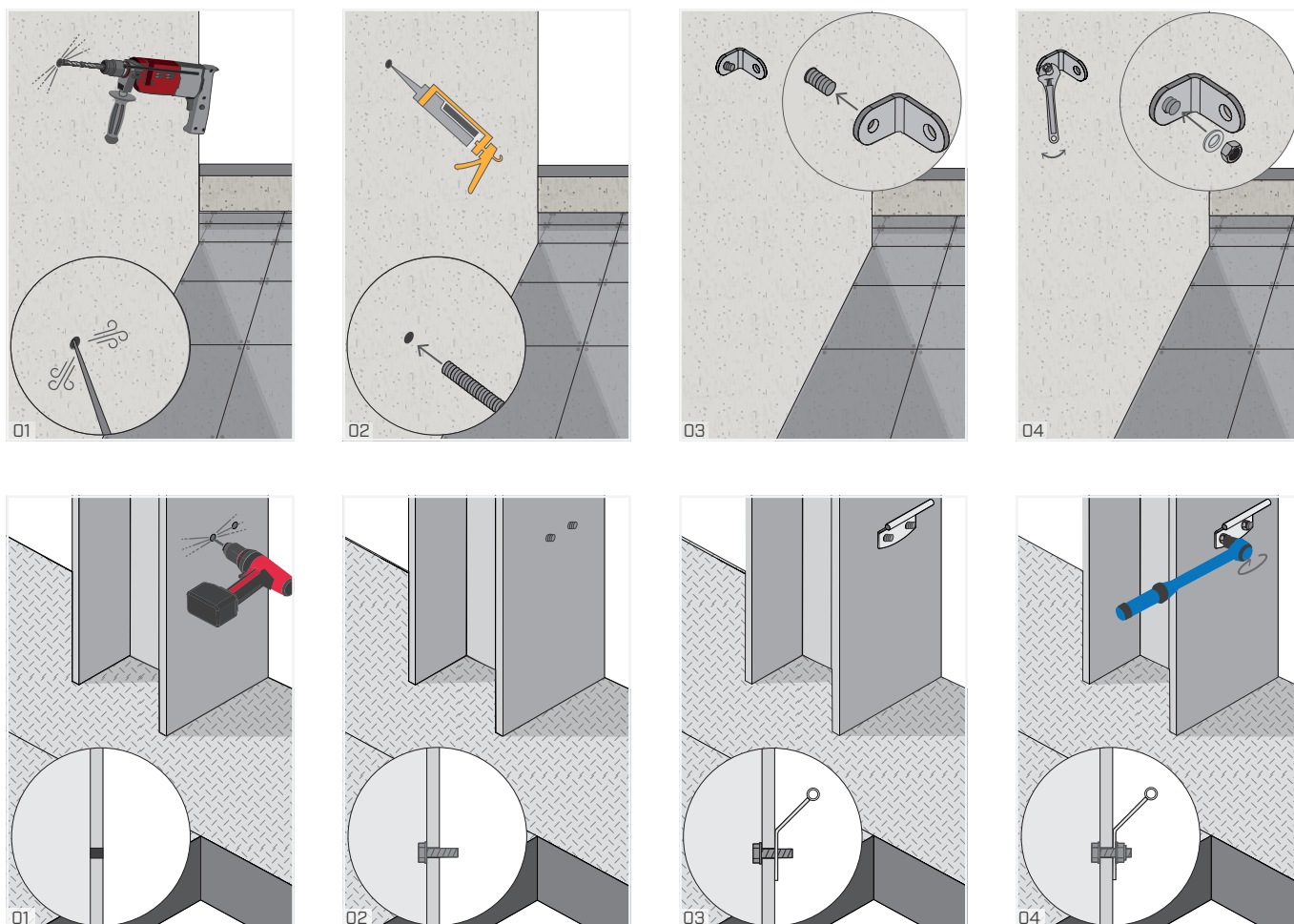
SLIDE 2



PATROLEND



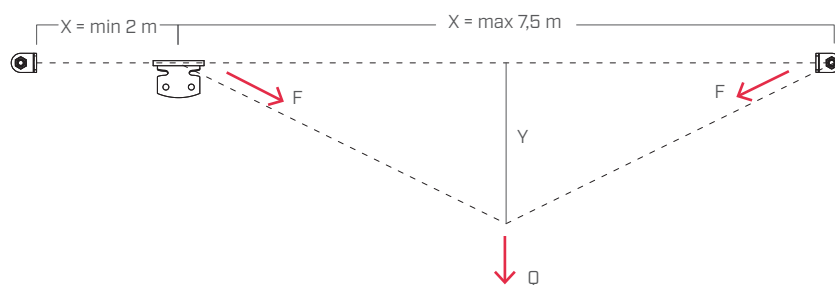
APPLICATION INSTRUCTIONS



For more information about product installation, please see the corresponding manual.

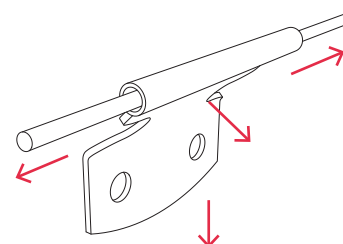
TECHNICAL DATA

	L _{of span} X [m]	
	2	7,5
Strain Y [m]	0,55	1,30



LABORATORY STRENGTHS

Data	Standard	Value
Q_s	EN 795:2012 CEN/TS 16415:2013	15 kN
Q_{d1}	EN 795:2012 CEN/TS 16415:2013	12 kN

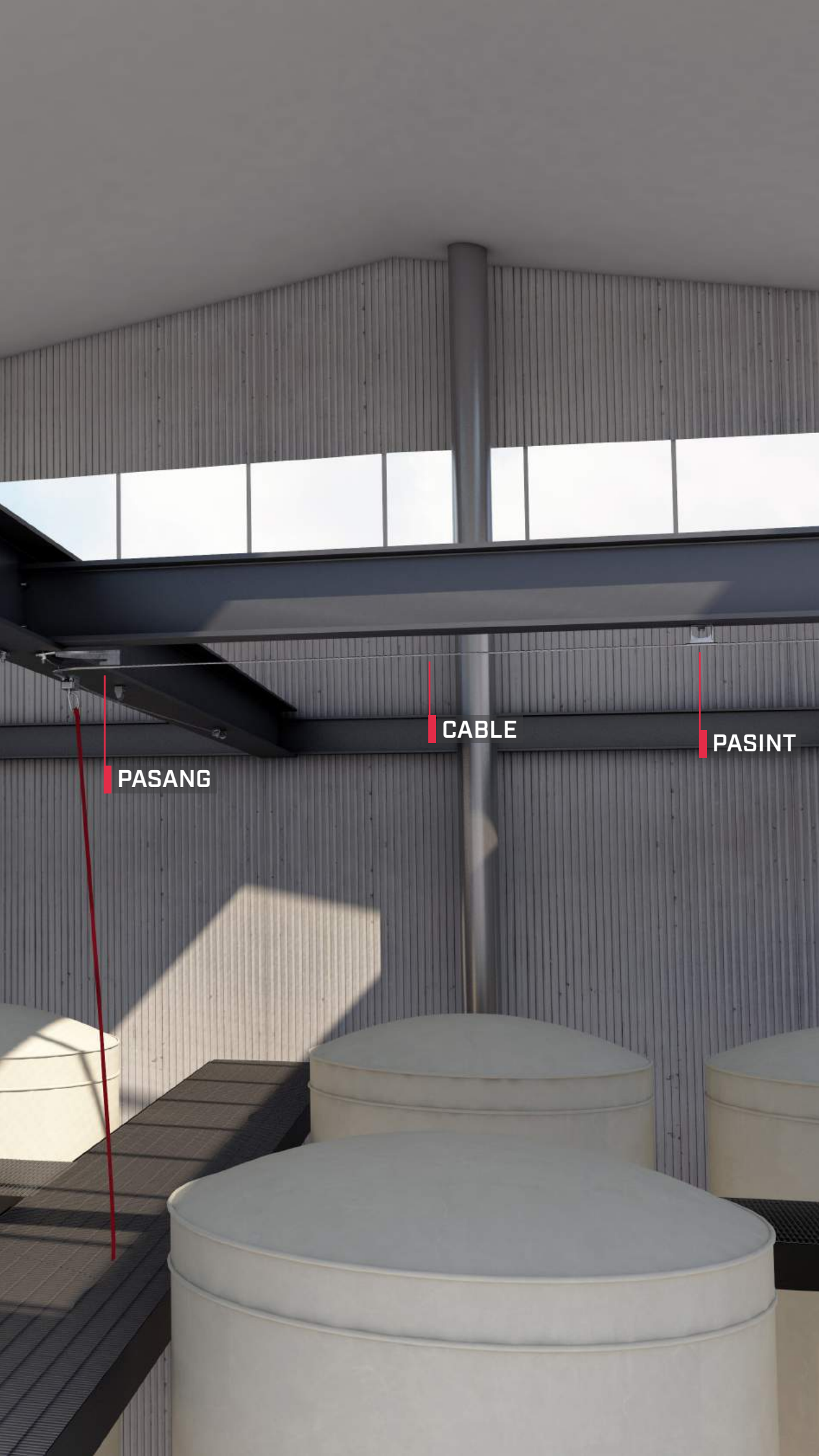




SPEAR

PATROLEND

SLIDE3



| PASS-THROUGH AIR

PASS-THROUGH AIR

OVERHEAD PASS-THROUGH ANCHOR LINE

INSTALLATION

System designed for installation above the operator's head.

COMPLETE

Shuttle specifically developed for the overhead system.

VERSATILE

Designed for securing to a concrete substructure or directly on steel.



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CEN/TS
16415:2013



COMPONENTS

CODE	description
SPEAR	tensioner and energy absorber
PATROLEND	terminal element
PASANG	angular pass-through element
PASINT	pass-through intermediate element
SLIDE3	fixed sliding device
CABLE	Ø8 7 x 7 stainless steel rope
PATROLSTOP	limit switch
TARGA	system information plate

COMPLEMENTARY PRODUCTS

FASTENING

TYPE	description	Ø [mm]	p.
MGS	threaded rod	M16	191
VIN-FIX PRO	vinylester chemical anchor	-	206
ULS - MUT	washer - nut	M16	192

TOWER support not included in the package, can be ordered separately (page 36)

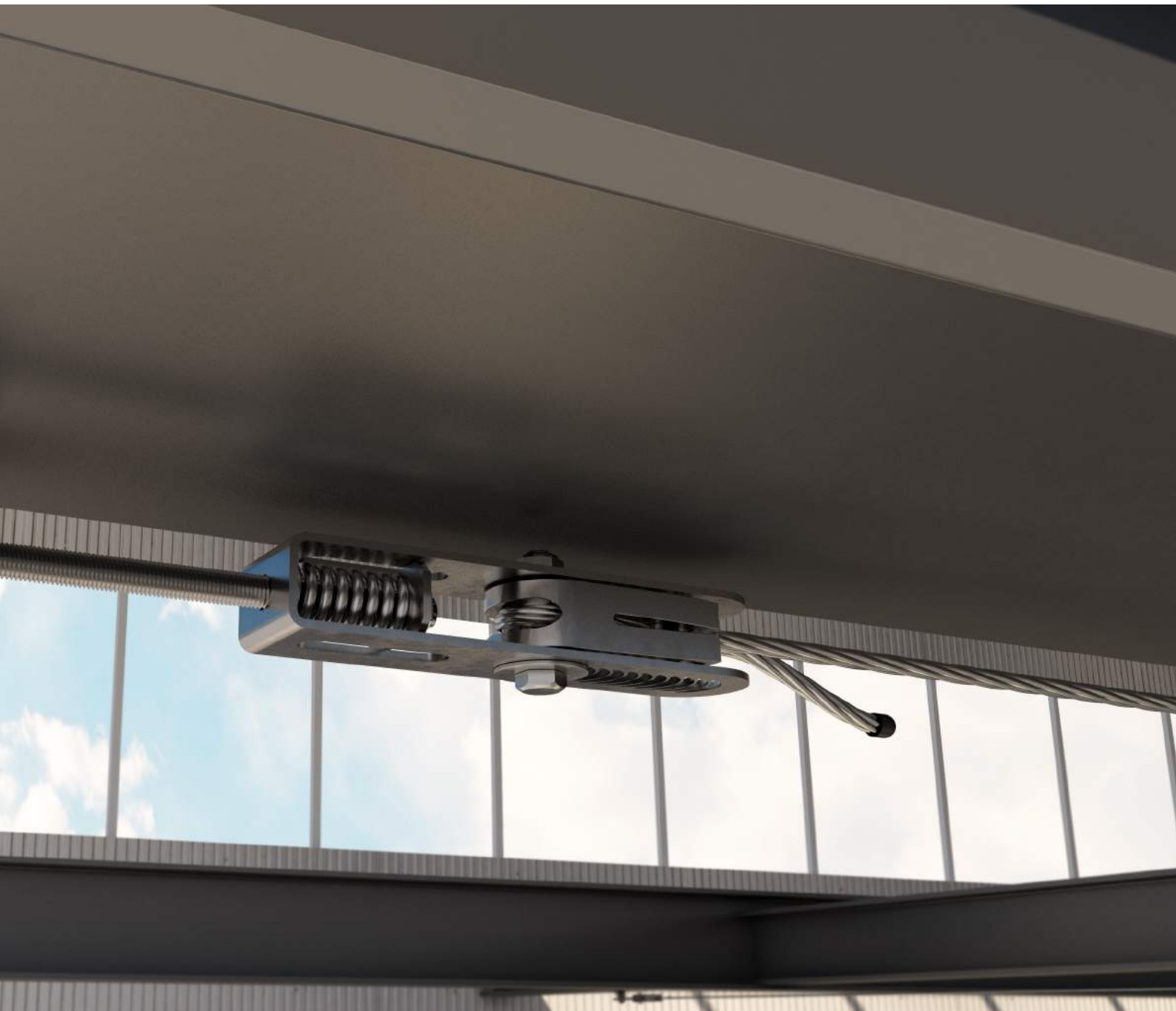


< UNIVERSAL

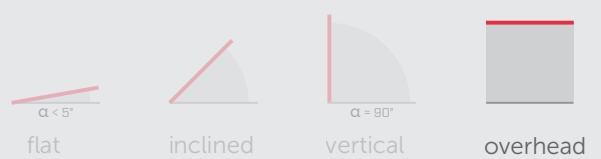
The system can be installed directly on either steel or concrete.

ADJUSTABLE >

Can be installed directly on the structure or using the TOWER support.



SURFACE INCLINATION



FIELD OF USE

- Min. concrete structure: 200 mm
- Min. steel structure: 5 mm

| SPEAR

TENSIONER AND ENERGY ABSORBER



| CODES AND DIMENSIONS

CODE	material	pcs.
SPEAR	stainless steel - AISI304 alloy EN AW-6082	2

| PATROLEND

TERMINAL ELEMENT



| CODES AND DIMENSIONS

CODE	material	pcs.
PATROLEND	stainless steel - AISI316	1

| PASANG

ANGULAR PASS-THROUGH ELEMENT



| CODES AND DIMENSIONS

CODE	material	pcs.
PASANG	stainless steel - AISI316	1

| PASINT

PASS-THROUGH INTERMEDIATE ELEMENT



| CODES AND DIMENSIONS

CODE	material	pcs.
PASINT	stainless steel - AISI316	1

SLIDE 3

FIXED SLIDING DEVICE FOR OVERHEAD LINE



CODES AND DIMENSIONS

CODE	material	pcs.
SLIDE3	stainless steel - AISI304 alloy EN AW-6082	1

CABLE

Ø8 7 x 7 STAINLESS STEEL ROPE



CODES AND DIMENSIONS

CODE	material	m.
CABLE	stainless steel - AISI316	-

PATROLSTOP

LIMIT SWITCH



CODES AND DIMENSIONS

CODE	material	pcs.
PATROLSTOP	rubber - plastic	1

TARGA

SYSTEM INFORMATION PLATE

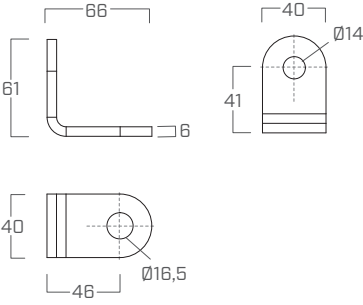


CODES AND DIMENSIONS

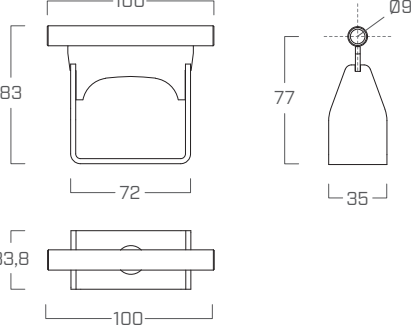
CODE	pcs.
TARGA	1

GEOMETRY

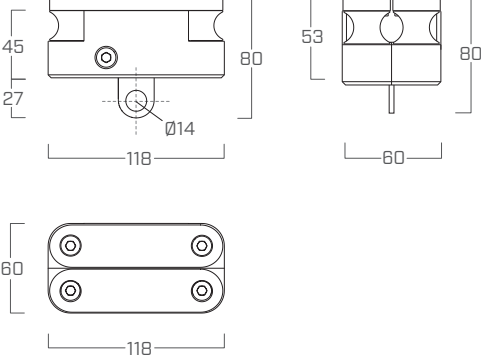
PATROLEND



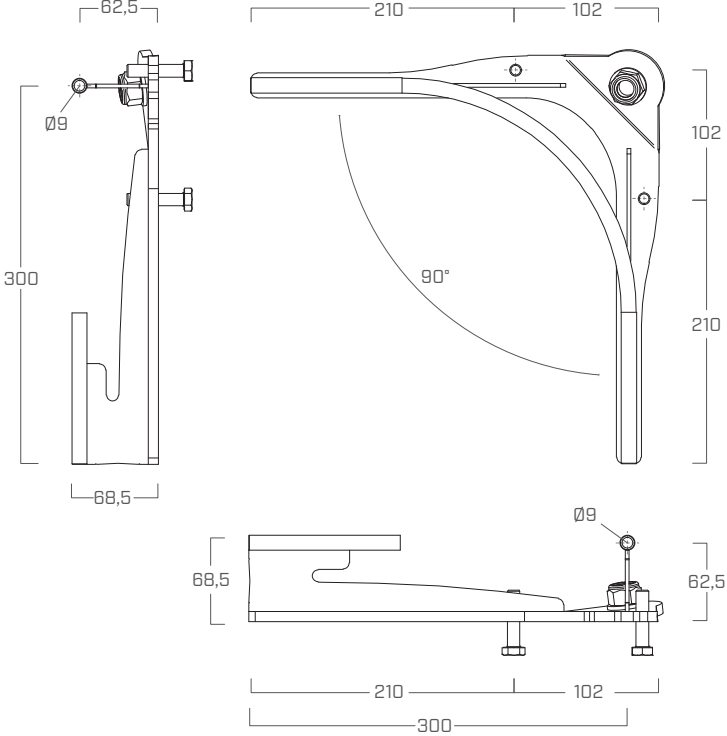
PASINT



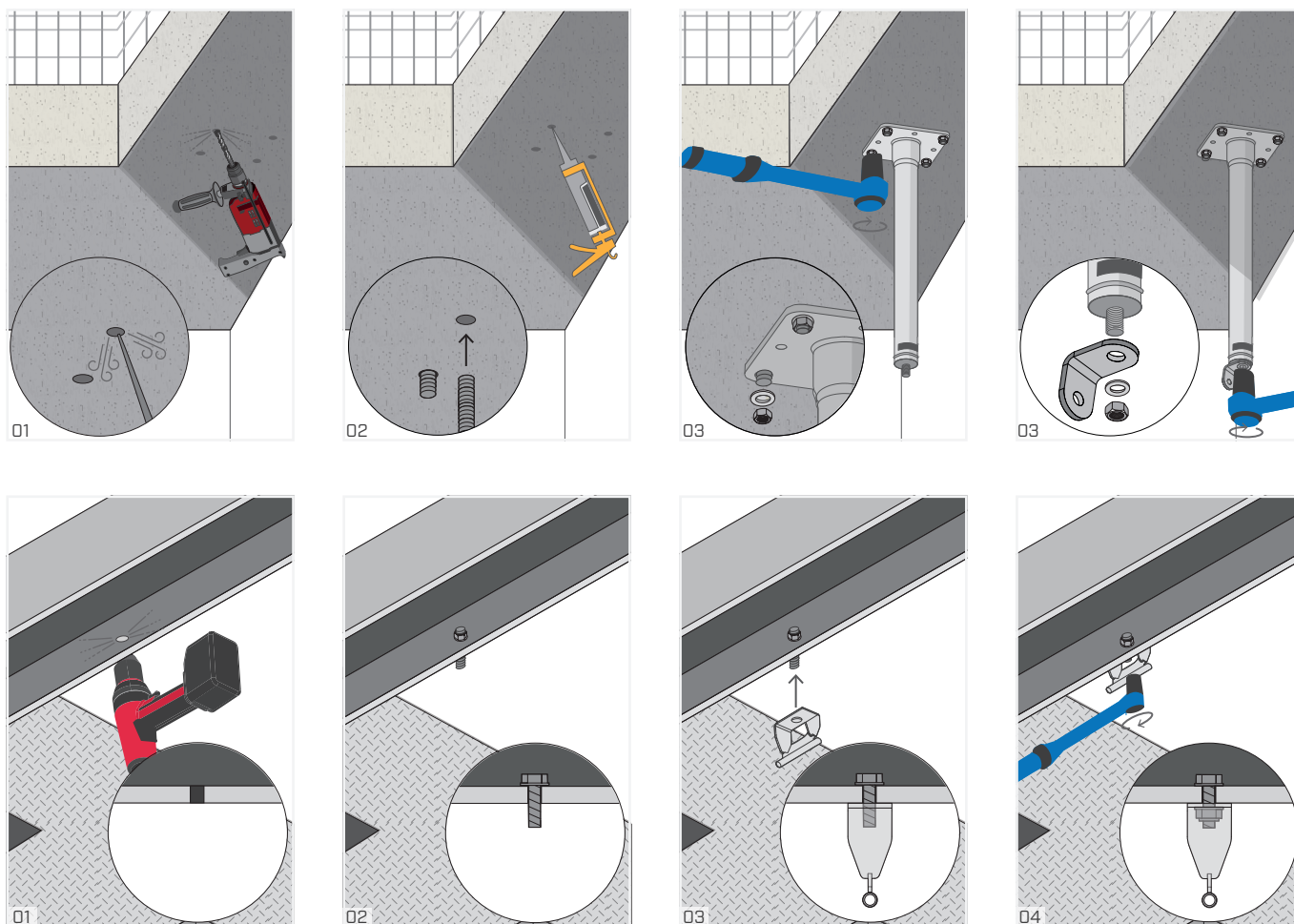
SLIDE 3



PASANG

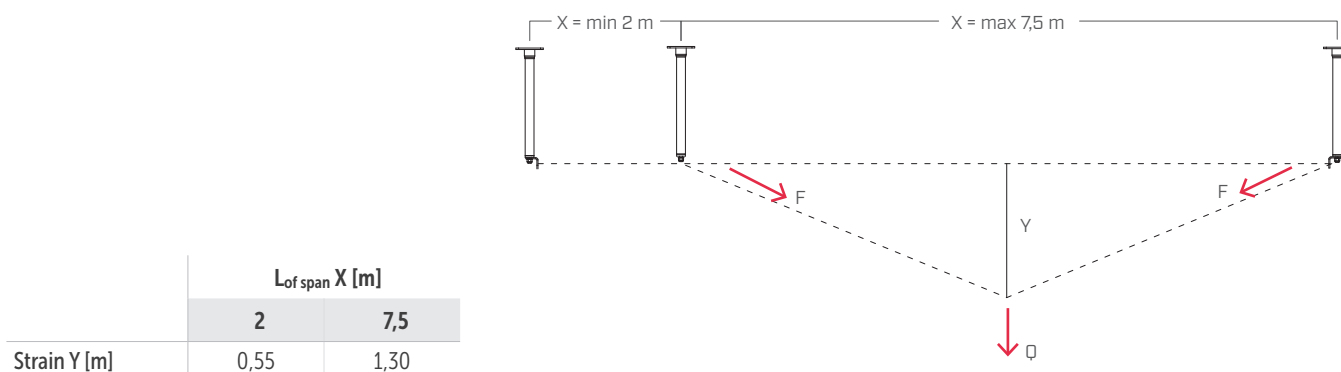


APPLICATION INSTRUCTIONS



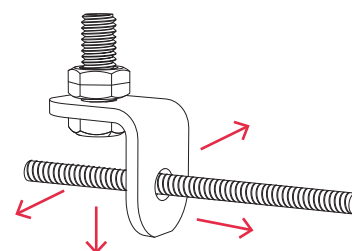
For more information about product installation, please see the corresponding manual.

TECHNICAL DATA



LABORATORY STRENGTHS

Data	Standard	Value
Q_s	EN 795:2012 CEN/TS 16415:2013	15 kN
Q_{d1}	EN 795:2012 CEN/TS 16415:2013	12 kN



ANCHOR LINE WITH SUPPORT

FUNCTIONAL

Support system which does not require the roofing to be drilled, thereby preventing thermal bridges and ensuring the structure waterproofing.

FAST INSTALLATION

The system consists of few components that facilitate and speed up mounting.

FLAT ROOFS

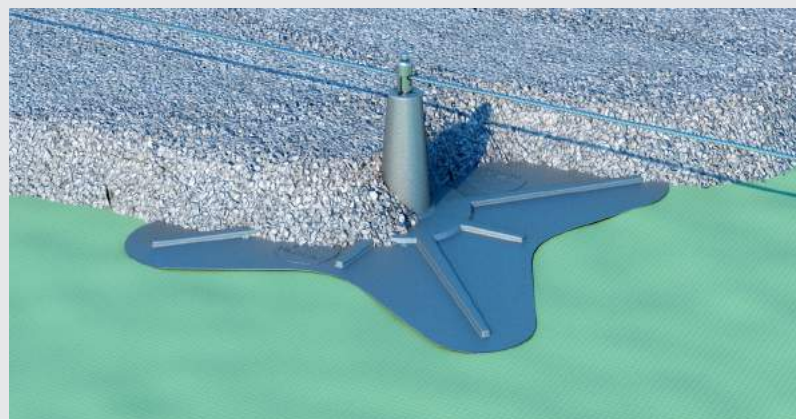
Suitable for roof slopes up to 5°.

CONCEALED

System with reduced visual impact, almost invisible once installed.

COMPONENTS

CODE	description
DD02	LINE - anchoring device
DD03	fall protection mat with cone
DD04	large cone
DD05	fastening head
DD06	fastening ring
DD07	square ring
DD08	eyelet to form rope loop
DD09	cable tensioner
DD10	clamp
DD11	Ø8 7 x 19 steel rope



ADJUSTABLE

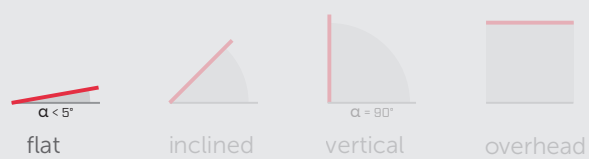
Can be installed on any green roof, regardless of the material used as fill.

HIDDEN

Once covered, the system is only minimally visible.



SURFACE INCLINATION



FIELD OF USE

- Green roof

DD02

LINE - ANCHORING DEVICE



CODES AND DIMENSIONS

CODE	material	pcs.
DD02	stainless steel	1

DD03

FALL PROTECTION MAT WITH CONE



CODES AND DIMENSIONS

CODE	material	pcs.
DD03	glass fibre reinforced plastic (GFRP)	1

DD04

LARGE CONE



CODES AND DIMENSIONS

CODE	material	pcs.
DD04	glass fibre reinforced plastic (GFRP)	1

DD05

FASTENING HEAD



CODES AND DIMENSIONS

CODE	material	pcs.
DD05	stainless steel	1

DD06

FASTENING RING



CODES AND DIMENSIONS

CODE	material	pcs.
DD06	stainless steel	1

DD07

SQUARE RING



CODES AND DIMENSIONS

CODE	material	pcs.
DD07	stainless steel	1

DD08

EYELET TO FORM ROPE LOOP



CODES AND DIMENSIONS

CODE	material	pcs.
DD08	stainless steel	1

DD09

CABLE TENSIONER



CODES AND DIMENSIONS

CODE	material	pcs.
DD09	stainless steel	1

■ DD10

CLAMP



■ CODES AND DIMENSIONS

CODE	material	pcs.
DD10	stainless steel	1

■ DD11

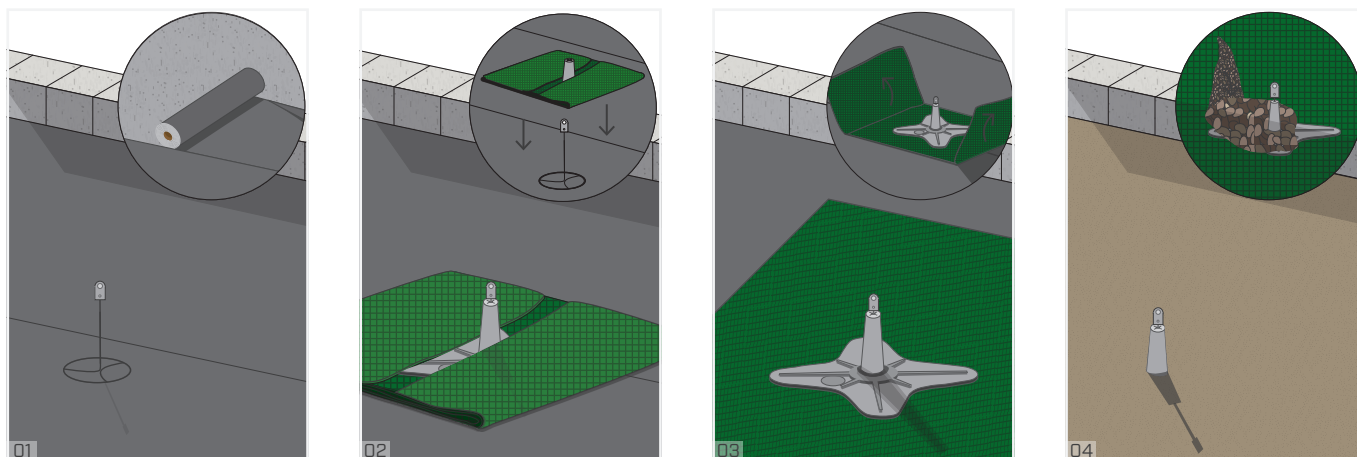
Ø8 7 x 19 STEEL ROPE



■ CODES AND DIMENSIONS

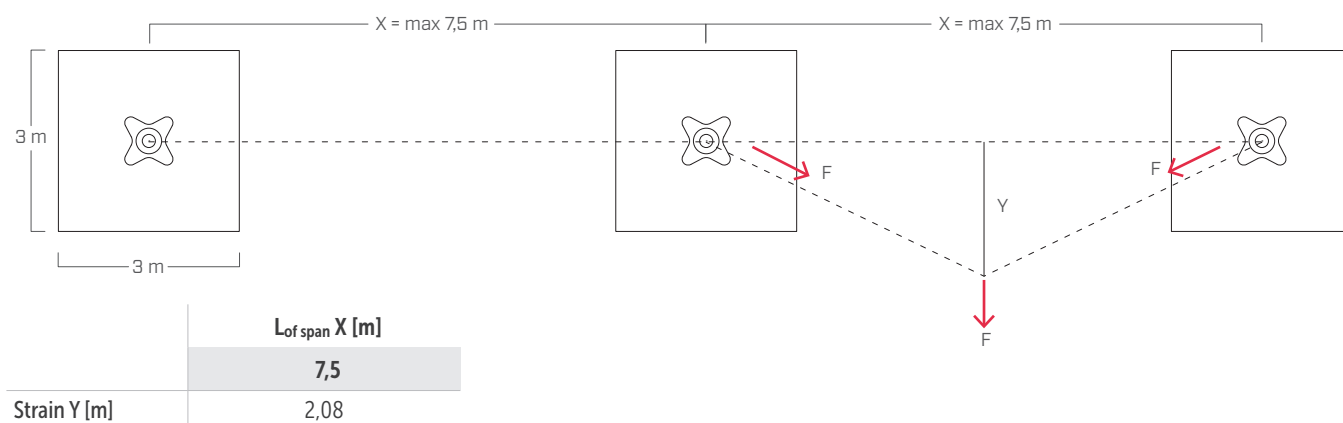
CODE	material	m.
DD11	stainless steel	-

APPLICATION INSTRUCTIONS

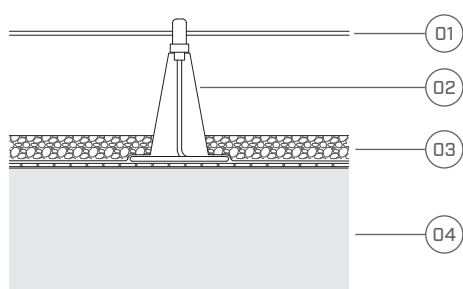


For more information about product installation, please see the corresponding manual.

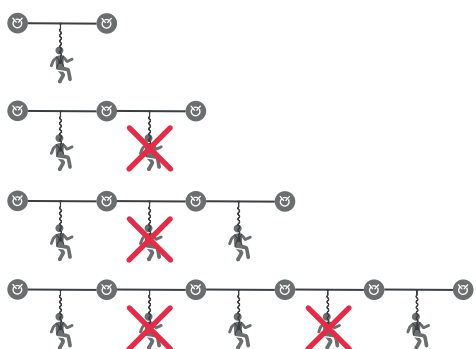
TECHNICAL DATA



SYSTEM ELEMENTS



- 01. ROPE
- 02. PLASTIC PROTECTION CONE
- 03. GRAVEL OR SOIL BALLAST
- 04. BEARING FLOOR



ANCHOR LINE ON RAIL

FAST INSTALLATION

Thanks to the centre distance between the rail fasteners, assembly requires a limited number of fastening points.

COMPLETE

Availability of three different sliding devices on ball bearings: horizontal, vertical and multifunction.

SAFE

Vertical and multi-function sliding devices equipped with automatic braking unit.

CONCEALED

The rail ensures a small footprint on the cover and thus a minimal visual impact.

VERSATILE

The line can also be used for work done while suspended.

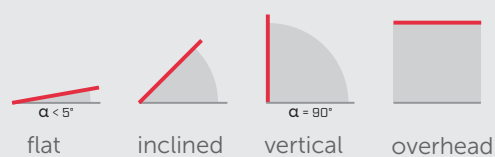


CODES AND DIMENSIONS

The elements of the RAIL SYSTEM are provided only upon request



SURFACE INCLINATION



FIELD OF USE

- Timber structure
- Concrete structure
- Steel structure

SINGLE POINTS

SINGLE POINTS

I SINGLE POINTS

For installation on supports

AOS01
anchor points for supports 98

Supports for AOS01

TOWER
support for timber, concrete and steel roofs 100

TRAPO
support for bearing trapezoidal sheet metal roofs 101

SHIELD
support for corrugated sheet roofs 102

SHIELD 2.0
support for corrugated sheet roofs 103

SEAMO
support for sheet metal roofs with round crimps 104

COPPO
support for roofs with faux tiles 105

BLOCK
support with ballast 106

SIANK FOUR
support for sheet metal roofs with double crimps 107

For roofs and structures

SIANK
anchor point for sheet metal roofs with double crimps 108

HOOK EVO 2.0
anchor point for timber and concrete roofs 110

HOOK EVO
anchor point for timber roofs 112

HOOK
anchor point for timber and concrete roofs 114

LOOP - LOOP XL
anchor point for timber and concrete roofs 116

SLIM
anchor point for small structures 118

KITE
anchor point for timber, concrete and steel roofs 120

AOS
anchor point for timber, concrete and steel roofs 122

PALMIFIX
universal counterplate for HOOK, LOOP and AOS 124

For work at height and in suspension

WING
anchor point for work at height and in suspension 125

WING 2
Anchor point for work at height 125

For green roof

GREEN POINT
anchor support system 126

Temporary

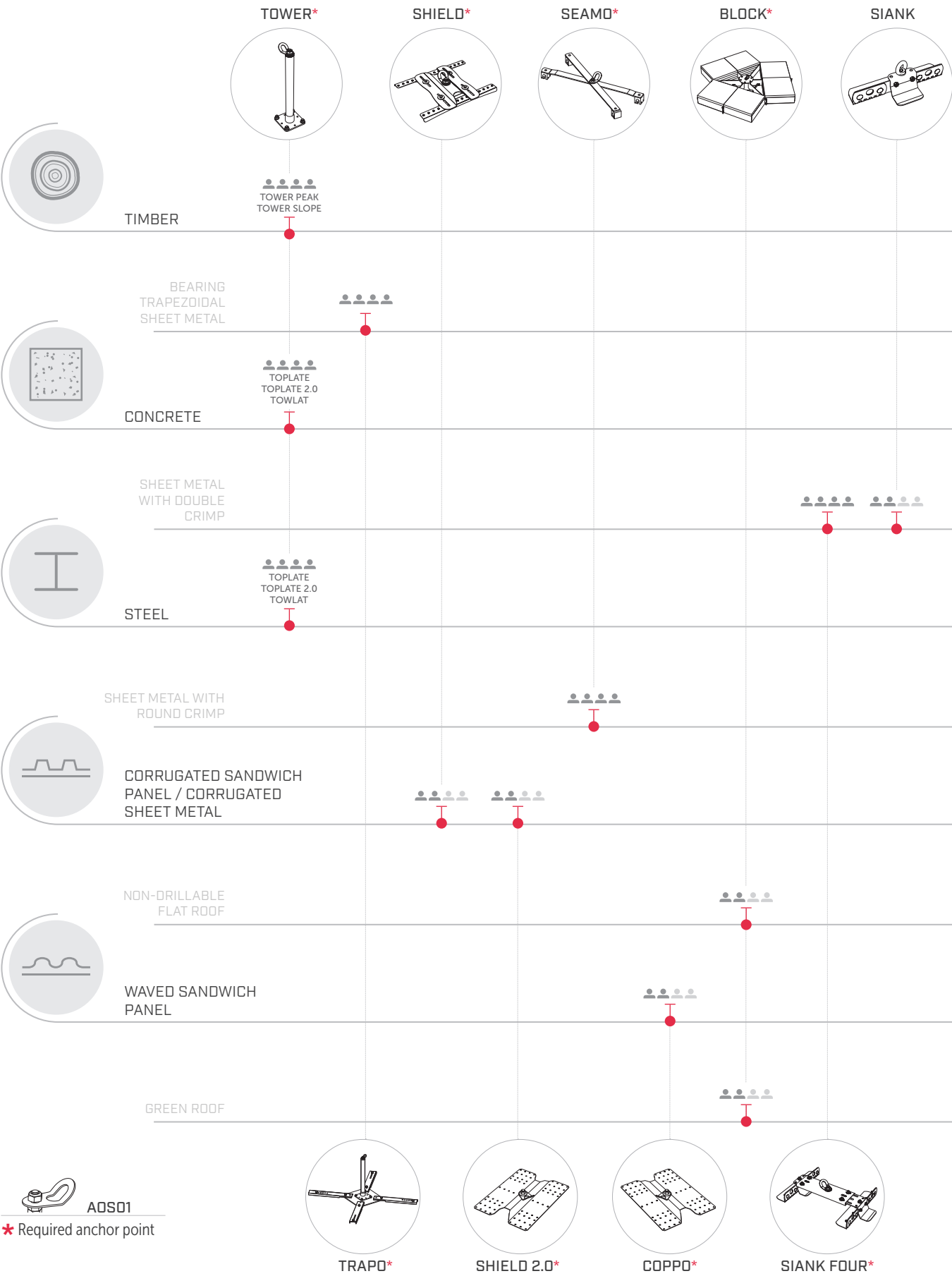
MOBILE
mobile anchor point 127

For steel structures

ROD
anchor for steel structures 128

CARRIER
sliding anchor for steel structures 128

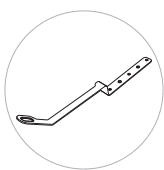
THE RIGHT SUPPORT FOR EVERY STRUCTURE



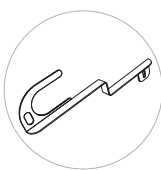
HOOK EVO 2.0



HOOK



SLIM



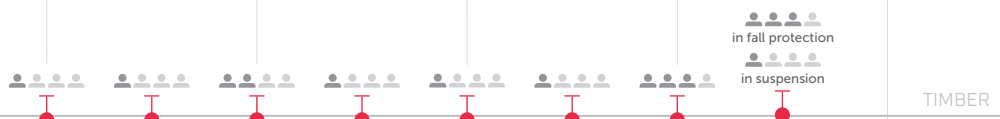
AOS



GREEN POINT

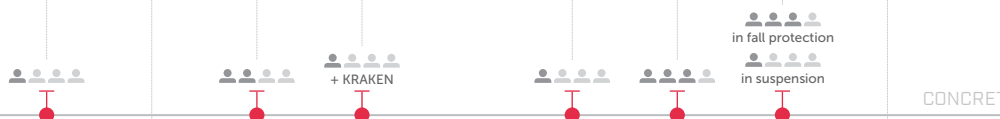


	4 PEOPLE
	3 PEOPLE
	2 PEOPLE
	1 PERSON



TIMBER

BEARING T
RAPEZOIDAL
SHEET METAL



CONCRETE

SHEET METAL
WITH DOUBLE
CRIMP



STEEL

SHEET METAL
WITH ROUND
CRIMP

CORRUGATED SANDWICH
PANEL / CORRUGATED
SHEET METAL

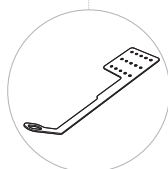
NON-DRILLABLE
FLAT ROOF

WAVED SANDWICH
PANEL

> 200 kg/m²

> 80 kg/m²

GREEN ROOF



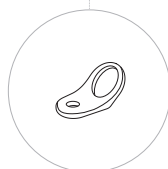
HOOK EVO



LOOP - LOOP XL



KITE



WING

AOS01

ANCHOR POINTS FOR SUPPORTS

PRACTICAL

The 360° swivel eyelet allows the operator total freedom of movement.

UNIVERSAL

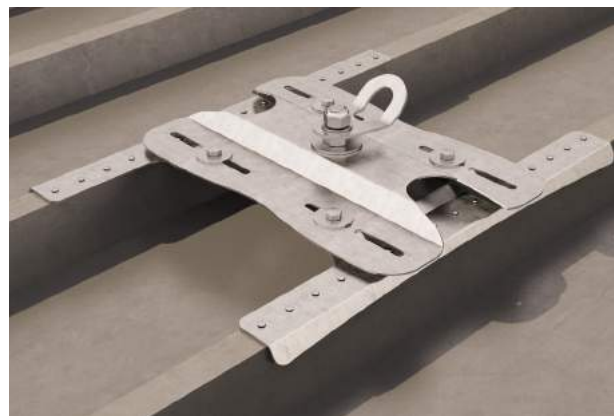
Can be used as an anchor point for all Rothoblaas supports.

COMPLETE

Supplied in a handy kit, complete with grease, bolts and washers for installation.

UNOBTRUSIVE

The eyelet is aesthetically pleasing and non-invasive.



CODES AND DIMENSIONS

CODE	material	pcs.
AOS01	stainless steel 1.4301 / AISI304	1

TECHNICAL DATA

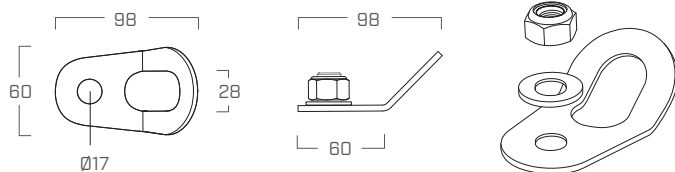
LABORATORY STRENGTHS

	EN 795:2012 - CEN/TS 16415:2013	
	Q _s	Q _{d2}
TOWER	15,0	12,0
TRAPO	15,0	12,0
SHIELD	13,0	12,0
SHIELD 2.0	13,0	12,0
SEAMO	15,0	12,0
COPPO	13,0	12,0
BLOCK	13,0	12,0
SIANK FOUR	15,0	12,0

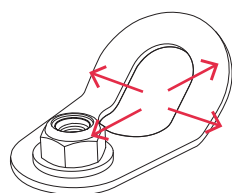
FIELD OF USE

- Timber / concrete / steel structure
- Corrugated sandwich panel / corrugated sheet metal
- Waved sandwich panel
- Bearing trapezoidal sheet metal
- Sheet metal with double crimp
- Sheet metal with round crimp
- Non-drillable flat roof
- Green roof

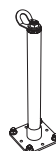
■ GEOMETRY



■ FIELD OF APPLICATION



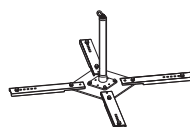

 $Q_s = 15,0$
 $Q_{d2} = 12,0$



TOWER


- Timber structure
- Concrete structure
- Steel structure

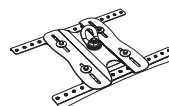

 $Q_s = 15,0$
 $Q_{d2} = 12,0$



TRAPO


- Bearing trapezoidal sheet metal

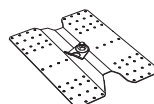

 $Q_s = 13,0$
 $Q_{d2} = 12,0$



SHIELD

- Corrugated sandwich panel / corrugated sheet metal

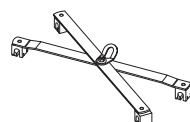

 $Q_s = 13,0$
 $Q_{d2} = 12,0$



SHIELD 2.0


- Corrugated sandwich panel / corrugated sheet metal

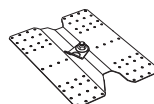

 $Q_s = 15,0$
 $Q_{d2} = 12,0$



SEAMO


- Sheet metal with round crimp

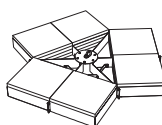

 $Q_s = 13,0$
 $Q_{d2} = 12,0$



COPPO


- Waved sandwich panel


 $Q_s = 13,0$
 $Q_{d2} = 12,0$



BLOCK

- Non-drillable flat roof
- Green roof


 $Q_s = 15,0$
 $Q_{d2} = 12,0$



SIANK FOUR

- Sheet metal with double crimp

SUPPORT FOR AOS01 ON TIMBER, CONCRETE AND STEEL ROOFS



TOWER22500

CODES AND DIMENSIONS

CODE	material	H [mm]	pcs.
TOWER300	S235JR zinc-plated steel	300	1
TOWER400	S235JR zinc-plated steel	400	1
TOWER500	S235JR zinc-plated steel	500	1
TOWER600	S235JR zinc-plated steel	600	1
TOWERA2300	stainless steel 1.4301 / AISI304	300	1
TOWERA2400	stainless steel 1.4301 / AISI304	400	1
TOWERA2500	stainless steel 1.4301 / AISI304	500	1
TOWER22500	S235JR zinc-plated steel	500	1

AOS01 anchor point not included in the package, can be ordered separately.

COMPLEMENTARY PRODUCTS

FASTENERS

n.	TYPE	description	d ₁ [mm]	p _{min} [mm]	p.
8	VGS	screw for timber	9	145	184
4	ULS	washer	10,5	-	192
1	BEF	TOWER fastening kit	9	145	215

n.	TYPE	description	Ø [mm]	p _{min} [mm]	p.
4	AB1	heavy anchor	M12	90	200
4	MGS	threaded rod	M12	90	191
	VIN-FIX PRO	vinylester chemical anchor	-	-	206

ACCESSORIES

CODE	description	p.
AOS01	swivel eyelet	98
TOPLATE	counterplate	43
TOPLATE2	adjustable plate	43
TOWERPEAK	adaptor for double layer ridge piece	40
TOWERSLOPE	Fastening guide for rafter	41
TOWLAT	adaptor for lateral starts	42

TECHNICAL DATA

LABORATORY STRENGTHS

Data	Standard	Value
Q _s	EN 795:2012 - CEN/TS 16415:2013	15 kN
Q _{d2}	EN 795:2012 - CEN/TS 16415:2013	12 kN



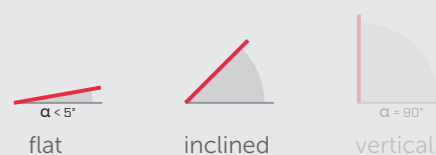
UNI
11578

EN
795/A:2012

CEN/TS
16415:2013



SURFACE INCLINATION



FIELD OF USE

- Min. timber structure: 160 x 160 mm
- Min. concrete structure: 140 mm
- Min. steel structure: 6 mm

SUPPORT FOR AOS01 ON BEARING TRAPEZOIDAL SHEET METAL ROOFS



UNI
11578

EN
795/A:2012

CEN/TS
16415:2013



CODES AND DIMENSIONS

CODE	material	H [mm]	pcs.
TRAPO300	stainless steel 1.4016 - AISI430	300	1
TRAPO500	stainless steel 1.4016 - AISI430	500	1

AOS01 anchor point not included in the package, can be ordered separately.
Fasteners for connection to the pole with the **TRAPO** are included in the package.

COMPLEMENTARY PRODUCTS

FASTENERS

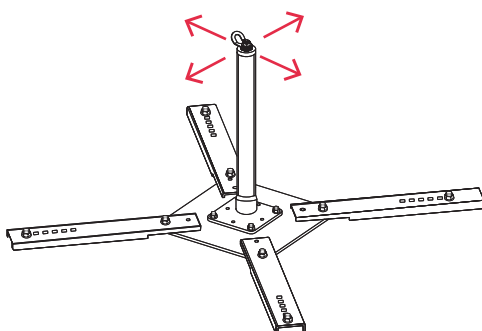
CODE	description
BEFTRAP1	composite set 1
BEFTRAP2	composite set 2

ACCESSORIES

CODE	description	p.
AOS01	swivel eyelet	98

TECHNICAL DATA

LABORATORY STRENGTHS



Data	Standard	Value
Q_s	EN 795:2012 - CEN/TS 16415:2013	15 kN
Q_{d2}	EN 795:2012 - CEN/TS 16415:2013	12 kN



SURFACE INCLINATION



FIELD OF USE

- Bearing trapezoidal sheet metal

SUPPORT FOR AOS01 ON CORRUGATED SHEET METAL ROOFS

UNOBTRUSIVE

The device ensures a reduced visual impact thanks to its small size.

PACKAGING

Supplied complete with mounting rivets and cellular rubber seals for perfect waterproofing.

DESIGN

Non-invasive system with modern lines, for an excellent aesthetic result.



CODES AND DIMENSIONS

CODE	material	B [mm]	L [mm]	pcs.
SHIELD	stainless steel 1.4301 - AISI304	360	476	1

AOS01 anchor point not included in the package, can be ordered separately.
Fasteners are included in the package.

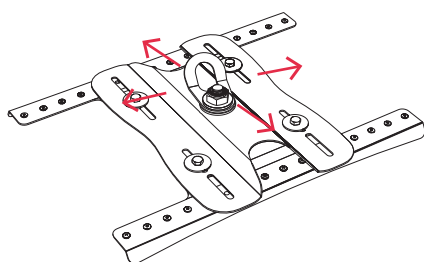
COMPLEMENTARY PRODUCTS

ACCESSORIES

CODE	description	p.
AOS01	swivel eyelet	98

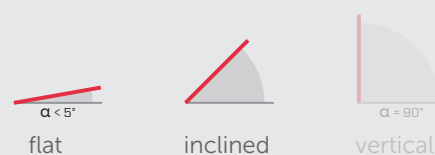
TECHNICAL DATA

LABORATORY STRENGTHS



Data	Standard	Value
Q_s	EN 795:2012 - CEN/TS 16415:2013	13 kN
Q_{d2}	EN 795:2012 - CEN/TS 16415:2013	12 kN

SURFACE INCLINATION



FIELD OF USE

- Corrugated sandwich panel / corrugated sheet metal
 - min. steel: 0,4 mm
 - min. aluminium: 0.6 mm

SHIELD 2.0

SUPPORT FOR AOS01 ON CORRUGATED SHEET METAL ROOFS

FAST

Easy installation because it is configured as a single plate.

COMPLETE

The package includes fasteners and cellular rubber seals, to ensure waterproofing.



CODES AND DIMENSIONS

CODE	material	B [mm]	L [mm]	pcs.
SHIELD2	stainless steel 1.4301 - AISI304	322	420	1

AOS01 anchor point not included in the package, can be ordered separately.
Fasteners are included in the package.

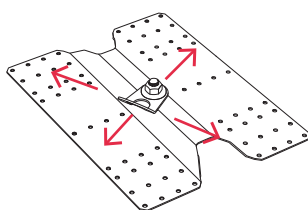
COMPLEMENTARY PRODUCTS

ACCESSORIES

CODE	description	p.
AOS01	swivel eyelet	98

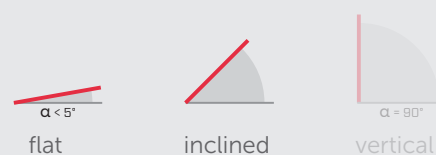
TECHNICAL DATA

LABORATORY STRENGTHS



Data	Standard	Value
Q _s	EN 795:2012 - CEN/TS 16415:2013	13 kN
Q _{d2}	EN 795:2012 - CEN/TS 16415:2013	12 kN

SURFACE INCLINATION



FIELD OF USE

- Corrugated sandwich panel / corrugated sheet metal
 - min. steel: 0,5 mm
 - min. aluminium: 0,7 mm

SUPPORT FOR AOS01 ON SHEET METAL ROOFS WITH ROUND CRIMP

SIMPLE

Fastened to the crimp with four clamps, without the need to make openings in the sheet metal.

ROBUST

Secured on two ends for improved resistance.



CODES AND DIMENSIONS

CODE	material	opening [mm]	pcs.
SEAMO	stainless steel 1.4301 - AISI304	305 - 500	1

AOS01 anchor point not included in the package, can be ordered separately.
Fasteners are included in the package.

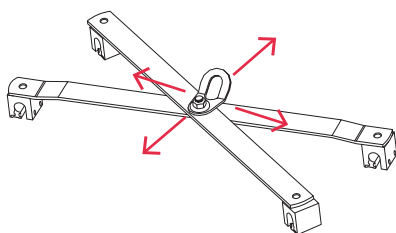
COMPLEMENTARY PRODUCTS

ACCESSORIES

CODE	description	p.
AOS01	swivel eyelet	98

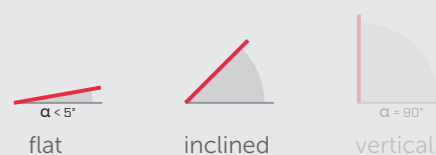
TECHNICAL DATA

LABORATORY STRENGTHS



Data	Standard	Value
Q_s	EN 795:2012 - CEN/TS 16415:2013	15 kN
Q_{d2}	EN 795:2012 - CEN/TS 16415:2013	12 kN

SURFACE INCLINATION



FIELD OF USE

- Sheet metal with round crimp
- min. aluminium: 0,8 mm

SUPPORT FOR AOS01 ON ROOFS WITH FAUX TILES

FAST

Easy installation because it is configured as a single plate.

COMPLETE

The package includes fasteners and cellular rubber seals, to ensure waterproofing.



CODES AND DIMENSIONS

CODE	material	B [mm]	L [mm]	pcs.
COPPO	stainless steel 1.4301 - AISI304	322	420	1

AOS01 anchor point not included in the package, can be ordered separately.
Fasteners are included in the package.

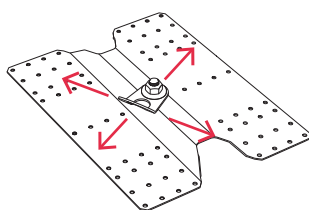
COMPLEMENTARY PRODUCTS

ACCESSORIES

CODE	description	p.
AOS01	swivel eyelet	98

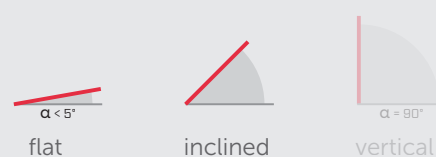
TECHNICAL DATA

LABORATORY STRENGTHS



Data	Standard	Value
Q _s	EN 795:2012 - CEN/TS 16415:2013	13 kN
Q _{d2}	EN 795:2012 - CEN/TS 16415:2013	12 kN

SURFACE INCLINATION



FIELD OF USE

- Waved sandwich panel
 - min. steel: 0,5 mm
 - min. aluminium: 0,7 mm

SUPPORT FOR AOS01 WITH BALLAST

FLAT ROOFS

Designed for flat roofs with inclines up to 5°.

UNOBTRUSIVE

System which does not require the roofing to be drilled, thereby preventing thermal bridges and ensuring the structure waterproofing.

PACKAGING

Extremely compact packaging that takes up little space.



CODES AND DIMENSIONS

CODE	material	r [mm]	pcs.
BLOCK	stainless steel 1.4301 - AISI304	940	1

AOS01 anchor point not included in the package, can be ordered separately.

Cement slab (500 x 500 mm) for ballast not included in the package.

Mats included in the box.

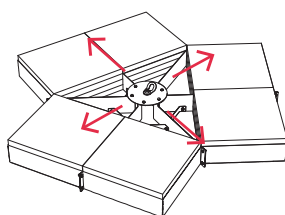
COMPLEMENTARY PRODUCTS

ACCESSORIES

CODE	description	p.
AOS01	swivel eyelet	98

TECHNICAL DATA

LABORATORY STRENGTHS



Data	Standard	Value
Q_s	EN 795:2012 - CEN/TS 16415:2013	13 kN
Q_{d2}	EN 795:2012 - CEN/TS 16415:2013	12 kN



SURFACE INCLINATION



FIELD OF USE

- Non-drillable flat roof
- Green roof

SIANK FOUR

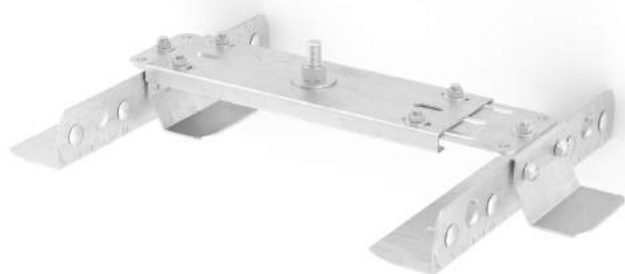
SUPPORT FOR AOS01 ON SHEET METAL ROOFS WITH DOUBLE CRIMPS

ROBUST

Secured on two ends for improved resistance.

PERFORMING

Up to four workers can be attached.



CODES AND DIMENSIONS

CODE	material	opening [mm]	pcs.
SIANK4	stainless steel 1.4301 - AISI304	430 - 600	1

AOS01 anchor point not included in the package, can be ordered separately.

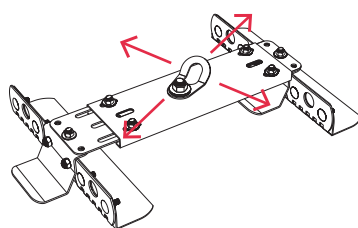
COMPLEMENTARY PRODUCTS

ACCESSORIES

CODE	description	p.
AOS01	swivel eyelet	98

TECHNICAL DATA

LABORATORY STRENGTHS



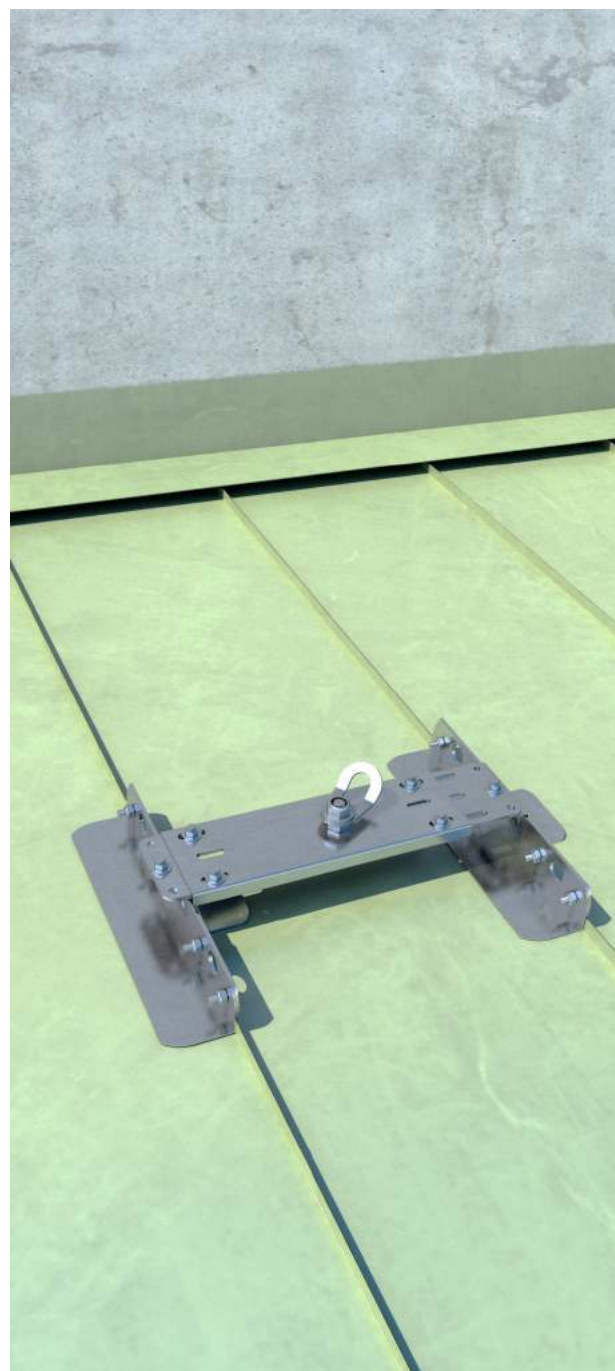
Data	Standard	Value
Q_s	EN 795:2012 - CEN/TS 16415:2013	15 kN
Q_{d2}	EN 795:2012 - CEN/TS 16415:2013	12 kN



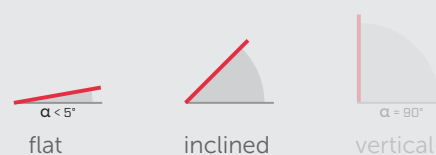
UNI
11578

EN
795/A:2012

CEN/TS
16415:2013



SURFACE INCLINATION



FIELD OF USE

- Sheet metal with double crimp
 - min. steel: 0,5 mm
 - min. aluminium: 0,7 mm
 - min. copper: 0,5 mm
 - min. zinc - titanium: 0,65 mm

ANCHOR POINT

EFFICIENT

The system is secured to one edge of the sheet metal only.

UNOBTRUSIVE

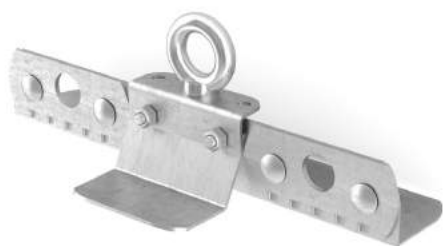
Fastened to the crimp with four clamps, without the need to make openings in the sheet metal.

COMPLETE

The eyelet is included in the package.

EFFECTIVE

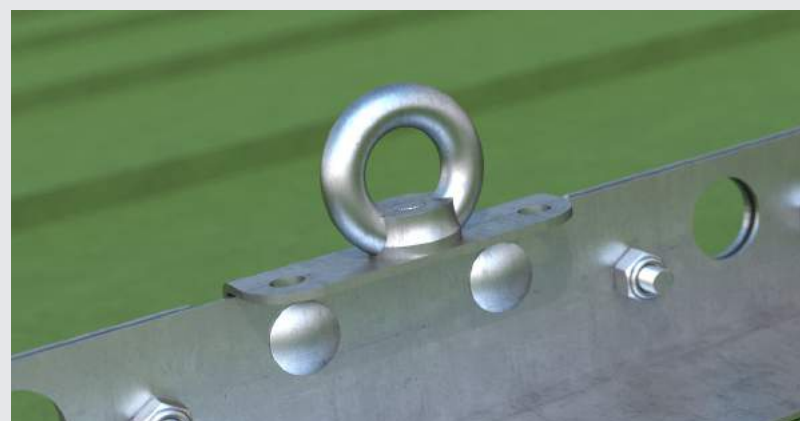
The anchoring point can support two workers, due to the strength of just the fastening claps.



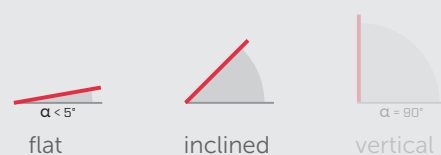
CODES AND DIMENSIONS

CODE	material	L [mm]	B [mm]	pcs.
SIANK	stainless steel 1.4301 - AISI304	400	163	1

Eyelet included in the package.



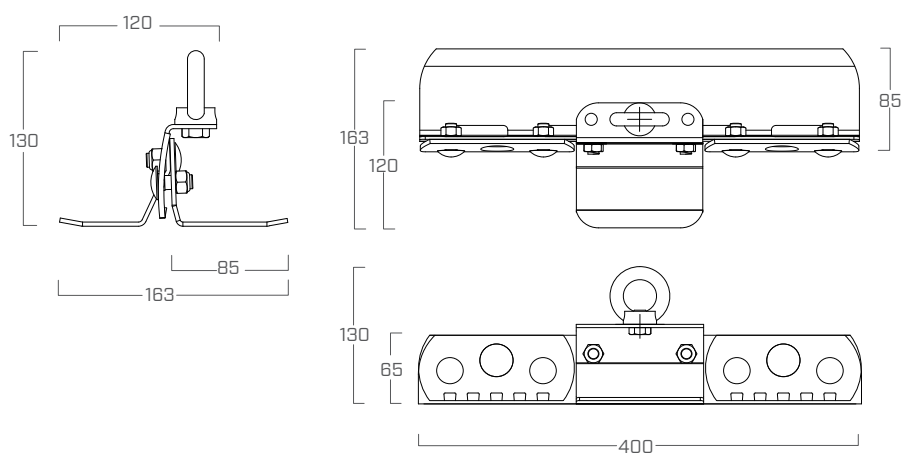
SURFACE INCLINATION



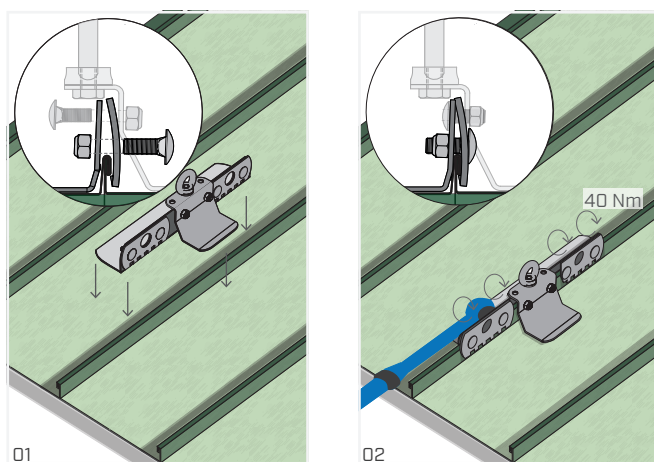
FIELD OF USE

- Sheet metal with double crimp
 - min. steel: 0,4 mm
 - min. aluminium: 0,5 mm
 - min. copper: 0,5 mm
 - min. zinc - titanium: 0,7 mm

■ GEOMETRY



■ APPLICATION INSTRUCTIONS

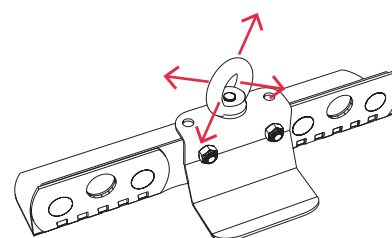


For more information about product installation, please see the corresponding manual.

■ TECHNICAL DATA

LABORATORY STRENGTHS

Data	Standard	Value
Q_s	EN 795:2012 - CEN/TS 16415:2013	13 kN
Q_{d2}	EN 795:2012 - CEN/TS 16415:2013	12 kN



HOOK EVO 2.0

ANCHOR POINT

UNOBTRUSIVE

Under-tile fastening ensures a low visual impact in the roofing, for an aesthetically satisfactory result.

FLEXIBLE

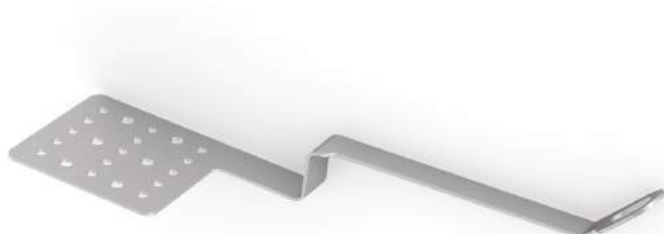
Fast, simple installation. The base plate with an increased number of holes allows the anchor to be mounted in different positions, depending on the type of roof tiles.

COMPLETE RANGE

Available in 3 heights to match the thickness of insulation, joists and tiles on any timber or concrete roof.

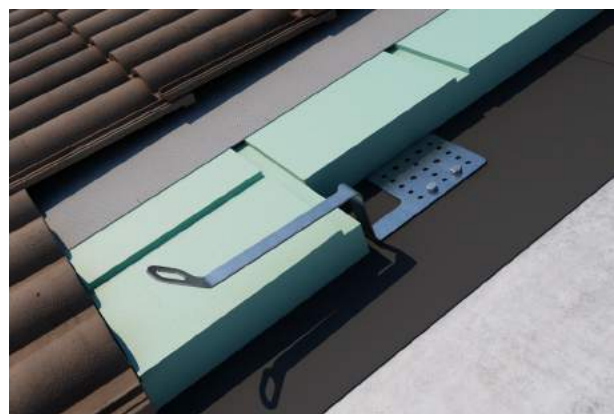
VERSATILE

The fastening hole configuration has been optimised to allow the device to be installed even on concrete structures.



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CODES AND DIMENSIONS

CODE	material	H [mm]	pcs.
HOOKEVO20	stainless steel 1.4301 - AISI304	20	5
HOOKEVO50	stainless steel 1.4301 - AISI304	50	5
HOOKEVO100	stainless steel 1.4301 - AISI304	100	5

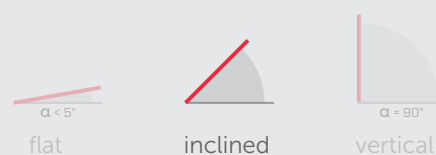
COMPLEMENTARY PRODUCTS

FASTENING

n.	TYPE	description	d ₁ [mm]	p _{min} [mm]	p.
3	HBS	screw for timber	8	80	180
2	SKR	screw anchor	10	65	194

n.	TYPE	description	Ø [mm]	p _{min} [mm]	p.
2	AB1	heavy anchor	M10	60	200
2	MGS	threaded rod	M10	80	191
	VIN-FIX PRO	vinylester chemical anchor	-	-	206

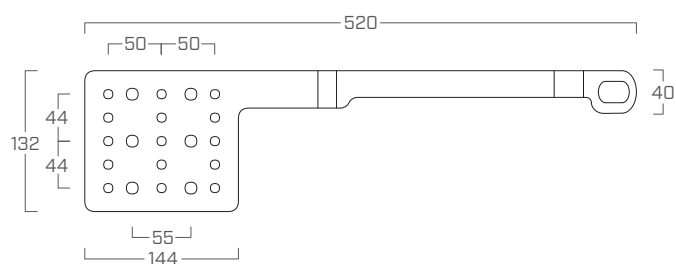
SURFACE INCLINATION



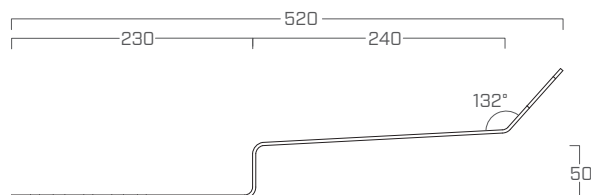
FIELD OF USE

- Min. timber structure: 80 x 100 mm
- Min. concrete structure: 120 mm

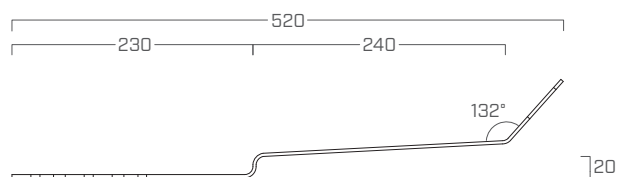
GEOMETRY



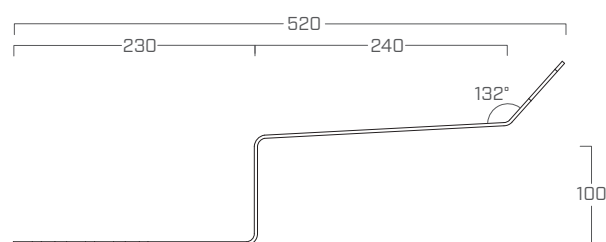
HOOKEV050



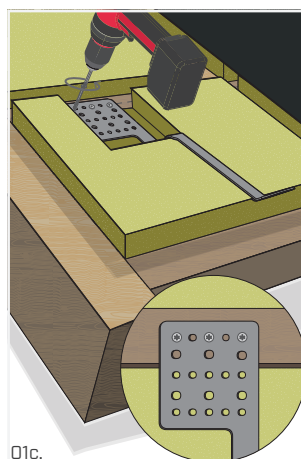
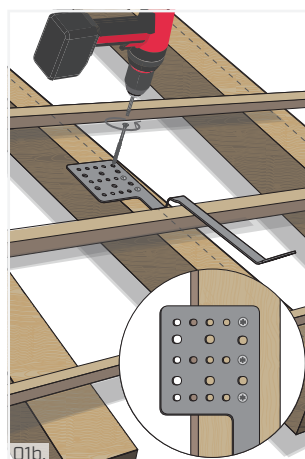
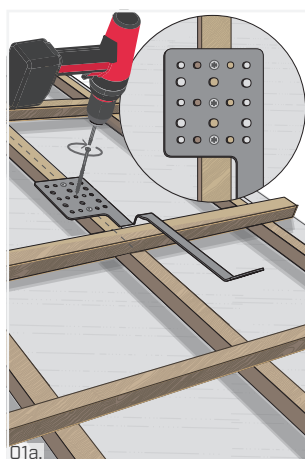
HOOKEV020



HOOKEV0100



APPLICATION INSTRUCTIONS

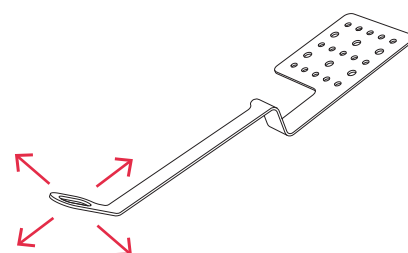


For more information about product installation, please see the corresponding manual.

TECHNICAL DATA

LABORATORY STRENGTHS

Data	Standard	Value
Q_s	EN 795:2012	12 kN
Q_{d2}	EN 795:2012	9 kN



ANCHOR POINT

UNOBTRUSIVE

Under-tile fastening ensures a low visual impact in the roofing, for an aesthetically satisfactory result.

FLEXIBLE

Fast, simple installation. The base plate with an increased number of holes allows the anchor to be mounted in different positions, depending on the type of roof tiles.

SAFE

Made from a single piece with no welding points, it is certified for applying force in all directions (360°).

MINIMUM SECTION

Optimised proportions for safe application on min. 100 x 100 mm timber joists.



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CODES AND DIMENSIONS

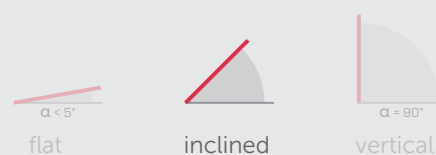
CODE	material	L [mm]	pcs.
HOOKEVO	stainless steel 1.4016 - AISI430	490	5

COMPLEMENTARY PRODUCTS

FASTENING

n.	TYPE	description	d ₁ [mm]	p _{min} [mm]	p.
3	HBS	screw for timber	8	80	180

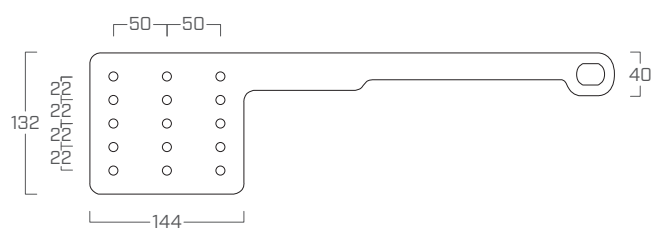
SURFACE INCLINATION



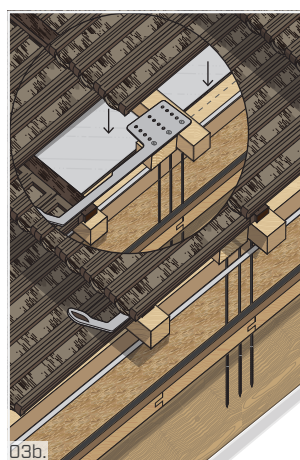
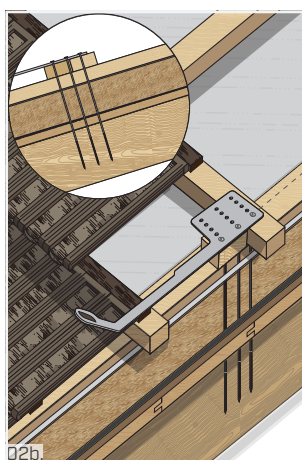
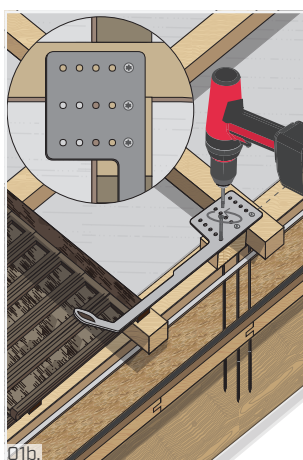
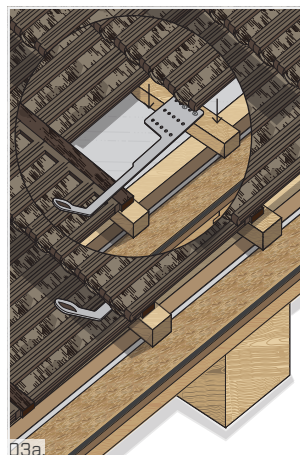
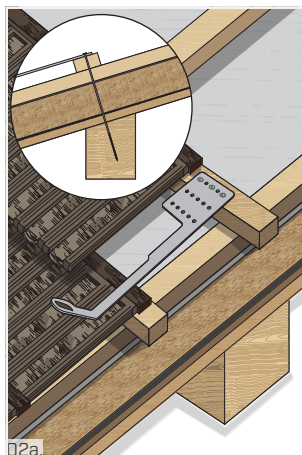
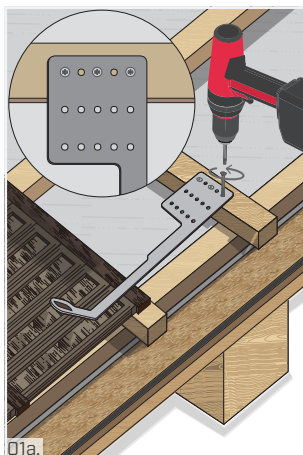
FIELD OF USE

- Min. timber structure: 100 x 100 mm

GEOMETRY



APPLICATION INSTRUCTIONS

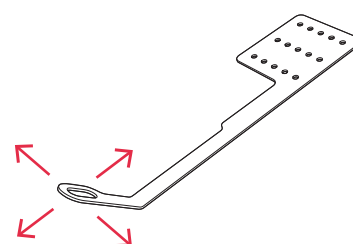


For more information about product installation, please see the corresponding manual.

TECHNICAL DATA

LABORATORY STRENGTHS

Data	Standard	Value
Q _s	EN 795:2012	12 kN
Q _{d2}	EN 795:2012	9 kN



ANCHOR POINT

COMPLETE RANGE

Available in 3 different heights to match the thickness of any timber or concrete insulation.

SAFE

Made from a single piece with no welding points, it is certified for applying force in all directions (360°).

AESTHETICS

Under-tile fastening ensures a low visual impact on the roofing.

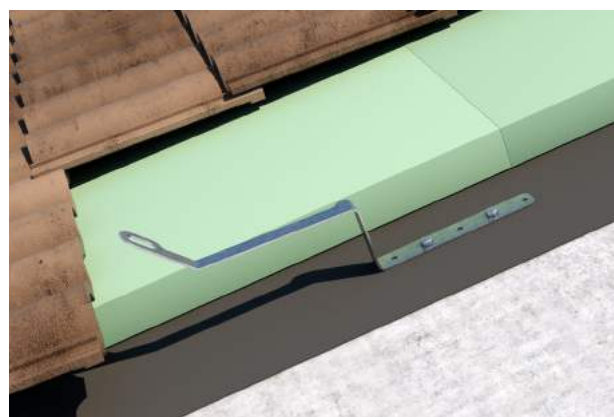
TIMBER AND CONCRETE

The fastening hole special shape has been optimised to allow the device to be mounted even on concrete structures.



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CODES AND DIMENSIONS

CODE	material	H [mm]	pcs.
HOOK20	stainless steel 1.4016 - AISI430	20	10
HOOK50	stainless steel 1.4016 - AISI430	50	10
HOOK100	stainless steel 1.4016 - AISI430	100	10

COMPLEMENTARY PRODUCTS

FASTENING

n.	TYPE	description	d ₁ [mm]	p _{min} [mm]	p.
3	HBS	screw for timber	8	80	180
2	SKR	screw anchor	10	100	194

n.	TYPE	description	Ø [mm]	p _{min} [mm]	p.
2	AB1	heavy anchor	M10	90	200
2	MGS	threaded rod	M10	70	191
	VIN-FIX PRO	vinylester chemical anchor	-	-	206

ACCESSORIES

CODE	description	p.
PALMIFIX	fixed counterplate	124
OMEGA	accessory for PALMIFIX	124

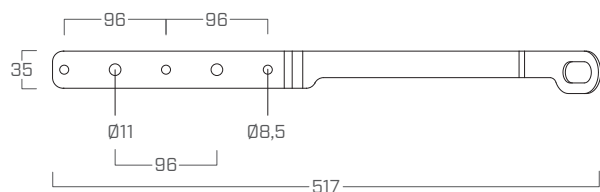
SURFACE INCLINATION



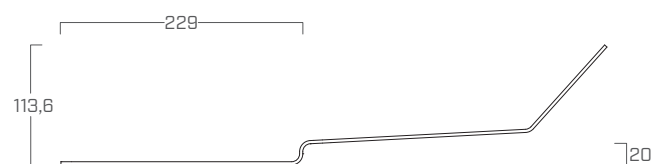
FIELD OF USE

- Min. timber structure: 80 x 100 mm
- Min. concrete structure: 100 mm

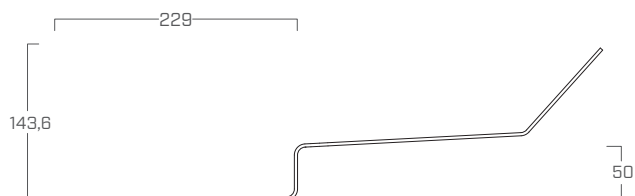
GEOMETRY



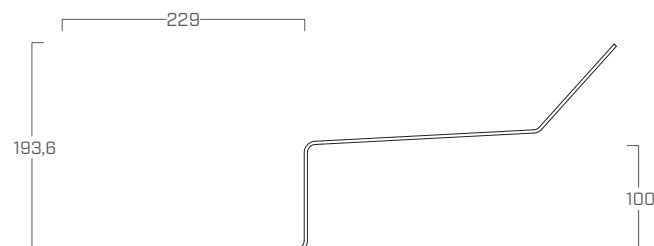
HOOK20



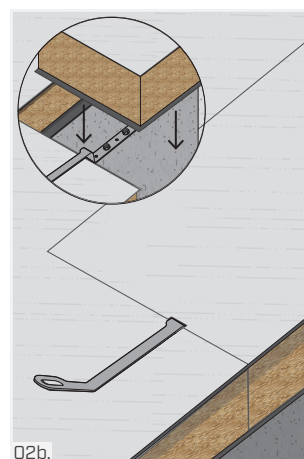
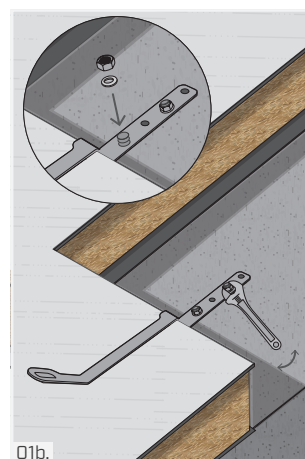
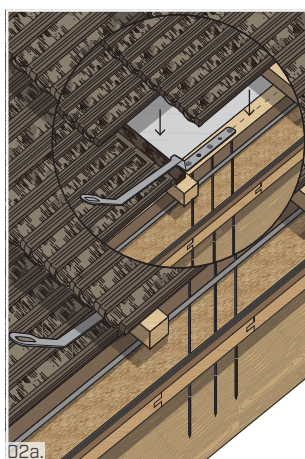
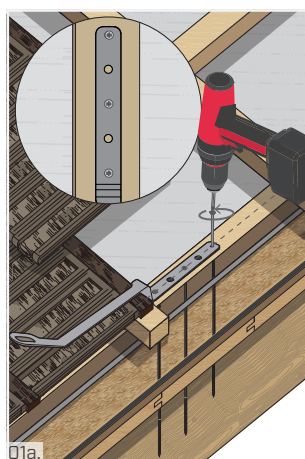
HOOK50



HOOK100



APPLICATION INSTRUCTIONS

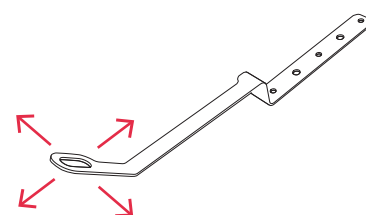


For more information about product installation, please see the corresponding manual.

TECHNICAL DATA

LABORATORY STRENGTHS

Data	Standard	Value
Q_s	EN 795:2012	13 kN
$Q_{d2}^{(1)}$	EN 795:2012	12 kN



NOTES:

¹Dynamic force applied following a 100-kg mass fall from 2,5 m

LOOP - LOOP XL

ANCHOR POINT

UNOBTRUSIVE

Under-tile fastening ensures a low visual impact, ideal for installation on roofs in historic centres.

FAST

Fast and easy installation, with just two screws.

VERSATILE

When used in combination with the KRAKEN, LOOP or LOOPXL device, they can also be installed on masonry roofs with 40 mm concrete slab.



LOOP - LOOP XL

KRAKEN



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CODES AND DIMENSIONS

CODE	material	B [mm]	L [mm]	pcs.
LOOP	stainless steel 1.4404 - AISI316	-	456	5
LOOPXL	stainless steel 1.4404 - AISI316	-	756	1
KRAKEN	stainless steel 1.4016 IIA - AISI430	116	100	1

KRAKEN complete with hardware for connection with LOOP and LOOPXL

COMPLEMENTARY PRODUCTS

FASTENING

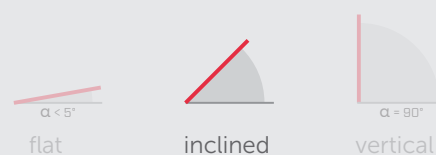
n.	TYPE	description	d ₁ [mm]	p _{min} [mm]	p.
2	HBS	screw for timber	8	80	180

n.	TYPE	description	Ø [mm]	p _{min} [mm]	p.
4	MGS	threaded rods	M8	64	191
	VIN-FIX PRO	vinylester chemical anchor	-	-	206

ACCESSORIES

CODE	description	p.
PALMIFIX	fixed counterplate	124
OMEGA	accessory for PALMIFIX	124

SURFACE INCLINATION

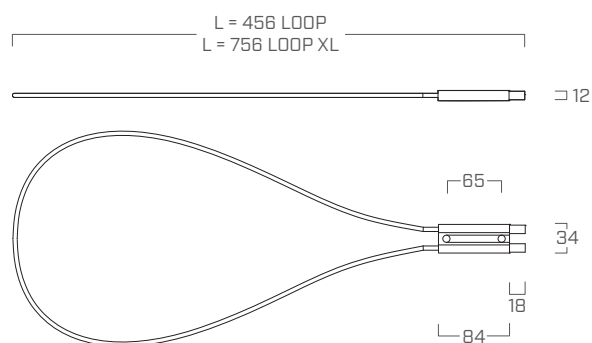


FIELD OF USE

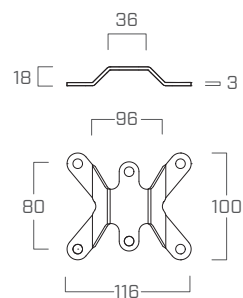
- Min. timber structure: 100 x 100 mm
- Min. concrete structure: 100 mm
- Masonry structure with slab in cls min: 40 mm

GEOMETRY

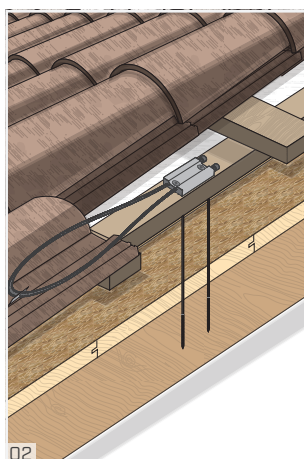
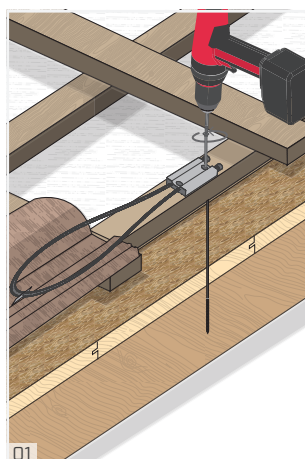
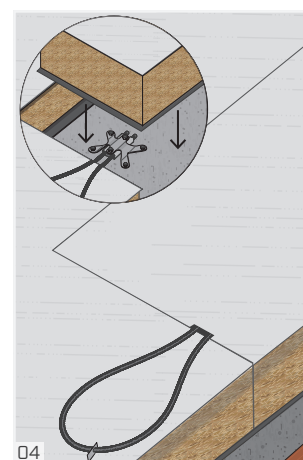
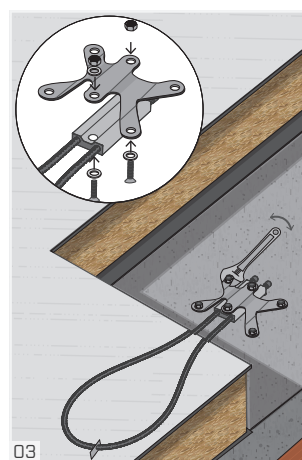
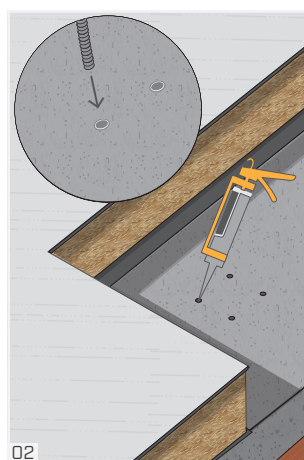
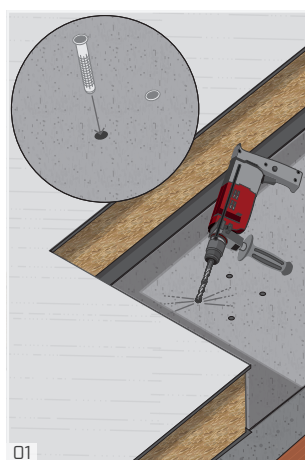
LOOP - LOOP XL



KRAKEN



APPLICATION INSTRUCTIONS

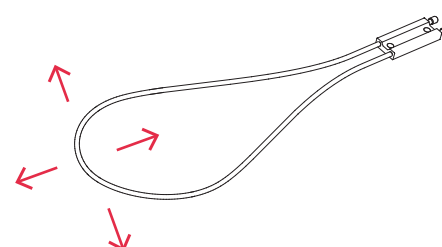


For more information about product installation, please see the corresponding manual.

TECHNICAL DATA

LABORATORY STRENGTHS

Data	Standard	Value
Q_s	EN 795:2012	12 kN
Q_{d2}	EN 795:2012	9 kN



ANCHOR POINT FOR SMALL STRUCTURES

FLEXIBLE

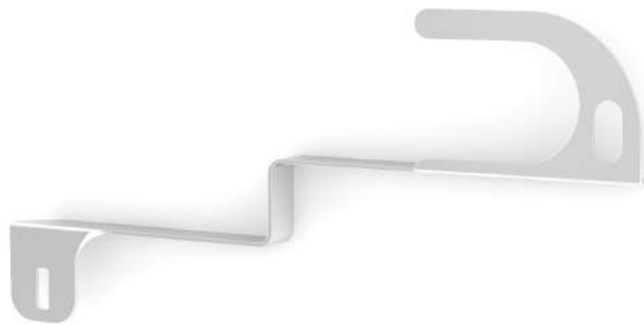
Can be installed on small beams, with minimum dimensions of 38 x 68 mm with no limits on maximum width.

MULTIPURPOSE

Can be used as single points or as a hook for ladders.

UNIVERSAL

With the assistance of the BEFSLIM2 adaptor, the device can be installed on substructures with offsetting of 60 mm to 140 mm between the element to which it is fastened and the roof exit point.



CODES AND DIMENSIONS

CODE	material	pcs.
SLIM	stainless steel 1.4016 - AISI430	5

COMPLEMENTARY PRODUCTS

FASTENING

n.	TYPE	description	p.
1	BEF	SLIM fastening kit	215
1	BEF	SLIM adjustable fastening kit	215

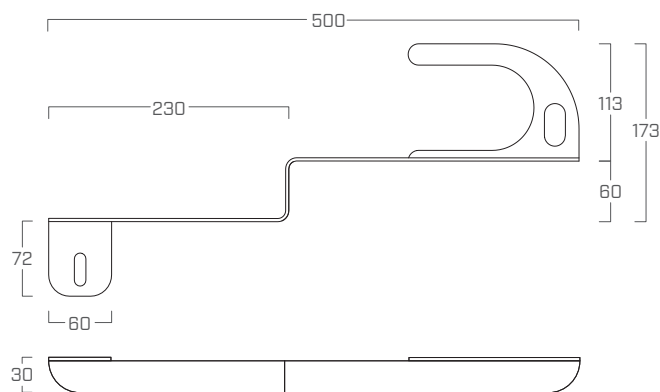
SURFACE INCLINATION



FIELD OF USE

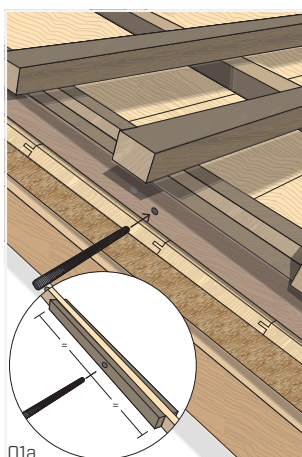
- Min. timber structure: 114 (38 + 38 + 38) x 68 mm

GEOMETRY

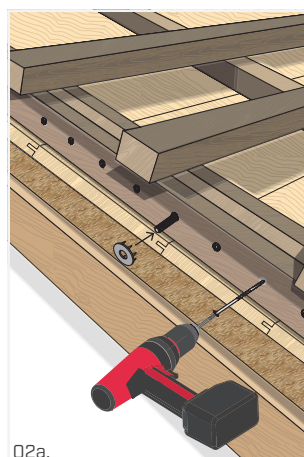


APPLICATION INSTRUCTIONS

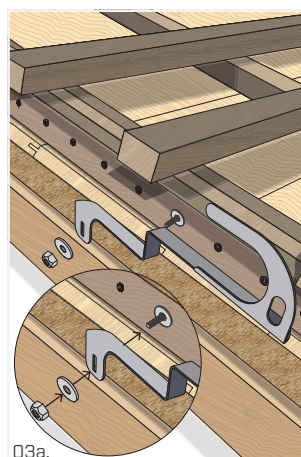
SLIM + BEFSLIM1



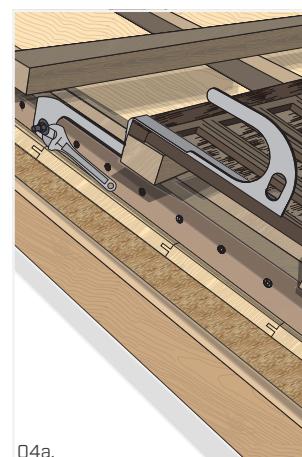
01a.



02a.

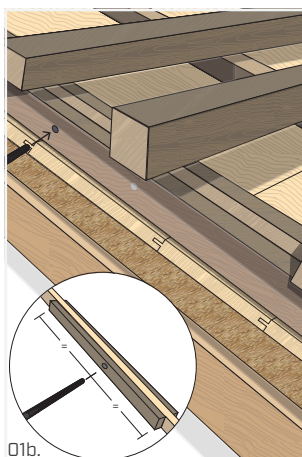


03a.

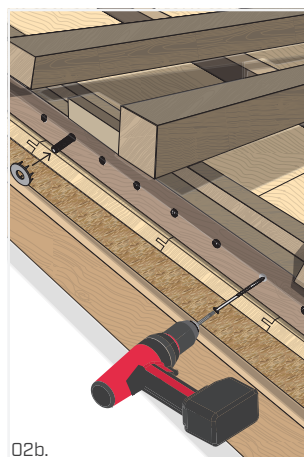


04a.

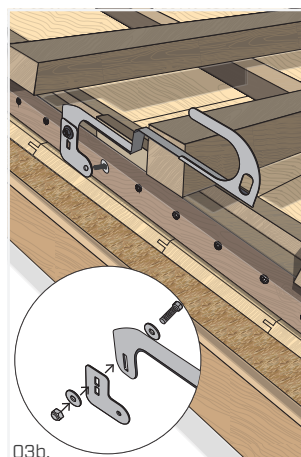
SLIM + BEFSLIM2



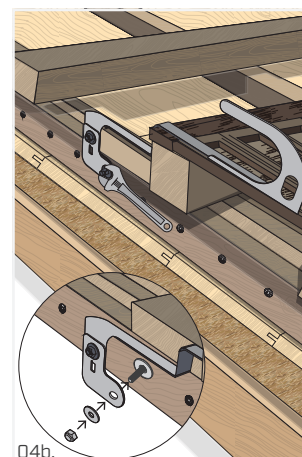
01b.



02b.



03b.



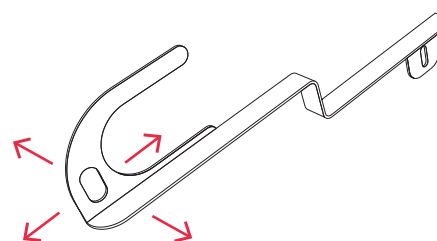
04b.

For more information about product installation, please see the corresponding manual.

TECHNICAL DATA

LABORATORY STRENGTHS

Data	Standard	Value
Q_s	EN 795:2012	12 kN
Q_{d2}	EN 795:2012	9 kN



ANCHOR POINT

PRACTICAL

Thanks to its lightweight and compact size, this anchor can be installed quickly and easily.

SAFE

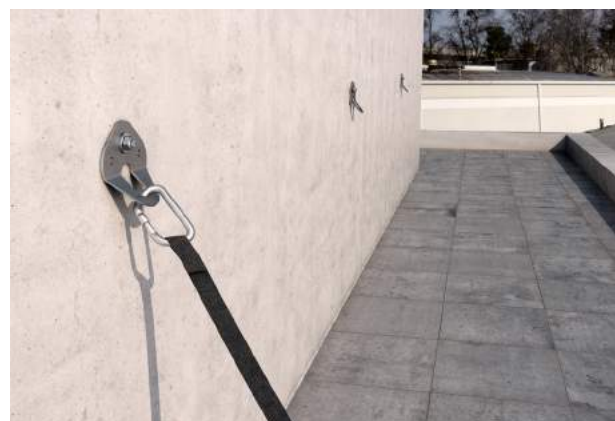
Laser cut from a single piece with no welding points, it improves safety in all its applications.

VERSATILE

Ideal as an anchor point in multiple environments, it allows the operator to safely access.

UNIVERSAL

Flexible in its applications, it can be installed on timber, concrete and steel structures.



CODES AND DIMENSIONS

CODE	material	B [mm]	L [mm]	pcs.
KITE	stainless steel 1.4016 - AISI430	101	100	1

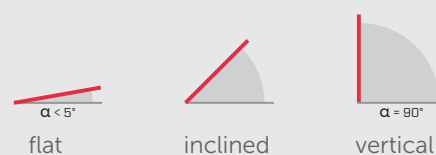
COMPLEMENTARY PRODUCTS

FASTENING

n.	TYPE	description	d ₁ [mm]	p _{min} [mm]	p.
2	HBS	screw for timber	8	100	180
1	VGS	screw for timber	11	100	184
1	BEF	KITE fastening kit	8 / 11	100	215

n.	TYPE	description	Ø [mm]	p _{min} [mm]	p.
1	AB1	heavy anchor	M12	90	200
1	MGS	threaded rod	M12	-	191
	VIN-FIX PRO	vinylester chemical anchor	-	-	206
1	BOLT	bolt	M12	-	-

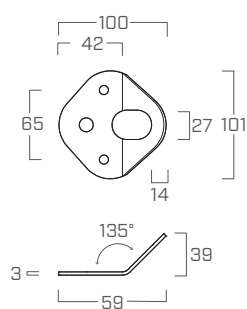
SURFACE INCLINATION



FIELD OF USE

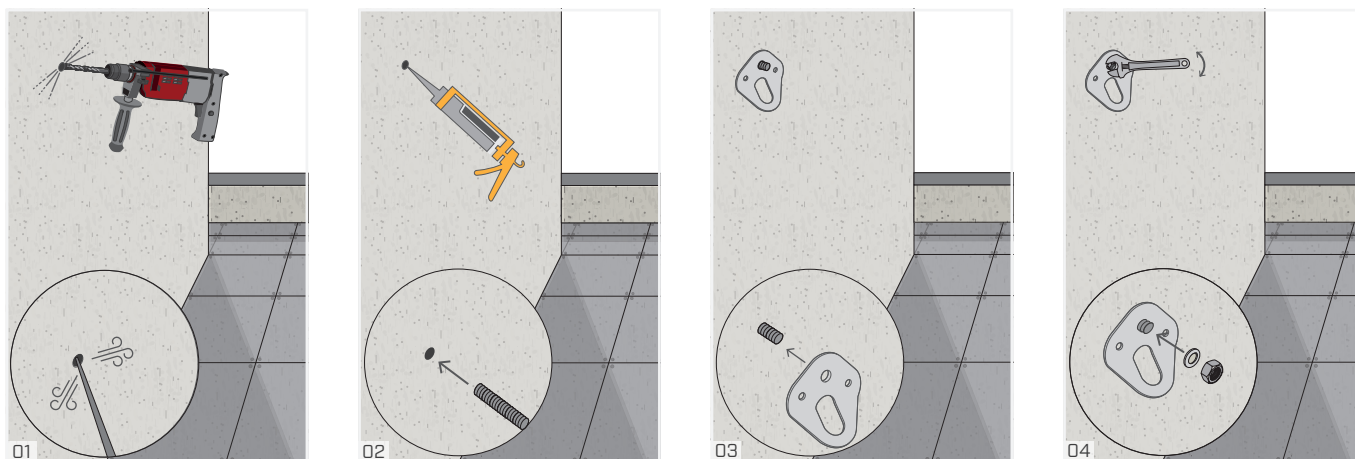
- Min. timber structure: 100 x 100 mm
- Min. concrete structure: 140 mm
- Min. steel structure: 5 mm

GEOMETRY



1 hole Ø13 mm for fastening on concrete and steel
 2 holes Ø9 mm + 1 hole Ø13 mm for fastening on timber

APPLICATION INSTRUCTIONS

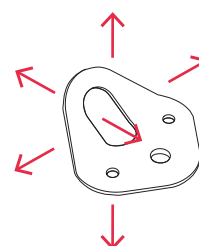


For more information about product installation, please see the corresponding manual.

TECHNICAL DATA

LABORATORY STRENGTHS

Data	Standard	Value
Q_s	EN 795:2012	12 kN
Q_{d2}	EN 795:2012	9 kN



ANCHOR POINT

FUNCTIONAL

The 360° swivel eyelet allows the operator total freedom of movement.

COMPLETE

Supplied in a handy kit complete with bolts and washers for installation.

UNIVERSAL

The threaded rod available in various lengths allows the anchor to adapt to any type of timber, concrete and steel structure.

VERSATILE

Ideal as an anchor point in multiple environments, it allows the operator to safely access roofs and terraces.



CODES AND DIMENSIONS

CODE	material	H [mm]	H ₁ [mm]	pcs.
AOS50	stainless steel 1.4301 - AISI304	80	29	1
AOS130	stainless steel 1.4301 - AISI304	175	135	1
AOS200	stainless steel 1.4301 - AISI304	250	166	1
AOS300	stainless steel 1.4301 - AISI304	350	266	1
AOS400	stainless steel 1.4301 - AISI304	450	366	1
AOS500	stainless steel 1.4301 - AISI304	550	466	1

COMPLEMENTARY PRODUCTS

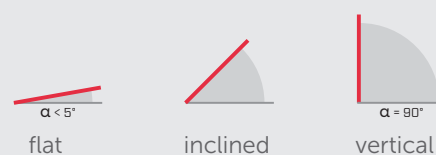
FASTENING

TYPE	description	Ø [mm]	p.
VIN-FIX PRO	vinylester chemical anchor	M16	206

ACCESSORIES

CODE	description	p.
PALMIFIX	fixed counterplate	124
OMEGA	accessory for PALMIFIX	124

SURFACE INCLINATION

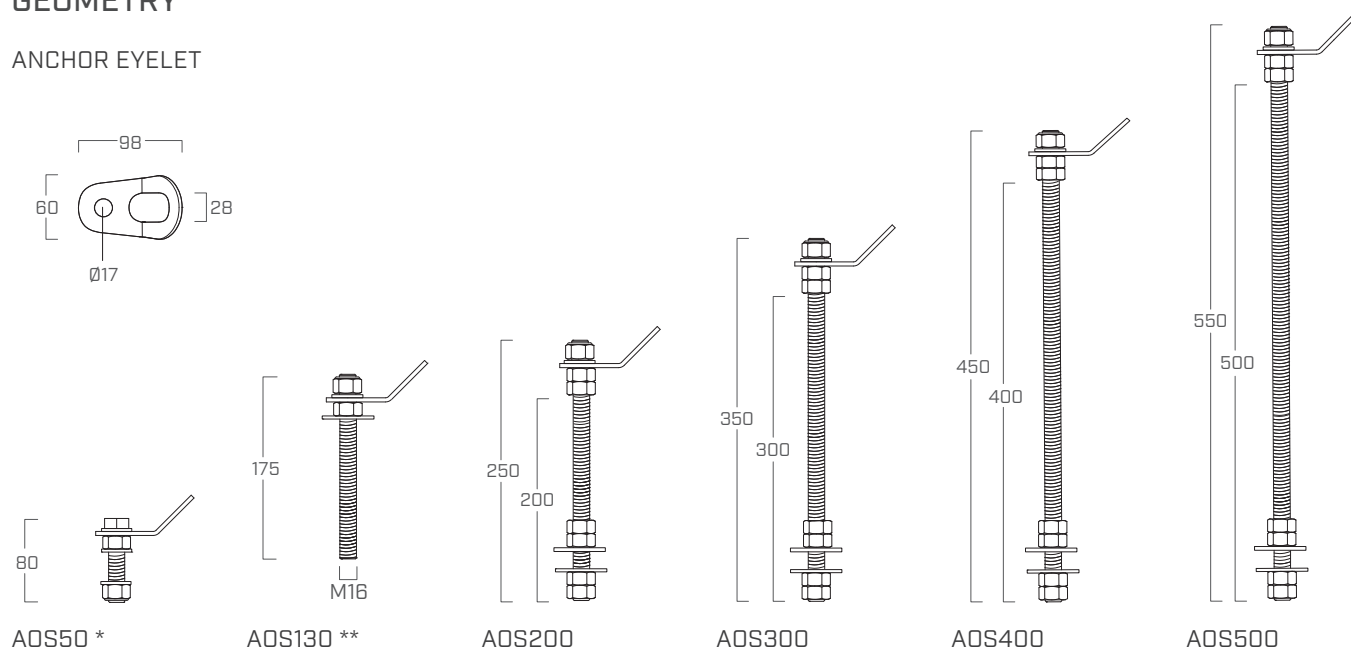


FIELD OF USE

- Min. timber structure: 100 x 120 mm
- Min. concrete structure: 164 mm
- Min. steel structure: 5 mm

GEOMETRY

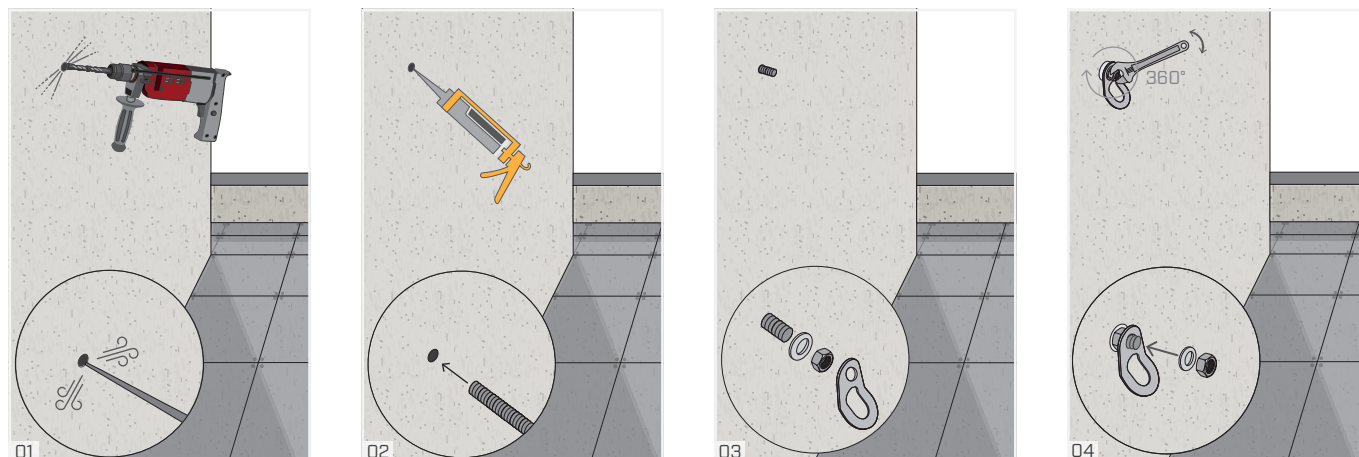
ANCHOR EYELET



* recommended for use on steel

** recommended for use on concrete, combined with a chemical anchor

APPLICATION INSTRUCTIONS

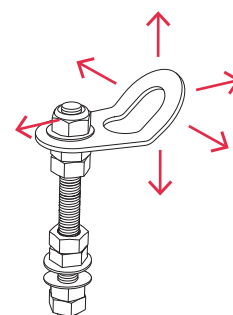


For more information about product installation, please see the corresponding manual.

TECHNICAL DATA

LABORATORY STRENGTHS

Data	Standard	Value
Q_s	EN 795:2012	14 kN
Q_{d1}	EN 795:2012	12 kN



PALMIFIX



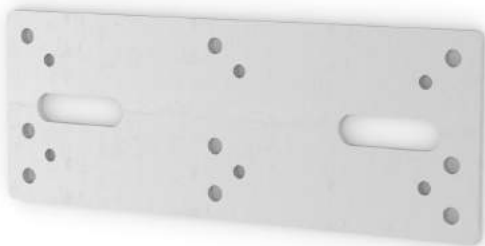
UNIVERSAL COUNTERPLATE FOR HOOK, LOOP AND AQS

UNIVERSAL

System suitable for the application of multiple devices.

VERSATILE

Suitable for application on structures that require special precautions or with sections different from those indicated in the manuals.



PALMIFIX



OMEGA



CODES AND DIMENSIONS

CODE	material	B [mm]	L [mm]	H [mm]	s [mm]	pcs.
PALMIFIX	S235JR zinc-plated steel	350	130	-	6	1
OMEGA	S235JR zinc-plated steel	290	80	68	8	1

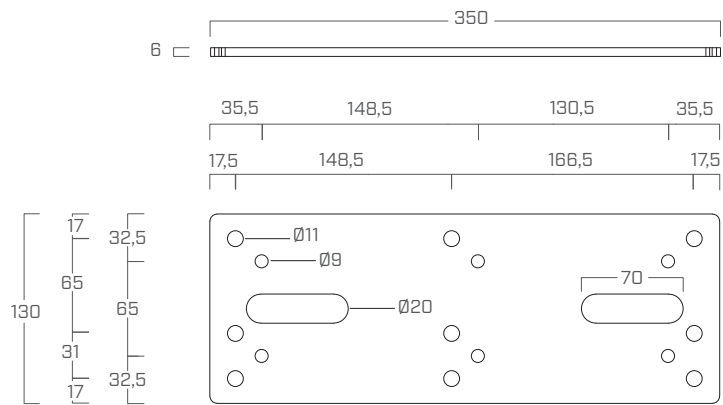
Bolts for fastener not included.

COMPLEMENTARY PRODUCTS

FASTENING

TYPE	description	Ø [mm]	p.
MGS	threaded rod	M12	191
ULS - MUT	washer - nut	M12	192

GEOMETRY



SURFACE INCLINATION



FIELD OF USE

- Timber structure
- Concrete structure
- Steel structure

WING

ANCHOR POINT FOR WORK AT HEIGHT AND IN SUSPENSION



CODES AND DIMENSIONS

CODE	material	anchor system	pcs.
WING	stainless steel	M16	1



WING 2

ANCHOR POINT FOR WORK AT HEIGHT



CODES AND DIMENSIONS

CODE	material	anchor system	pcs.
WING2	stainless steel - AISI304	M12	1



ANCHOR SUPPORT SYSTEM

FAST INSTALLATION

The system consists of few components that facilitate and speed up mounting.

FUNCTIONAL

Support system which does not require the roofing to be drilled, thereby preventing thermal bridges and ensuring the structure waterproofing.

UNOBTRUSIVE

The device ensures a low visual impact in the roofing, for an aesthetically satisfactory result.

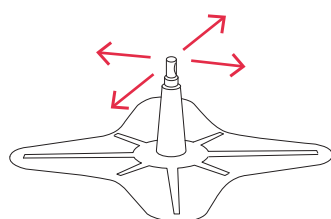


CODES AND DIMENSIONS

CODE	description	material	pcs.
DD01	anchor device	stainless steel	1
DD03	fall protection mat with cone	glass fibre reinforced plastic (GFRP)	1

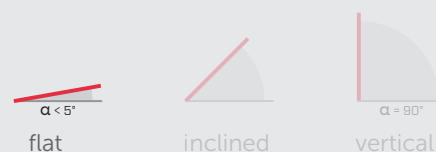
TECHNICAL DATA

LABORATORY STRENGTHS



Data	Standard	> 80 kg/m ²	> 200 kg/m ²
Q _s	EN 795:2012 - CEN/TS 16415:2013	12 kN	13 kN
Q _{d2}	EN 795:2012 - CEN/TS 16415:2013	9 kN	12 kN

SURFACE INCLINATION



FIELD OF USE

- Green roof

MOBILE ANCHOR POINT

REMOVABLE

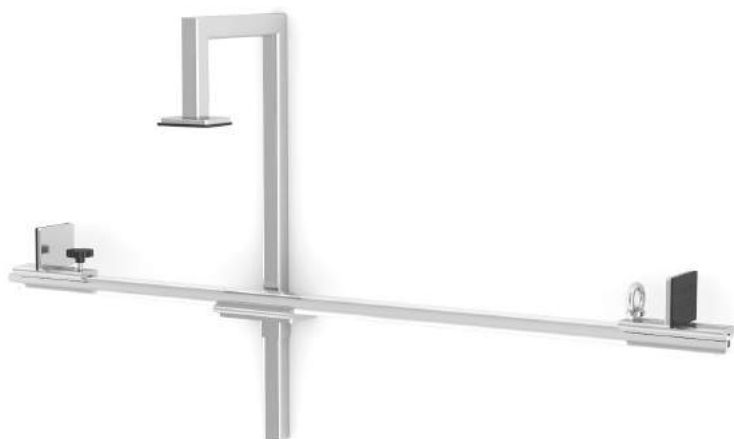
It can be assembled and disassembled easily and quickly, to safely ensure temporary access to the roofing.

ADJUSTABLE

Allows you to choose a temporary installation point in complete freedom.

FUNCTIONAL

It can be temporarily installed on doors, windows and inclined skylights, with no structural damage.



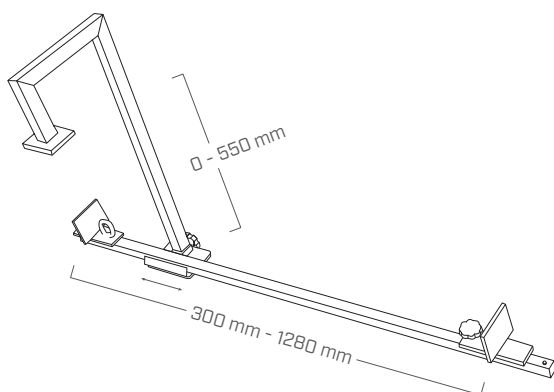
EN
795 - B



CODES AND DIMENSIONS

CODE	material	L [mm]	B [mm]	H [mm]	kg	pcs.
MOBILE	EE30 aluminium	1450	122	100	3,2	1

TECHNICAL DATA



SURFACE INCLINATION



FIELD OF USE

- Roof windows and skylights
- Doors



ANCHOR FOR STEEL STRUCTURES



EN
795 - A



CODES AND DIMENSIONS

CODE	material	weight [kg]	pcs.
ROD	stainless steel	2,5	1



SLIDING ANCHOR FOR STEEL STRUCTURES



EN
795 - B



CODES AND DIMENSIONS

CODE	material	weight [kg]	pcs.
CARRIER	galvanised steel	5,2	1

COLLECTIVE PROTECTION AND ACCESSES

COLLECTIVE PROTECTION AND ACCESSES

COLLECTIVE PROTECTION AND ACCESSES

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railing for horizontal edges 175

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universal railing with stem 175

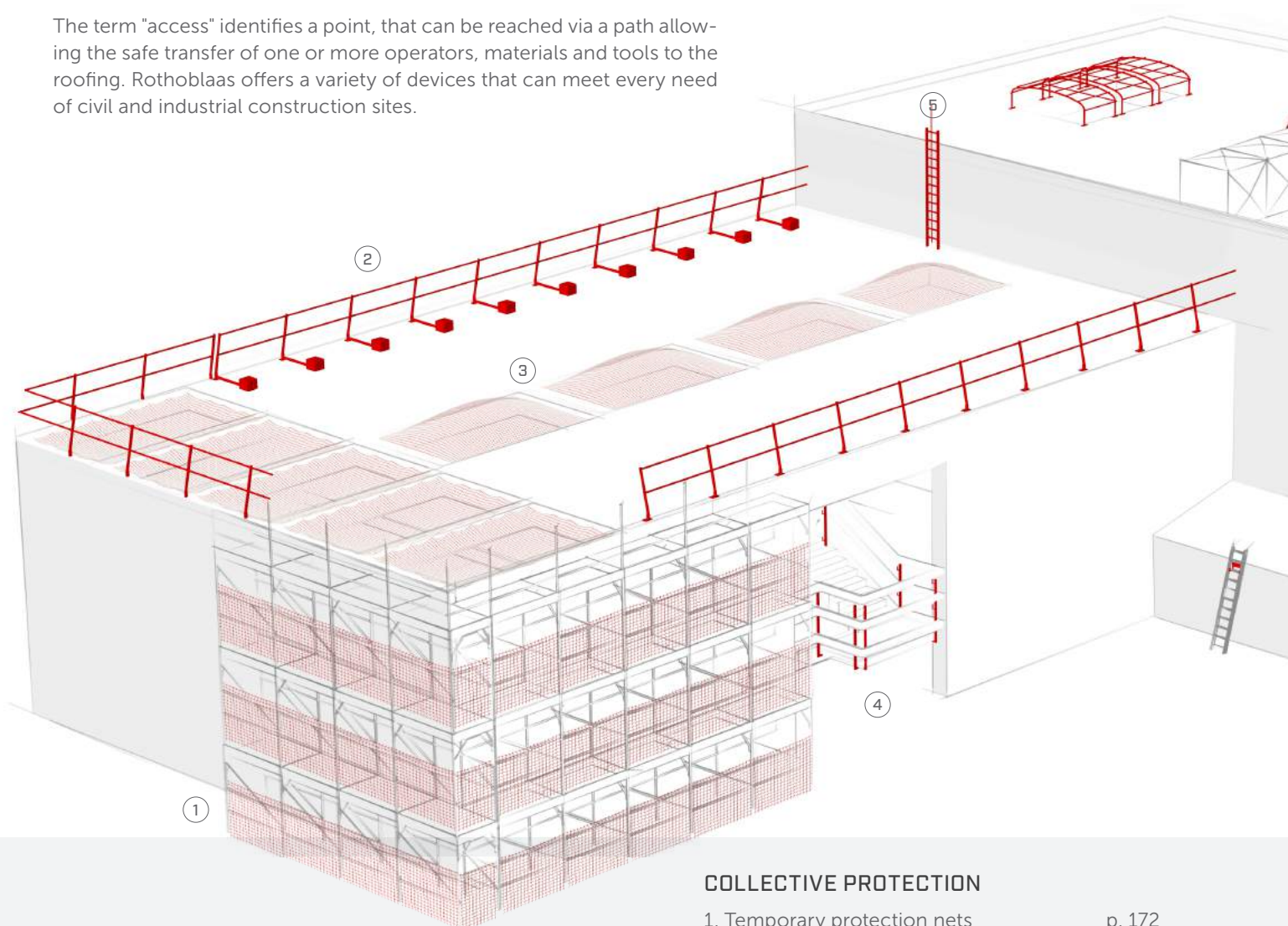
COLLECTIVE PROTECTION AND ACCESSSES

COLLECTIVE PROTECTION

Collective Protective Equipment (CPE) are aimed at safeguarding people's health and safety. The use of CPE should be seen as a priority with respect to the use of Personal Protective Equipment (PPE). There are different types of product, according to the needs of the construction site.

ACCESSES

The term "access" identifies a point, that can be reached via a path allowing the safe transfer of one or more operators, materials and tools to the roofing. Rothoblaas offers a variety of devices that can meet every need of civil and industrial construction sites.



FIND THE
PRODUCT

COLLECTIVE PROTECTION

- | | |
|-------------------------------|--------|
| 1. Temporary protection nets | p. 172 |
| 2. Permanent railing barriers | p. 134 |
| 3. Skylight nets | p. 166 |
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ACCESSES

- | | |
|-----------------------------|--------|
| 6. Overpass walkway | p. 163 |
| 7. Ladders and ladder hooks | p. 146 |
| 8. Walkways | p. 162 |

COLLECTIVE PROTECTION

① TEMPORARY PROTECTION NETS

They protect workers from falling from heights during repair and installation work in sites. They offer freedom of movement and, in case of a fall, the impact is absorbed. Two different types exist, Type S (horizontal) and Type U (vertical). Compliant with standard EN 1263-1.

② PERMANENT RAILING BARRIERS

Permanent roof protections protect everyone who climbs on roofs from falls. Workers can move freely without PPE when permanent railings are installed. Compliant with standards EN 14122-3 and EN 13374. A class protection.

③ SKYLIGHT NETS

They protect workers from falling inside the building and are permanently mounted.

④ TEMPORARY RAILING BARRIERS

Temporary protections that prevent falls from heights during repair and installation work. Compliant with standard 13374.

⑤ VERTICAL ANCHOR LINE

Vertical fall protection system that allows workers to access the roof, making all types of ladders, electrical pylons and cranes safe, in compliance with EN 353-1:2014. Used to safely climb up and down the ladder. Thanks to the numerous accessories, the anchor line can be installed at any point on the ladder; installation is simple and may be performed by a single worker.

ACCESSES

⑥ OVERPASS WALKWAY

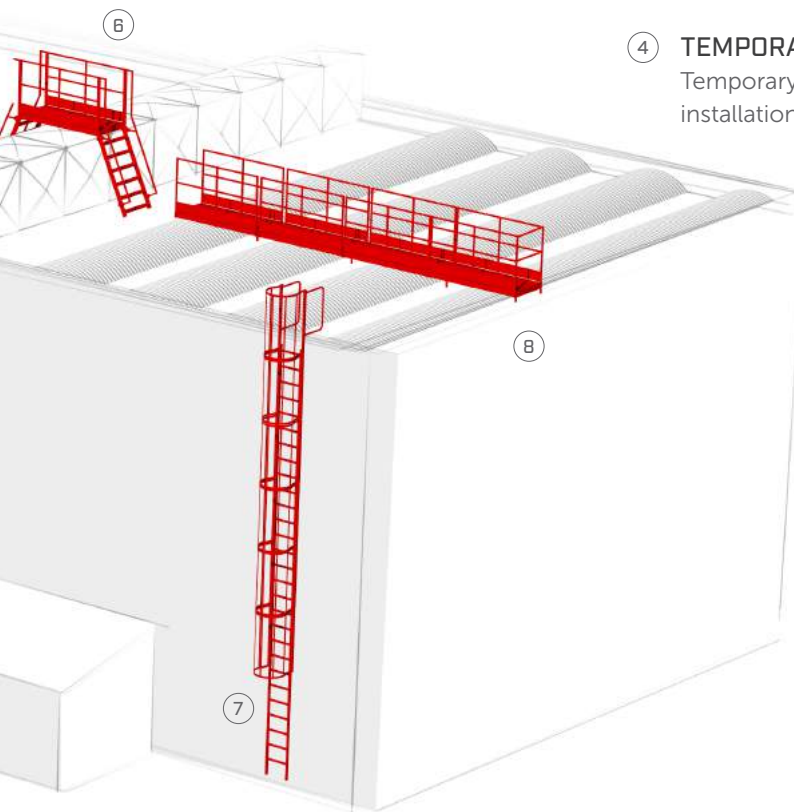
Walkways that allow creating safety paths suitable for installation on fragile roofs. The non-slip coating provides safe footing. Made of aluminium, they resist mechanical stress, corrosion and weather. Overpass stairs are designed to adapt to any type of installation; assembly is simple and easy.

⑦ LADDERS AND LADDERS HOOKS

Used in industrial applications as they are permanently fixed and fitted with protective cages. Made of aluminium, they resist corrosion and are ergonomically designed. The standard modules are designed to allow the ladders to be installed in any situation. Accompanied by a vast array of accessories, they are designed in accordance with the provisions of Art. 113 of Italian Leg. D. 09/04/2008 n. 81 "Consolidating Act" and are also available based on EN 14122-4.

⑧ WALKWAYS

Fully adaptable, they are designed to make passes on fragile, slippery, and non-walkable roofing safe, or to overcome obstacles. Equipped with regulatory railing barriers and toe-boards, they allow the transit of non-specialised operators with no need for using appropriate PPE. Made of aluminium, they resist mechanical stress, corrosion and weather. The elements of the walkways are designed to adapt to any type of installation; assembly is simple and easy.



RAILING GUARD

VERTICAL AND SLOPED RAILINGS

SIMPLE

Fast and easy to assemble, installation only takes a few steps.

COMBINABLE

Modular system, can meet any design requirement thanks to the wide range of available accessories.

LIGHTWEIGHT AND DURABLE

The aluminium alloy guarantees an aesthetically unobtrusive system with good long-term resistance to corrosion.

TYPES

STRAIGHT AND SLOPED STRUT

- flat fastening
- vertical fastening
- freestanding

CODES AND DIMENSIONS

Tailor-made solutions to meet every design requirement.

CLASS A2

UNI
EN 13374

EN
14122-3



PRACTICAL

Installation is fast and easy, no need to drill the roof.

SPECIAL FASTENING

Special fastening systems for installation below flashing or on sandwich panels.



SOLUTIONS



FIXED



LATERAL
RECLINING



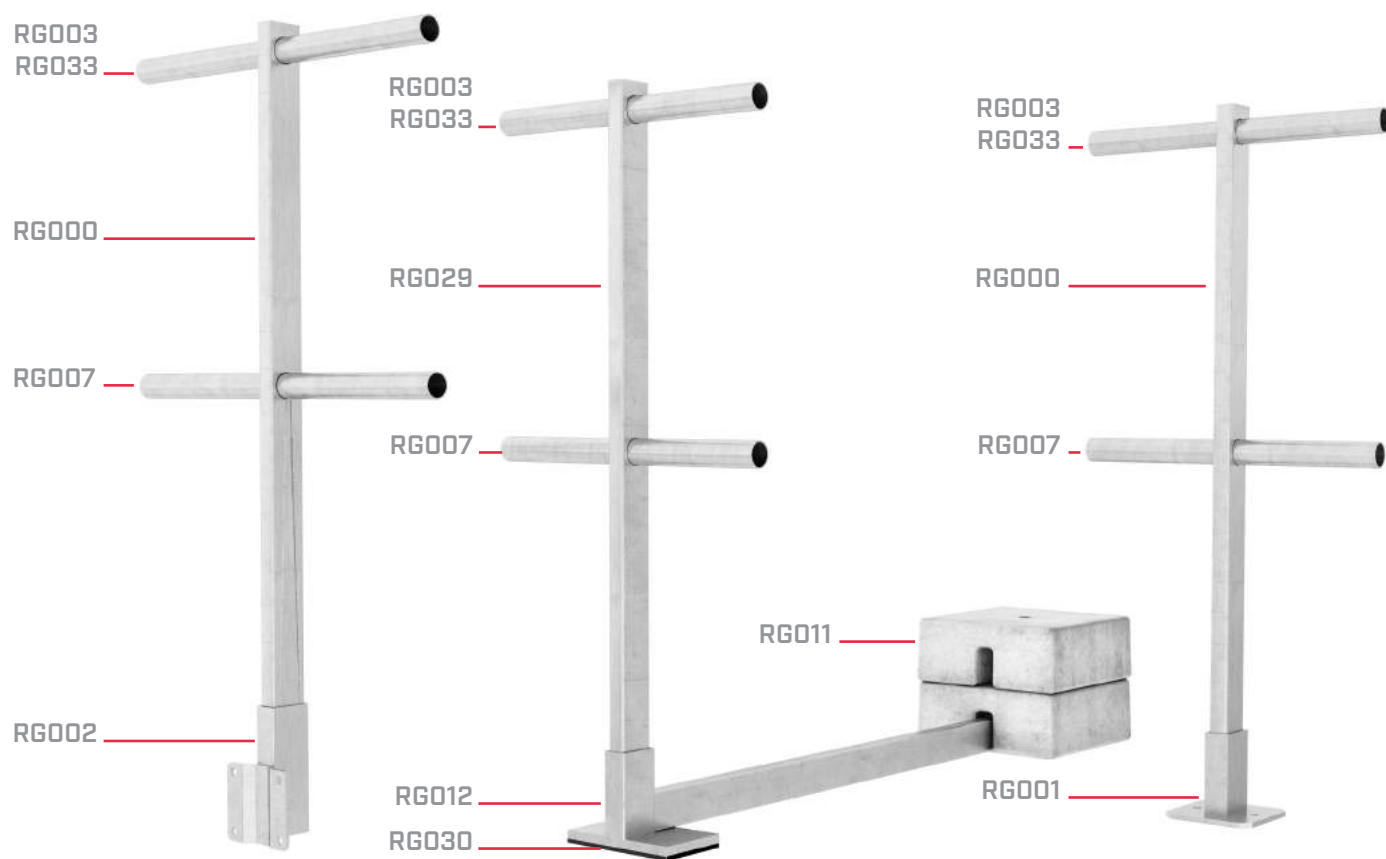
FRONT RE-
CLINING

FIELD OF USE

Roofs or spaces in which multiple people must enter, even without PPE.

RAILING GUARD

VERTICAL RAILING



CODES AND DIMENSIONS

CODE	description	L [mm]	d [mm]	s [mm]	pcs.
RG000	straight strut for flat/vertical support	-	-	-	1
RG029	straight strut for support with ballast	-	-	-	1
RG001	flat support	-	-	-	1
RG002	vertical support	-	-	-	1
RG012	support with ballast	-	-	-	1
RG011	ballast for railing	-	-	-	1
RG030	anti-slip bearing kit for support with ballast	-	-	-	1
RG003	upper conduit for 2 m spacing	3000	Ø40	3	1
RG033	upper conduit for 1.5 m spacing	3000	Ø40	2	1
RG007	lower conduit for 1,5 m and 2 m spacing	3000	Ø30	2	1
RG004	conduit joint (for RG003)	-	-	-	1
RG034	conduit joint (for RG033)	-	-	-	1
RG008	conduit joint (for RG007)	-	-	-	1
RG006	angle conduit kit (for RG003)	-	-	-	1
RG035	angle conduit kit (for RG033)	-	-	-	1
RG010	angle conduit kit (for RG007)	-	-	-	1
RG005	conduit closing cap (for RG003 and RG033)	-	-	-	1
RG009	conduit closing cap (for RG007)	-	-	-	1

CODES AND DIMENSIONS

CODE	description	pcs.
RG036	eco vertical support	1
RG037	self-blocking nuts and bolts for eco vertical support	1



RG036

RG037

CODE	description	pcs.
RG013	self drilling screws for support and conduit joint TE/FR 6,3 x 25 stainless steel	50
RG014	self drilling screws for conduit and toeboard joint TE/FR 6,3 x 19 stainless steel	50



RG013

RG014

CODE	description	d [mm]	pcs.
RG020	wall support for conduit	Ø40	1
RG032	wall support for conduit	Ø30	1



RG020

RG032

CODE	description	L [mm]	pcs.
RG021	gate	700	1
RG022	gate	1300	1



RG021

RG022

CODE	description	L [mm]	H [mm]	pcs.
RG016	toeboard	3000	150	1
RG017	toeboard fastening bracket	-	-	1



RG016

RG017

CODE	description	pcs.
RG018	joint for toeboard	1
RG019	angular for toeboard	1



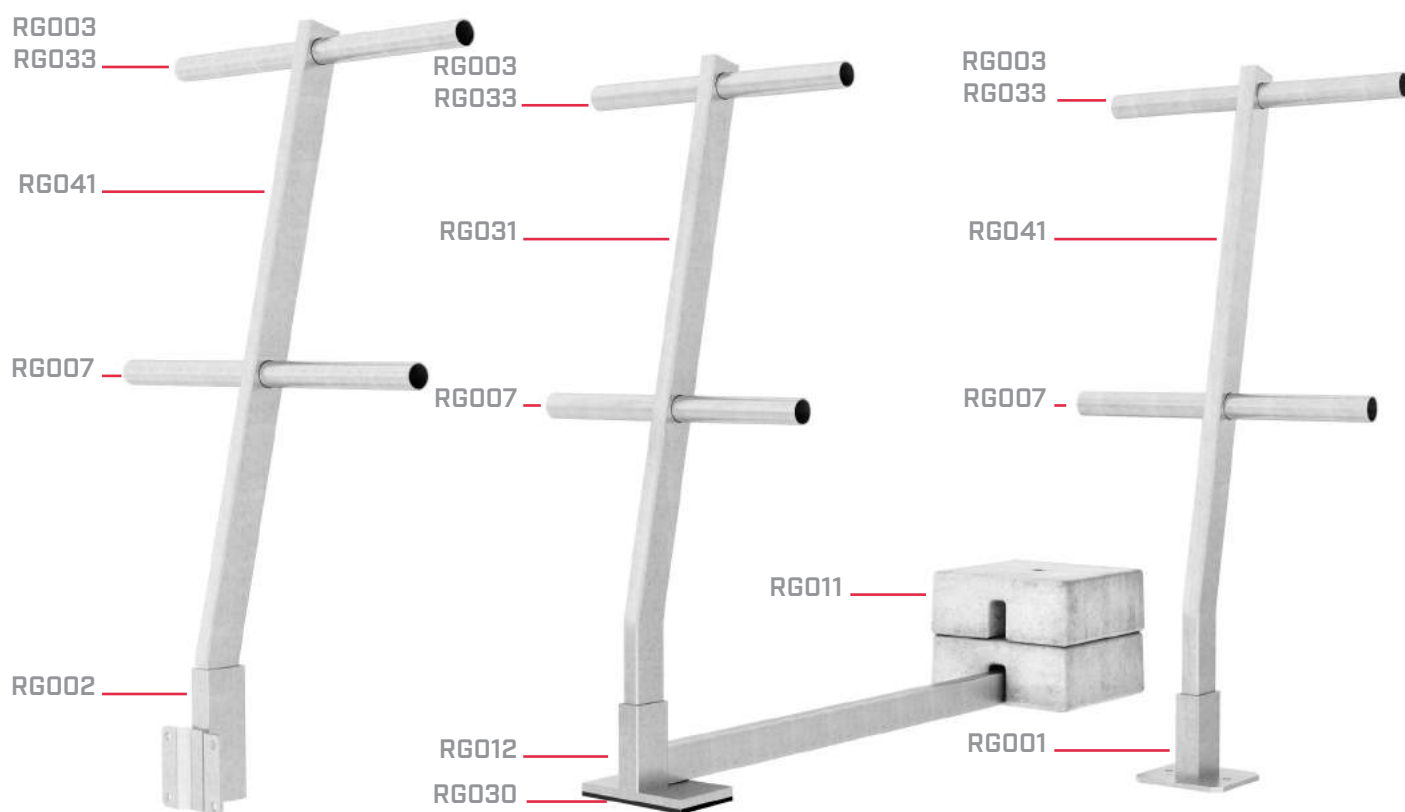
RG018

RG019

CODE	description	pcs.
RG024	flat support manual	1
RG027	vertical support manual	1
RG028	freestanding support manual	1

RAILING GUARD

INCLINED RAILING BARRIER



CODES AND DIMENSIONS

CODE	description	L [mm]	d [mm]	s [mm]	pcs.
RG041	sloped strut for flat/vertical support	-	-	-	1
RG031	sloped strut for support with ballast	-	-	-	1
RG001	flat support	-	-	-	1
RG002	vertical support	-	-	-	1
RG012	support with ballast	-	-	-	1
RG011	ballast for railing	-	-	-	1
RG030	anti-slip bearing kit for support with ballast	-	-	-	1
RG003	upper conduit for 2 m spacing	3000	Ø40	3	1
RG033	upper conduit for 1.5 m spacing	3000	Ø40	2	1
RG007	lower conduit for 1,5 m and 2 m spacing	3000	Ø30	2	1
RG004	conduit joint (for RG003)	-	-	-	1
RG034	conduit joint (for RG033)	-	-	-	1
RG008	conduit joint (for RG007)	-	-	-	1
RG006	angle conduit kit (for RG003)	-	-	-	1
RG035	angle conduit kit (for RG033)	-	-	-	1
RG010	angle conduit kit (for RG007)	-	-	-	1
RG005	conduit closing cap (for RG003 and RG033)	-	-	-	1
RG009	conduit closing cap (for RG007)	-	-	-	1

CODES AND DIMENSIONS

CODE	description	pcs.
RG036	eco vertical support	1
RG037	self-blocking nuts and bolts for eco vertical support	1



CODE	description	pcs.
RG013	self drilling screws for support and conduit joint TE/FR 6,3 x 25 stainless steel	50
RG014	self drilling screws for conduit and toeboard joint TE/FR 6,3 x 19 stainless steel	50



CODE	description	d [mm]	pcs.
RG020	wall support for conduit	Ø40	1
RG032	wall support for conduit	Ø30	1



CODE	description	L [mm]	pcs.
RG021	gate	700	1
RG022	gate	1300	1



CODE	description	L [mm]	H [mm]	pcs.
RG016	toeboard	3000	150	1
RG017	toeboard fastening bracket	-	-	1



CODE	description	pcs.
RG018	joint for toeboard	1
RG019	angular for toeboard	1



CODE	description	pcs.
RG024	flat support manual	1
RG027	vertical support manual	1
RG028	freestanding support manual	1



Railing with special fastening for corrugated sheet



Railing with ballast with standard straight strut

RAILING GUARD 2

RECLINING RAILINGS

COMPLETE RANGE

Available in a front reclining version with ballast, lateral reclining with flat or vertical fastening, and front reclining with flat or vertical fastening.

DISCREET

Ideal for roofs with environmental constraints requiring the conduit to not be visible when work is not being done.

DURABLE

Made of aluminium, they are lightweight and manageable and resistant to weather. Fastenings provided are made of stainless steel.

MODULAR

Provided in preassembled 6 m modules, can also be provided in non-standard formats upon request. Includes gates to be installed at the edges in the case of angles, to allow for proper closure of all railings.



CODES AND DIMENSIONS

Tailor-made solutions to meet every design requirement.



< **VERSATILE**

The reclining railings are available with flat or vertical fastenings or with ballast.

FIELD OF USE

- Flat roofs



Lateral reclining railing with flat fastening



Front reclining railing with vertical fastening



Lateral reclining railing with vertical fastening

I CAGE LADDERS

UNI EN
14122-4

CAGED LADDERS

DURABLE

Made of aluminium alloy, they offer high mechanical resistance and resist corrosion and weather.

GEOMETRY

Designed to make installation easy and support ergonomics during use. The profiles are designed to enhance the properties of the materials used.

RELIABLE

Guarantee the utmost safety for the user and give the installer the serenity that comes with a reliable product.

ADAPTABLE

Ladder components are designed to adjust to any type of installation.

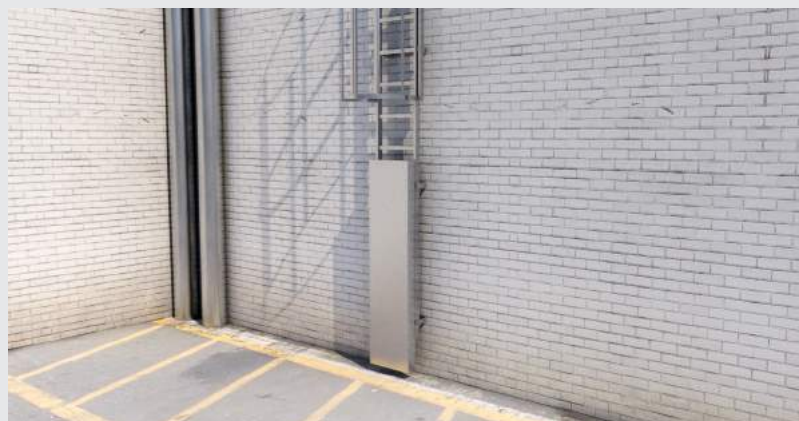
STANDARD COMPONENTS

All elements are designed to be easily replaced if necessary.



I CODES AND DIMENSIONS

Caged ladders are available in standard 2 and 3 m modules and in starting modules that can be personalised based on requirements.



< **SAFE**

All ladders come with a standard protective cage.

COMPLETE >

The ladder is provided with landing handles and 1,10 m terminal protection to ensure the worker can safely dismount.



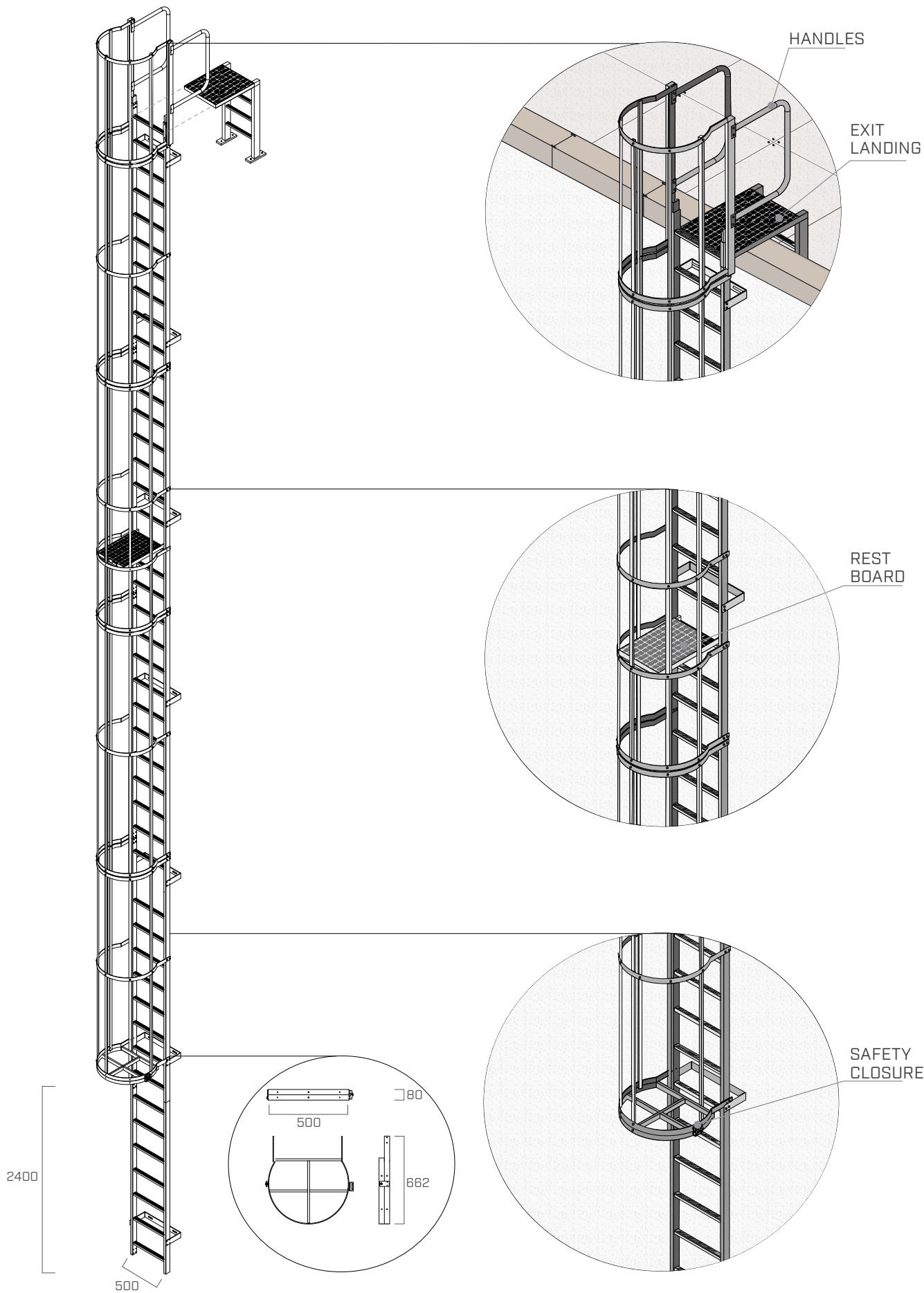
MATERIAL

Heavy-duty aluminium alloy
stainless steel.

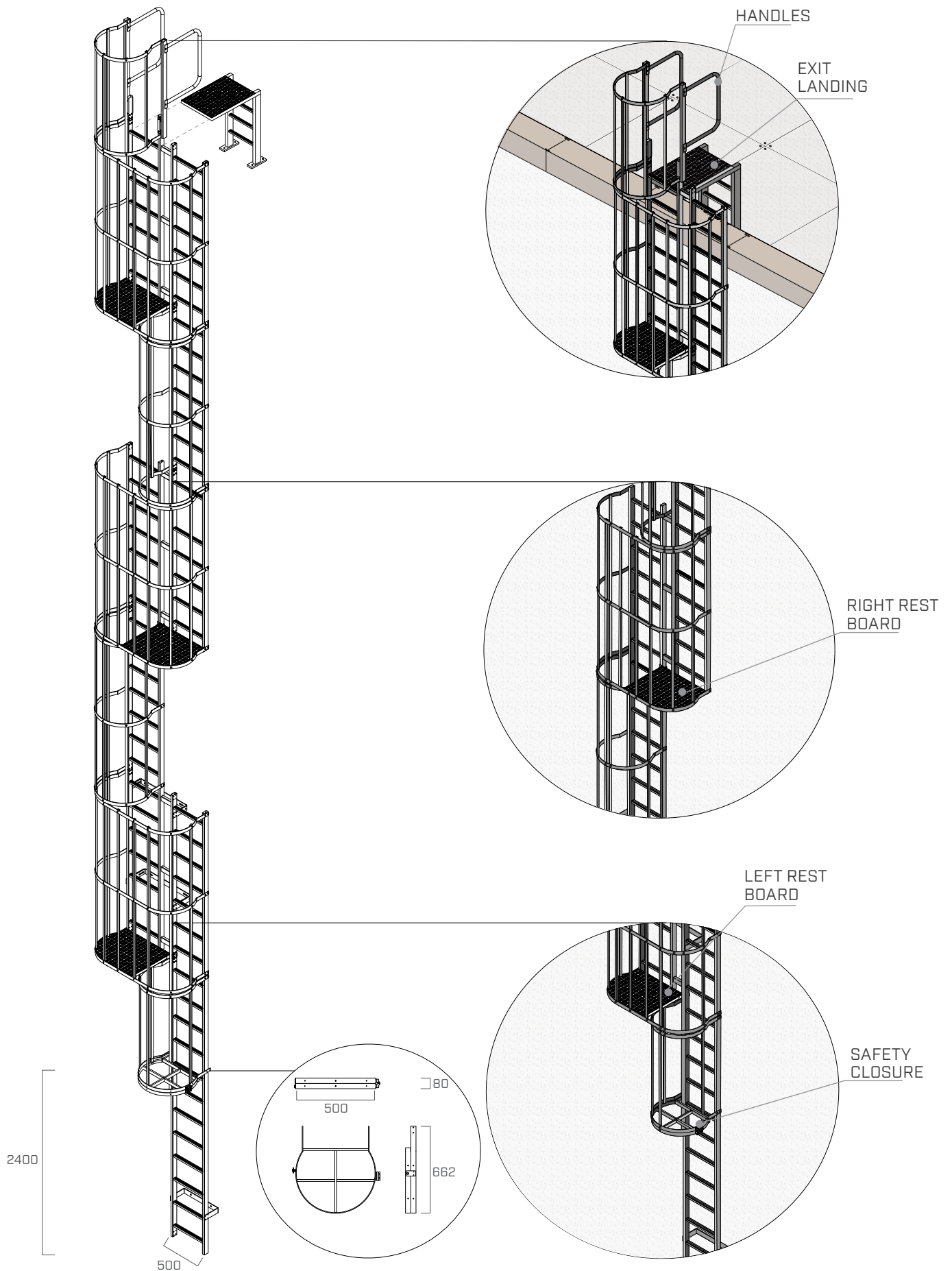
FIELD OF USE

Access to roofs, silos, machinery and other entries.

■ GEOMETRY



GEOMETRY





Caged ladders complete with rest board



Caged ladder with side exit landing



Special assembly of a caged ladder



Folding rest board, to divide the ladder

VERTICAL LIFE LINE

VERTICAL ANCHOR LINES FOR LADDERS

SIMPLE

Fast and easy to assemble, installation only takes a few steps.

COMBINABLE

Modular system, can meet any design requirement thanks to the wide range of available accessories.

LIGHTWEIGHT AND DURABLE

The aluminium alloy guarantees an extremely light system, with good long-term resistance to corrosion.



CODES AND DIMENSIONS

CODE	description	pcs.
BEFVERT1	fastening set for fixed ladder start and end	1
BEFVERT2	intermediate fastening set for fixed ladder	1
BEFVERT3	fastening set for structure start and end	1
BEFVERT4	intermediate fastening set for structure	1
SLIDEVERT	removable sliding fall arrester for vertical anchor line	1



< PRACTICAL

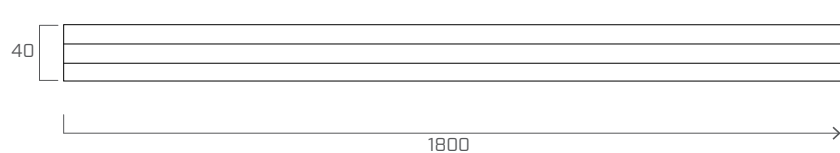
Fast and easy installation, with few elements.

FIELD OF USE

- Fixed ladders
- Directly on the structure

GEOMETRY

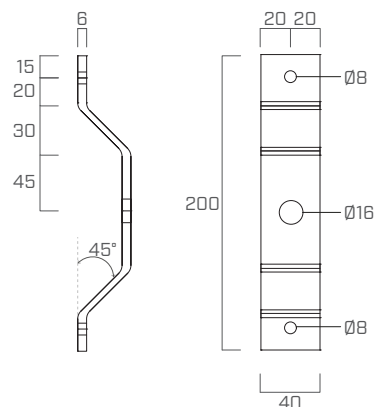
UPPER ROD



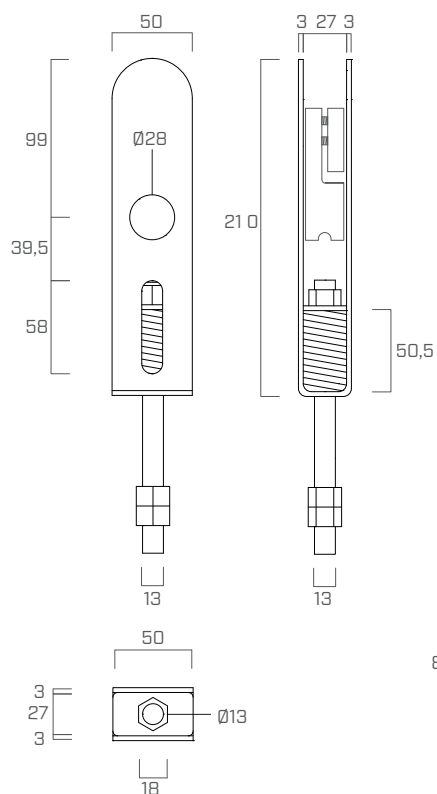
LOWER ROD



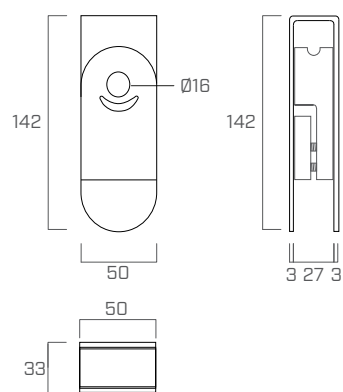
UPPER FASTENING



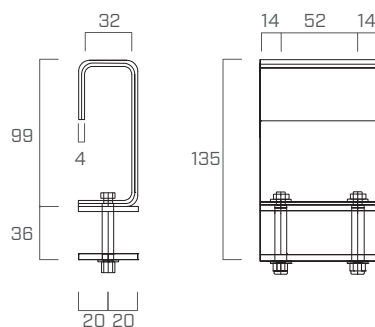
LOWER SPEAR



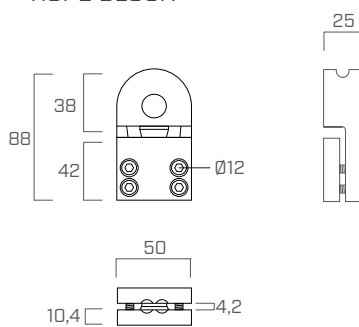
UPPER SPEAR



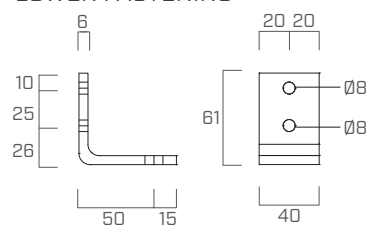
INTERMEDIATE FASTENING



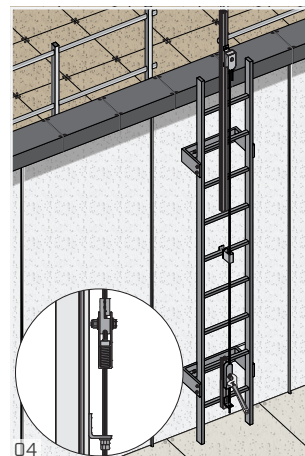
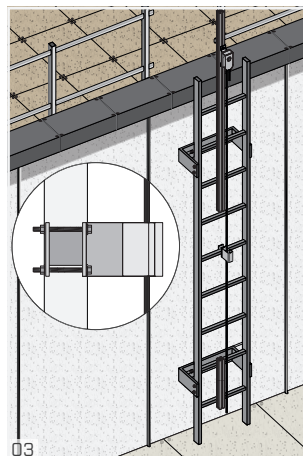
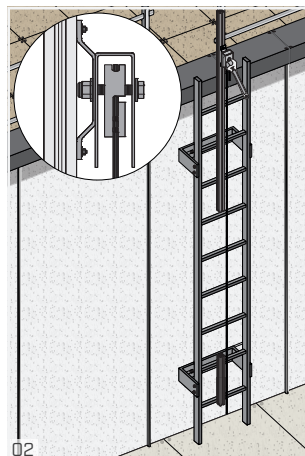
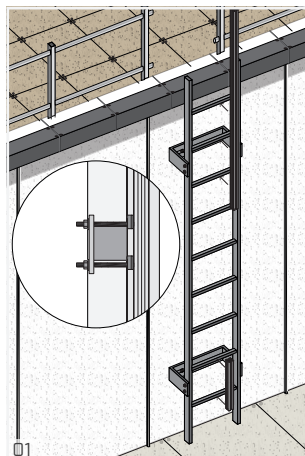
ROPE BLOCK



LOWER FASTENING



APPLICATION INSTRUCTIONS



For more information about product installation, please see the corresponding manual.

SOLID LADDERS

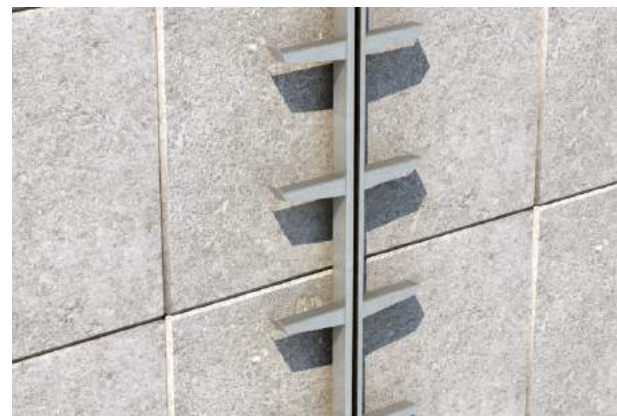
FIXED LADDERS

SAFE

Designed with long-lasting materials, with non-slip steps.

POLES

This system is particularly appropriate for climbing structures with a circular shape.



CODES AND DIMENSIONS

Tailor-made solutions to meet every design requirement.



< HEIGHT

Systems recommended for a maximum height of 12 meters between the exit cage and the stair resting base.

FIELD OF USE

Various types of structures based on the device used.

PITCHED LADDERS

PITCHED LADDERS

COMPLETE RANGE

Aluminium ladders available in a wide range of formats to meet every need, including bridge, platform with wheels, sliding platform on fixed tracks or freestanding.

RELIABLE

Aluminium pitched ladder with large steps, 150 mm deep with non-slip process, for safe and comfortable climbing.

ACCESSORIES

A series of specific accessories make this a solid practical solution.

DURABLE

Designed with long lasting material.



CODES AND DIMENSIONS

Tailor-made solutions to meet every design requirement.



< SPECIAL

Various types of ladders can be provided by request.

FIELD OF USE

Can be used for any design need.

LADDER FIX

MOBILE LADDER HOOK

SAFE
Prevents the mobile ladder from sliding or falling.

UNIVERSAL
Can be attached to any ladder produced according to EN 131/1.

EFFICIENT
Guarantees constant optimal distribution of forces between the ladder and support surface.



CODES AND DIMENSIONS

CODE	B [mm]	L [mm]	H [mm]	weight [kg]	pcs.
LADFIX	310	1000	60	2,2	1



PRACTICAL
Fast and easy to use.

FIELD OF USE
Can be used on any roof with a gutter.



Hook for the access point on a roof with a gutter

ROOF

LADDER HOOK FOR PITCHED ROOFS



CODES AND DIMENSIONS

CODE	material	holes Ø11,5 [n°]	pcs.
ROOF	zinc-plated steel	3	1



WALL

LADDER HOOK FOR WALL



CODES AND DIMENSIONS

CODE	material	holes Ø9 [n°]	holes Ø13 [n°]	pcs.
WALL	zinc-plated steel	5	4	1



I PLAIN

LADDER HOOK FOR FLAT SURFACES



I CODES AND DIMENSIONS

CODE	material	holes Ø9 [n°]	holes Ø13 [n°]	pcs.
PLAIN	zinc-plated steel	5	4	1



GANGWAY

WALKWAYS

RELIABLE

The non-slip, anti-oil, anti-heel and ice resistant coating ensures safe footing.

CLEVER

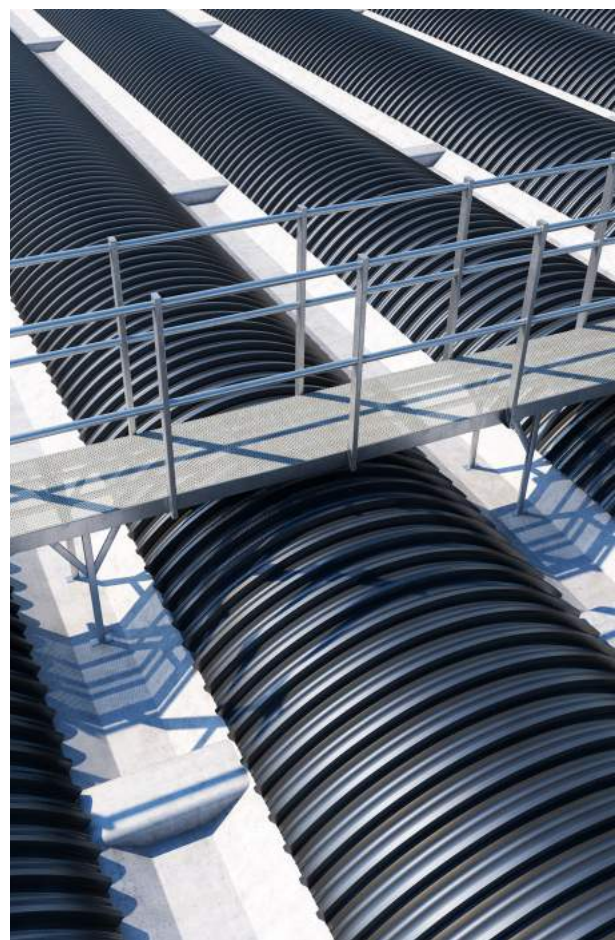
Walkways designed and built in order to create safe passages for roofs that would otherwise be impossible to walk on.

STANDARD MODULES

Available in 3, 2,5 and 2 m long modules, from 60 to 120 cm wide. Additional sizes available upon request.

TO MEASURE

Can be supplied to meet every need: with or without railings, toeboards or even just monolateral.



CODES AND DIMENSIONS

Tailor-made solutions to meet every design requirement.



◀ **ADAPTABLE**

Brackets can be made to order upon request, to resolve all roof fastening problems.

FIELD OF USE

Roofs that are not flat or that need to be made safe for walking.

I OVERRUN

OVERPASS WALKWAY

SAFE

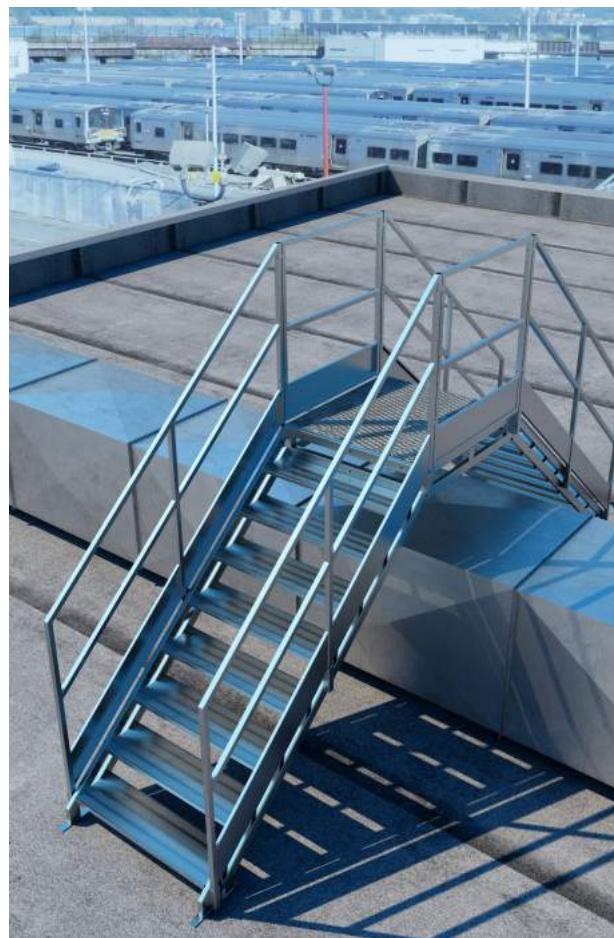
Gives the installer the serenity of a safe product.

ADJUSTABLE

Ladders provided both in standard formats and in personalised sizes (by request).

RELIABLE

The non-slip covering means difficult areas of roofs or machinery can be reached safely.



I CODES AND DIMENSIONS

Tailor-made solutions to meet every design requirement.



< MULTI-FORM

The ladder can be used in various configurations, to easily pass by any obstacle.

FIELD OF USE

Any situation that requires passing over obstacles.



Walkway with monolateral protection for industrial roofs



Overpass walkway in an industrial complex

ROTHONET 1

HORIZONTAL FALL PROTECTION NET

SIMPLE

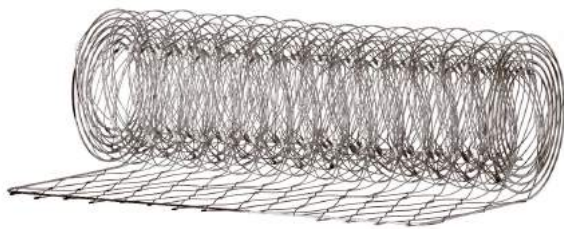
Quick and easy assembly with the aid of angular and rectilinear fastening systems.
Anti-intrusion plate included.

VERSATILE

Possibility of application to structures in various materials (timber, steel, concrete).

ATTRACTIVE

A more harmonious and sinuous shape than traditional nets, appropriate for installation in civil and industrial structures.



CODES AND DIMENSIONS

Tailor-made solutions to meet every design requirement.

TYPE	description
CLASSIC	polypropylene mesh
ELEGANCE	stainless steel mesh

Fasteners are included in the package.

COMPLEMENTARY PRODUCTS

FASTENING

description	d ₁ [mm]	L[mm]
screw for timber	8	100
self-tapping screw for concrete	7,5	60
self-drilling screw for steel	5,5	25

This manual provides details about laboratory-tested fastening systems.



CLASSIC
EN
1263-1

ELEGANCE
EN
10204



SURFACE INCLINATION

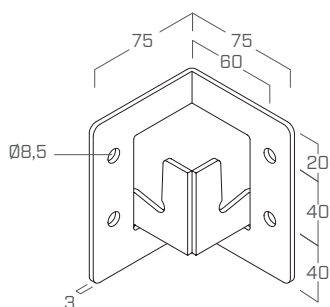


FIELD OF USE

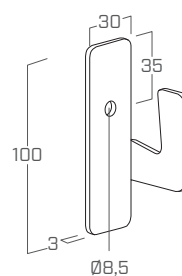
- Timber structure
- Concrete structure
- Steel structure

GEOMETRY

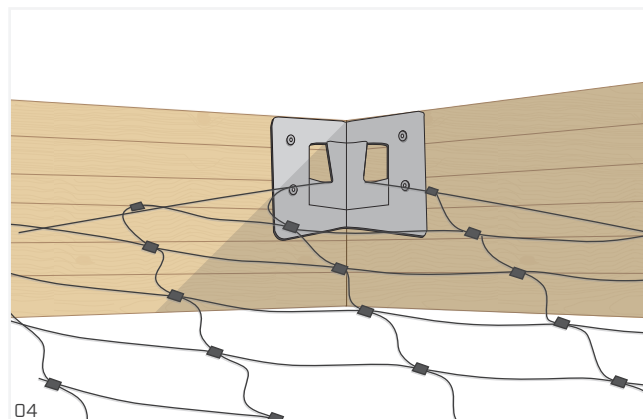
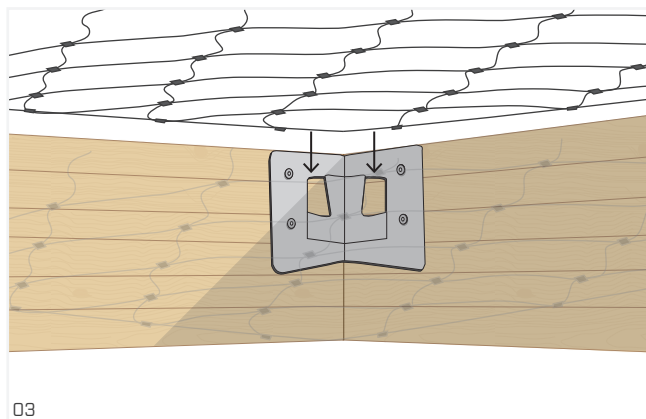
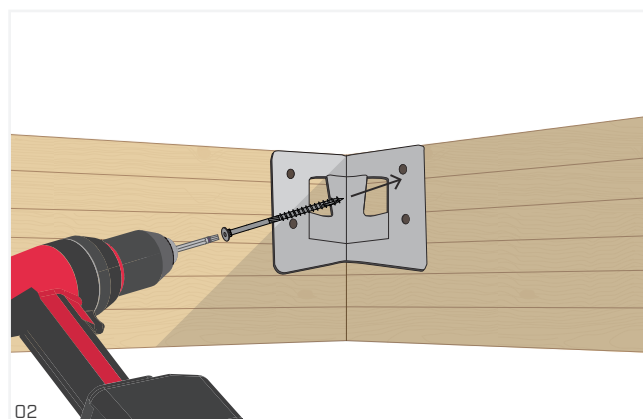
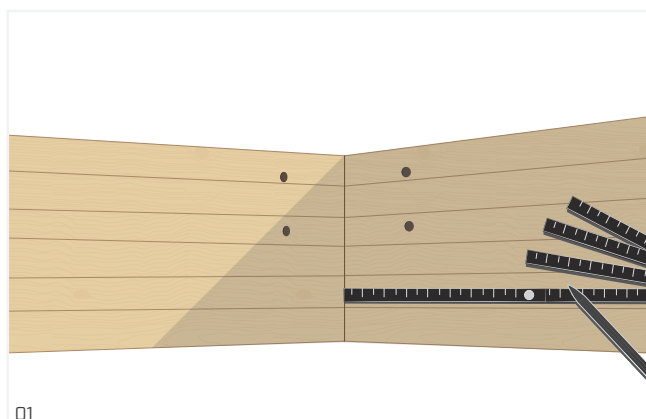
ANGULAR SUPPORT ELEMENT



INTERMEDIATE SUPPORT ELEMENT

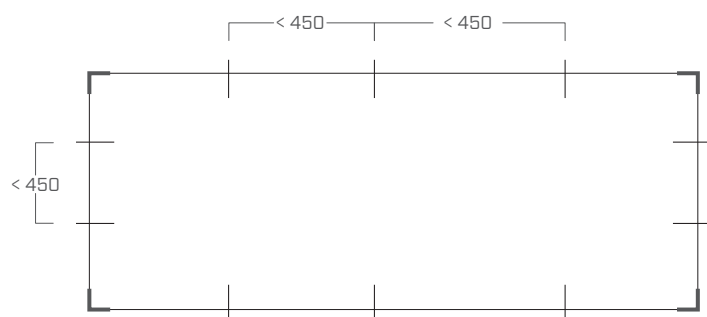


APPLICATION INSTRUCTIONS



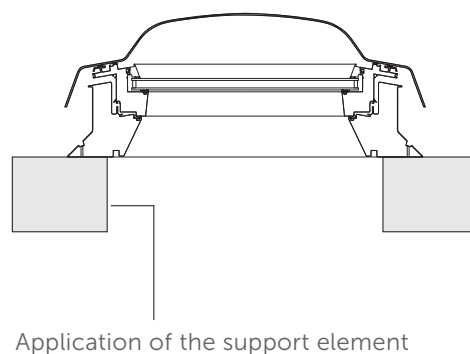
INSTALLATION

MAXIMUM DISTANCES FOR POSITIONING OF SUPPORT ELEMENTS



└─ angular element

— intermediate element



ROTHONET 2

HORIZONTAL FALL PROTECTION NET

ADJUSTABLE

Available in various sizes, to meet all needs of the construction site.

EASY

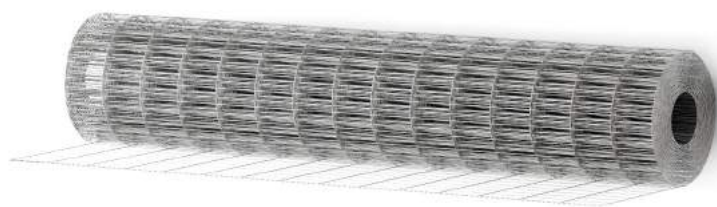
Supplied in convenient rolls that facilitate transport and installation.

EXISTING STRUCTURES

It can be installed on finished buildings without having to disassemble skylights.

PRACTICAL

Quick installation using wooden or metal profiles.



CODES AND DIMENSIONS

CODE	material	B [mm]	L [m]	pcs.
RONET1020	zinc-plated steel	1020	25	1
RONET1220	zinc-plated steel	1220	25	1
RONET1520	zinc-plated steel	1520	25	1
RONET1830	zinc-plated steel	1830	25	1
RONET2030	zinc-plated steel	2030	25	1
RONET2230	zinc-plated steel	2230	25	1
RONET2530	zinc-plated steel	2530	25	1

COMPLEMENTARY PRODUCTS

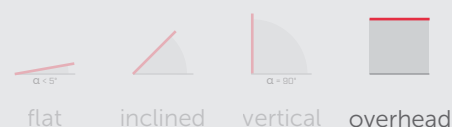
FASTENING

TYPE	description	d ₁ [mm]	pag.
HBS	screw for timber	6	180
SKR	screw anchor	7,5	194

CODE	description	L [mm]	d ₁ [mm]
SBS6360	self-drilling screw for timber-metal	60	6,3
SBS6370	self-drilling screw for timber-metal	70	6,3
SBS6385	self-drilling screw for timber-metal	85	6,3

CODE	description	L [m]	B [mm]	s [mm]
PF400043	perforated strap	50	40	3

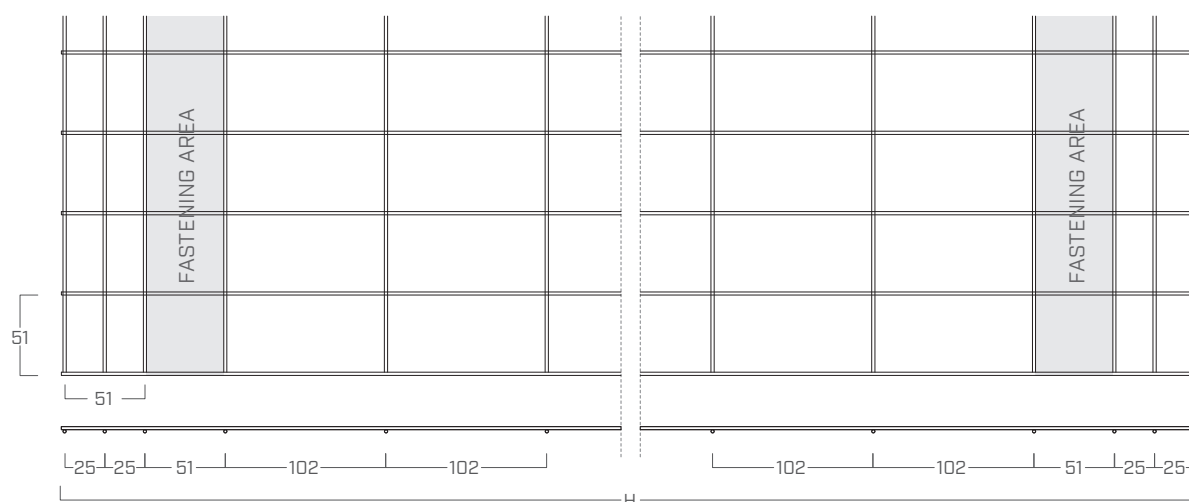
SURFACE INCLINATION



FIELD OF USE

- Timber structure
- Concrete structure
- Steel structure

GEOMETRY



When joining two contiguous networks, it is necessary to provide an overlap of at least 1000 mm and double the fasteners. At the beginning and end of such overlap, the first fasteners shall be placed at a distance less than 150 mm from the beginning of the overlap. The number of fasteners must be increased in the two ends of the net (at least 3 additional fasteners).

INSTALLATION

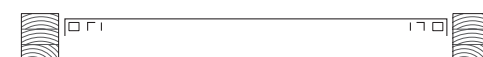
wood batten 30 x 40 mm | steel angle 30 x 30 x 3 mm | steel profile 30 x 3 mm

Model	B [mm]	clear width space [mm]	i [mm]
A-C	1020	0 - 770	1000
	1220	730 - 970	900
	1520	930 - 1270	700
	1830	1230 - 1580	600
	2030	1530 - 1780	500
	2230	1730 - 1980	400
B	2530	1930 - 2280	300
	1020	0 - 840	1000
	1220	820 - 1040	900
	1520	1020 - 1340	700
	1830	1320 - 1650	600
	2030	1630 - 1850	500
	2230	1830 - 2050	400
	2530	2030 - 2350	300

MODEL A



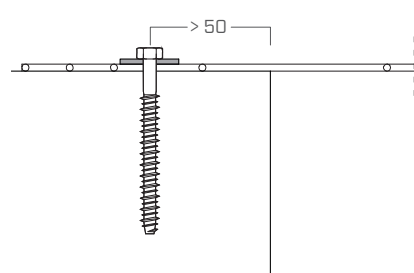
MODEL B



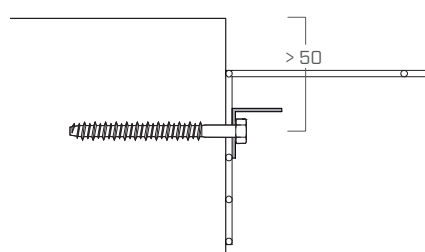
MODEL C



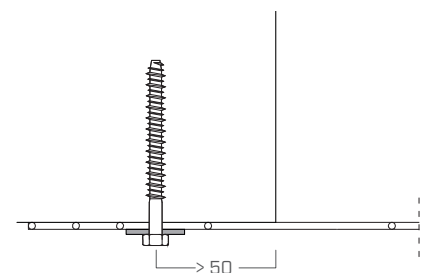
FASTENING MINIMUM DISTANCE FROM THE EDGE OF THE STRUCTURE



MODEL A



MODEL B



MODEL C

SKYCAGE

FIXED PROTECTION FOR SKYLIGHTS

FLAT ROOFS

Protects skylights on flat roofs and roofs with slopes of up to 15°.

CONSIDERATE

System installation does not affect the roof insulation layer.

COMBINABLE

The system consists of intermediate and lateral modules, with a maximum length of 1,2 m and a maximum width of 2,5 m.

ADJUSTABLE

The legs are height adjustable, to meet every need.



CODES AND DIMENSIONS

Tailor-made solutions to meet every design requirement.



< EFFECTIVE

Protects skylights from falling persons or objects, but does not impede the passage of light.

FIELD OF USE

Skylights

DOMENET

FABRIC NET FOR SKYLIGHTS

PRACTICAL

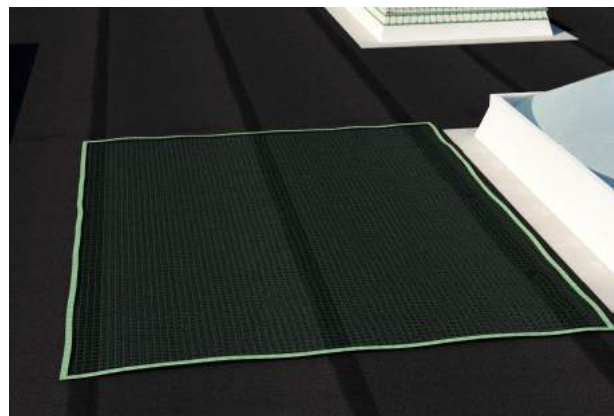
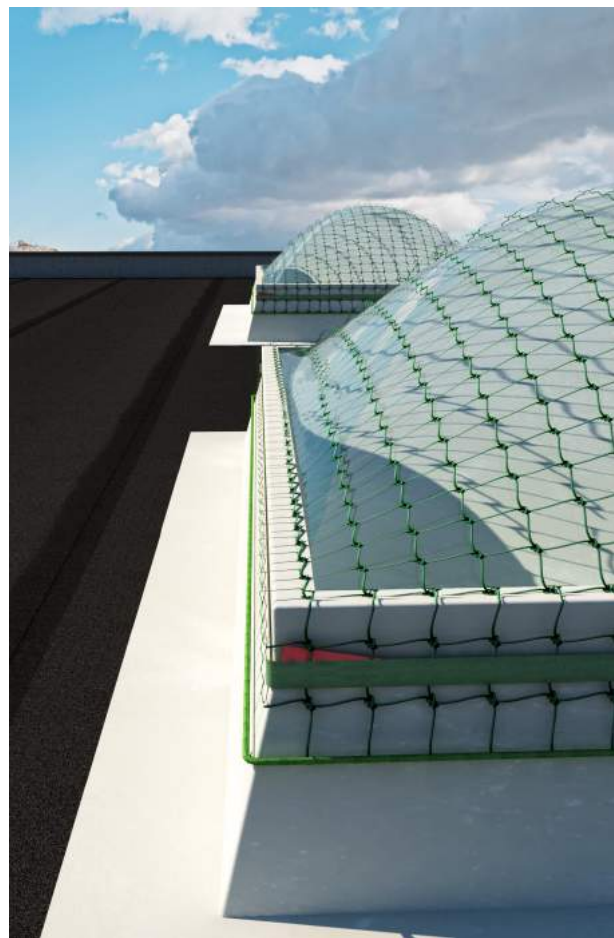
Fast and easy installation due to the lighter weight and anchoring device with adjustable band.

REMOVABLE

Temporary anchoring device for short-term operations on flat roofs.

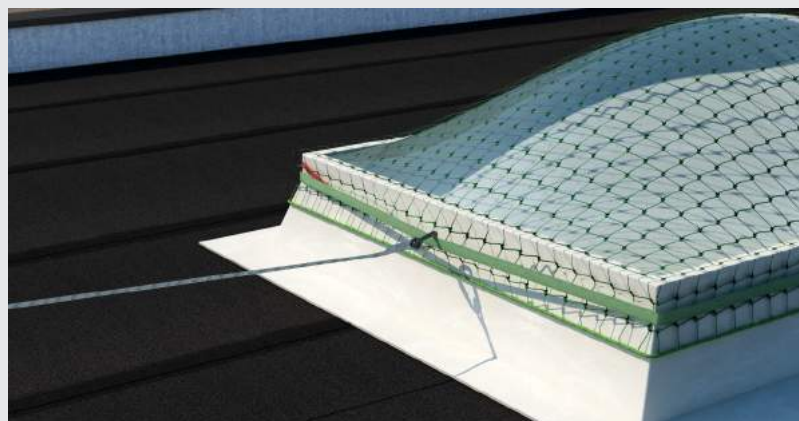
VERSATILE

Offered in two sizes, can adjust to most square shaped skylights on the market.



CODES AND DIMENSIONS

CODE	description	B [m]	L [m]	pcs.
DOME22	skylight nets	2	2	1
DOME33	skylight nets	3	3	1



< AESTHETICS

More proportioned and harmonic shapes than traditional nets, for improved yield in the installation in civil and industrial structures.

FIELD OF USE

Skylights

HORIZONTAL NET

HORIZONTAL POLYPROPYLENE FALL PROTECTION SAFETY NET

SAFE

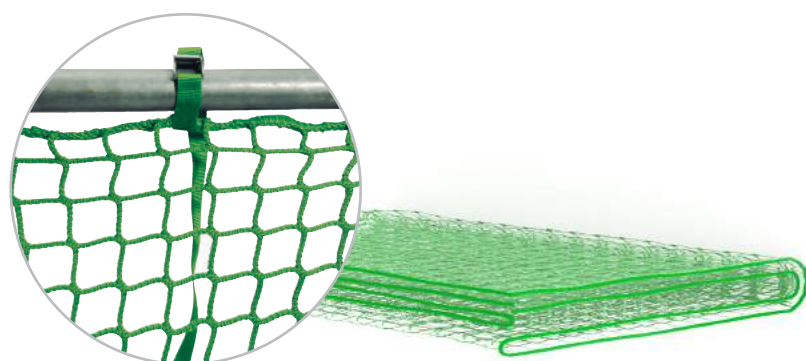
It requires a limited number of fastening systems (maximum distance between anchors: 2,5 m).

MODULAR

Possibility of combining different nets to cover larger areas.

CAN BE PERSONALIZED

Also available in other colours by request (red, blue, white) and in personalised format for larger nets.



NETHOOK1



NETHOOK2

CODES AND DIMENSIONS

CODE	B [m]	L [m]	mesh [mm]	rope [mm]	weight [kg]	pcs.
HOR510	5	10	100	Ø5	11,4	1
HOR610	6	10	100	Ø5	13,7	1
HOR1010	10	10	100	Ø5	22,9	1
HOR7515	7,5	15	100	Ø5	25,7	1

Each fastening point must withstand a minimum load of 6 kN

COMPLEMENTARY PRODUCTS

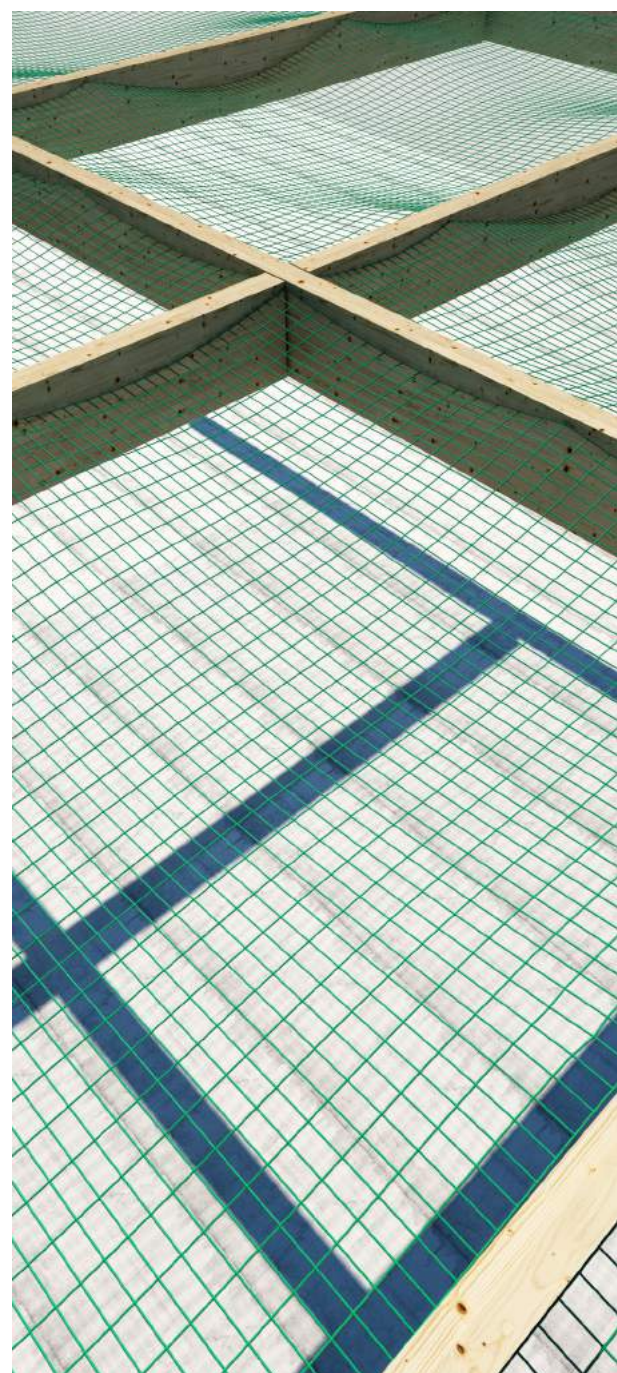
FASTENING

CODE	description	rope [mm]
HORFIX	fastening rope	Ø14
HORCONNECT	sewing rope	Ø6

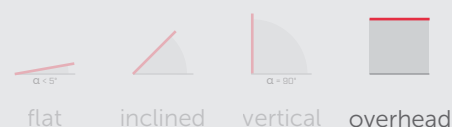
It can be ordered by the metre

FASTENING

CODE	description
NETHOOK1	U net hook
NETHOOK2	turned net hook



SURFACE INCLINATION



MATERIAL

Knotless high resistance polypropylene net

VERTICAL NET

LATERAL POLYPROPYLENE FALL PROTECTION SAFETY NET

SAFE

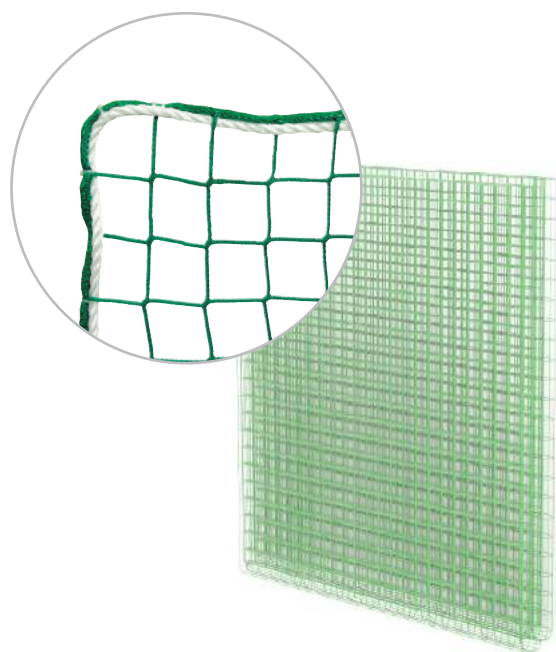
Edge protection system on roofs or scaffolds.

FUNCTIONAL

Possible installation by inserting each individual link in the scaffold pipe or via fastening straps (optional).

VERSATILE

Also available in other colours by request (red, blue, white).



CODES AND DIMENSIONS

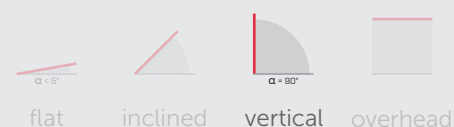
CODE	B [m]	L [m]	mesh [mm]	rope [mm]	weight [kg]	pcs.
VER210	2	10	100	Ø5	4,5	1

COMPLEMENTARY PRODUCTS

FASTENING

CODE	description	L [mm]	p _{min} [mm]
VERBENT	fastening strap	600	700

SURFACE INCLINATION



MATERIAL

Knotless high resistance polypropylene net

MOBILE RAIL 1

TEMPORARY RAILING FOR SLOPES OF NOT MORE THAN 10°



CODES AND DIMENSIONS

CODE	material	degrees	weight [kg]	pcs.
RAIL1	galvanised steel	90°	7,8	1

MOBILE RAIL 2

TEMPORARY RAILING FOR SLOPES OF NOT MORE THAN 30°



CODES AND DIMENSIONS

CODE	material	degrees	weight [kg]	pcs.
RAIL2	galvanised steel	68°	10,0	1

CONCRETE RAIL

RAILING FOR HORIZONTAL EDGES



CODES AND DIMENSIONS

CODE	material	degrees	weight [kg]	pcs.
RAIL3	zinc-plated steel	90°	2,4	1
RAILBASE3	zinc-plated steel	-	1,2	1



STAIR RAIL

UNIVERSAL RAILING WITH STEM



CODES AND DIMENSIONS

CODE	material	opening [mm]	weight [kg]	pcs.
RAIL4	zinc-plated steel	800	5,0	1





COMPLEMENTARY PRODUCTS

COMPLEMENTARY PRODUCTS

Screws

HBS <i>countersunk screw for wood</i>	180
--	-----

Connectors

VGS <i>total thread connector with countersunk head</i>	184
--	-----

Stainless steel metrics

MGS AI 975 <i>threaded rod in A2 stainless steel DIN 975</i>	190
MUT AI 934 <i>hexagonal nut in A2 stainless steel DIN 934</i>	190
MUT 985 <i>self-blocking nut in A2 stainless steel DIN 985</i>	190
ULS AI 9021 <i>A2 stainless steel washer DIN 9021</i>	190

Galvanized steel metrics

MGS 1000 <i>4.8 or 8.8 steel class threaded rod DIN 975</i>	191
MUT 934 <i>hexagonal nut steel class 8 DIN 934</i>	191
ULS 9021 <i>S235 steel washer DIN 9021</i>	192
ULS 440 <i>S235 steel washer DIN 440R</i>	192
ULS 1052 <i>S235 steel washer DIN 1052</i>	192
ULS 125 <i>S235 steel washer DIN 125A</i>	192

Anchors

SKR - SKS <i>screw anchor for concrete</i>	194
SKR - SKS CE <i>screw anchor for concrete CE1</i>	196
ABS <i>heavy-duty expansion anchor with clamp CE1</i>	198
AB1 <i>heavy duty expansion anchor CE1</i>	200
AB1 A4 <i>CE1 stainless steel heavy-duty expansion anchor</i>	202
AB7 <i>heavy duty expansion anchor CE7</i>	204

Chemical anchor

VIN-FIX PRO
vinyl ester chemical anchor without styrene 206

EPO-FIX PLUS
high-performance epoxy chemical anchor 210

Threaded rods and mesh bush

INA
5.8 steel class threaded rod for chemical anchors 214

IHP
mesh brush for hollow plastic materials 214

IHM
mesh brush for hollow metal materials 214

Fastening set

BEF_SLIM
fastening set for SLIM 215

BEF_TOWER
fastening set for TOWER 215

BEF_PLATE
fastening set for PALMIFIX 215

BEF_KITE
fastening set for KITE 215

Sleeves

ROLL HANDLE
lead and butyl sleeve 216

LEAD HANDLE
lead with EPDM handle for TOWER 217

POST HANDLE
sealing sleeve for TOWER 217

Wrenches

CRICKET
8 size ratcheting wrench 218

BEAR
torque wrench 218

Riveter

FINCH
manual pliers for blind rivets 219

FINCH XL
professional riveting machine 219

BIRD
battery-operated riveting machine 220

Cable tensioner

ROPE CLAMP
cable tensioner for anchor line 220

Drills - screwdrivers

A 10 M
cordless screwdriver 221

ASB 18 M BL
cordless percussion drill 221

KMR 3352
screwdriver with automatic loader 222

KMR 3363
screwdriver with battery powered automatic loader 222

IMPULS
pulse screw gun 223

GRIND
battery operated grinder 223

Gun for cartridge

FLY 401
gun for cartridge 224

MAMMOTH
gun for cartridge 224

COUNTERSUNK SCREW FOR WOOD

SPECIAL STEEL

Highly ductile (moves with the wood) and high-resistant steel ($f_{y,k} = 1000$ N/mm²).

TESTED AND CERTIFIED

To be used for all types of single point assembly on wood supports.

COMPLETE RANGE

Ideal for installation of single points, even on structures with very thick insulation.

CODES AND DIMENSIONS

CODE	d ₁ [mm]	L [mm]	b [mm]	A [mm]	TX	pcs.
HBS880	8	80	52	28	40	100
HBS8100	8	100	52	40	40	100
HBS8120	8	120	60	60	40	100
HBS8140	8	140	60	80	40	100
HBS8160	8	160	80	80	40	100
HBS8180	8	180	80	100	40	100
HBS8200	8	200	80	120	40	100
HBS8220	8	220	80	140	40	100
HBS8240	8	240	80	160	40	100
HBS8260	8	260	80	180	40	100
HBS8280	8	280	80	200	40	100
HBS8300	8	300	100	200	40	100
HBS8320	8	320	100	220	40	100
HBS8340	8	340	100	240	40	100
HBS8360	8	360	100	260	40	100
HBS8380	8	380	100	280	40	100
HBS8400	8	400	100	300	40	100
HBS8440	8	440	100	340	40	100
HBS8480	8	480	100	380	40	100
HBS8520	8	520	100	420	40	100



< VERSATILE

Suitable for LOOP installation, the simplest single point in the Rothoblaas range.

STATIC SAFETY >

The screws' fast initial grip makes it possible to create secure structural connections in all assembly conditions.



MATERIAL

Carbon steel with white galvanic zinc coating.

COMPATIBLE ANCHOR DEVICES

HOOK EVO 2.0

HOOK EVO

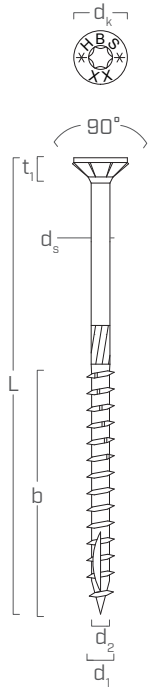
HOOK

LOOP

KITE (combined with VGS)

GEOMETRY AND MECHANICAL CHARACTERISTICS

HBS SCREW			
Nominal diameter	d_1	[mm]	8
Head diameter	d_k	[mm]	14,5
Core diameter	d_2	[mm]	5,4
Shank diameter	d_s	[mm]	5,8
Head thickness	t_1	[mm]	4,5
Predrill diameter	d_v	[mm]	5,0
Characteristic value for the yield moment	$M_{y,k}$	[Nmm]	20057,5
Characteristic value of extraction strength	$f_{ax,k}$	[N/mm ²]	11,7
Characteristic head penetration strength	$f_{head,k}$	[N/mm ²]	10,5
Characteristic tensile strength	$f_{tens,k}$	[kN]	20,1

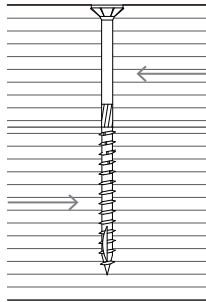


INSTALLATION

MINIMUM DISTANCES FOR SHEAR LOADS ⁽¹⁾

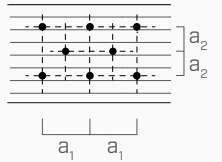
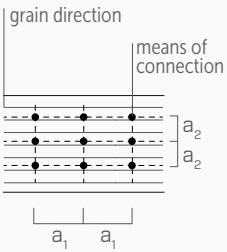
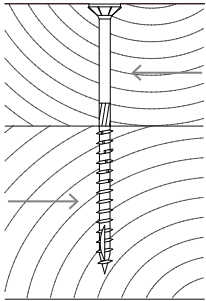
Load angle to the grain $\alpha = 0^\circ$

		SCREWS INSERTED WITH PRE-BORED HOLES	SCREWS INSERTED WITHOUT PRE-BORED HOLES
a_1	[mm]	40	96
a_2	[mm]	24	40
$a_{3,t}$	[mm]	96	120
$a_{3,c}$	[mm]	56	80
$a_{4,t}$	[mm]	24	40
$a_{4,c}$	[mm]	24	40

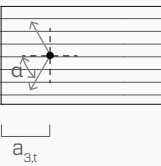


Load angle to the grain $\alpha = 90^\circ$

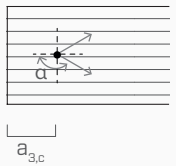
		SCREWS INSERTED WITH PRE-BORED HOLES	SCREWS INSERTED WITHOUT PRE-BORED HOLES
a_1	[mm]	32	40
a_2	[mm]	32	40
$a_{3,t}$	[mm]	56	80
$a_{3,c}$	[mm]	56	80
$a_{4,t}$	[mm]	56	80
$a_{4,c}$	[mm]	24	40



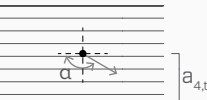
loaded end
 $-90^\circ < \alpha < 90^\circ$



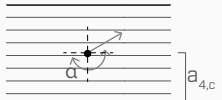
unloaded end
 $90^\circ < \alpha < 270^\circ$



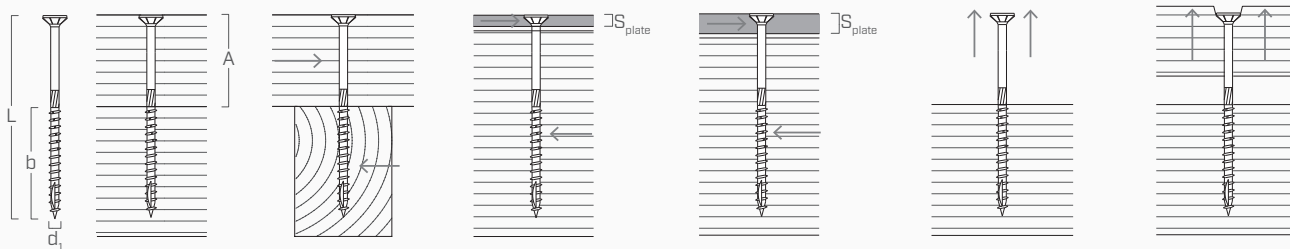
loaded edge
 $0^\circ < \alpha < 180^\circ$



unloaded edge
 $180^\circ < \alpha < 360^\circ$



■ STATIC VALUES



GEOMETRY				SHEAR			TENSION	
d ₁ [mm]	L [mm]	b [mm]	A [mm]	TIMBER-TIMBER R _{v,k} [kN]	STEEL-WOOD THIN PLATE ⁽²⁾ R _{v,k} [kN]	STEEL-WOOD THICK PLATE ⁽³⁾ R _{v,k} [kN]	THREAD WITHDRAWAL ⁽⁴⁾ R _{ax,k} [kN]	HEAD PULL-THROUGH ⁽⁵⁾ R _{head,k} [kN]
8	80	52	28	2,59	3,99	5,10	5,25	2,38
	100	52	48	3,28	3,99	5,10	5,25	2,38
	120	60	60	3,28	4,19	5,30	6,06	2,38
	140	60	80	3,28	4,19	5,30	6,06	2,38
	160	80	80	3,28	4,70	5,81	8,08	2,38
	180	80	100	3,28	4,70	5,81	8,08	2,38
	200	80	120	3,28	4,70	5,81	8,08	2,38
	220	80	140	3,28	4,70	5,81	8,08	2,38
	240	80	160	3,28	4,70	5,81	8,08	2,38
	260	80	180	3,28	4,70	5,81	8,08	2,38
	280	80	200	3,28	4,70	5,81	8,08	2,38
	300	100	200	3,28	5,20	6,31	10,10	2,38
	320	100	220	3,28	5,20	6,31	10,10	2,38
	340	100	240	3,28	5,20	6,31	10,10	2,38
	360	100	260	3,28	5,20	6,31	10,10	2,38
	380	100	280	3,28	5,20	6,31	10,10	2,38
	400	100	300	3,28	5,20	6,31	10,10	2,38
	440	100	340	3,28	5,20	6,31	10,10	2,38
	480	100	380	3,28	5,20	6,31	10,10	2,38
	520	100	420	3,28	5,20	6,31	10,10	2,38

GENERAL PRINCIPLES:

- Characteristic values consistent with EN 1995:2014 and in accordance with ETA-11/0030.

- Design values can be obtained from characteristic values as follows:

$$R_d = \frac{R_k \cdot k_{mod}}{\gamma_m}$$

The coefficients γ_m and k_{mod} should be taken according to the current regulations used for the calculation.

- For the mechanical strength values and the geometry of the screws, reference was made to ETA-11/0030.

- For the calculation process a timber density $\rho_k = 385 \text{ kg/m}^3$ has been considered. Characteristic resistances can also be considered as valid for larger densities, for the purposes of safety.

- Values were calculated considering the threaded part as being completely inserted into the wood.

- Dimensioning and verification of timber elements and steel plates must be carried out separately.

- The shear characteristic resistances are calculated for screws inserted without pre-drilling holes. In the case of screws inserted with pre-bored holes, greater resistance values can be obtained.

- For different calculation methods, the myProject software is available free of charge. (www.rothoblaas.com)

The characteristic resistances were calculated using solid wood or glulam. In the case of joints with CLT elements, the resistance values may be different and should be calculated on the basis of the characteristics of the panel and the connection configuration.

Full list of codes and technical data available in the website www.rothoblaas.com.

NOTES:

⁽¹⁾ Minimum distances are in accordance with EN 1995:2014 standard, according to ETA-11/0030, considering a volume mass of the wooden elements equal to $\rho_k \leq 420 \text{ kg/m}^3$. In the case of steel-wood joints, the minimum spacings (a_1 , a_2) can be multiplied by a coefficient of 0,7.

⁽²⁾ The shear resistance characteristics are calculated considering the case of a thin plate ($S_{PLATE} \leq 0,5 d_1$).

⁽³⁾ The shear resistance characteristics are calculated considering the case of a thick plate ($S_{PLATE} \geq d_1$).

⁽⁴⁾ The axial thread-resistance was calculated considering a 90° angle between the grain and the connector and for a fixing length of b.

⁽⁵⁾ The axial resistance to head penetration was calculated using wood elements. In the case of steel-wood connections, generally the steel tensile strength is binding with respect to head separation or penetration.

TOTAL THREADED CONNECTOR WITH COUNTERSUNK HEAD

SPECIAL STEEL

Deep thread and high resistance steel ($f_{y,k} = 1000 \text{ N/mm}^2$) for excellent tensile performance.

VERSATILE

Can also be used for joints, reinforcements, lifting and coupling.

COUNTERSUNK HEAD

Designed for use on steel plates.

CODES AND DIMENSIONS

CODE	d ₁ [mm]	L [mm]	b [mm]	TX	pcs.
VGS9120	9	120	110	40	25
VGS9140	9	140	130	40	25
VGS9160	9	160	150	40	25
VGS9180	9	180	170	40	25
VGS9200	9	200	190	40	25
VGS9220	9	220	210	40	25
VGS9240	9	240	230	40	25
VGS9260	9	260	250	40	25
VGS9280	9	280	270	40	25
VGS9300	9	300	290	40	25
VGS9320	9	320	310	40	25
VGS9340	9	340	330	40	25
VGS9360	9	360	350	40	25
VGS9380	9	380	370	40	25
VGS9400	9	400	390	40	25
VGS9440	9	440	430	40	25
VGS9480	9	480	470	40	25
VGS9520	9	520	510	40	25
VGS11100	11	100	90	50	25
VGS11125	11	125	115	50	25
VGS11150	11	150	140	50	25
VGS11175	11	175	165	50	25
VGS11200	11	200	190	50	25
VGS11225	11	225	215	50	25
VGS11250	11	250	240	50	25
VGS11275	11	275	265	50	25
VGS11300	11	300	290	50	25
VGS11325	11	325	315	50	25
VGS11350	11	350	340	50	25
VGS11375	11	375	365	50	25
VGS11400	11	400	390	50	25
VGS11450	11	450	440	50	25
VGS11500	11	500	490	50	25
VGS11550	11	550	540	50	25
VGS11600	11	600	590	50	25



ASSEMBLY >

The high performance thread and high tensile strength guarantee easy and effective installation.



MATERIAL

Carbon steel with white galvanic zinc coating.

COMPATIBLE ANCHOR DEVICES

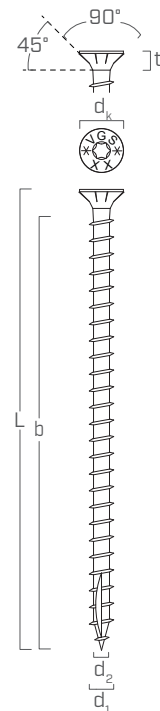
TOWER

KITE (combined with HBS)

GEOMETRY AND MECHANICAL CHARACTERISTICS

VGS CONNECTOR				
Nominal diameter	d₁	[mm]	9	11
Head diameter	d_k	[mm]	16,0	19,3
Core diameter	d₂	[mm]	5,9	6,6
Head thickness	t₁	[mm]	6,5	8,2
Pre-bored hole diameter*	d_v	[mm]	5,0	6,0
Characteristic value for the yield moment	M_{y,k}	[Nmm]	27244,1	45905,4
Characteristic value of extrac-tion strength	f_{ax,k}	[N/mm ²]	11,7	11,7
Characteristic tensile strength	f_{tens,k}	[kN]	25,4	38,0
Characteristic yield strength	f_{y,k}	[N/mm ²]	1000	1000

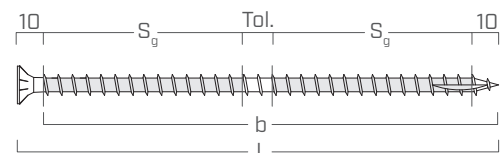
* Pre-bored hole required for connectors with Ø11 ≥ 400 mm



EFFECTIVE THREAD USED IN CALCULATION

b = L - 10 mm represents the entire length of the threaded part.

S_g = (L - 10 mm - 10 mm - Tol.) / 2 represents the partial length of the threaded part net of a laying tolerance (Tol.) of 10 mm.



GENERAL PRINCIPLES:

- Characteristic values consistent with EN 1995:2014 and in accordance with ETA-11/0030.
- Design values can be obtained from characteristic values as follows:

$$R_d = \frac{R_k \cdot k_{mod}}{\gamma_m}$$

The coefficients γ_m and k_{mod} should be taken according to the current regulations used for the calculation.

- For the mechanical strength values and the geometry of the screws, reference was made to ETA-11/0030.
- For the calculation process a timber density $\rho_k = 385 \text{ kg/m}^3$ has been considered. Characteristic resistances can also be considered as valid for larger densities, for the purposes of safety.
- Dimensioning and verification of the timber elements must be carried out separately.
- The shear characteristic resistances are calculated for screws inserted without pre-drilling holes. In the case of screws inserted with pre-drilling holes, greater resistance values can be obtained.
- The extraction and shear values were calculated considering the centre of gravity of the connector placed in correspondence with the shear plane.
- The characteristic resistances were calculated using solid wood or glulam. In the case of joints with CLT elements, the resistance values may be different and should be calculated on the basis of the characteristics of the panel and the connection configuration.

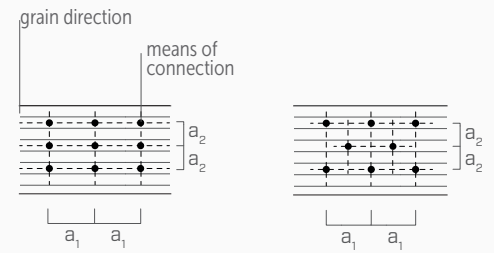
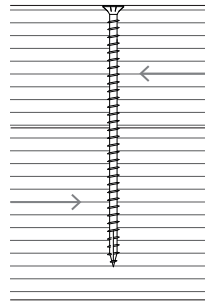
Full technical data is available in the website www.rothoblaas.com.

INSTALLATION

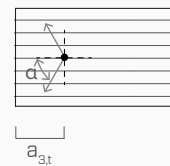
MINIMUM DISTANCES FOR SHEAR LOADS ⁽¹⁾

Load angle to the grain $\alpha = 0^\circ$

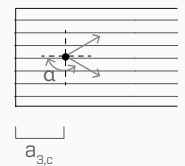
		SCREWS INSERTED WITH PRE-BORED HOLES		SCREWS INSERTED WITHOUT PRE-BORED HOLES	
		9	11	9	11
a_1	[mm]	45	55	108	132
a_2	[mm]	27	33	45	55
$a_{3,t}$	[mm]	108	132	135	165
$a_{3,c}$	[mm]	63	77	90	110
$a_{4,t}$	[mm]	27	33	45	55
$a_{4,c}$	[mm]	27	33	45	55



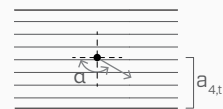
loaded end
 $-90^\circ < \alpha < 90^\circ$



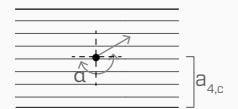
unloaded end
 $90^\circ < \alpha < 270^\circ$



loaded edge
 $0^\circ < \alpha < 180^\circ$

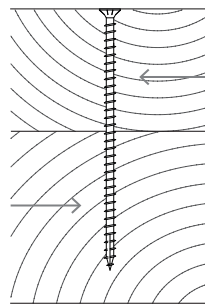


unloaded edge
 $180^\circ < \alpha < 360^\circ$



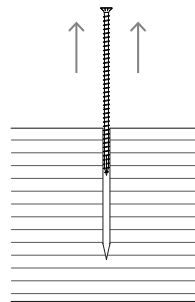
Load angle to the grain $\alpha = 90^\circ$

		SCREWS INSERTED WITH PRE-BORED HOLES		SCREWS INSERTED WITHOUT PRE-BORED HOLES	
		9	11	9	11
a_1	[mm]	36	44	45	55
a_2	[mm]	36	44	45	55
$a_{3,t}$	[mm]	63	77	90	110
$a_{3,c}$	[mm]	63	77	90	110
$a_{4,t}$	[mm]	63	77	90	110
$a_{4,c}$	[mm]	27	33	45	55



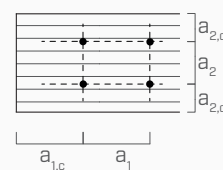
MINIMUM DISTANCES FOR AXIAL STRESSES ⁽²⁾

		SCREWS INSERTED WITH PRE-BORED HOLES		SCREWS INSERTED WITHOUT PRE-BORED HOLES	
		9	11	9	11
a_1	[mm]	45	55	45	55
a_2	[mm]	45	55	45	55
$a_{2,LIM}^{(3)}$	[mm]	23	28	23	28
$a_{1,c}$	[mm]	90	110	90	110
$a_{2,c}$	[mm]	27	33	36	44

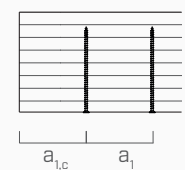


SCREWS INSERTED WITH A 90° ANGLE WITH RESPECT TO THE GRAIN

PLAN



FRONT



NOTES:

⁽¹⁾ Minimum distances are in accordance with EN 1995:2014 as per ETA-11/0030 considering a volume mass of the wooden elements equal to $\rho_k \leq 420 \text{ kg/m}^3$.

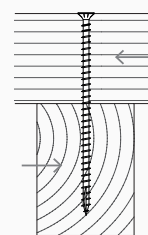
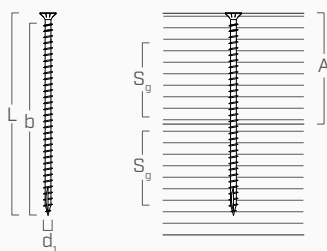
In the case of steel-wood joints, the minimum spacings (a_1 , a_2) can be multiplied by a coefficient of 0,7.

⁽²⁾ The minimum distances for connectors stressed axially are independent of the insertion angle of the connector and the angle of the force with respect to the grain, in accordance with ETA-11/0030.

⁽³⁾ The axial distance a_2 can be reduced down to $2,5 \cdot d_1$ if for each connector a "joint surface" $a_1 \cdot a_2 = 25 \cdot d_1^2$ is maintained.

■ STATIC VALUES

SHEAR



GEOMETRY				TIMBER - TIMBER
d ₁ [mm]	L [mm]	S _g [mm]	A _{min} [mm]	R _{v,k} [kN]
9	160	65	80	5,10
	180	75	90	5,39
	200	85	100	5,67
	220	95	110	5,95
	240	105	120	6,24
	260	115	130	6,51
	280	125	140	6,51
	300	135	150	6,51
	320	145	160	6,51
	340	155	170	6,51
	360	165	180	6,51
	380	175	190	6,51
	400	185	200	6,51
	440	205	220	6,51
	480	225	240	6,51
	520	245	260	6,51
11	100	35	50	4,27
	125	48	63	5,40
	150	60	75	6,40
	175	73	88	7,05
	200	85	100	7,48
	225	98	113	7,92
	250	110	125	8,35
	275	123	138	8,79
	300	135	150	9,06
	325	148	163	9,06
	350	160	175	9,06
	375	173	188	9,06
	400	185	200	9,06
	450	210	225	9,06
	500	235	250	9,06
	550	260	275	9,06
	600	285	300	9,06

NOTES:

⁽⁴⁾ The tensile design strength of the connector is the lower between the wood-side design strength (R_{ax,d}) and the steel-side design strength (R_{tens,d}).

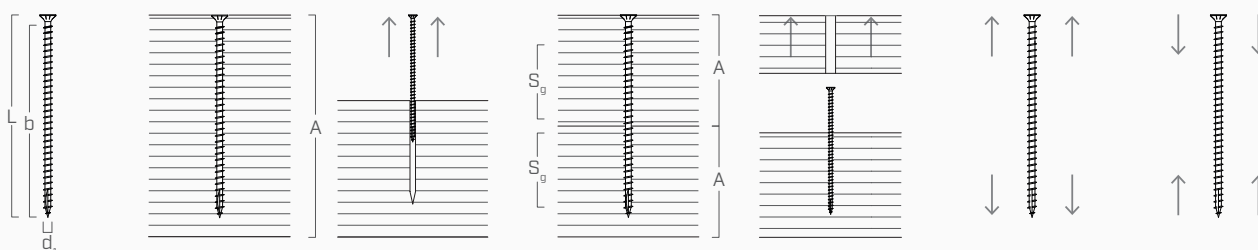
$$R_{ax,d} = \min \left\{ \frac{R_{ax,k} \cdot k_{mod}}{Y_m}, \frac{R_{tens,k}}{Y_{m2}} \right\}$$

⁽⁵⁾ The compression design strength of the connector is the lower between the wood-side design strength (R_{ax,d}) and the instability design strength (R_{ki,d}).

$$R_{ax,d} = \min \left\{ \frac{R_{ax,k} \cdot k_{mod}}{Y_m}, \frac{R_{ki,k}}{Y_{m1}} \right\}$$

■ STATIC VALUES

TENSION ^[4] / COMPRESSION ^[5]



GEOMETRY			TOTAL THREAD WITHDRAWAL ⁽⁶⁾		PARTIAL THREAD WITHDRAWAL ⁽⁶⁾			TENSION	INSTABILITY
d ₁ [mm]	L [mm]	b [mm]	A _{min} [mm]	R _{ax,k} [kN]	S _g [mm]	A _{min} [mm]	R _{ax,k} [kN]	R _{tens,k} [kN]	R _{ki,k} [kN]
9	160	150	170	17,05	65	85	7,39	25,40	17,25
	180	170	190	19,32	75	95	8,52		
	200	190	210	21,59	85	105	9,66		
	220	210	230	23,87	95	115	10,80		
	240	230	250	26,14	105	125	11,93		
	260	250	270	28,41	115	135	13,07		
	280	270	290	30,68	125	145	14,21		
	300	290	310	32,96	135	155	15,34		
	320	310	330	35,23	145	165	16,48		
	340	330	350	37,50	155	175	17,61		
	360	350	370	39,78	165	185	18,75		
	380	370	390	42,05	175	195	19,89		
	400	390	410	44,32	185	205	21,02		
	440	430	450	48,87	205	225	23,30		
	480	470	490	53,41	225	245	25,57		
	520	510	530	57,96	245	265	27,84		
11	100	90	110	12,50	35	55	4,86	38,00	21,93
	125	115	135	15,97	48	68	6,60		
	150	140	160	19,45	60	80	8,33		
	175	165	185	22,92	73	93	10,07		
	200	190	210	26,39	85	105	11,81		
	225	215	235	29,86	98	118	13,54		
	250	240	260	33,34	110	130	15,28		
	275	265	285	36,81	123	143	17,01		
	300	290	310	40,28	135	155	18,75		
	325	315	335	43,75	148	168	20,49		
	350	340	360	47,22	160	180	22,22		
	375	365	385	50,70	173	193	23,96		
	400	390	410	54,17	185	205	25,70		
	450	440	460	61,11	210	230	29,17		
	500	490	510	68,06	235	255	32,64		
	550	540	560	75,00	260	280	36,11		
	600	590	610	81,95	285	305	39,59		

NOTES:

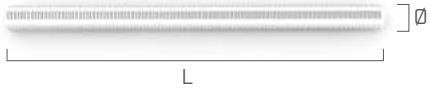
⁽⁶⁾ The axial resistance of the thread to withdrawal was calculated considering a 90° angle between the fibres and the connector and for a effective thread length of b or S_g. For intermediate S_g values it is possible to interpolate linearly.

MGS AI 975

THREADED ROD

CODES AND DIMENSIONS

CODE	Ø [mm]	L [mm]	pcs.
AI9758	M8	1000	5
AI97510	M10	1000	5
AI97512	M12	1000	5
AI97516	M16	1000	5



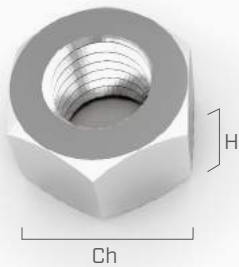
A2 stainless steel
DIN 975

MUT AI 934

HEXAGONAL NUT

CODES AND DIMENSIONS

CODE	Ø [mm]	H [mm]	Ch [mm]	pcs.
AI9348	M8	6,5	13	500
AI93410	M10	8	16	200
AI93412	M12	10	18	200
AI93416	M16	13	24	100



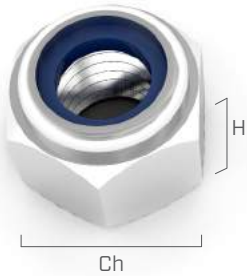
A2 stainless steel
DIN 934

MUT 985

SELF-BLOCKING NUT

CODES AND DIMENSIONS

CODE	Ø [mm]	H [mm]	Ch [mm]	pcs.
MUT9858	M8	8	13	1
MUT98510	M10	10	17	1
MUT98512	M12	12	19	1
MUT98516	M16	16	24	1



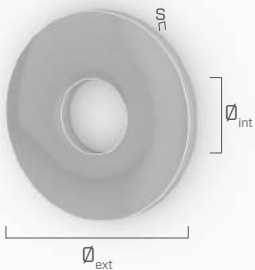
A2 stainless steel
DIN 985

ULS AI 9021

WASHER

CODES AND DIMENSIONS

CODE	Ø [mm]	Ø _{int} [mm]	Ø _{ext} [mm]	s [mm]	pcs.
AI90218	M8	8,4	24	2	500
AI902110	M10	10,5	30	2,5	500
AI902112	M12	13	37	3	200
AI902116	M16	17	50	3	100



A2 stainless steel
DIN 9021

MGS 1000

THREADED ROD

CODES AND DIMENSIONS

STEEL CLASS 4.8

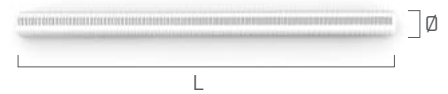
CODE	Ø [mm]	L [mm]	pcs.
MGS10008	M8	1000	10
MGS100010	M10	1000	10
MGS100012	M12	1000	10
MGS100014	M14	1000	10
MGS100016	M16	1000	10

STEEL CLASS 8.8

CODE	Ø [mm]	L [mm]	pcs.
MGS10888	M8	1000	1
MGS11088	M10	1000	1
MGS11288	M12	1000	1
MGS11488	M14	1000	1
MGS11688	M16	1000	1



Steel class 4.8 - bright zinc plated
DIN 975



Steel class 8.8 - bright zinc plated
DIN 975

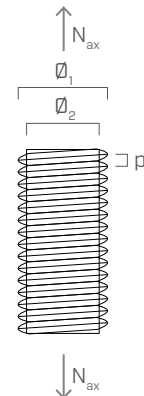
STATIC VALUES - TENSILE STRENGTH

CHARACTERISTIC VALUES

					STEEL CLASS	
					4.8	8.8
Ø [mm]	Ø ₁ [mm]	Ø ₂ [mm]	p [mm]	A _{resist} [mm ²]	N _{ax,k} [kN]	N _{ax,k} [kN]
M8	8,0	6,47	1,25	36,6	13,2	26,4
M10	10,0	8,16	1,50	58,0	20,9	41,8
M12	12,0	9,85	1,75	84,3	30,3	60,7
M14	14,0	11,55	2,00	115,0	41,4	82,8
M16	16,0	13,55	2,00	157,0	56,5	113,0

Characteristic values according to EN 1993.

Design values can be obtained from characteristic values as follows: $N_{ax,d} = N_{ax,k} / \gamma_{m2}$



MUT 934

HEXAGONAL NUT

CODES AND DIMENSIONS

CODE	Ø [mm]	H [mm]	Ch [mm]	pcs.
MUT9348	M8	6,5	13	1000
MUT93410	M10	8	17	500
MUT93412	M12	10	19	500
MUT93414	M14	11	22	200
MUT93416	M16	13	24	200



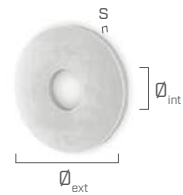
Steel class 8 - bright zinc plated
DIN 934

ULS 9021

WASHER

CODES AND DIMENSIONS

CODE	Ø [mm]	Ø _{int} [mm]	Ø _{ext} [mm]	s [mm]	pcs.
ULS8242	M8	8,4	24	2	200
ULS10302	M10	10,5	30	2,5	200
ULS13373	M12	13	37	3	100
ULS15443	M14	15	44	3	100
ULS17503	M16	17	50	3	100



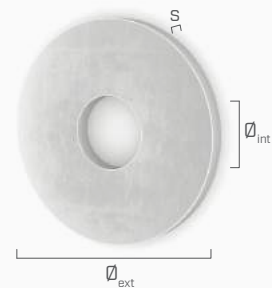
S235 steel - bright zinc plated
DIN 9021

ULS 440

WASHER

CODES AND DIMENSIONS

CODE	Ø [mm]	Ø _{int} [mm]	Ø _{ext} [mm]	s [mm]	pcs.
ULS11343	M10	11	34	3	200
ULS13444	M12	13,5	44	4	200
ULS17565	M16	17,5	56	5	50



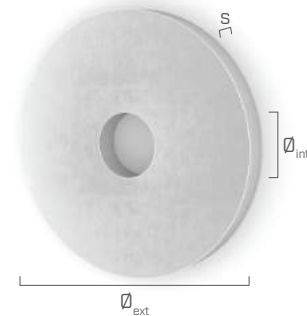
S235 steel - bright zinc plated
DIN 440 R

ULS 1052

WASHER

CODES AND DIMENSIONS

CODE	Ø [mm]	Ø _{int} [mm]	Ø _{ext} [mm]	s [mm]	pcs.
ULS14586	M12	14	58	6	50
ULS18686	M16	18	68	6	50



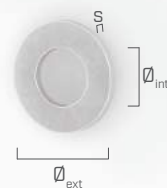
S235 steel - bright zinc plated
DIN 1052

ULS 125

WASHER

CODES AND DIMENSIONS

CODE	Ø [mm]	Ø _{int} [mm]	Ø _{ext} [mm]	s [mm]	pcs.
ULS81616	M8	8,4	16	1,6	1000
ULS10202	M10	10,5	20	2	500
ULS13242	M12	13	24	2,5	500
ULS17303	M16	17	30	3	250

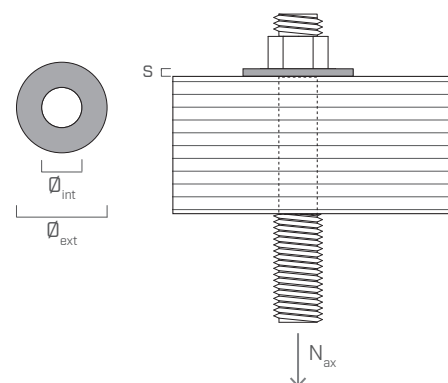


S235 steel - bright zinc plated
DIN 125 A

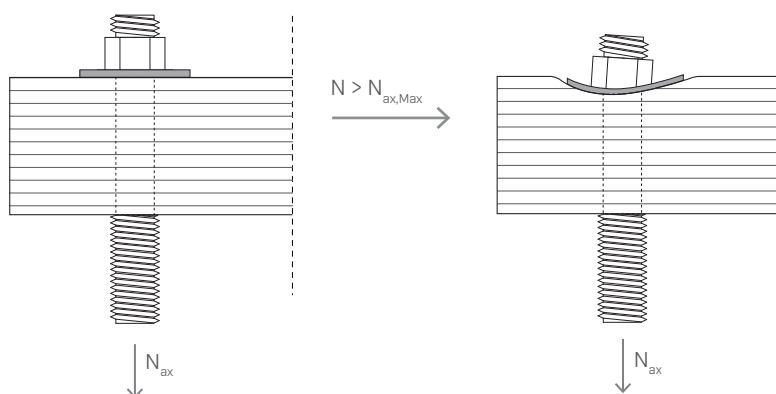
■ STATIC VALUES - WASHERS

PULL-THROUGH RESISTANCE

Ø [mm]	standard	Ø _{int} [mm]	Ø _{ext} [mm]	s [mm]	CHARACTERISTIC VALUES
					N _{ax,k} [kN]
M10	DIN 125 A	10,5	20,0	2,0	1,84
	DIN 9021	10,5	30,0	2,5	5,02
	DIN 440 R	11	34,0	3,0	6,58
	DIN 1052	-	-	-	-
M12	DIN 125 A	13,0	24,0	2,5	2,59
	DIN 9021	13,0	37,0	3,0	7,63
	DIN 440 R	13,5	44,0	4,0	11,16
	DIN 1052	14,0	58,0	6,0	20,15
M16	DIN 125 A	17,0	30,0	3,0	3,89
	DIN 9021	17,0	50,0	3,0	14,07
	DIN 440 R	17,5	56,0	5,0	18,00
	DIN 1052	18,0	68,0	6,0	27,36



CRITICALITY: WASHER HEAD PULL-THROUGH INTO TIMBER



NOTES:

- Characteristic values according to EN 1995:2008.
- Design values can be obtained from characteristic values as follows:

$$N_{ax,d} = \frac{N_{ax,k} \cdot k_{mod}}{\gamma_m}$$

The coefficients γ_m and k_{mod} should be taken according to the current regulations used for the calculation.

- For the calculation process a timber density $\rho_k = 380 \text{ kg/m}^3$ has been considered.
- The pull-through resistance of a washer is proportional to its contact surface with the timber element.

SKR - SKS

SCREW ANCHOR FOR CONCRETE



- Suitable for uncracked concrete
- Hexagonal head of increased size
- Electrogalvanized carbon steel
- Thread suitable for dry fastening
- Through fastening
- No fastener expansion



SKR



SKS

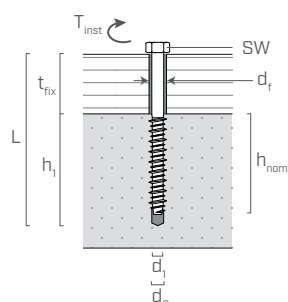
CODES AND DIMENSIONS

SKR HEXAGONAL HEAD

CODE	d ₁ [mm]	L [mm]	t _{fix} [mm]	h _{1,min} [mm]	h _{nom} [mm]	d _{0 cls} [mm]	d _{f timber} [mm]	d _{f steel} [mm]	SW [mm]	T _{inst} [Nm]	pcs.
SKR7560	7,5	60	10	60	50	6	8	8 - 10	13	15	50
SKR7580	7,5	80	30	60	50	6	8	8 - 10	13	15	50
SKR75100	7,5	100	20	90	80	6	8	8 - 10	13	15	50
SKR1080	10	80	30	65	50	8	10	10 - 12	16	25	50
SKR10100	10	100	20	95	80	8	10	10 - 12	16	25	25
SKR10120	10	120	40	95	80	8	10	10 - 12	16	25	25
SKR10140	10	140	60	95	80	8	10	10 - 12	16	25	25
SKR10160	10	160	80	95	80	8	10	10 - 12	16	25	25
SKR12100	12	100	20	100	80	10	12	12 - 14	18	50	25
SKR12120	12	120	40	100	80	10	12	12 - 14	18	50	25
SKR12140	12	140	60	100	80	10	12	12 - 14	18	50	25
SKR12160	12	160	80	100	80	10	12	12 - 14	18	50	25
SKR12200	12	200	120	100	80	10	12	12 - 14	18	50	25
SKR12240	12	240	160	100	80	10	12	12 - 14	18	50	25
SKR12280	12	280	200	100	80	10	12	12 - 14	18	50	25
SKR12320	12	320	240	100	80	10	12	12 - 14	18	50	25
SKR12400	12	400	320	100	80	10	12	12 - 14	18	50	25

SKS COUNTERSUNK HEAD

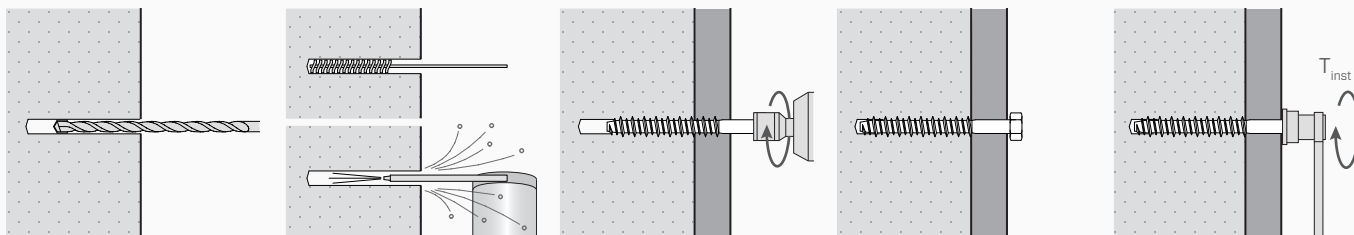
CODE	d ₁ [mm]	L [mm]	t _{fix} [mm]	h _{1,min} [mm]	h _{nom} [mm]	d _{0 cls} [mm]	d _{f timber} [mm]	d _{f steel} [mm]	TX [mm]	T _{inst} [Nm]	pcs.
SKS7560	7,5	60	10	60	50	6	8	-	40	-	50
SKS7580	7,5	80	30	60	50	6	8	-	40	-	50
SKS75100	7,5	100	20	90	80	6	8	-	40	-	50
SKS75120	7,5	120	40	90	80	6	8	-	40	-	50
SKS75140	7,5	140	60	90	80	6	8	-	40	-	50
SKS75160	7,5	160	80	90	80	6	8	-	40	-	50



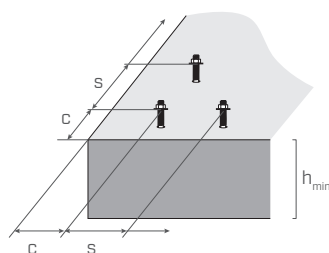
d₁ = anchor diameter
 L = anchor length
 t_{fix} = maximum fastening thickness
 h₁ = minimum hole depth
 h_{nom} = nominal anchoring depth

d₀ = hole diameter in the concrete support
 d_f = maximum hole diameter in the element to be fastened
 SW = wrench size
 T_{inst} = tightening torque

ASSEMBLY



INSTALLATION



			SKR			SKS
Spacing and minimum distances for tensile loads			7,5	10	12	7,5
Minimum spacing	$S_{min,N}$	[mm]	50	60	65	50
Minimum edge distance	$C_{min,N}$	[mm]	50	60	65	50
Minimum thickness of concrete support	h_{min}	[mm]	100	110	130	100
Critical spacing	$S_{cr,N}$	[mm]	100	150	180	100
Critical edge distance	$C_{cr,N}$	[mm]	50	70	80	50
Spacing and minimum distances for shear loads			7,5	10	12	7,5
Minimum spacing	$S_{min,V}$	[mm]	50	60	70	50
Minimum edge distance	$C_{min,V}$	[mm]	50	60	70	50
Minimum thickness of concrete support	h_{min}	[mm]	100	110	130	100
Critical spacing	$S_{cr,V}$	[mm]	140	200	240	140
Critical edge distance	$C_{cr,V}$	[mm]	70	110	130	70

For spacing and distances smaller than the critical ones, strength values have to be reduced depending on the installation parameters.

STATIC VALUES

Valid for a single anchor in C20/25 grade concrete when spacing and edge-distance are not limiting parameters.

ADMISSIBLE VALUES [recommended]

		UNCRACKED CONCRETE		
		TENSION	SHEAR ⁽¹⁾	HEAD PENETRATION
		$N_{1,rec}$ [kN]	V_{rec} [kN]	$N_{2,rec}$ [kN]
SKR	7,5	2,13	2,50	1,19 ⁽²⁾
	10	6,64	6,65	1,86 ⁽²⁾
	12	8,40	8,18	2,83 ⁽²⁾
SKS	7,5	2,13	2,50	0,72

GENERAL PRINCIPLES:

- Recommended admissible shear and tensile values are compliant with Certificate Nr. 2006/5205/1 released from Politecnico di Milano and obtained by considering a safety factor of 4 for the failure load.

NOTES:

⁽¹⁾ When evaluating the anchor global-strength, the shear strength on the element to be fastened (e.g. timber, concrete, ..) must be considered separately based on the material adopted.

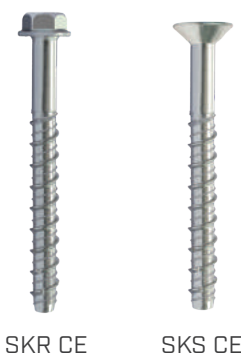
⁽²⁾ All values refer to SKR installed with DIN 9021 (ISO 9073) washer.

SKR - SKS CE



SCREW ANCHOR FOR CONCRETE CE1

- CE option 1 for cracked and uncracked concrete
- Seismic performance category C1 (M10-M16) and C2 (M12-M16)
- Electrogalvanized carbon steel
- Self-locking knurled under-head (SKR CE)
- Fire resistance R120
- Through fastening
- No fastener expansion



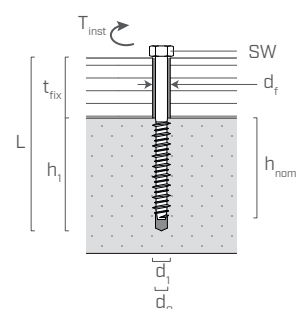
CODES AND DIMENSIONS

SKR CE HEXAGONAL HEAD WITH MOCK WASHER

CODE	d ₁ [mm]	L [mm]	t _{fix} [mm]	h _{1,min} [mm]	h _{nom} [mm]	h _{ef} [mm]	d _{0 cls} [mm]	d _f [mm]	SW [mm]	T _{inst} [Nm]	pcs.
SKR8100CE	8	100	40	75	60	48	6	9	10	20	50
SKR1080CE	10	80	10	85	70	56	8	12	13	50	50
SKR10100CE	10	100	30	85	70	56	8	12	13	50	25
SKR10120CE	10	120	50	85	70	56	8	12	13	50	25
SKR12110CE	12	110	30	100	80	64	10	14	15	80	25
SKR12150CE	12	150	70	100	80	64	10	14	15	80	25
SKR12210CE	12	210	130	100	80	64	10	14	15	80	20
SKR12250CE	12	250	170	100	80	64	10	14	15	80	15
SKR12290CE	12	290	210	100	80	64	10	14	15	80	15
SKR16130CE	16	130	20	140	110	85	14	18	21	160	10

SKS CE COUNTERSUNK FLAT HEAD

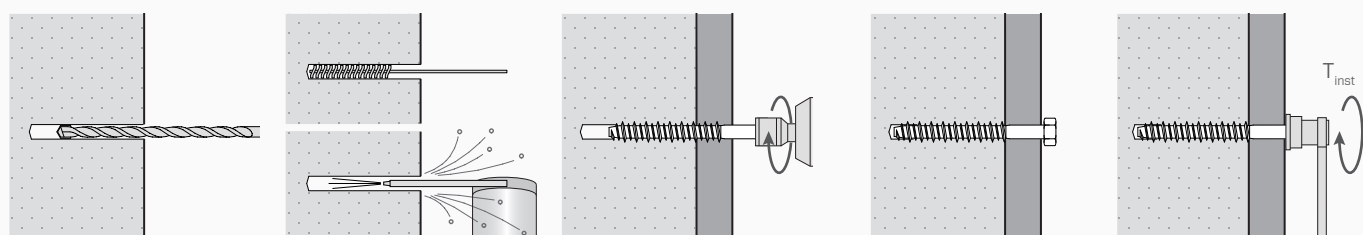
CODE	d ₁ [mm]	L [mm]	t _{fix} [mm]	h _{1,min} [mm]	h _{nom} [mm]	h _{ef} [mm]	d _{0 cls} [mm]	d _f [mm]	TX [mm]	T _{inst} [Nm]	pcs.
SKS75100CE	8	100	40	75	60	48	6	9	TX30	20	50
SKS10100CE	10	100	30	85	70	56	8	12	TX40	50	50



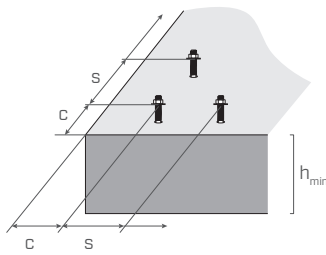
d₁ = external diameter of anchor
 L = anchor length
 t_{fix} = maximum fastening thickness
 h₁ = minimum hole depth
 h_{nom} = nominal anchoring depth

d₀ = hole diameter in the concrete support
 d_f = maximum hole diameter in the element to be fastened
 SW = wrench size
 T_{inst} = tightening torque

ASSEMBLY



■ INSTALLATION



			SKR CE / SKS CE			
Spacing and minimum distances			8	10	12	16
Minimum spacing	S_{min}	[mm]	45	50	60	80
Minimum edge distance	C_{min}	[mm]	45	50	60	80
Minimum thickness of concrete support	h_{min}	[mm]	100	110	130	170
Spacing and critical distances			8	10	12	16
Critical spacing	$S_{cr,N}^{(4)}$	[mm]	144	168	192	255
	$S_{cr,sp}^{(5)}$	[mm]	160	175	195	255
Critical edge distance	$C_{cr,N}^{(4)}$	[mm]	72	84	96	128
	$C_{cr,sp}^{(5)}$	[mm]	80	85	95	130

For spacing and distances smaller than the critical ones, strength values have to be reduced depending on the installation parameters.

■ STATIC VALUES

Valid for a single anchor in thickened C20/25 grade concrete with a thin reinforcing layer when spacing and edge-distance are not limiting parameters.

CHARACTERISTIC VALUES

		UNCRACKED CONCRETE				CRACKED CONCRETE					
		TENSION ⁽¹⁾		SHEAR ⁽²⁾		TENSION ⁽¹⁾		SHEAR			
		$N_{Rk,p}$ [kN]	γ_{Mp}	$V_{Rk,s}$ [kN]	γ_{Ms}	$N_{Rk,p}$ [kN]	γ_{Mp}	$V_{Rk,s} / R_{k,cp}$ [kN]	$\gamma_{Ms,Mc}$		
SKR CE	8	16	2,1	9,4	1,5	8	4	2,1	9,4 ⁽²⁾	1,5	<div>incremental factor for $N_{Rk,p}^{(6)}$</div> <div>C30/37</div> <div>1,22</div> <div>C40/50</div> <div>1,41</div> <div>C50/60</div> <div>1,58</div>
	10	20	1,8	20,1	1,5	10	7,5	1,8	15,1 ⁽³⁾	1,5	
	12	25	2,1	32,4	1,5	12	9	2,1	32,4 ⁽²⁾	1,5	
	16	40	2,1	56,9	1,5	16	16	2,1	56,4 ⁽³⁾	1,5	
SKS CE	8	16	2,1	9,4	1,5	8	4	2,1	9,4 ⁽²⁾	1,5	
	10	20	1,8	20,1	1,5	10	7,5	1,8	20,1 ⁽²⁾	1,5	

ADMISSIBLE VALUES [recommended]

		UNCRACKED CONCRETE		CRACKED CONCRETE	
		TENSION	SHEAR	TENSION	SHEAR
		N_{rec} [kN]	V_{rec} [kN]	N_{rec} [kN]	V_{rec} [kN]
SKR CE	8	5,4	4,5	8	1,4
	10	7,9	9,6	10	3,0
	12	8,5	15,4	12	3,1
	16	13,6	27,1	16	5,4
SKS CE	8	5,4	4,5	8	1,4
	10	7,9	9,6	10	3,0

GENERAL PRINCIPLES:

- Characteristic values according to ETA-11/0336.
- Design values can be obtained from characteristic values as follows: $R_d = R_k / \gamma_m$.
Coefficients γ_m are listed in the table in accordance with the failure characteristics and product certificates.
- Admissible values (recommended) are evaluated based on the characteristic values by applying the material safety factors γ_m according to ETA and a further partial factor for external actions $\gamma_f = 1,4$.
- For the calculation of anchors with reduced spacing, or too close to the edge, please refer to ETA. Similarly, in case of fastening on concrete-supports with a better-grade, limited thickness or a thick reinforcing layer please see ETA.
- When designing anchors under seismic load please refer to the ETA referral document and information in the EOTA Technical Report 045.
- For the calculation of anchors subjected to fire refer to the ETA and the Technical Report 020.

NOTES:

- ⁽¹⁾ Pull-out failure mode.
- ⁽²⁾ Steel failure mode ($V_{Rk,s}$).
- ⁽³⁾ Pry-out failure mode ($V_{Rk,cp}$).
- ⁽⁴⁾ Concrete cone failure mode.
- ⁽⁵⁾ Splitting failure mode.
- ⁽⁶⁾ Tensile-strength increment factor (excluding steel failure).

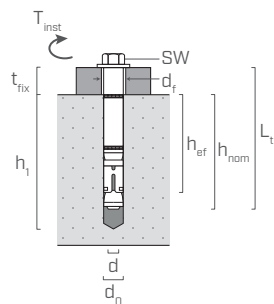
HEAVY-DUTY EXPANSION ANCHOR WITH CLAMP CE1

- CE option 1 for cracked and uncracked concrete
- Seismic performance category C1 and C2
- Electrogalvanized carbon steel
- Fire resistance R120
- 8.8 grade screw with hexagonal head and washer
- Suitable for dense materials
- Through fastening
- Torque-controlled expansion



CODES AND DIMENSIONS

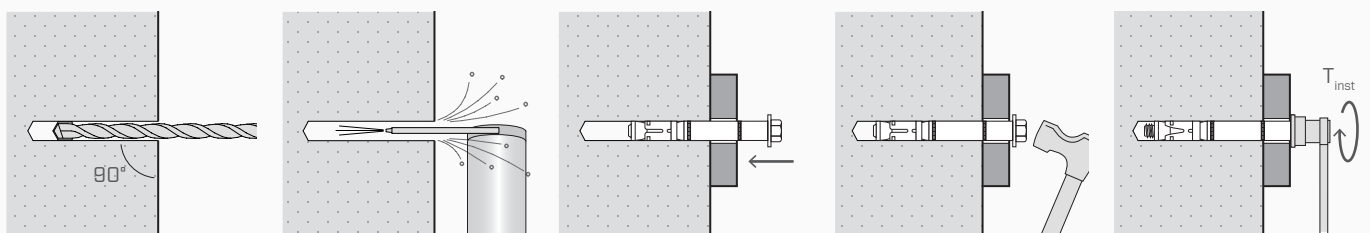
CODE	d_0 [mm]	L_t [mm]	d_{screw} [mm]	t_{fix} [mm]	$h_{1,min}$ [mm]	h_{nom} [mm]	h_{ef} [mm]	d_f [mm]	SW [mm]	T_{inst} [Nm]	pcs.
FE210356	10	70	M6	5	80	65	55	12	10	15	50
FE210361	10	100	M6	35	80	65	55	12	10	15	50
FE210366	12	100	M8	30	90	70	60	14	13	30	50
FE210371	12	120	M8	50	90	70	60	14	13	30	25
FE210376	16	120	M10	40	100	80	70	18	17	50	25
FE210381	16	140	M10	60	100	80	70	18	17	50	20
FE210386	18	120	M12	20	120	100	90	20	19	100	10
FE210391	18	150	M12	50	120	100	90	20	19	100	10
FE210392	24	140	M16	20	140	120	105	26	24	160	5
FE210393	24	170	M16	50	140	120	105	26	24	160	5



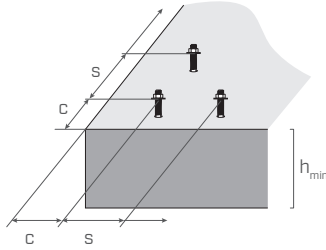
d_0 = anchor diameter = hole diameter in the concrete support
 d = screw diameter
 L_t = anchor length
 t_{fix} = maximum fastening thickness
 h_1 = minimum hole depth
 h_{nom} = nominal anchoring depth
 h_{ef} = effective anchor depth

d_f = maximum hole diameter in the element to be fastened
 SW = wrench size
 T_{inst} = tightening torque

ASSEMBLY



■ INSTALLATION



Spacing and minimum distances			10/M6	12/M8	16/M10	18/M12	24/M16	
Minimum spacing	s_{min}	[mm]	55	110	80	135	130	
	for $c \geq$	[mm]	110	145	120	220	240	
Minimum edge distance	c_{min}	[mm]	70	100	90	175	180	
	for $s \geq$	[mm]	110	160	175	255	290	
Minimum thickness of concrete support		h_{min}	[mm]	110	120	140	180	210

Spacing and critical distances			10/M6	12/M8	16/M10	18/M12	24/M16
Critical spacing	$s_{cr,N}^{(4)}$	[mm]	165	180	210	270	315
	$s_{cr,sp}^{(5)}$	[mm]	220	320	240	370	390
Critical edge distance	$c_{cr,N}^{(4)}$	[mm]	85	90	105	135	160
	$c_{cr,sp}^{(5)}$	[mm]	110	160	120	185	195

For spacing and distances smaller than the critical ones, strength values have to be reduced depending on the installation parameters.

■ STATIC VALUES

Valid for a single anchor in thickened C20/25 grade concrete with a thin reinforcing layer when spacing and edge-distance are not limiting parameters.

CHARACTERISTIC VALUES

	UNCRACKED CONCRETE					CRACKED CONCRETE							
	TENSION ⁽¹⁾		SHEAR ⁽²⁾			TENSION ⁽¹⁾		SHEAR					
	N _{Rk,p} [kN]	γ _{Mp}	V _{Rk,s} [kN]	γ _{Ms}		N _{Rk,p} [kN]	γ _{Mp}	V _{Rk,s} / R _{k,cp} [kN]	γ _{Ms,Mc}				
10/M6	16,0	1,5	16,0	1,45	10/M6	5	1,5	15,6 ⁽³⁾	1,5	incremental factor for N _{Rk,p} ⁽⁶⁾			
12/M8	16,0	1,5	25,0	1,45	12/M8	6	1,5	25,0 ⁽²⁾	1,45				
16/M10	20,0	1,5	43,0	1,45	16/M10	16	1,5	42,2 ⁽³⁾	1,5				
18/M12	35,0	1,5	58,0	1,45	18/M12	25	1,5	58,0 ⁽²⁾	1,45				
24/M16	45,0	1,5	107,0	1,45	24/M16	35	1,5	75,9 ⁽³⁾	1,5				
											ψ _c	C30/37	1,22
												C40/50	1,41
												C50/60	1,55

ADMISSIBLE VALUES [recommended]

	UNCRACKED CONCRETE			CRACKED CONCRETE	
	TENSION	SHEAR		TENSION	SHEAR
	N_{rec} [kN]	V_{rec} [kN]		N_{rec} [kN]	V_{rec} [kN]
10/M6	7,6	7,9	10/M6	2,4	7,4
12/M8	7,6	12,3	12/M8	2,9	12,3
16/M10	9,5	21,2	16/M10	7,6	20,1
18/M12	16,7	28,6	18/M12	11,9	28,6
24/M16	21,4	52,7	24/M16	16,7	38,0

GENERAL PRINCIPLES:

- Characteristic values according to ETA-11/0181.
- Design values can be obtained from characteristic values as follows: $R_d = R_k / \gamma_m$.
Coefficients γ_m are listed in the table in accordance with the failure characteristics and product certificates.
- Admissible values (recommended) are evaluated based on the characteristic values by applying the material safety factors γ_m according to ETA and a further partial factor for external actions $\gamma_f = 1,4$.
- For the calculation of anchors with reduced spacing, or too close to the edge, please refer to ETA. Similarly, in case of fastening on concrete-supports with a better-grade, limited thickness or a thick reinforcing layer please see ETA.
- When designing anchors under seismic load please refer to the ETA referral document and information in the EOTA Technical Report 045.
- For the calculation of anchors subjected to fire refer to the ETA and the Technical Report 020.

NOTES:

- (1) Pull-out failure mode.
- (2) Steel failure mode ($V_{Rk,s}$).
- (3) Pry-out failure mode ($V_{Rk,cp}$).
- (4) Breakage characteristics for formation of concrete cone for tensile loads.
- (5) Splitting failure mode for tensile loads.
- (6) Tensile-strength increment factor (excluding steel failure).

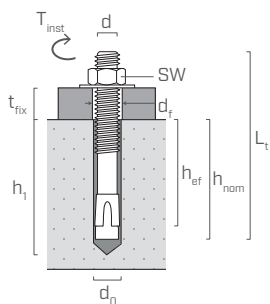
HEAVY DUTY EXPANSION ANCHOR CE1

- CE option 1 for cracked and uncracked concrete
- Seismic performance category C1 (M10-M16) and C2 (M12-M16)
- Electrogalvanized carbon steel
- Fire resistance R120
- Complete with nut and washer
- Suitable for dense materials
- Through fastening
- Torque-controlled expansion



CODES AND DIMENSIONS

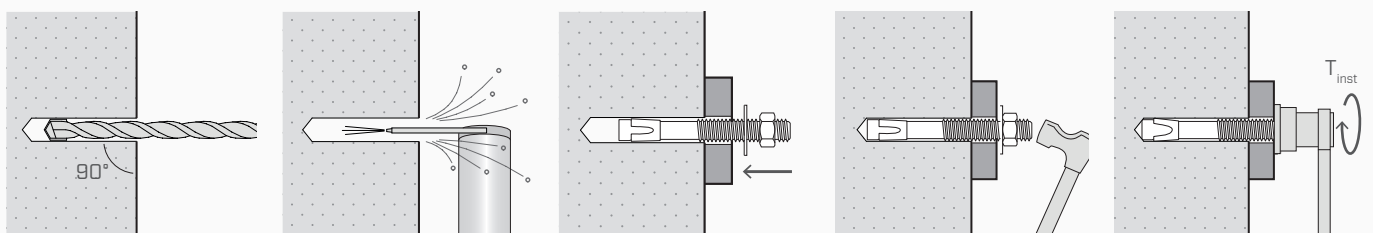
CODE	d = d ₀ [mm]	L _t [mm]	t _{fix} [mm]	h _{1,min} [mm]	h _{nom} [mm]	h _{ef} [mm]	d _f [mm]	SW [mm]	T _{inst} [Nm]	pcs.
AB1875	M8	75	9	60	55	48	9	13	15	100
AB1895	M8	95	29	60	55	48	9	13	15	50
AB18115	M8	115	49	60	55	48	9	13	15	50
AB110115	M10	115	35	75	68	60	12	17	40	25
AB110135	M10	135	55	75	68	60	12	17	40	25
AB112100	M12	100	4	85	80	70	14	19	60	25
AB112120	M12	120	24	85	80	70	14	19	60	25
AB112150	M12	150	54	85	80	70	14	19	60	25
AB112180	M12	180	84	85	80	70	14	19	60	25
AB116145	M16	145	28	105	97	85	18	24	100	10



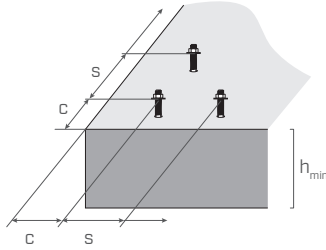
d = anchor diameter
d₀ = hole diameter in the concrete support
L_t = anchor length
t_{fix} = maximum fastening thickness
h₁ = minimum hole depth

h_{nom} = nominal anchoring depth
h_{ef} = effective anchor depth
d_f = maximum hole diameter in the element to be fastened
SW = wrench size
T_{inst} = tightening torque

ASSEMBLY



■ INSTALLATION



Spacing and minimum distances			M8	M10	M12	M16
Minimum spacing	s_{min}	[mm]	50	60	70	85
Minimum edge distance	c_{min}	[mm]	50	60	70	85
Minimum thickness of concrete support	h_{min}	[mm]	100	120	140	170

Spacing and critical distances			M8	M10	M12	M16
Critical spacing	$s_{cr,N}^{(3)}$	[mm]	144	180	210	255
	$s_{cr,sp}^{(4)}$	[mm]	288	300	350	425
Critical edge distance	$c_{cr,N}^{(3)}$	[mm]	72	90	105	128
	$c_{cr,sp}^{(4)}$	[mm]	144	150	175	213

For spacing and distances smaller than the critical ones, strength values have to be reduced depending on the installation parameters.

■ STATIC VALUES

Valid for a single anchor in thickened C20/25 grade concrete with a thin reinforcing layer when spacing and edge-distance are not limiting parameters.

CHARACTERISTIC VALUES

	UNCRACKED CONCRETE					CRACKED CONCRETE				
	TENSION ⁽¹⁾		SHEAR ⁽²⁾			TENSION ⁽¹⁾		SHEAR		
	N _{Rk,p} [kN]	γ _{Mp}	V _{Rk,s} [kN]	γ _{Ms}		N _{Rk,p} [kN]	γ _{Mp}	V _{Rk} [kN]	γ _M	
M8	9	1,8	11,0	1,25	M8	6	1,8	12,0	γ _{Mc} = 1,5 ⁽⁵⁾	incremental factor for N _{Rk,p} ⁽⁶⁾
M10	16	1,5	17,4	1,25	M10	9	1,5	17,4	γ _{Ms} = 1,25 ⁽²⁾	
M12	25	1,5	25,3	1,25	M12	16	1,5	25,3	γ _{Ms} = 1,25 ⁽²⁾	
M16	35	1,5	47,1	1,25	M16	25	1,5	47,1	γ _{Ms} = 1,25 ⁽²⁾	

ADMISSIBLE VALUES [recommended]

	UNCRACKED CONCRETE			CRACKED CONCRETE	
	TENSION	SHEAR		TENSION	SHEAR
	N_{rec} [kN]	V_{rec} [kN]		N_{rec} [kN]	V_{rec} [kN]
M8	3,6	6,3	M8	2,4	5,7
M10	7,6	9,9	M10	4,3	9,9
M12	11,9	14,5	M12	7,6	14,5
M16	16,7	26,9	M16	11,9	26,9

GENERAL PRINCIPLES:

- Characteristic values according to ETA-17/0481.
- Design values can be obtained from characteristic values as follows: $R_d = R_k / \gamma_m$.
- Coefficients γ_m are listed in the table in accordance with the failure characteristics and product certificates.
- Admissible values (recommended) are evaluated based on the characteristic values by applying the material safety factors γ_m according to ETA and a further partial factor for external actions $\gamma_f = 1,4$.
- For the calculation of anchors with reduced spacing, or too close to the edge, please refer to ETA. Similarly, in case of fastening on concrete-supports with a better-grade, limited thickness or a thick reinforcing layer please see ETA.
- When designing anchors under seismic load please refer to the ETA referral document and information in the EOTA Technical Report 045.
- For the calculation of anchors subjected to fire refer to the ETA and the Technical Report 020.

NOTES:

- ⁽¹⁾ Pull-out failure mode.
- ⁽²⁾ Steel failure mode.
- ⁽³⁾ Breakage characteristics for formation of concrete cone for tensile loads.
- ⁽⁴⁾ Splitting failure mode for tensile loads.
- ⁽⁵⁾ Pry-out failure mode.
- ⁽⁶⁾ Tensile-strength increment factor (excluding steel failure).

AB1 A4



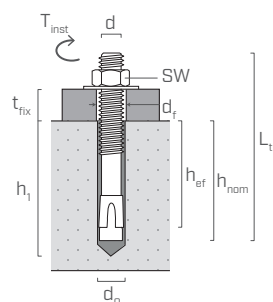
CE1 STAINLESS STEEL HEAVY-DUTY EXPANSION ANCHOR

- CE option 1 for cracked and uncracked concrete
- Seismic performance category C1
- A4 stainless steel
- Fire resistance R120
- Complete with nut and washer
- Suitable for dense materials
- Through fastening
- Torque-controlled expansion



CODES AND DIMENSIONS

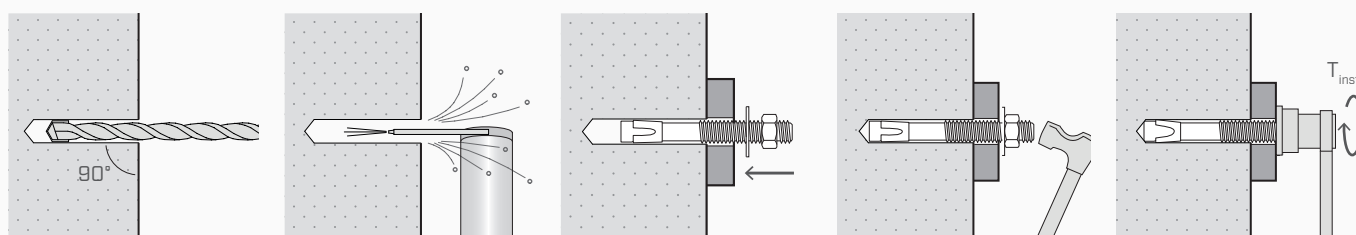
CODE	$d = d_0$ [mm]	L_t [mm]	t_{fix} [mm]	$h_{1,min}$ [mm]	h_{nom} [mm]	h_{ef} [mm]	d_f [mm]	SW [mm]	T_{inst} [Nm]	pcs.
AI8095A4	M8	92	30	60	50	45	9	13	20	50
AI80112A4	M8	112	50	60	50	45	9	13	20	50
AI1095A4	M10	92	10	75	68	60	12	17	35	50
AI10132A4	M10	132	50	75	68	60	12	17	35	25
AI12110A4	M12	118	20	90	81	70	14	19	70	20
AI12163A4	M12	163	65	90	81	70	14	19	70	20
AI16123A4	M16	123	5	110	96	85	18	24	120	10



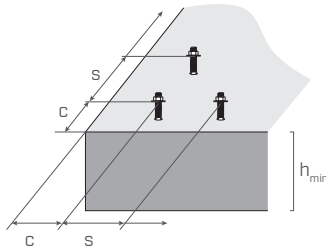
d = anchor diameter
 d_0 = hole diameter in the concrete support
 L_t = anchor length
 t_{fix} = maximum fastening thickness
 h_1 = minimum hole depth

h_{nom} = nominal anchoring depth
 h_{ef} = effective anchor depth
 d_f = maximum hole diameter in the element to be fastened
 SW = wrench size
 T_{inst} = tightening torque

ASSEMBLY



■ INSTALLATION



Spacing and minimum distances			M8	M10	M12	M16
Minimum spacing	s_{min}	[mm]	50	55	60	70
	for $c \geq$	[mm]	50	80	90	120
Minimum edge distance	c_{min}	[mm]	50	50	55	85
	for $s \geq$	[mm]	50	100	145	150
Minimum thickness of concrete support	h_{min}	[mm]	100	120	140	170
Spacing and critical distances			M8	M10	M12	M16
Critical spacing	$s_{cr,N}^{(3)}$	[mm]	135	180	210	255
	$s_{cr,sp}^{(4)}$	[mm]	180	240	280	340
Critical edge distance	$c_{cr,N}^{(3)}$	[mm]	68	90	105	128
	$c_{cr,sp}^{(4)}$	[mm]	90	120	140	170

For spacing and distances smaller than the critical ones, strength values have to be reduced depending on the installation parameters.

■ STATIC VALUES

Valid for a single anchor in thickened C20/25 grade concrete with a thin reinforcing layer when spacing and edge-distance are not limiting parameters.

CHARACTERISTIC VALUES

	UNCRACKED CONCRETE				CRACKED CONCRETE				incremental factor for $N_{Rk,p}^{(6)}$			
	TENSION ⁽¹⁾		SHEAR ⁽²⁾		TENSION ⁽¹⁾		SHEAR					
	$N_{Rk,p}$ [kN]	γ_{Mp}	$V_{Rk,s}$ [kN]	γ_{Ms}	$N_{Rk,p}$ [kN]	γ_{Mp}	$V_{Rk,s}$ [kN]	γ_M				
M8	9	1,8	11	1,25	M8	5	1,8	11	$\gamma_{Mc} = 1,5^{(5)}$	ψ_c	C25/30	1,04
M10	16	1,8	17	1,25	M10	9	1,8	17	$\gamma_{Ms} = 1,25^{(2)}$		C30/37	1,10
M12	20	1,8	25	1,25	M12	12	1,8	25	$\gamma_{Ms} = 1,25^{(2)}$		C40/50	1,20
M16	35	1,5	47	1,25	M16	20	1,5	47	$\gamma_{Ms} = 1,25^{(2)}$		C50/60	1,28

ADMISSIBLE VALUES [recommended]

	UNCRACKED CONCRETE			CRACKED CONCRETE	
	TENSION	SHEAR		TENSION	SHEAR
	N_{rec} [kN]	V_{rec} [kN]		N_{rec} [kN]	V_{rec} [kN]
M8	3,6	6,3	M8	2,0	5,2
M10	6,3	9,7	M10	3,6	9,7
M12	7,9	14,3	M12	4,8	14,3
M16	16,7	26,9	M16	9,5	26,9

GENERAL PRINCIPLES:

- Characteristic values according to ETA-10/0076.
- Design values can be obtained from characteristic values as follows: $R_d = R_k / \gamma_m$.
- Coefficients γ_m are listed in the table in accordance with the failure characteristics and product certificates.
- Admissible values (recommended) are evaluated based on the characteristic values by applying the material safety factors γ_m according to ETA and a further partial factor for external actions $\gamma_f = 1,4$.
- For the calculation of anchors with reduced spacing, or too close to the edge, please refer to ETA. Similarly, in case of fastening on concrete-supports with a better-grade, limited thickness or a thick reinforcing layer please see ETA.
- When designing anchors under seismic load please refer to the ETA referral document and information in the EOTA Technical Report 045.
- For the calculation of anchors subjected to fire refer to the ETA and the Technical Report 020.

NOTES:

- ⁽¹⁾ Pull-out failure mode.
- ⁽²⁾ Steel failure mode.
- ⁽³⁾ Breakage characteristics for formation of concrete cone for tensile loads.
- ⁽⁴⁾ Splitting failure mode for tensile loads.
- ⁽⁵⁾ Pry-out failure mode.
- ⁽⁶⁾ Tensile-strength increment factor (excluding steel failure).

- CE option 7 for uncracked concrete
- Electrogalvanized carbon steel
- Complete with nut and washer
- Long thread
- Extra-long multiway expansion clamp
- Suitable for dense materials
- Through fastening
- Torque-controlled expansion



AB7 EXTRALONG

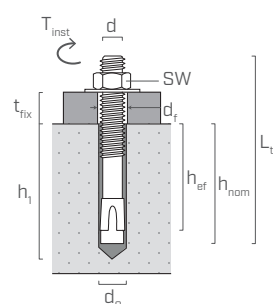


AB7 STANDARD WASHER ISO 7089

CODE	d = d ₀ [mm]	L _t [mm]	t _{fix} [mm]	h _{1,min} [mm]	h _{nom} [mm]	h _{ef} [mm]	d _f [mm]	SW [mm]	T _{inst} [Nm]	pcs.
AB71075	10	75	10	65	55	50	12	17	35	50
AB712100	12	100	18	80	70	60	14	19	55	50
AB712120	12	120	38	80	70	60	14	19	55	20
AB716145	16	145	30	110	100	85	18	24	100	15
AB716220	16	220	105	110	100	85	18	24	100	10
AB720170	20	170	35	125	115	100	22	30	150	5

AB7 EXTRALONG LARGE SIZE WASHER ISO 7093

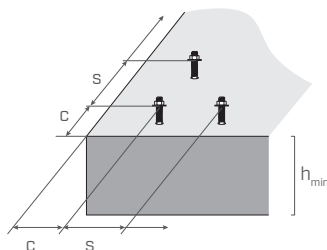
CODE	d = d ₀ [mm]	L _t [mm]	t _{fix} [mm]	h _{1,min} [mm]	h _{nom} [mm]	h _{ef} [mm]	d _f [mm]	SW [mm]	T _{inst} [Nm]	pcs.
AB716300	16	300	185	110	100	85	18	24	100	5
AB716400	16	400	245	110	100	85	18	24	100	5



d = anchor diameter
 d_0 = hole diameter in the concrete support
 L_t = anchor length
 t_{fix} = maximum fastening thickness
 h_1 = minimum hole depth

h_{nom} = nominal minimum anchoring depth
 h_{ef} = effective anchor depth
 d_f = maximum hole diameter in the element to be fastened
 SW = wrench size
 T_{inst} = tightening torque

■ INSTALLATION



Spacing and minimum distances			M10	M12	M16	M20
Minimum spacing	S_{min}	[mm]	68	81	115	135
Minimum edge distance	C_{min}	[mm]	68	81	115	135
Minimum thickness of concrete support	h_{min}	[mm]	100	120	170	200
Spacing and critical distances			M10	M12	M16	M20
Critical spacing	$S_{cr,N}^{(3)}$	[mm]	150	180	255	300
	$S_{cr,sp}^{(4)}$	[mm]	250	300	425	500
Critical edge distance	$C_{cr,N}^{(3)}$	[mm]	75	90	128	150
	$C_{cr,sp}^{(4)}$	[mm]	125	150	213	250

For spacing and distances smaller than the critical ones, strength values have to be reduced depending on the installation parameters.

■ STATIC VALUES

Valid for a single anchor in thickened C20/25 grade concrete with a thin reinforcing layer when spacing and edge-distance are not limiting parameters.

CHARACTERISTIC VALUES

	UNCRACKED CONCRETE			
	TENSION ⁽¹⁾		SHEAR ⁽²⁾	
	$N_{Rk,p}$ [kN]	γ_{Mp}	$V_{Rk,s}$ [kN]	γ_{Ms}
M10	12,0	1,8	14,5	1,25
M12	16,0	1,8	21,1	1,25
M16	16,0	1,8	39,3	1,25
M20	30,0	1,5	58,8	1,25

incremental factor for $N_{Rk,p}^{(5)}$		
ψ_c	C30/37	1,22
	C40/50	1,41
	C50/60	1,55

ADMISSIBLE VALUES [recommended]

	UNCRACKED CONCRETE	
	TENSION	SHEAR
	N_{rec} [kN]	V_{rec} [kN]
M10	4,8	8,3
M12	6,3	12,1
M16	6,3	22,5
M20	14,3	33,6

GENERAL PRINCIPLES:

- Characteristic values according to ETA-17/0237.
- Design values can be obtained from characteristic values as follows: $R_d = R_k / \gamma_m$. Coefficients γ_m are listed in the table in accordance with the failure characteristics and product certificates.
- Admissible values (recommended) are evaluated based on the characteristic values by applying the material safety factors γ_m according to ETA and a further partial factor for external actions $\gamma_f = 1,4$.
- For the calculation of anchors with reduced spacing, or too close to the edge, please refer to ETA. Similarly, in case of fastening on concrete-supports with a better-grade, limited thickness or a thick reinforcing layer please see ETA.

NOTES:

- ⁽¹⁾ Pull-out failure mode.
- ⁽²⁾ Steel failure mode.
- ⁽³⁾ Breakage characteristics for formation of concrete cone for tensile loads.
- ⁽⁴⁾ Splitting failure mode for tensile loads.
- ⁽⁵⁾ Tensile-strength increment factor (excluding steel failure).

VIN-FIX PRO

VINYL ESTER CHEMICAL ANCHOR WITHOUT STYRENE



- CE option 1 for cracked and uncracked concrete
- Certified use for masonry (category of use c, w/d)
- C1 Seismic performance category (M12-M24)
- Certified fire resistance F120
- Comply with LEED ®, IEQ Credit 4.1
- A+ Class: emission of volatile organic compounds (VOC) in lived environments
- Dry or wet concrete
- Concrete with submerged holes (M8-M16)
- No stress in the support
- Without styrene - odorless



CODES AND DIMENSIONS

CODE	format [ml]	pcs.
VIN410	410	12
VIN300	300	12

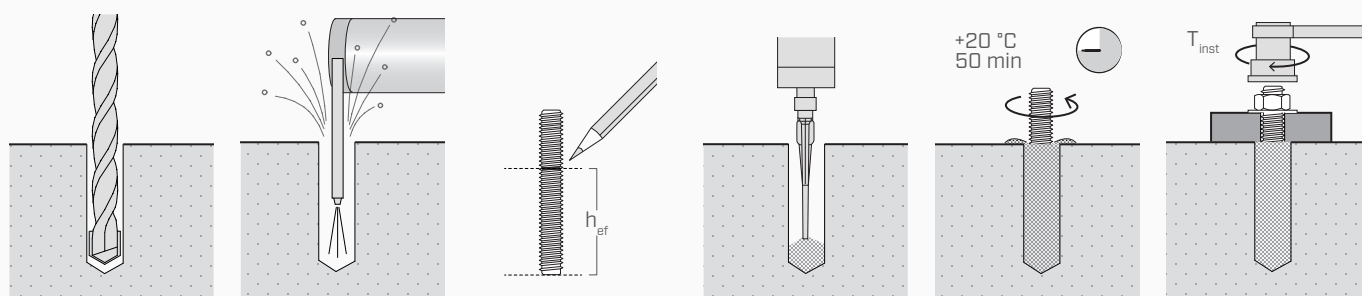
Expiry from date of manufacturing: 18 months for 410 ml / 12 months for 300 ml.
Storage temperature between +5 and +25° C.

COMPLEMENTARY PRODUCTS

ACCESSORIES

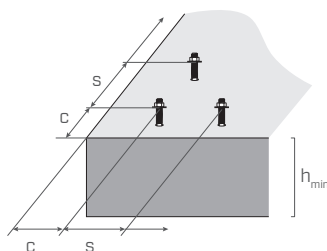
CODE	description	format [ml]	pcs.
MAM400	gun for cartridge	410	1
FLY401	gun for cartridge	300	1
STING	nozzle	-	12
PONY	blowing pump	-	1

ASSEMBLY



■ INSTALLATION

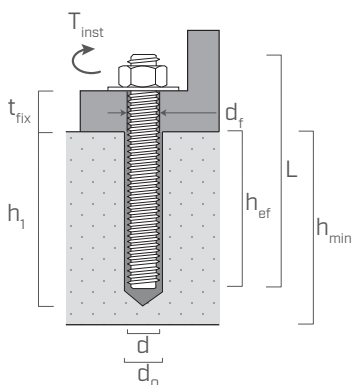
INSTALLATION GEOMETRY ON CONCRETE - THREADED RODS (TYPE INA or MGS)



d	[mm]	M8	M10	M12	M16	M20	M24	M27	M30
d ₀	[mm]	10	12	14	18	22	26	30	35
h _{ef,min}	[mm]	64	80	96	128	160	192	216	240
h _{ef,max}	[mm]	160	200	240	320	400	480	540	600
d _f	[mm]	9	12	14	18	22	26	30	33
T _{inst}	[Nm]	10	20	40	80	150	200	240	275

			M8	M10	M12	M16	M20	M24	M27	M30
Minimum spacing	S _{min}	[mm]	h _{ef} / 2							
Minimum edge distance	C _{min}	[mm]	h _{ef} / 2							
Minimum thickness of concrete support	h _{min}	[mm]	h _{ef} + 30 ≥ 100 mm				h _{ef} + 2 d ₀			

For spacing and distances smaller than the critical ones, strength values have to be reduced depending on the installation parameters.



d = anchor diameter
d₀ = hole diameter in the concrete support
h_{ef} = effective anchor depth
d_f = maximum hole diameter in the element to be fastened

T_{inst} = tightening torque
L = anchor length
t_{fix} = maximum fastening thickness
h₁ = minimum hole depth

INSTALLATION TIME AND TEMPERATURE

support temperature	cartridge temperature	workability time	curing time before loading	
			dry support	wet support
- 10 ÷ + 4 °C *	+ 5 ÷ + 20 °C	20 min *	24 h *	48 h *
+ 5 ÷ + 9 °C		10 min	145 min	290 min
+ 10 ÷ + 19 °C		6 min	85 min	170 min
+ 20 ÷ + 29 °C		4 min	50 min	100 min
+ 30 °C		4 min	40 min	80 min

* use not included in certification

■ STATIC CHARACTERISTIC VALUES

Valid for a single threaded rod (INA or MGS) in very thick C20/25 grade concrete with a thin reinforcing layer when spacing and edge-distance are not limiting parameters.

UNCRACKED CONCRETE ⁽¹⁾

TENSION

Ø [mm]	h _{ef,standard} [mm]	N _{Rk,p} ⁽²⁾ [kN]				h _{ef,max} [mm]	N _{Rk,s/Rk,p} ⁽³⁾ [kN]			
		steel 5.8	γ _{Mp}	steel 8.8	γ _{Mp}		steel 5.8	γ _M	steel 8.8	γ _M
M8	80	17,1	1,8	17,1	1,8	160	18,0	γ _M = 1,5	29,0	γ _M = 1,5
M10	90	28,3		28,3		200	29,0		46,0	
M12	110	39,4		39,4		240	42,0		67,0	
M16	128	57,9		57,9		320	78,0		144,8	γ _{Mp} = 1,8
M20	170	90,8		90,8		400	122,0		213,6	
M24	210	126,7	2,1	126,7	2,1	480	176,0	γ _{Mp} = 2,1	289,5	γ _{Mp} = 2,1
M27	240	132,3		132,3		540	297,7		297,7	
M30	270	140,0		140,0		600	311,0		311,0	

SHEAR

Ø [mm]	h _{ef} [mm]	V _{Rk,s} ⁽⁴⁾ [kN]			
		steel 5.8	γ _{Ms}	steel 8.8	γ _{Ms}
M8	≥ 64	9,0	1,25	15,0	1,25
M10	≥ 80	15,0		23,0	
M12	≥ 96	21,0		34,0	
M16	≥ 128	39,0		63,0	
M20	≥ 160	61,0		98,0	
M24	≥ 192	88,0		141,0	
M27	≥ 216	115,0		184,0	
M30	≥ 240	140,0		224,0	

incremental factor for N _{Rk,p} ⁽⁵⁾		
ψ _c	C25/30	1,02
	C30/37	1,04
	C40/50	1,08
	C50/60	1,10

CRACKED CONCRETE ⁽¹⁾

TENSION

Ø [mm]	h _{ef,standard} [mm]	N _{Rk,p} ⁽²⁾ [kN]				h _{ef,max} [mm]	N _{Rk,p} ⁽²⁾ [kN]			
		steel 5.8	γ _{Mp}	steel 8.8	γ _{Mp}		steel 5.8	γ _{Mp}	steel 8.8	γ _{Mp}
M12	110	18,7	1,8	18,7	1,8	240	40,7	1,8	40,7	1,8
M16	128	29,0		29,0		320	72,4		72,4	
M20	170	48,1		48,1		400	113,1		113,1	
M24	210	71,3		71,3		480	162,9		162,9	

SHEAR

Ø [mm]	h _{ef,standard} [mm]	V _{Rk} [kN]				h _{ef,max} [mm]	V _{Rk,s} ⁽⁴⁾ [kN]			
		steel 5.8	γ _{Ms}	steel 8.8	γ _{Mc}		steel 5.8	γ _{Ms}	steel 8.8	γ _{Ms}
M12	110	21,0	1,25 ⁽⁴⁾	37,3	1,5 ⁽⁶⁾	240	21,0	1,25	34,0	1,25
M16	128	39,0		57,9		320	39,0		63,0	
M20	170	61,0		96,1		400	61,0		98,0	
M24	210	88,0		142,5		480	88,0		141,0	

■ STATIC ADMISSIBLE VALUES

UNCRAKED CONCRETE TENSION

\emptyset [mm]	$h_{ef,standard}$ [mm]	N_{rec} [kN]		$h_{ef,max}$ [mm]	N_{rec} [kN]	
		steel 5.8	steel 8.8		steel 5.8	steel 8.8
M8	80	6,8	6,8	160	8,6	13,8
M10	90	11,2	11,2	200	13,8	21,9
M12	110	15,6	15,2	240	20,0	31,9
M16	128	23,0	23,0	320	37,1	57,5
M20	170	36,0	36,0	400	58,1	84,8
M24	210	50,3	50,3	480	83,8	114,9
M27	240	45,0	45,0	540	101,3	101,3
M30	270	47,6	47,6	600	105,8	105,8

SHEAR

\emptyset [mm]	h_{ef} [mm]	V_{rec} [kN]	
		steel 5.8	steel 8.8
M8	≥ 64	5,1	8,6
M10	≥ 80	8,6	13,1
M12	≥ 96	12,0	19,4
M16	≥ 128	22,3	36,0
M20	≥ 160	34,9	56,0
M24	≥ 192	50,3	80,6
M27	≥ 216	65,7	105,1
M30	≥ 240	80,0	128,0

CRACKED CONCRETE TENSION

\emptyset [mm]	$h_{ef,standard}$ [mm]	N_{rec} [kN]		$h_{ef,max}$ [mm]	N_{rec} [kN]	
		steel 5.8	steel 8.8		steel 5.8	steel 8.8
M12	110	7,4	7,4	240	16,2	16,2
M16	128	11,5	11,5	320	28,7	28,7
M20	170	19,1	19,1	400	44,9	44,9
M24	210	28,3	28,3	480	64,6	64,6

SHEAR

\emptyset [mm]	$h_{ef,standard}$ [mm]	V_{rec} [kN]		$h_{ef,max}$ [mm]	V_{rec} [kN]	
		steel 5.8	steel 8.8		steel 5.8	steel 8.8
M12	110	12,0	17,8	240	12,0	19,4
M16	128	22,3	27,6	320	22,3	36,0
M20	170	34,9	45,8	400	34,9	56,0
M24	210	50,3	67,9	480	50,3	80,6

GENERAL PRINCIPLES:

- Characteristic values according to ETA-16/0600.
- Design values can be obtained from characteristic values as follows: $R_d = R_k / \gamma_m$. Coefficients γ_m are listed in the table in accordance with the failure characteristics and product certificates.
- Admissible values (recommended) are evaluated based on the characteristic values by applying the material safety factors γ_m according to ETA and a further partial factor for external actions $\gamma_f = 1,4$.
- For the calculation of anchors with reduced spacing, or too close to the edge, please refer to ETA. Similarly, in case of fastening on concrete-supports with a better-grade, limited thickness or a thick reinforcing layer please see ETA.
- For the design of anchors subjected to seismic loading refer to ETA and to ETAG 001 (Annex E and TR045).
- For specifications of the diameters covered by the various certifications (cracked concrete, uncracked concrete, seismic applications, masonry), please refer to ETA.

NOTES:

- (1) For the calculation of anchors in masonry or in case of high bond rods, please see ETA document.
- (2) Pull-out and concrete cone failure.
- (3) Steel failure for 5.8 grade rods and variable failure mode (steel failure / pull-out) for 8.8 grade rods.
- (4) Steel failure mode.
- (5) Tensile-strength increment factor (excluding steel failure) for both cracked and uncracked concrete.
- (6) Pry-out failure mode.

EPO-FIX PLUS



HIGH-PERFORMANCE EPOXY CHEMICAL ANCHOR



- CE option 1 for cracked and uncracked concrete
- C2 seismic performance category (M12-M16-M20)
- A+ Class: emission of volatile organic compounds (VOC) in lived environments
- Dry or damp concrete
- Concrete with submerged holes

CODES AND DIMENSIONS

CODE	format [ml]	pcs.
EPO385	385	12

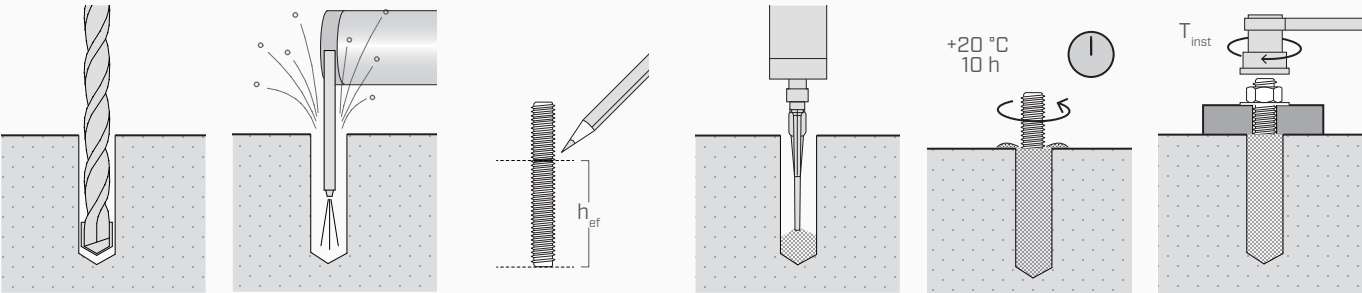
Expiry from date of manufacturing: 24 months
Storage temperature between +5 and +25° C.

COMPLEMENTARY PRODUCTS

ACCESSORIES

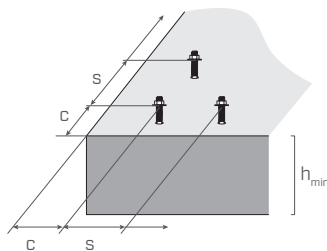
CODE	description	format [ml]	pcs.
MAMDB	double cartridge gun	385	1
STING	nozzle	-	12
PONY	blowing pump	-	1

ASSEMBLY



■ INSTALLATION

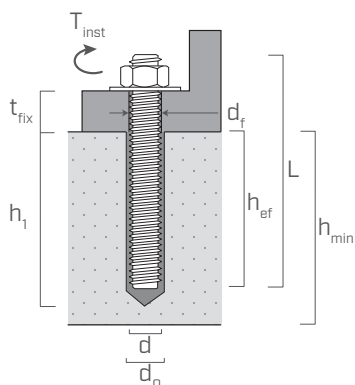
INSTALLATION GEOMETRY ON CONCRETE - THREADED RODS (TYPE INA or MGS)



d	[mm]	M8	M10	M12	M16	M20	M24	M27	M30
d₀	[mm]	10	12	14	18	22	26	30	35
h_{ef,min}	[mm]	60	60	70	80	90	96	108	120
h_{ef,max}	[mm]	160	200	240	320	400	480	540	600
d_f	[mm]	9	12	14	18	22	26	30	33
T_{inst}	[Nm]	10	20	40	80	120	160	180	200

		M8	M10	M12	M16	M20	M24	M27	M30
Minimum spacing	S_{min} [mm]	max (h _{ef} / 2; 5d)							
Minimum edge distance	C_{min} [mm]	max (h _{ef} / 2; 5d)							
Minimum thickness of concrete support	h_{min} [mm]	h _{ef} + 30 ≥ 100 mm				h _{ef} + 2 d ₀			

For spacing and distances smaller than the critical ones, strength values have to be reduced depending on the installation parameters.



d = anchor diameter
d₀ = hole diameter in the concrete support
h_{ef} = effective anchor depth
d_f = maximum hole diameter in the element to be fastened

T_{inst} = tightening torque
L = anchor length
t_{fix} = maximum fastening thickness
h₁ = minimum hole depth

INSTALLATION TIME AND TEMPERATURE

support temperature	workability time	curing time before loading	
		dry support	wet support
+ 5 ÷ + 9 °C	120 min	50 h	100 h
+ 10 ÷ + 14 °C	45 min	30 h	60 h
+ 15 ÷ + 19 °C	25 min	18 h	36 h
+ 20 ÷ + 29 °C	12 min	10 h	20 h
+ 30 ÷ + 39 °C	6 min	6 h	12 h
+ 40 °C	5 min	4 h	8 h

Cartridge storage temperature + 5 ÷ + 25 °C

■ STATIC CHARACTERISTIC VALUES

Valid for a single threaded rod (INA or MGS) in very thick C20/25 grade concrete with a thin reinforcing layer when spacing and edge-distance are not limiting parameters.

UNCRACKED CONCRETE ⁽¹⁾

TENSION

Ø [mm]	h _{ef,standard} [mm]	N _{Rk} ⁽²⁾ [kN]				h _{ef,max} [mm]	N _{Rk,s} ⁽²⁾ [kN]			
		steel 5.8	γ _M	steel 8.8	γ _M		steel 5.8	γ _{M_s}	steel 8.8	γ _{M_s}
M8	80	18,0	γ _{M_s} = 1,5	29,0	γ _{M_s} = 1,5	160	18,0	1,5	29,0	1,5
M10	90	29,0		42,4	γ _{M_p} = 1,5	200	29,0		46,0	
M12	110	42,0		58,3	γ _{M_c} = 1,5	240	42,0		67,0	
M16	128	73,1	γ _{M_c} = 1,5	73,1		320	78,0		125,0	
M20	170	111,9		111,9		400	122,0		196,0	
M24	210	153,7		153,7		480	176,0		282,0	
M27	240	187,8		187,8		540	230,0		368,0	
M30	270	224,0		224,0		600	280,0		449,0	

SHEAR

Ø [mm]	h _{ef,standard} [mm]	V _{Rk,s} [kN]			
		steel 5.8	γ _{M_s}	steel 8.8	γ _{M_s}
M8	80	9,0	1,25	15,0	1,25
M10	90	15,0		23,0	
M12	110	21,0		34,0	
M16	128	39,0		63,0	
M20	170	61,0		98,0	
M24	210	88,0		141,0	
M27	240	115,0		184,0	
M30	270	140,0		224,0	

increment factor for concrete ⁽⁴⁾

ψ _c	C25/30	1,02
	C30/37	1,04
	C40/50	1,07
	C50/60	1,09

CRACKED CONCRETE ⁽¹⁾

TENSION

Ø [mm]	h _{ef,standard} [mm]	N _{Rk} ⁽²⁾ [kN]				h _{ef,max} [mm]	N _{Rk} ⁽²⁾ [kN]			
		steel 5.8	γ _{M_p}	steel 8.8	γ _{M_p}		steel 5.8	γ _{M_s}	steel 8.8	γ _M
M12	110	31,1	1,5	31,1	1,5	240	42,0	1,5	67,0	γ _{M_s} = 1,5
M16	128	41,8		41,8		320	78,0		104,5	γ _{M_p} = 1,5
M20	170	64,1		64,1		400	122,0		150,8	
M24	210	87,1		87,1		480	176,0		199,0	
M27	240	112,0		112,0		540	230,0		251,9	
M30	270	140,0		140,0		600	280,0		311,0	

SHEAR

Ø [mm]	h _{ef,min} [mm]	V _{Rk,s} ⁽³⁾ [kN]			
		steel 5.8	γ _{M_s}	steel 8.8	γ _{M_s}
M12	110	21,0	1,25 ⁽⁴⁾	34,0	1,25
M16	128	39,0		63,0	
M20	170	61,0		98,0	
M24	210	88,0		141,0	
M27	240	115,0		184,0	
M30	270	140,0		224,0	

■ STATIC ADMISSIBLE VALUES

UNCRAKED CONCRETE TENSION

\emptyset [mm]	$h_{ef,standard}$ [mm]	N_{rec} [kN]		$h_{ef,max}$ [mm]	N_{rec} [kN]	
		steel 5.8	steel 8.8		steel 5.8	steel 8.8
M8	80	8,6	13,8	160	8,6	13,8
M10	90	13,8	20,2	200	13,8	21,9
M12	110	20,0	27,8	240	20,0	31,9
M16	128	34,8	34,8	320	37,1	59,5
M20	170	53,3	53,3	400	58,1	93,3
M24	210	73,2	73,2	480	83,8	134,3
M27	240	89,4	89,4	540	109,5	175,2
M30	270	106,7	106,7	600	133,3	213,8

SHEAR

\emptyset [mm]	$h_{ef,standard}$ [mm]	V_{rec} [kN]	
		steel 5.8	steel 8.8
M8	80	5,1	8,6
M10	90	8,6	13,1
M12	110	12,0	19,4
M16	128	22,3	36,0
M20	170	34,9	56,0
M24	210	50,3	80,6
M27	240	65,7	105,1
M30	270	80,0	128,0

CRACKED CONCRETE TENSION

\emptyset [mm]	$h_{ef,standard}$ [mm]	N_{rec} [kN]		$h_{ef,max}$ [mm]	N_{rec} [kN]	
		steel 5.8	steel 8.8		steel 5.8	steel 8.8
M12	110	14,8	14,8	240	20,0	31,9
M16	128	19,9	19,9	320	37,1	49,8
M20	170	30,5	30,5	400	58,1	71,8
M24	210	41,5	41,5	480	83,8	94,8
M27	240	53,3	53,3	540	109,5	120,0
M30	270	66,7	66,7	600	133,3	148,1

SHEAR

\emptyset [mm]	$h_{ef,standard}$ [mm]	V_{rec} [kN]	
		steel 5.8	steel 8.8
M12	110	12,0	19,4
M16	128	22,3	36,0
M20	170	34,9	56,0
M24	210	50,3	80,6
M27	240	65,7	105,1
M30	270	80,0	128,0

GENERAL PRINCIPLES:

- Characteristic values according to ETA-17/0347.
- Design values can be obtained from characteristic values as follows: $R_d = R_k / \gamma_m$.
Coefficients γ_m are listed in the table and are in accordance with the product certificates.
- Admissible values (recommended) are evaluated based on the characteristic values by applying the material safety factors γ_m according to ETA and a further partial factor for external actions $\gamma_f = 1,4$.
- For the calculation of anchors with reduced spacing, or too close to the edge, please refer to ETA. Similarly, in case of fastening on concrete-supports with a better-grade, limited thickness or a thick reinforcing layer please see ETA.
- For the design of anchors subjected to seismic loading refer to ETA and TR045.
- For specifications of the diameters covered by the various certifications (cracked concrete, uncracked concrete, seismic applications), please refer to ETA.

NOTES:

- (1) For the calculation of anchors in masonry or in case of high bond rods, please refer to ETA document.
- (2) The table shows the characteristic values N_{Rk} and the related partial safety coefficient in accordance with the key failure characteristics.
- (3) Steel failure mode.
- (4) Tensile-strength increment factor (excluding steel failure) for both cracked and uncracked concrete.

INA

5.8 STEEL CLASS THREADED ROD FOR CHEMICAL ANCHORS

- Complete with nut (ISO4032) and washer (ISO7089)
- 5.8 grade galvanized steel

CODES AND DIMENSIONS

CODE	Ø [mm]	L _t [mm]	d ₀ [mm]	d _f [mm]	pcs.
FE210100	M8	110	10	≤ 9	10
FE210105	M10	110	12	≤ 12	10
FE210110	M10	130	12	≤ 13	10
FE210115	M12	130	14	≤ 14	10
FE210119	M12	180	14	≤ 15	10
FE210116	M16	160	18	≤ 18	10
FE210118	M16	190	18	≤ 18	10
FE210121	M16	230	18	≤ 18	10
FE210117	M20	240	24	≤ 22	10
FE210122	M24	270	28	≤ 26	10
FE210123	M27	400	32	≤ 30	10

d₀ = hole diameter in the support

d_f = hole diameter in the element to be fastened



IHP

MESH BRUSH FOR HOLLOW PLASTIC MATERIALS

CODES AND DIMENSIONS

CODE	d ₀ [mm]	L [mm]	Ø [mm]	pcs.
FE210120	16	85	M10 (M8)	10
FE210125	16	130	M10 (M8)	10
FE210130	20	85	M12 / M16	10



IHM

MESH BRUSH FOR HOLLOW METAL MATERIALS

CODES AND DIMENSIONS

CODE	d ₀ [mm]	L [mm]	Ø [mm]	pcs.
FE210230	12	1000	M8	10
FE210235	16	1000	M10 / M8	10
FE210240	20	1000	M12 / M16	5



BEF_SLIM

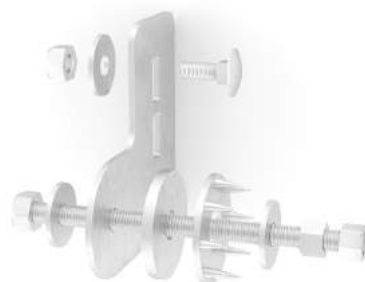
FASTENING SET FOR SLIM

CODES AND DIMENSIONS

CODE	n.	content	Ø [mm]	pcs.
BEFSLIM1	2	washer	M10	1
	2	hexagonal nut	M10	
	1	threaded rod (L = 200 mm)	M10	
	1	self-blocking nut	M10	
	1	GEKA (D _{EXT} = 50 mm)	-	
BEFSLIM2	3	washer	M10	1
	2	hexagonal nut	M10	
	1	washer	M12	
	1	threaded rod (L = 200 mm)	M10	
	2	self-blocking nut	M10	
	1	round head bolt	M10	
	1	"I" plate	-	
	1	GEKA (D _{EXT} = 50 mm)	-	



BEFSLIM1



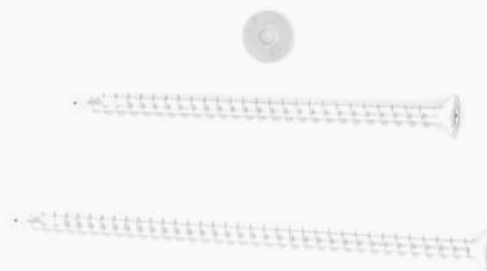
BEFSLIM2

BEF_TOWER

FASTENING SET FOR TOWER

CODES AND DIMENSIONS

CODE	n.	content	d ₁ [mm]	L [mm]	pcs.
BEF201VGS	8	VGS screws	9	160	1
	4	washer	-	-	
BEF202VGS	8	VGS screws	9	200	1
	4	washer	-	-	

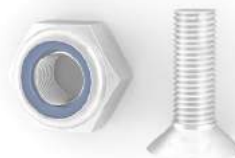


BEF_PLATE

FASTENING SET FOR TOPLATE 2.0

CODES AND DIMENSIONS

CODE	n.	content	Ø [mm]	pcs.
BEFPLATE	4	self-blocking nut	M12	1
	4	hexagonal head bolts 35 mm	M12	

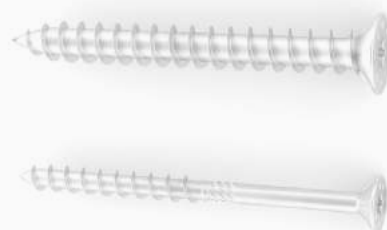


BEF_KITE

FASTENING SET FOR KITE

CODES AND DIMENSIONS

CODE	n.	content	d ₁ [mm]	L [mm]	pcs.
BEFKITE	1	VGS screw	11	100	1
	2	HBS screws	8	100	



MANICA ROLL

LEAD AND BUTYL SLEEVE

PERFORMING

The entire surface is adhesive to ensure watertightness.

PRACTICAL

It can be shaped with a cutter or scissors to the desired form and size.

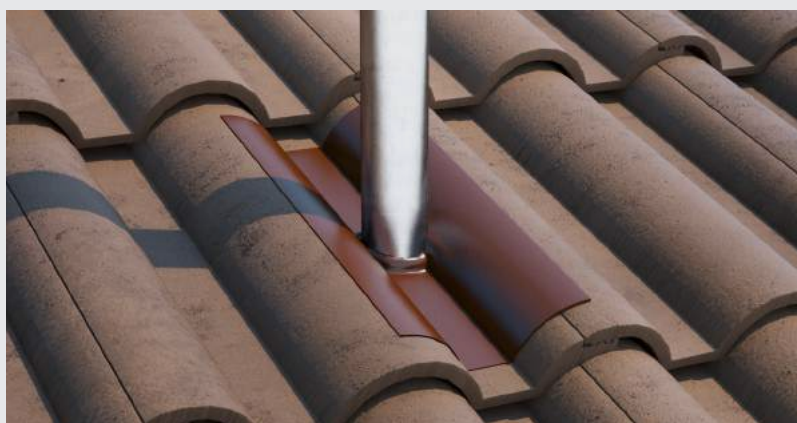
STRONG

0,5 mm lead layer for extended resistance.



CODES AND DIMENSIONS

CODE	L [mm]	B [mm]	s [mm]	colour	pcs.
MANROLL1	5000	300	0,5	red brick	1
MANROLL2	5000	300	0,5	brown	1
MANROLL3	5000	300	0,5	dark brown	1
MANROLL4	5000	300	0,5	black	1
MANROLL5	5000	300	0,5	anthracite	1



< MALLEABLE

The butylic base can be shaped to adapt to the support on which it is installed.

MANICA LEAD

LEAD WITH EPDM HANDLE FOR TOWER



CODES AND DIMENSIONS

CODE	material	support [mm]	weight [g]	pcs.
MANLEAD	lead	Ø48	310	1
MANEPDM	EPDM	Ø48	76	1



MANICA POST

SEALING SLEEVE FOR TOWER



CODES AND DIMENSIONS

CODE	material	Ø [mm]	B x L [mm]	colour	pcs.
MANPOST1	alu-butyl	25 - 32	300 x 200	red brick	5
MANPOST2	alu-butyl	42 - 55	300 x 200	red brick	5
MANPOST3	alu-butyl	42 - 55	230 x 230	aluminium	4



CRICKET

8 SIZE RATCHETING WRENCH



CODES AND DIMENSIONS

CODE	size [socket / thread M]	pcs.
CRICKET	10 / M6 - 13 / M8 - 17 / M10 - 19 / M12 22 / M14 - 24 / M16 - 27 / M18	1



BEAR

TORQUE WRENCH



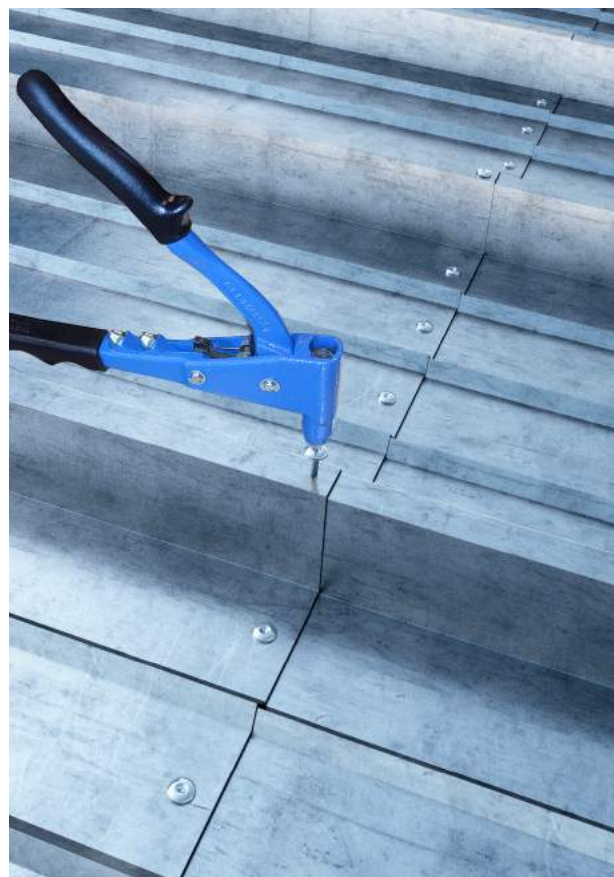
CODES AND DIMENSIONS

CODE	torque [Nm]	pcs.
BEAR	10 - 110	1



FINCH

MANUAL PLIERS FOR BLIND RIVETS



CODES AND DIMENSIONS

CODE	Ø _{rivets} [mm]	weight [kg]	pcs.
FINCH	4 - 5	0,6	1

FINCH XL

PROFESSIONAL RIVETING MACHINE



CODES AND DIMENSIONS

CODE	Ø _{rivets} [mm]	weight [kg]	pcs.
FINCH2	4.8 - 6.4	1,9	1

BIRD

BATTERY-OPERATED RIVETING MACHINE



CODES AND DIMENSIONS

CODE	battery [Ah]	Ø _{rivets} [mm]	strength [N]	pcs.
BIRD	2,6	4.8 - 7.7	14.000	1

ROPE CLAMP

CABLE TENSIONER FOR ANCHOR LINE



CODES AND DIMENSIONS

CODE	description	pcs.
SPAN1	cable tensioner	1
CLAMP1	clamp	1

A 10 M

CORDLESS SCREWDRIVER

- soft / hard torque: **17 / 34 [Nm]**
- nominal minimum 1st gear: **0 - 360 [1/min]**
- nominal minimum 2nd gear: **0 - 1400 [1/min]**
- nominal tension: **10,8 [V]**
- weight: **0,8 [kg]**



CODES AND DIMENSIONS

CODE	description	pcs.
MA919901	MIDIMAX IN T-MAX	1
MA919902	MAXIMAX IN T-MAX	1

* based on battery included



ASB 18 M BL

CORDLESS PERCUSSION DRILL

- soft / hard torque: **44 / 90 [Nm]**
- nominal minimum 1st gear: **0 - 600 [1/min]**
- nominal minimum 2nd gear: **0 - 2050 [1/min]**
- nominal tension: **18 [V]**
- weight: **1,9 [kg]**



CODES AND DIMENSIONS

CODE	description	pcs.
MA91A101	MIDIMAX IN T-MAX	1
MA91A140	MAXIMAX IN T-MAX	1

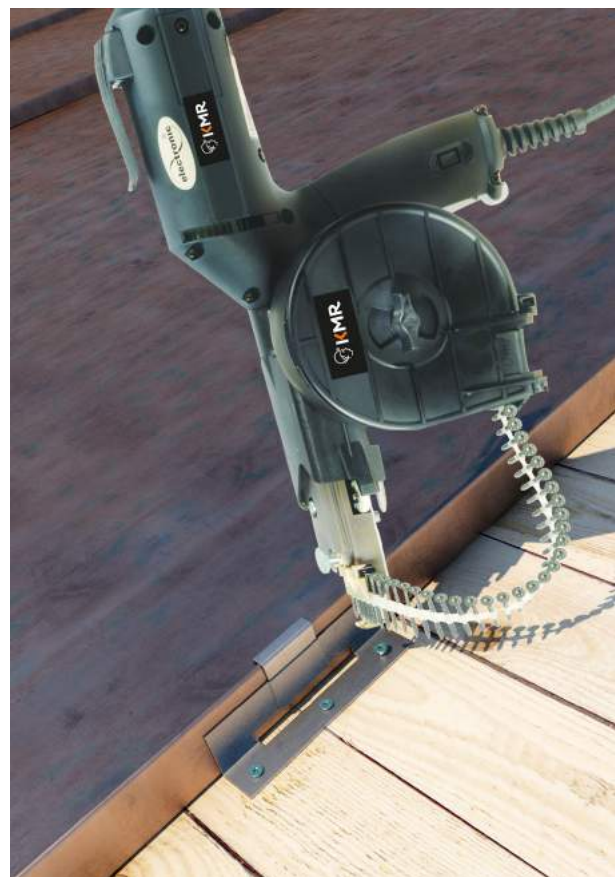
* based on battery included



KMR 3352

SCREWDRIVER WITH AUTOMATIC LOADER

- screw length: **25 - 50 [mm]**
- screw diameter: **3.5 - 4.2 [mm]**
- performance: **0 - 2850 / 750 [1-min/W]**
- weight: **2,2 [kg]**



CODES AND DIMENSIONS

CODE	description	pcs.
HH3352	screwdriver with automatic loader	1

* based on battery included

KMR 3363

SCREWDRIVER WITH BATTERY POWERED AUTOMATIC LOADER

- screw length: **25 - 50 [mm]**
- screw diameter: **3.5 - 4.2 [mm]**
- performance: **5,2 / 18,0 [1-min/W]**
- weight: **3,1 [kg]**



CODES AND DIMENSIONS

CODE	description	pcs.
HH3363	screwdriver with battery powered automatic loader	1

* based on battery included

IMPULS

PULSE SCREW GUN

- torque: **50 - 140 - 205 [Nm]**
- loadless speed: **0 - 2300 [rpm]**
- battery capacity - Li-ion: **3.0 [Ah]**
- nominal tension: **18 [V]**
- weight: **1,35 [kg]**
- connection: **1/2" [inches]**



CODES AND DIMENSIONS

CODE	description	pcs.
PANIMP18	pulse screw gun	1

* based on battery included



GRIND

BATTERY OPERATED GRINDER

- torque: **50 - 140 - 205 [Nm]**
- loadless speed: **10000 [rpm]**
- battery capacity - Li-ion: **5.0 [Ah]**
- nominal tension: **18 [V]**
- weight: **2,35 [kg]**
- disk diameter: **125 [mm]**



CODES AND DIMENSIONS

CODE	description	pcs.
PANGRIND18	battery operated grinder	1

* based on battery included



FLY 401

GUN FOR CARTRIDGE



CODES AND DIMENSIONS

CODE	format [ml]	pcs.
FLY401	300	1



MAMMOTH

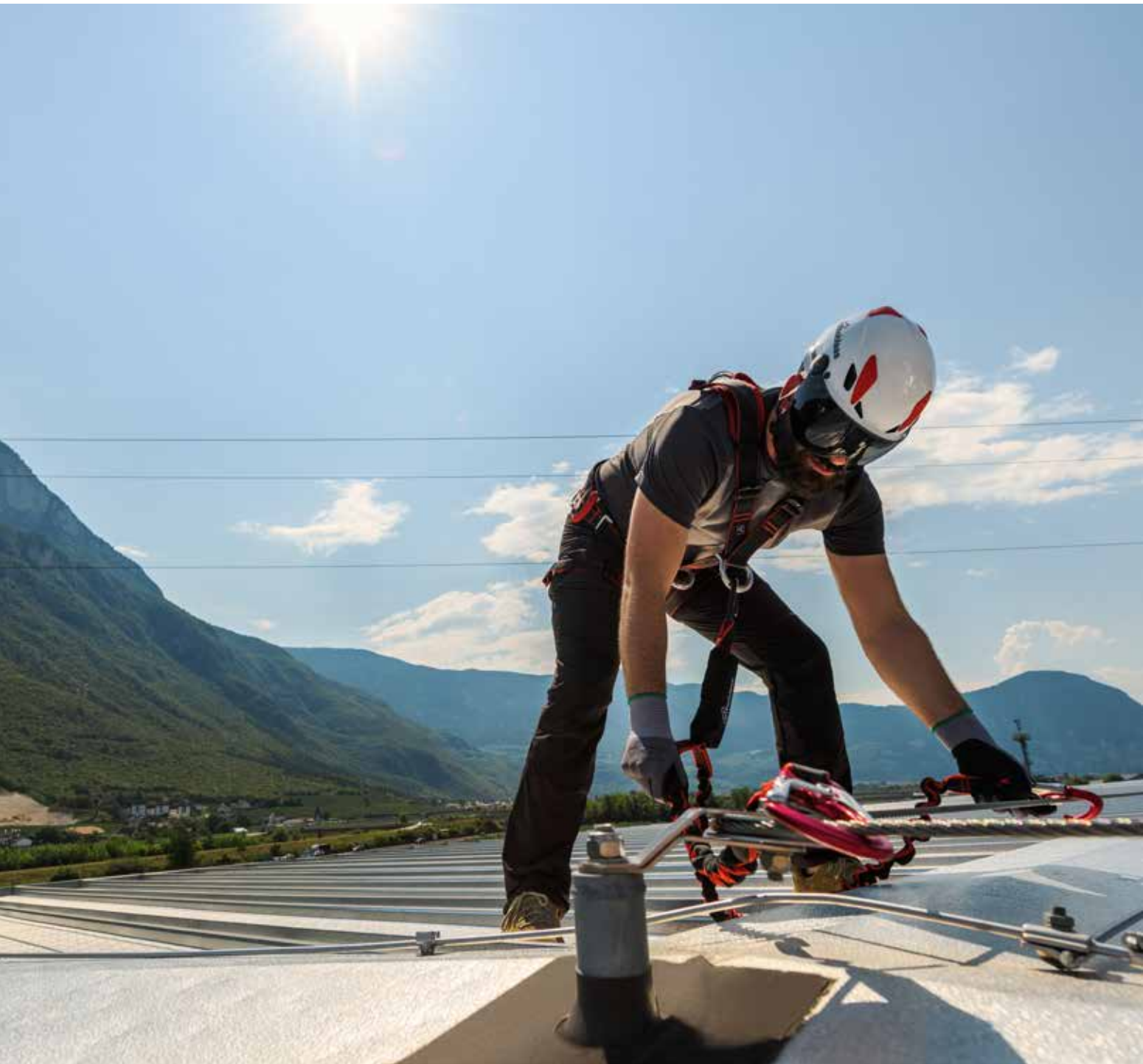
GUN FOR CARTRIDGE



CODES AND DIMENSIONS

CODE	format [ml]	pcs.
MAM400	410	1





ROTHOBLAAS FALL PROTECTION SYSTEM: WORKING AT HEIGHT AS NEVER BEEN SO SAFE

A wide range of fall protection systems for industrial environments and roofing together with a service of **specialised technical assistance** and a network of consultants are always available.

100% AT THE SERVICE OF PLANNERS OF SAFETY

Rothoblaas designs, manufactures, certifies and markets its solutions in its name and under its own brand. Each stage of the production process is subject to strict, systematic checks by notified third parties ensuring the smooth progress thereof.

Worldwide networks of distributors and specialized technical salesmen are at the customers' disposal advising the most suitable solutions to solve construction site concerns.

TECHNICAL DOCUMENTATION

Catalogues, installation manuals, technical specifications, declarations of performance and other documents available online in various languages, and always up to date.



TECHNICAL AND SALES ASSISTANCE

Staff with excellent technical knowledge, able to answer questions about the most appropriate solutions as well as technical questions, also on-site.

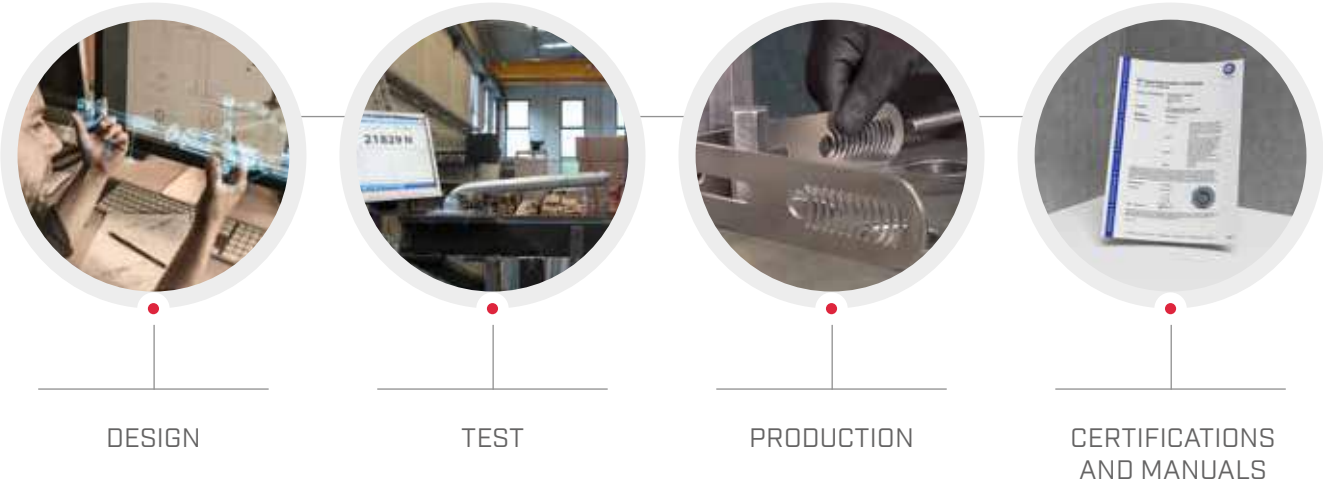
SPECIALISED DISTRIBUTORS

Covering the country through an extensive network of specialised distributors and installers, able to assist customers in selecting the most appropriate solution, with professionalism and skill.



FROM IDEA TO MARKET

Here at Rothoblaas the whole process of product development takes place internally. We manage the entire process from the initial idea through to developmental stage all the way to market entry. We design, test, and constantly check our products, whilst always adhering to the whole certification process. Technical specifications are prepared, construction details drawn up; we develop the software for the calculation and verification, we offer comprehensive advice; only when we are 100% satisfied that our products, no matter how small or large, are ready for the market do we then, in-house, prepare the marketing materials, including both electronic and paper catalogues. Additionally, we retain control of every aspect of packaging and labelling; and we have all these skills within the company



PROFESSIONAL TRAINING

Wide range of training courses and technical seminars dedicated to keeping the skills of designers and installers of fall-protection systems up to date.

- Course for qualified installers of fall protection systems
- Course for using personal protective equipment against falls from height and rescue systems
- Fall protection system design course

ROTHOSCHOOL

The right training for a successful professional future!

 www.rothoblaas.com/school



EXPERTS AT SERVICE OF PROFESSIONALS

Maximize the performance and efficiency of Rothoblaas' solutions: a team of highly skilled technical consultants is always at disposal of planners, technicians and installers.

› www.rothoblaas.com/support

PERSONAL PROTECTIVE EQUIPMENT

PERSONAL PROTECTIVE EQUIPMENT

PERSONAL PROTECTIVE EQUIPMENT

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RESCUE KIT SYSTEM <i>suspension rescue system</i>	244
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305

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305

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TEMPORARY
temporary anchor line

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temporary anchor line

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FAST LINK
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CLASSIC
connectors for use with mobile devices

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OVAL
connectors for connection to fixed points

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XXL
connectors with high breaking loads

314

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WORK PRO
professional work gloves

317

MONO
disposable nitrile gloves

317

ECO
polyester/nitrile gloves

318

DYNEEMA
gloves with dyneema / polyurethane technology

318

LATEX
nylon / latex gloves

319

NYLON
nylon / latex gloves

319

NITRAN
nylon-elastan / nitrile foam gloves

320

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glasses with temples

323

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glasses with temples

323

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folding ear muffs

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325

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aluminium pulley with double sheave

325

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mobile device with three feet for lowering and lifting 328

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crane for lifting people and loads 333

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EN 166

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02. HELMETS - 11. EYE - EAR

EN 341

Rescue descent devices

06. DESCENDERS - POSITIONING

EN 352-1

Hearing protectors

02. HELMETS - 11. EYE - EAR

EN 353-1

Guided type fall arresters including a rigid anchor line

COLLECTIVE PROTECTION AND ACCESSES

EN 353-2

Guided type fall arresters including a flexible anchor line

04. FALL ARRESTERS - POSITIONING - 05. ROPES

06. DESCENDERS - POSITIONING

EN 354

Lanyards

08. ANCHORS

EN 355

Energy absorbers

04. FALL ARRESTERS - POSITIONING

EN 358

Personal protective equipment for work positioning and prevention of falls from a height

03. HARNESSSES - 05. ROPES - 06. DESCENDERS - POSITIONING

EN 360

Retractable type fall arresters

07. RETRACTABLE FALL ARRESTERS - 13. TRIPODS - BIPODS

EN 361

Full body harnesses

03. HARNESSSES

EN 362

Connectors

09. CONNECTORS

EN 363

Fall arrest systems

EN 388

Gloves giving protection from mechanical risks

10. GLOVES

EN 397

Industrial protective helmets

02. HELMETS

PERSONAL PROTECTIVE EQUIPMENT (PPE)

Where collective protection systems are not sufficient or applicable, personal protective equipment (PPE) is adopted which can be of the restraint, positioning, recovery or fall arrest type. PPE means any equipment or accessory intended to be worn or used by a worker with the aim of protecting them against one or more risks in the working area which could threaten their health or safety during work.

A worker must properly utilise these devices, take care of them and not tamper with them and must give notification of any defects or specific problems. For certain PPE, training and education programs are required.

PPE are divided into first, second and third category devices. The first two categories include devices designed to protect workers from performing low to medium risk tasks, whereas the third includes "life saving" devices, designed to avert the risk of death caused by accidents.

The users of these devices are required to take part in specialised courses, in accordance with Article 77 of Italian Legislative Decree 81/2008, while Article 76 of Italian Legislative Decree 81/08 indicates that characteristics that PPE must have to be used.



03



HARNESSES

04

FALL ARRESTERS -
POSITIONING

05



ROPES

06

DESCENDERS -
POSITIONING

07

RETRACTABLE
FALL ARRESTERS

08



ANCHORS

09



CONNECTORS

10



GLOVES

11



EYE - EAR

12



PULLEYS

13



TRIPODS-BIPODS

EN 420

Protective gloves

10. GLOVES

EN 566

Climbing equipment - rings

05. ROPES - 08. ANCHORS

EN 567

Climbing equipment - rope clamps

04. FALL ARRESTERS - POSITIONING

06. DESCENDERS - POSITIONING

EN 795

Anchor devices

04. FALL ARRESTERS - POSITIONING - 05. ROPES - 08. ANCHORS

13. TRIPODS - BIPODS

EN 813

Sit harness

03. HARNESSES

EN 1496

Rescue lifting devices

06. DESCENDERS - 13. TRIPODS - BIPODS

EN 1891

Low stretch kernmantel ropes

05. ROPES

EN 12275

Climbing equipment - connectors

09. CONNECTORS

EN 12277

Climbing equipment - harnesses

03. HARNESSES

EN 12278

Pulleys

12. PULLEYS

EN 12841

Access system with ropes - rope adjustment devices

04. FALL ARRESTERS - POSITIONING

06. DESCENDERS - POSITIONING

CEN/TS 16415

Anchor devices [Recommendations for anchor devices for use by more than one person simultaneously]

13. TRIPODS - BIPODS

CEE 93/42

Medical device

13. TRIPODS - BIPODS

EQUIPMENT CARE AND MAINTENANCE

The care and maintenance of your equipment is essential for the safety of the user. Cuts, abrasions, burns and other signs of wear adversely affect safety: a damaged device may operate improperly and cause accidents, which can be avoided with effective preventive inspections.

TEXTILE DEVICES



CUTS

A 2-mm edge cut reduces fabric resistance by up to 40%



ULTRA VIOLET DEGRADATION

The sun and welding can damage textile components



ABRASIONS

An abrasion on textile components acts just like a cut when fabric threads are torn



SEAMS

Before each use it is essential to check that there are no loose, torn, worn or missing threads



BURNS

Caused both by heat sources and by contact with chemical and corrosive substances or materials. In particular, nylon is usually damaged when in contact with acids, and polyester with alkaline substances

MECHANICAL DEVICES



SIGNS OF WEAR

The frequent use of the device can determine accelerated wear. The frequency of checks must therefore be directly proportional to the frequency of use



DEFORMATION

Excessive loads or misuse may result in changes and breakdown of the device



LOOSENED PARTS

Before each use, check the device for integrity (loosened screws, signs of breakage, etc.)



CORROSION AND OXIDATION

Keep the devices away from moisture and atmospheric agents as they may deteriorate their functions

APPROVED

CHECK AND REVIEW

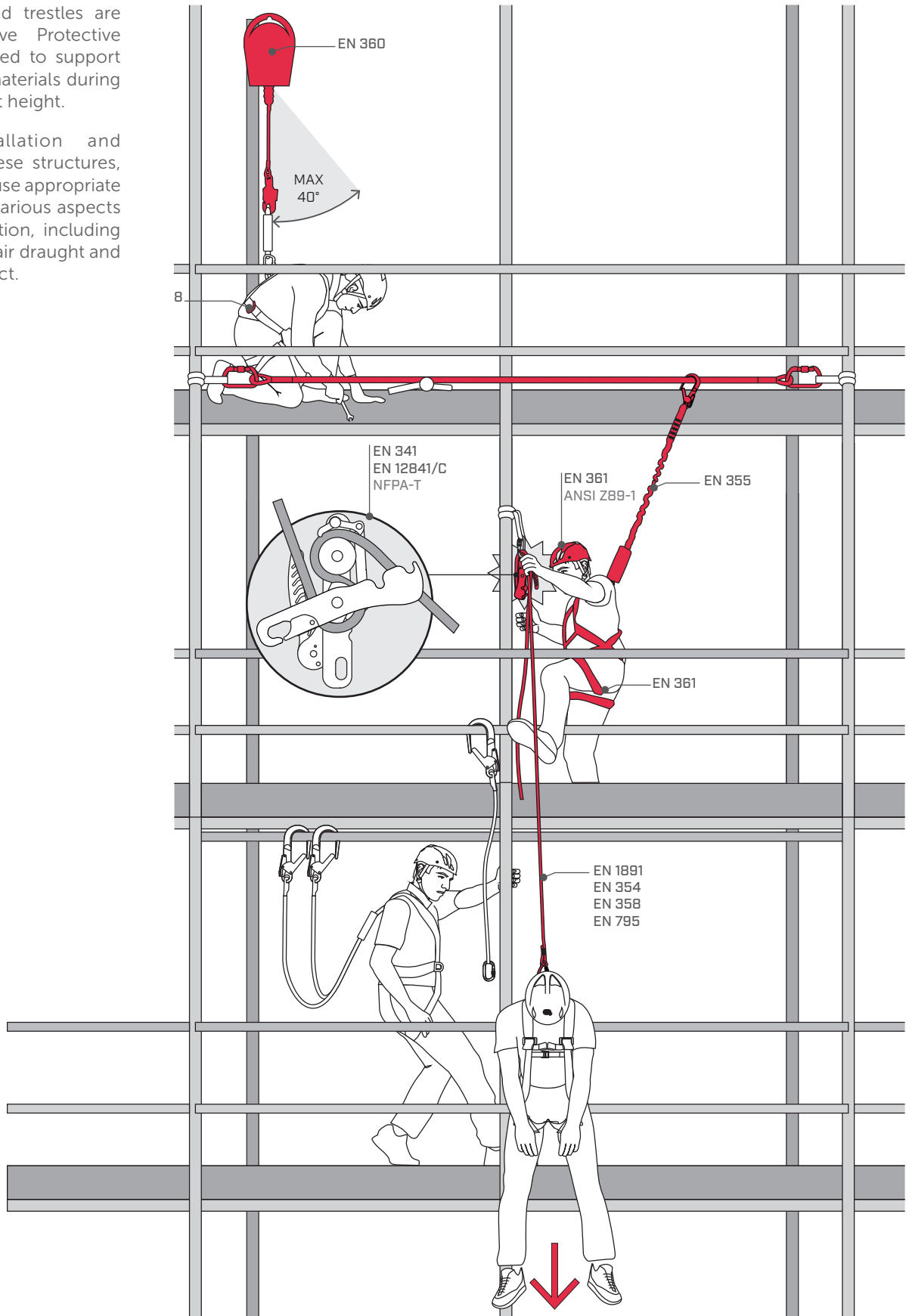
In addition to the normal visual inspection that is done before and after each use, all 3rd-class PPE must be checked by experienced personnel at least annually.

Rothoblaas offers the possibility of an annual audit, and control is documented on the PPE booklet attached to each product.

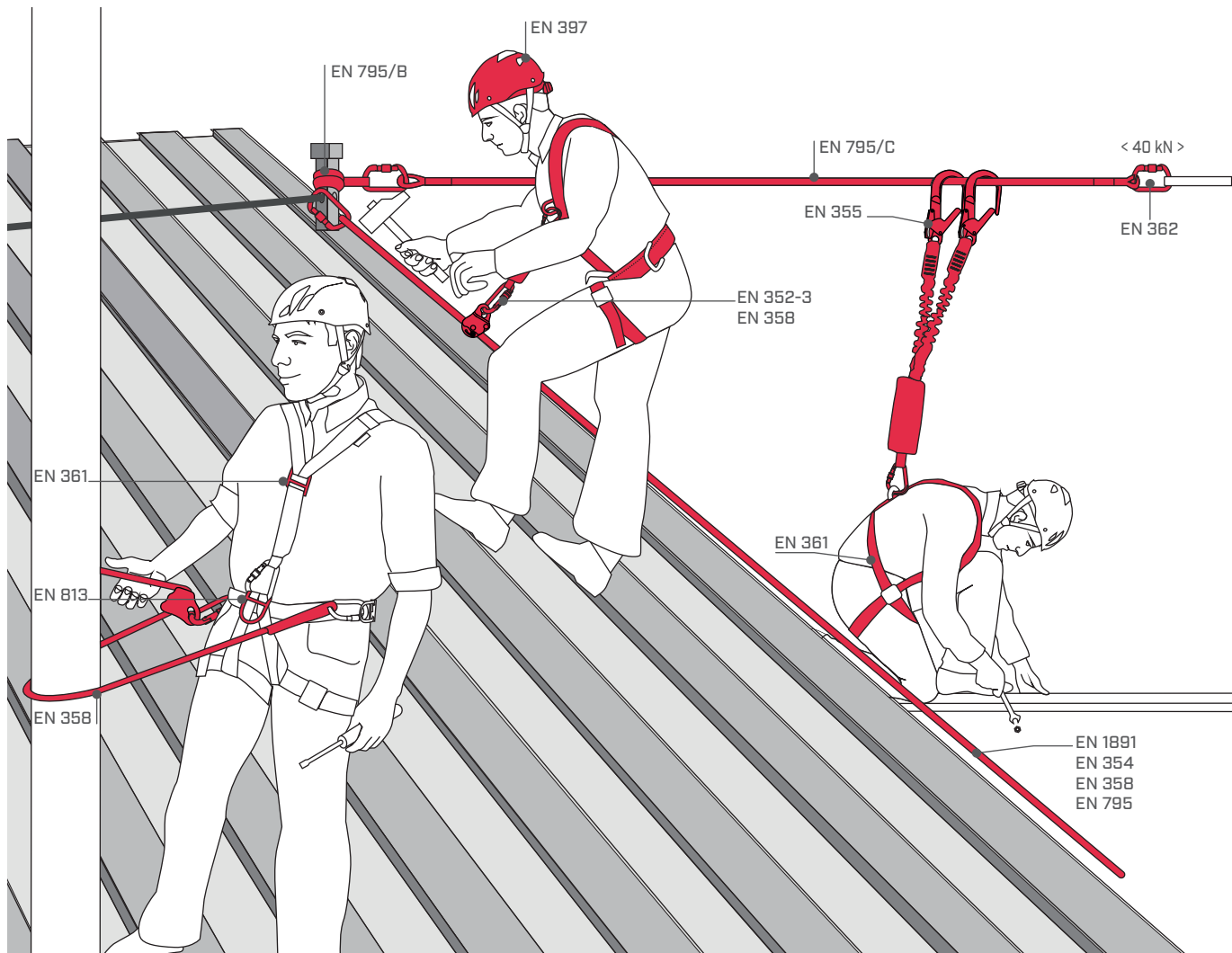
WORK ON SCAFFOLDING OR TRESTLES

Scaffolding and trestles are CPE (Collective Protective Equipment) used to support workers and materials during construction at height.

During installation and removal of these structures, workers must use appropriate PPE and take various aspects into consideration, including the fall factor, air draught and pendulum effect.



WORK ON ROOFS



"Work on roofs" means all actions carried out on roofs with an incline between 5° and 30°. To work safely, the worker must be attached to an anchor line already installed on the ridge line. If this is not available, a temporary anchor line must be installed by a qualified worker.

A **FIXED ANCHOR LINE** must be made of certified devices, designed by a qualified professional and installed by a worker who has been adequately trained by the manufacturer. During this phase, the most important aspect is the selection of the type and number of fastenings to be used. Once installed, the anchor line must be tested and inspected on annually.

TEMPORARY ANCHOR LINES are used in situations where there is no possibility of creating an adequate anchor for a fixed anchor line.

To access roof-top work areas, two methods are available: access from above, typically from a window or hatch on the roof, or from below, using a ladder or mobile platform. When leaving the roof, it is important to use a double rope to reach the main safety system (the anchor line on the ridge). When working, it is also fundamental to use appropriate PPE, including a retractable device and a length-adjustable positioning rope.

When working near the side edges of the roof, the risk of a fall becomes more likely, with consequent pendulum effect. Therefore, it is necessary to combine the retractable device with an energy absorber rope, which can in turn be connected to a supplementary anchor line or anchor points specifically installed along the edges.

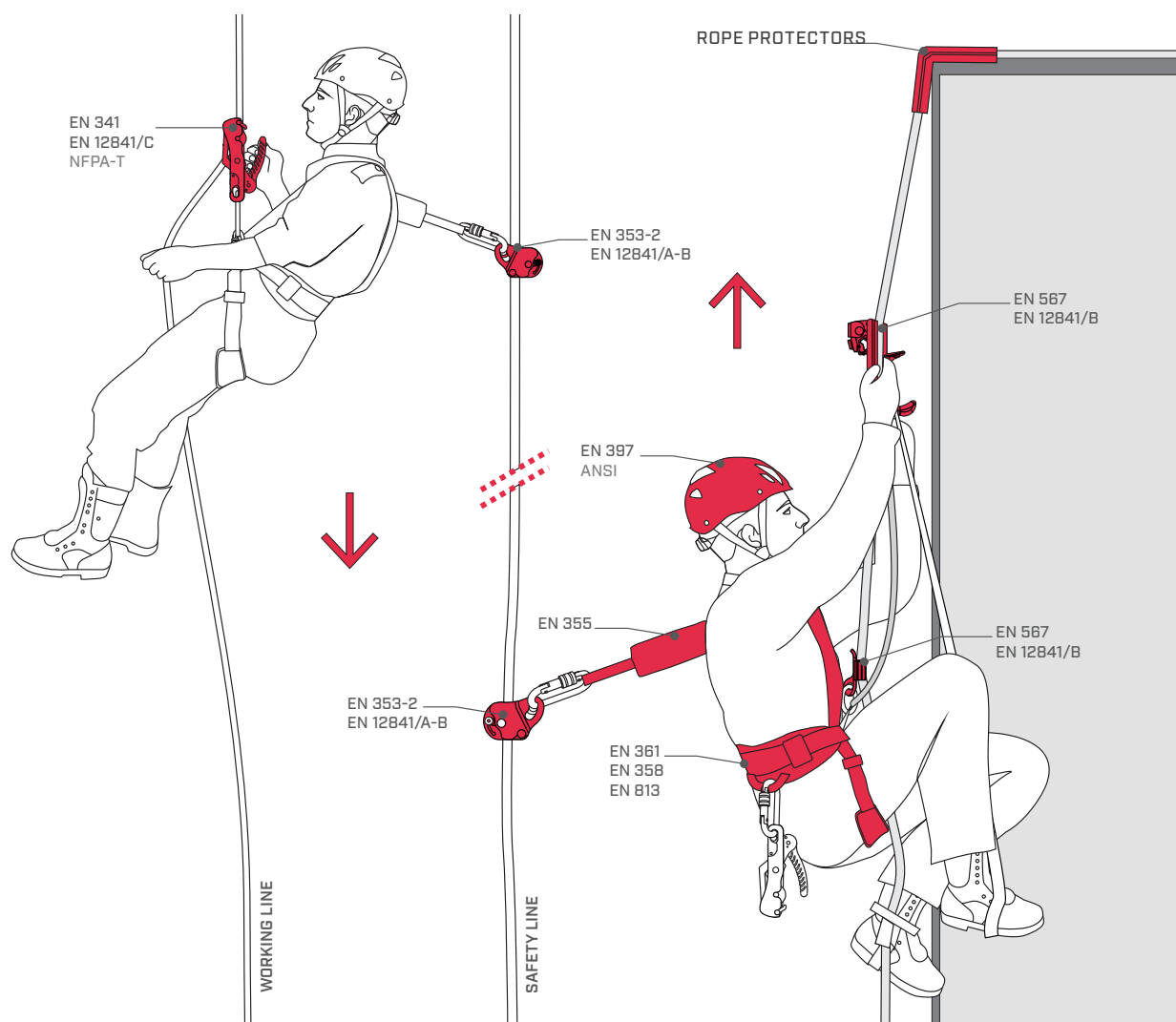
WORK WITH ROPES

"Work with ropes" means situations where the worker must carry out short-term operations while freely hanging or working along a vertical wall or surface with an incline exceeding 30°. Due to their complexity, these jobs are performed by specialised workers with high level training provided by qualified entities or associations such as IRATA or SPRAT.

A rope is used when carrying out these operations, together with ascenders and descenders, which are devices that allow the worker to move up and down along the rope. A second rope must also be used, known as the "safety" rope, complete with a fall protection system which goes into action in the case the working rope breaks.

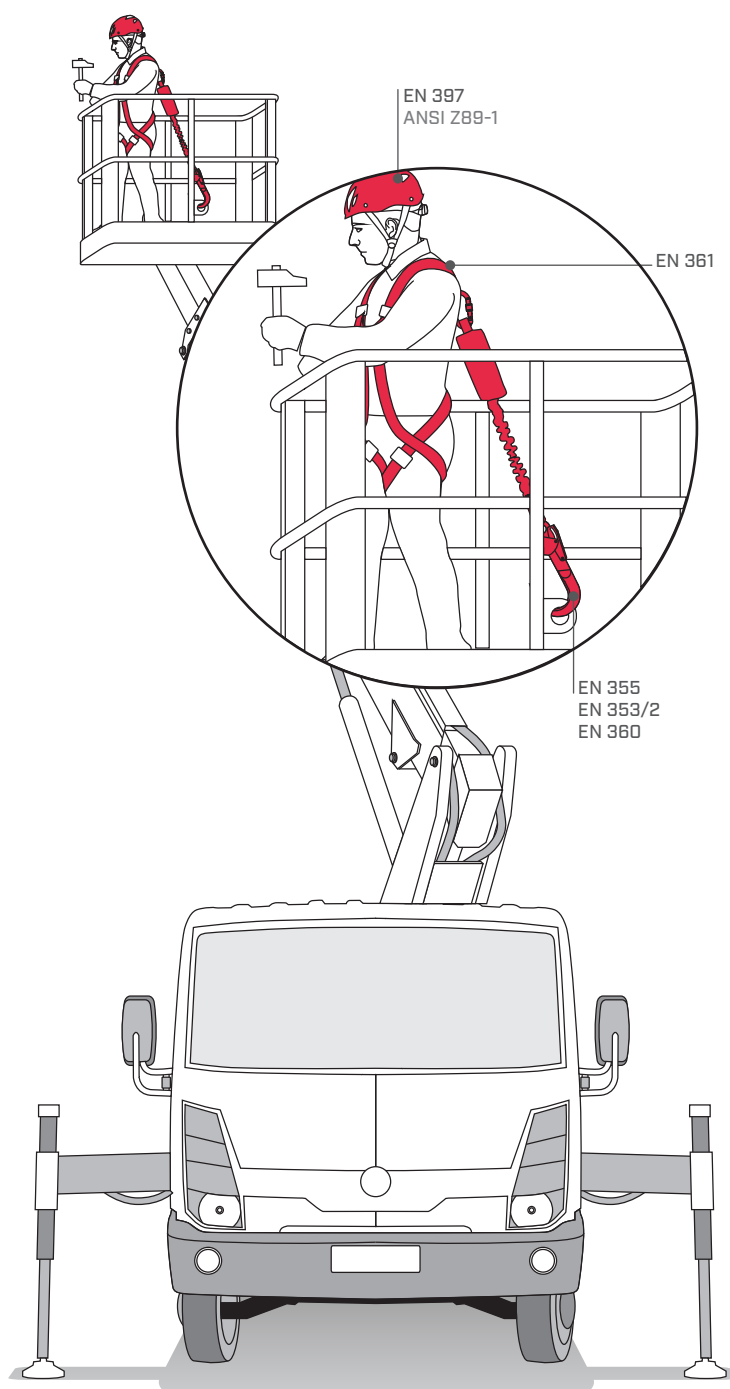
The working area maybe accessed from above or below. Generally, access is from above, since this is the easier solution. In this case, a descender is sufficient to move down the working rope, again combined with the fall protection system on the safety rope. For work where the worker rises from below, it is necessary to use specific PPE, such as ascent gloves and a chest rope clamp, which allow the worker to carry out the task as comfortably as possible.

Given that the worker will be suspended for most of the time, it is important to select a comfortable fall protection harness, certified under **EN 813** and **EN 361**; for work to be carried out entirely suspended for a long period of time, use of a rigid cradle is recommended.



WORK ON PLATFORMS

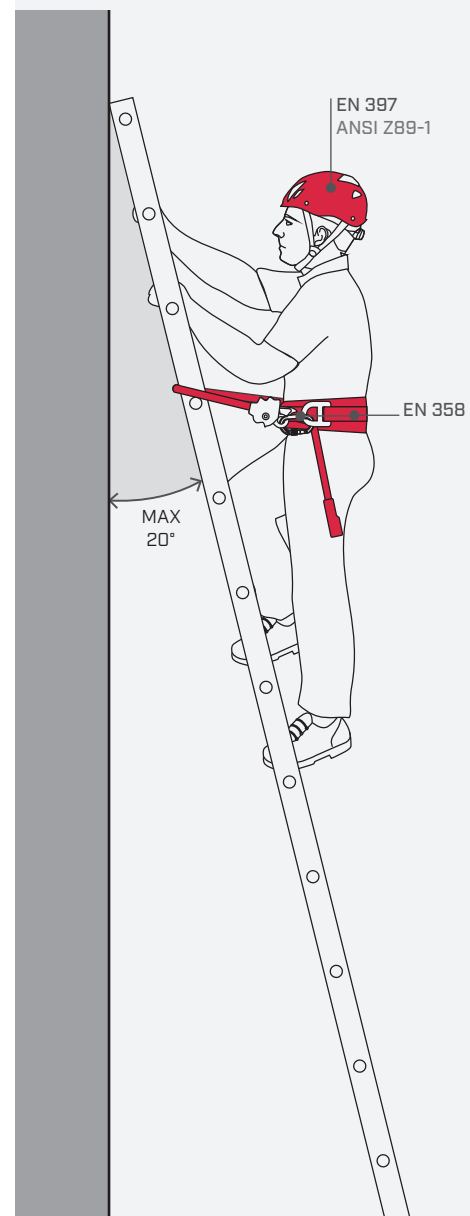
Aerial work platforms are often used to reach working areas at height. These platforms are not without falling risks for workers, who could be thrown past the side barriers due to swinging while the platform is moving towards the working area. Therefore, it is recommended that an anchoring system be used which secures the worker to the platform itself.



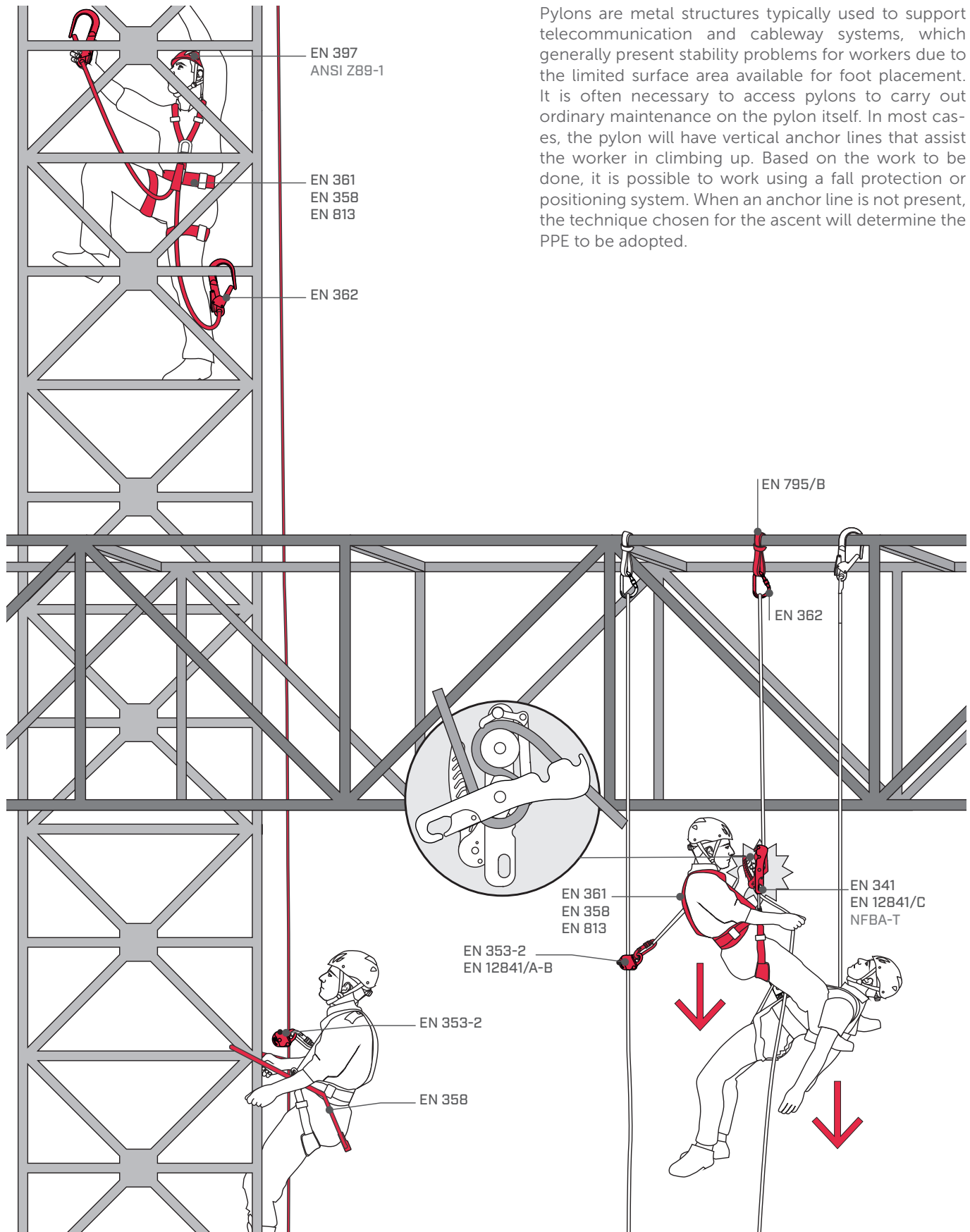
WORK ON LADDERS

Ladders can be used to access working areas. They can be fixed or portable; in both cases they must be certified.

Fixed ladders are typically used in industrial environments where access to certain areas is very frequent for the performance of ordinary maintenance, while portable ladders are used for extraordinary maintenance. It should be remembered that whenever possible, the use of an aerial platform or scaffolding is preferable to the use of a ladder. In all cases, no worker should ascend a ladder without adequate personal protection equipment.



WORKING ON ELECTRICITY PYLONS OR METAL STRUCTURES



Pylons are metal structures typically used to support telecommunication and cableway systems, which generally present stability problems for workers due to the limited surface area available for foot placement. It is often necessary to access pylons to carry out ordinary maintenance on the pylon itself. In most cases, the pylon will have vertical anchor lines that assist the worker in climbing up. Based on the work to be done, it is possible to work using a fall protection or positioning system. When an anchor line is not present, the technique chosen for the ascent will determine the PPE to be adopted.

WORK IN CONFINED SPACES AND/OR POSSIBLY CONTAMINATED SPACES

Confined spaces and/or possibly contaminated spaces refer to any environment where the risk of death or serious injury is very high, due to the presence of dangerous substances or conditions (e.g. lack of space or oxygen) and the difficulty of completing rescue operations in the case of an emergency.

Examples of possible confined spaces and/or possibly contaminated spaces:

- TANKS
- SILOS
- CONTAINERS USED AS REACTORS
- CLOSED DRAINAGE SYSTEMS
- SEWAGE SYSTEMS
- CISTERNS
- POOLS
- COMBUSTION CHAMBERS INSIDE OVENS
- PIPELINES
- ENVIRONMENTS WITH INADEQUATE OR ABSENT VENTILATION

Before starting to work, it is necessary to:

1. Perform specific analysis to identify dangers, with adequate risk evaluation, taking into account possible changes in initial environmental and working conditions over time (e.g. infiltration of methane gas in a sewer line/excavation due to the presence of a gas pipeline, etc.).
2. Define specific operating procedures.
3. Establish adequate methods to manage an emergency, based on the risk present, the access method (horizontal or vertical, at ground level or at height) and the size and structural characteristics of the confined space.
4. Train, educate and instruct workers involved in the activity, particularly with reference to the application of procedures and use of PPE, as well as the working tools and equipment on the basis of the activities to be performed and the risks present.

REMEMBER

Before entering to provide assistance, rescuers must put on appropriate PPE after risk analysis or contact personnel suitable for the task.

HAZARDS LINKED TO CONFINED SPACES

Several critical situations may occur in confined spaces. The cause is often due to:



LACK OF OXYGEN



**RESIDUES INSIDE
CISTERNS AND TANKS**



**GASES, FUMES OR TOXIC
VAPOURS**



**LIQUID OR SOLID
SUBSTANCES**



**HIGH CONCENTRATIONS
OF DUST**



FIRES AND EXPLOSIONS



HIGH TEMPERATURES

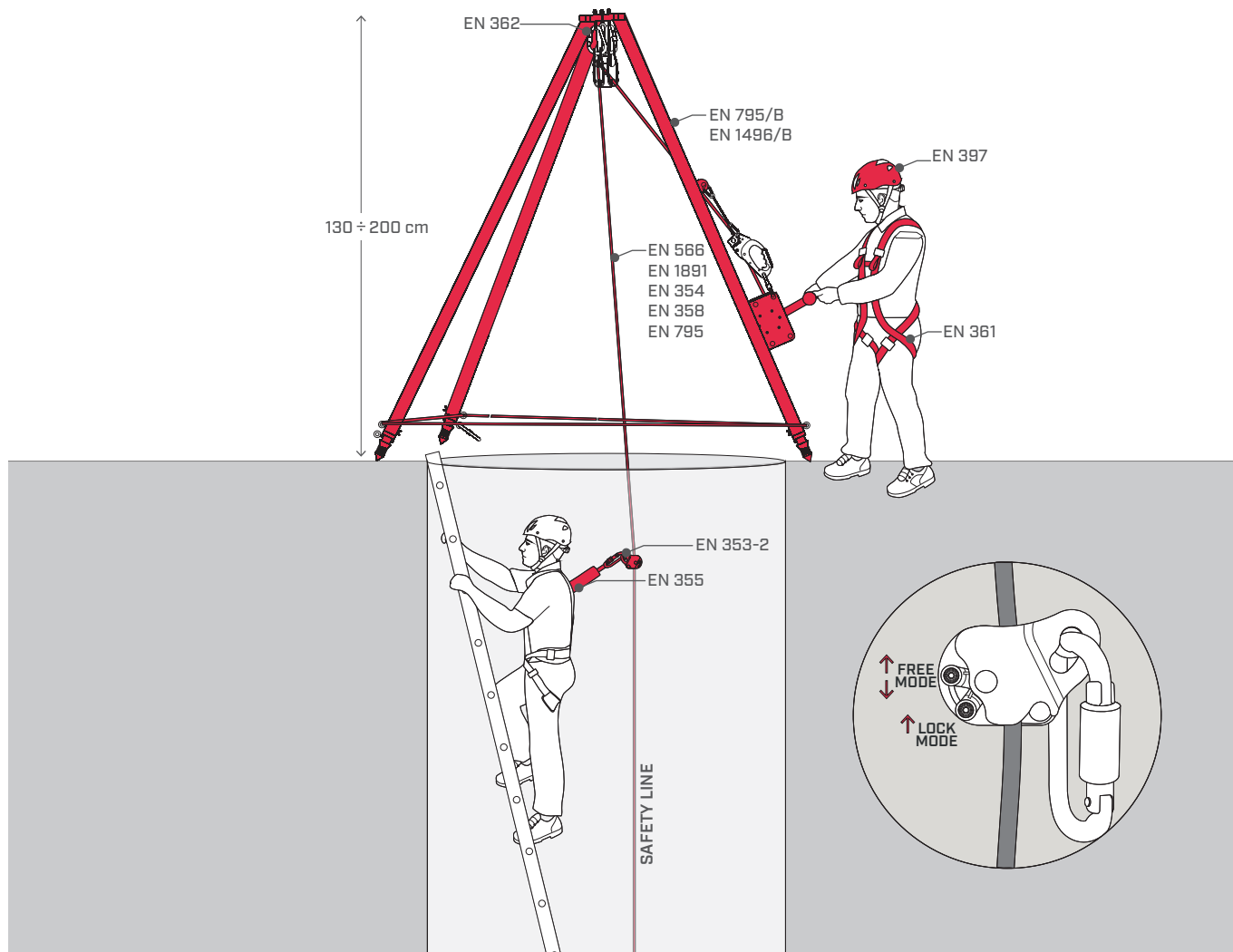
LEGISLATIVE PROVISIONS

In order to identify the necessary measures to ensure the safety of workers, a proper assessment of the risks related to the activities to be carried out should be made. For operations within confined spaces, this involves identifying the hazards present, the risk assessment and the identification of the precautionary measures to be taken.

As of 23/11/2011, there is a regulation containing rules for certifying companies and independent workers to operate in "confined spaces or possibly contaminated spaces". The Italian Presidential Decree provides general guidelines for a genuine strategy to combat accidents occurring in these environments, relative to which the preparation of best practices intended to guide workers is an integral and fundamental step.

For a correct assessment, consider:

- the type of activity;
- the type of work environment;
- the materials and equipment to be used and suitable PPE;
- the suitability of employees;
- the solutions to be adopted for emergency response.



! WARNING!

If the environment is suspected to be contaminated, continuous air quality monitoring is required.



01. KITS

BASE

BASE WORKSITE KIT



IRIS



LINO10



RSBAG

- Indispensable for all basic equipment
- Not recommended for daily work at height

CODES AND DIMENSIONS

CODE	TYPE	description	pcs.	p.
BASE	IRIS	harness for fall protection (single size)	1	265
	LINO10	guided type fall arrester on anchor line (10 m)	1	281
	RBBAG	backpack	1	244

INTERMEDIATE

SEMI-PROFESSIONAL KIT FOR WORKSITES



BIAML



LINO10



RSBAG

- Includes fast-close harness, easy and simple to put on
- Appropriate for all types of work at height and on the ground

CODES AND DIMENSIONS

CODE	TYPE	description	pcs.	p.
INTER	BIAML	professional harness for fall protection (size M/L)	1	263
	LINO10	guided type fall arrester on anchor line (10 m)	1	281
	RSBAG	waterproof bag	1	245

I PROFI

PROFESSIONAL WORKSITE KIT



- Includes professional accessories
- Suitable for daily work at height

I CODES AND DIMENSIONS

CODE	TYPE	description	pcs.	p.
PROFI	ARTEMISML	fall protection and positioning harness (size M/L)	1	260
	ROPE110	rope with loops and auto block connector (10 m)	1	282
	BACK	fall protection and positioning device	1	289
	PRO	helmets for workplace safety, for industry and construction	1	249
	BACKPACK	waterproof bag with internal pocket	1	245

I PLATFORM BASE

BASE KIT FOR PLATFORM WORK



- Specially designed for platform work
- Appropriate for occasional platform work

I CODES AND DIMENSIONS

CODE	TYPE	description	pcs.	p.
PLATBASE	IRIS	harness for fall protection (single size)	1	265
	ENERGY	adjustable rope with energy absorber	1	277
	RBBAG	waterproof bag	1	245

I PLATFORM PROFI

PROFESSIONAL KIT FOR PLATFORM WORK



HESTIAMXL



STRAP2



RSBAG

- Includes professional accessories
- Recommended for frequent platform work

I CODES AND DIMENSIONS

CODE	TYPE	description	pcs.	p.
PLATPRO	HESTIAMXL	harness for fall protection (size M/XL)	1	264
	STRAP2	retractable device	1	302
	RSBAG	waterproof bag	1	245

I RESCUE KIT

SUSPENSION RESCUE SYSTEM



ROPBRA



ELELEF



ROPE130



SCISSOR



BAND23120



BACKPACK

- Includes solutions for quick rescues in the case of emergency
- Indispensable for daily rope work

I CODES AND DIMENSIONS

CODE	TYPE	description	pcs.	p.
RESCUEKIT	ROPBRA	antipanic descender	1	295
	BAND23120	bands (120 cm)	1	305
	ROPE130	rope with loops and auto block connector (30 m)	1	282
	SCISSOR	professional scissor	1	285
	ELELEF	moveable rope lock for ascent	1	292
	BACKPACK	waterproof bag with internal pocket	1	245

I RESCUE KIT SYSTEM

SUSPENSION RESCUE SYSTEM



EVA250



RSBAG



BAND23120

- Includes automatic evacuation system
- Ideal for rescues at elevated heights

I CODES AND DIMENSIONS

CODE	TYPE	description	pcs.	p.
RKS	EVA250	descenders	1	293
	BAND23120	bands (120 cm)	1	305
	RSBAG	waterproof bag	1	245

I BAG

BACKPACK



- Complete with hook for lifting
- Extremely light and comfortable

I CODES AND DIMENSIONS

code	weight [g]	capacity [l]	H [mm]	pcs.
RBBAG	390	23,6	400	1

| SACK

WATERPROOF BAG



- Waterproof bag
- Internal document pockets

| CODES AND DIMENSIONS

code	weight [g]	capacity [l]	H [mm]	pcs.
RSBAG	610	30	700	1

| BACKPACK

WATERPROOF BAG WITH INTERNAL POCKET



- With internal pocket for small objects
- Made of extremely durable PVC

| CODES AND DIMENSIONS

code	weight [g]	capacity [l]	H [mm]	pcs.
BACKPACK	1300	60	550 + 200	1





02. HELMETS

The use of a helmet is absolutely necessary to protect workers when working at height and, more generally, when working in professional environments. Additionally, in most working environments, use of a helmet is obligatory. Given its importance and use for extended periods of time, a good helmet must be robust, durable and comfortable.

Rothoblaas helmets are EN 397 certified and are extremely durable. They adapt easily and quickly and have comfortable internal padding, which can be easily removed and washed.

REFERENCE STANDARD

ANSI Z89.1-2009	Industrial Head Protection
EN 397	Industrial protective helmets
EN 352-1	Hearing protectors
EN 166	Personal eye protection

I PROTECTOR



HELMETS FOR WORKPLACE SAFETY, FOR
INDUSTRY AND CONSTRUCTION



- Weight: **385 g**
- Material: **ABS**
- Application: **construction, industrial and work at height**
- Chin strap opening in case of impact: **between 15 and 25 daN**

Light, comfortable and well-aerated helmet with wheel adjustment system. The wheel can still be easily adjusted even when gloves are worn. Internal padding with "spider" structure, removable and washable.

Visor and earmuffs can be attached directly to the shell.



CODES AND DIMENSIONS

CODE	description	size	pcs.
PRO	PROTECTOR	UNI 52 - 64 cm	1
PRONEC	PROTECTOR with nape cover	UNI 52 - 64 cm	1
PRODIE	dielectric PROTECTOR	UNI 52 - 64 cm	1

Also available in various colours by request (yellow, high visibility yellow, black, rubberized black, orange and red)



ARCH

HELMETS FOR WORKPLACE SAFETY, FOR
INDUSTRY AND CONSTRUCTION

CE
EN 397
ANSI Z.89.1 - 2009



- Weight: **385 g**
- Material: **ABS**
- Application: **construction, industrial and work at height**
- Chin strap opening in case of impact: **between 15 and 25 daN**

New light and comfortable helmet, ultra-resistant to impacts and other forces. The well-aerated internal area guarantees the perfect fit. The padding can be removed and washed.

Visor and earmuffs can be attached directly to the shell. Provided with 4 durable light holders to attach a head lamp.



CODES AND DIMENSIONS

CODE	certificate	size	pcs.
ARCHEN	EN 397	UNI 55 - 63 cm	1
ARCHAN	ANSI Z.89.1 - 2009	UNI 55 - 63 cm	1

Also available in other colours by request (yellow, orange)



PAN

HELMET FOR DAILY WORK



- Weight: **396 g**
- Material: **ABS**
- Application: **construction and work at height**

Excellent for daily worksite tasks. The nylon trappings include a rapid adjustment system. Padded chin strap, adjustable and quick-release. Suitable for work at height.



CODES AND DIMENSIONS

CODE	size	pcs.
PAN	UNI 51 - 63 cm	1

Also available in other colours by request (yellow, orange)



VISOR

VISORS FOR HELMETS

CE
EN 166



VISTRA



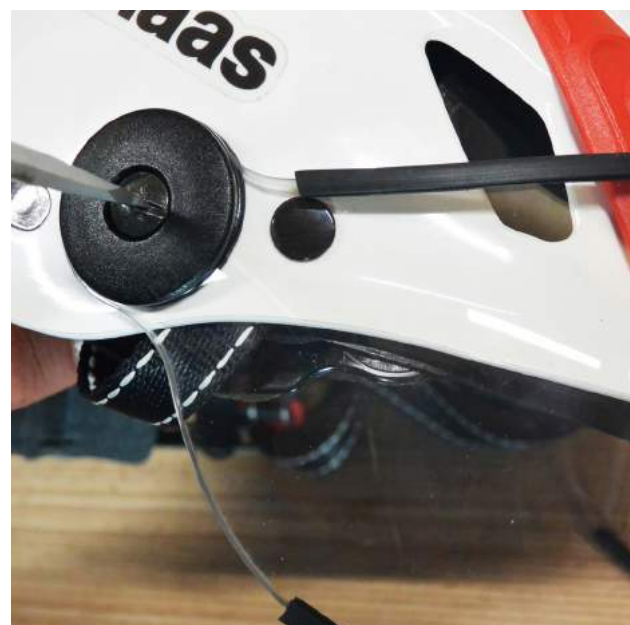
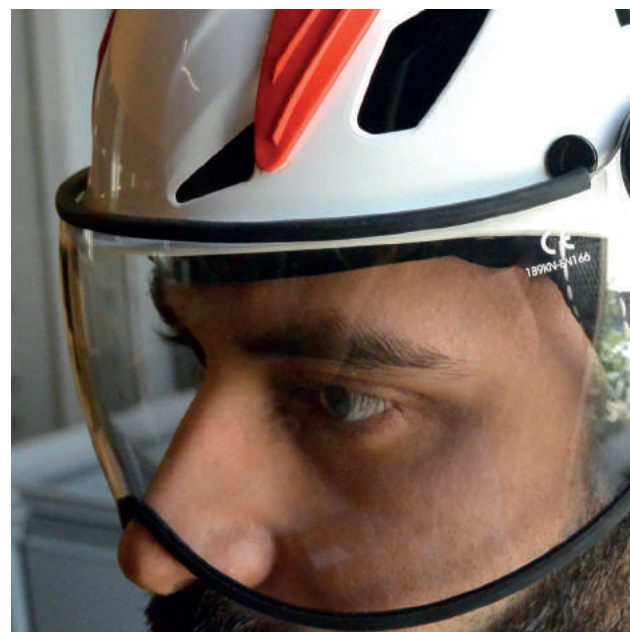
VISDAR



VISTRALON



VISTRE



CODES AND DIMENSIONS

CODE	material	for helmets	pcs.
VISTRA	polycarbonate	PROTECTOR + ARCH	1
VISDAR	polycarbonate	PROTECTOR + ARCH	1
VISTRALON	polycarbonate	PROTECTOR + ARCH	1
VISTRE	metal	PROTECTOR + ARCH + PAN	1

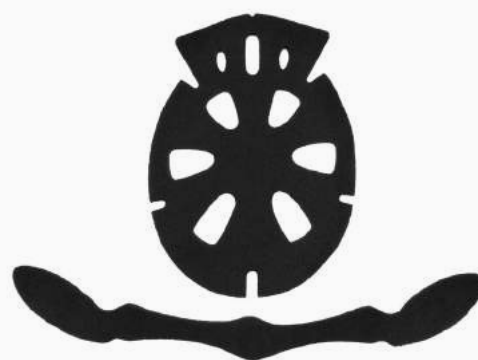
Fastening kit included with all models

PADDING

PADDING FOR HELMETS

CODES AND DIMENSIONS

CODE	description	for helmets	pcs.
PADPRO	spare padding	PROTECTOR	1
PADARC	spare padding	ARCH	1



EAR

EAR DEFENDERS FOR HELMETS

CE
EN 352-1



EAR26



EAR30



EAR32



CODES AND DIMENSIONS

CODE	SNR [dB]	for helmets	pcs.
EAR26	26	PROTECTOR + ARCH	1
EAR30	30	PROTECTOR + ARCH	1
EAR32	32	PROTECTOR + ARCH	1

CODE	description	for helmets	pcs.
EARADA	ear defenders adapter	PROTECTOR	1

Adaptors not appropriate for the ARCH helmet

GEAR

HEAD WRAP FOR HELMETS

CODES AND DIMENSIONS

CODE	description	for helmets	pcs.
GEARPRO	spare head wrap	PROTECTOR	1
GEARARCH	spare head wrap	ARCH	1



I LIGHT

COMPACT LIGHT WITH 7 MODES



I CODICI E DIMENSIONI

CODE	output [lumen]	depth of light beam [m]	battery life [h]	pcs.
LIGHT	122	120	180	1

- Operates with 3 AAA batteries
- Watertightness: **IPX6, water resistant**
- **7 modes**
- Head lamp: **medium, high, low light and SOS strobe**
- Lateral LEDs: **high and low light and SOS strobe**

I LIGHT SOS

ULTRA COMPACT LIGHT WITH 4 MODES FOR USE



I CODICI E DIMENSIONI

CODE	output [lumen]	depth of light beam [m]	battery life [h]	pcs.
LIGHTSOS	25	25	96	1

- Operates with 2 CR2032 button batteries
- Watertightness: **IPX6, water resistant**
- **4 modes**
- Head lamp: **high and low light**
- Red LEDs: **fixed light and SOS strobe**



03. HARNESSES

Positioning and fall arrest slings are suitable for any work situation at height. A quality professional harness must be easy to put on and comfortable during work, but with rigidity in the appropriate spots. It must be light but durable and above all must have anchor points placed properly. To allow the operator to work safely, these slings generally have one or more ventral, lateral, sternal and dorsal attachment points.

VENTRAL AND LATERAL ATTACHMENT POINTS

Points transmitting the load to the level of the belt to work comfortably resting on the feet during the suspension, distributing the load between belt and leg loops.

STERNAL AND DORSAL ATTACHMENT POINTS

They allow connecting a fall arrest system, ensuring the user a stable, reassuring position after a fall from height.

REFERENCE STANDARD

EN 361	Full body harnesses
EN 358	Personal protective equipment for work positioning and prevention of falls from a height
EN 813	Sit harness
EN 12277/A/C	Mountaineering equipment - Harnesses

HERA

FALL PROTECTION AND POSITIONING HARNESS

CE
EN 361
EN 358
EN 12277/A/C
EN 813



- Two aluminium rings sewn to the ventral and sternal connections
- Gear loops with a modular structure for maximum efficiency and minimum hindrance
- Legs with thick padding for greater comfort during suspension
- Waist bend with ergonomic shape and lighter structure, for the utmost versatility and comfort

Excellent harness for short-term rope work and positioning, situations in which lightness and freedom of movement are essential.

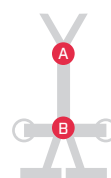
The upper portion is light, ergonomic and breathable, ensuring the utmost comfort in terms of wear and use.

CODES AND DIMENSIONS

CODE	chest [cm]	belt [cm]	leg [cm]	size	weight [g]	pcs.
HERAS	75/85	60/95	40/60	S	1235	1
HERAML	86/110	75/110	50/70	M/L	1285	1
HERAXL	86/110	85/130	65/78	XL	1335	1

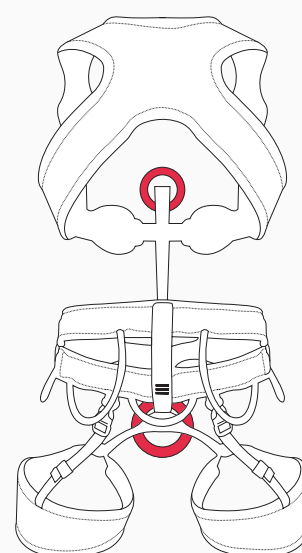
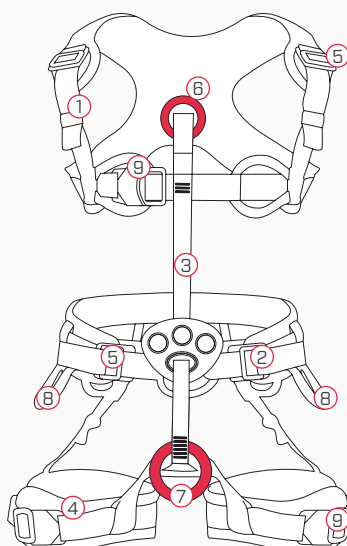
A. EN 361 | 15 kN

B. EN 358 - EN 813 | 15 kN



TECHNICAL DATA

1. Braces
2. Belt
3. Sewn short connection longe
4. Leg loops
5. AISI316 stainless steel through elements
6. Sternal attachment point in aluminium
7. Ventral attachment point in aluminium alloy
8. Gear loops with modular structure
9. Automatic buckles in AISI316 stainless steel



PLANK

SEAT FOR EXTENDED SUSPENSION WORK



- Seat for extended suspension work, with an innovative design
- The aluminium frame can be disassembled, guaranteeing it is extremely lightweight and small
- The seat, made of braided bands, adjusts perfectly to the body; this provides incredible ergonomics and high breathability
- Once disassembled and placed in its bag, PLANK takes up a surprisingly small amount of space
- Perfect for using with the **HERA** harness

CODES AND DIMENSIONS

CODE	material	weight [g]	pcs.
PLANK	aluminium / polyester	895	1





- Sternal and dorsal fall protection attachment points
- Ventral attachment point for progression along the rope
- Lateral positioning points with trigger folding
- Two large gear rings
- Four quick close buckles at waist and legs, it goes on quickly and easily
- Wide high waist band that ensures maximum lumbar support
- Comfortable leg padding guaranteeing maximum comfort during extended use

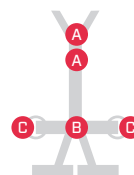
Work harness for positioning and suspension, versatile and easy to put on.

Special attention was paid to safety during use, with the inclusion of lateral positioning points using trigger folding, avoiding interference when not being used.

CODES AND DIMENSIONS

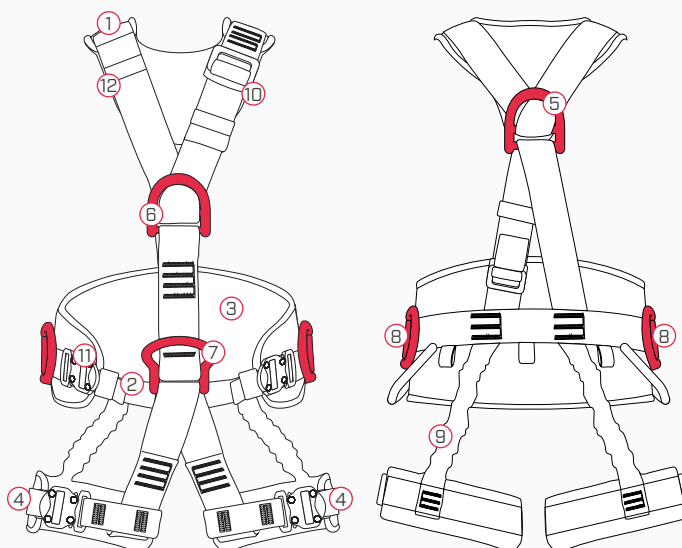
CODE	belt [cm]	leg [cm]	size	weight [g]	pcs.
GAIAML	72/105	50/68	M/L	1950	1
GAIXL	89/130	62/80	XL	2050	1

- A. EN 361 | **15 kN**
B. EN 358 - EN 813 | **15 kN**
C. EN 358 | **15 kN**



TECHNICAL DATA

1. Braces
2. Belt
3. Rear support in polyamide and polyurethane
4. Leg loops
5. Carbon steel dorsal attachment point
6. Carbon steel sternal attachment point
7. Ventral attachment point in aluminium alloy
8. Lateral attachment points in aluminium alloy
9. Bands
10. Carbon steel adjustment buckles
11. Carbon steel automatic adjustment buckles
12. Nylon/polyester through elements



ARTEMIS

FALL PROTECTION AND POSITIONING HARNESS

CE
EN 361
EN 358
EN 813
EN 12277/ A/C



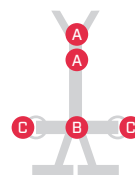
- Three anchor points (ventral, sternal and dorsal) plus innovative lateral positioning rings made of fabric bands
- Two large gear rings
- Thick padding that guarantees the utmost comfort during use
- Lightened padding on the waist band to increase breathability

The excellent padding guarantees maximum comfort during use; the multiple buckles ensure easy and fast adjustment.

CODES AND DIMENSIONS

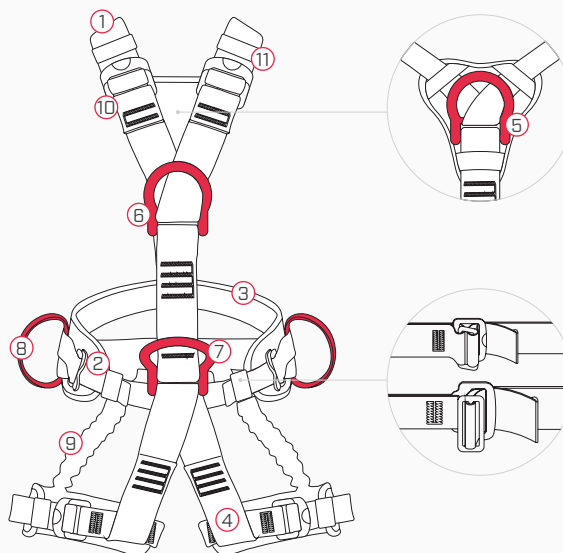
CODE	belt [cm]	leg [cm]	size	weight [g]	pcs.
ARTEMISML	72/105	50/68	M/L	1130	1
ARTEMISXL	89/130	62/80	XL	1180	1

- A. EN 361 | 15 kN
B. EN 358 - EN 813 | 15 kN
C. EN 358 | 15 kN



TECHNICAL DATA

1. Polyester braces
2. Polyester belt
3. Rear support in polyamide and polyurethane
4. Polyester legs
5. Dorsal attachment point in aluminium alloy
6. Sternal attachment point in aluminium alloy
7. Ventral attachment point in aluminium alloy
8. Lateral attachment points in polyester
9. Polyester bands
10. Carbon steel adjustment buckles
11. Nylon/polyester through elements



MAIA

FALL PROTECTION AND POSITIONING HARNESS

CE
EN 361
EN 358
EN 813



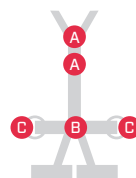
- Three anchor points (ventral, sternal and dorsal) plus lateral positioning rings
- Plastic gear rings and four tool-holder knots

The elastic straps on the harness guarantee excellent fit.

CODES AND DIMENSIONS

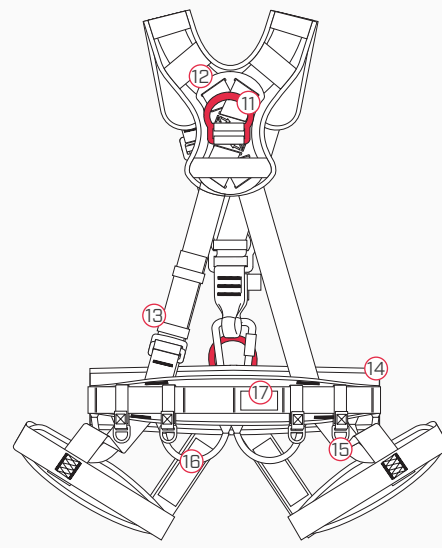
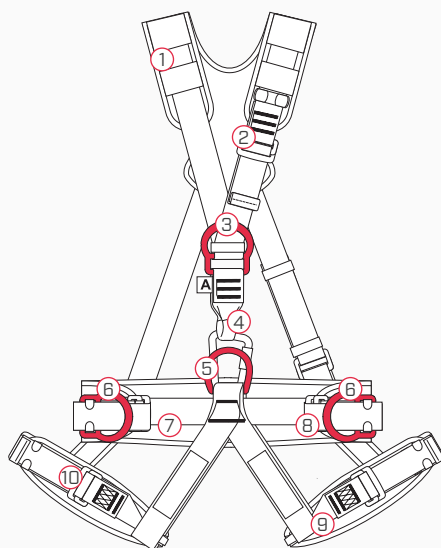
CODE	belt [cm]	leg [cm]	size	weight [g]	pcs.
MAIAS	80/142	42/75	S	1720	1
MAIAMXL	82/144	44/77	M/XL	1820	1

- A. EN 361 | 15 kN
B. EN 358 - EN 813 | 15 kN
C. EN 358 | 15 kN



TECHNICAL DATA

1. Braces
2. Adjustment buckle
3. Sternal attachment point
4. Carabiner
5. Ventral attachment point
6. Lateral attachment points
7. Belt to stabilise the working position
8. Belt adjustment buckles
9. Leg belts
10. Leg adjustment buckles
11. Dorsal attachment point
12. Stabilisation system buckles
13. Adjustment buckles
14. Waist band
15. Tool-holder knots
16. Gear rings
17. Label



I APATE

FALL PROTECTION AND POSITIONING HARNESS

CE
EN 361
EN 358



- Sternal and dorsal attachment points plus lateral positioning rings

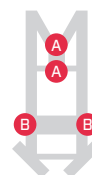
Wide waist belt guarantees good lumbar support.

The multiple buckles ensure fast and easy adjustment.

CODES AND DIMENSIONS

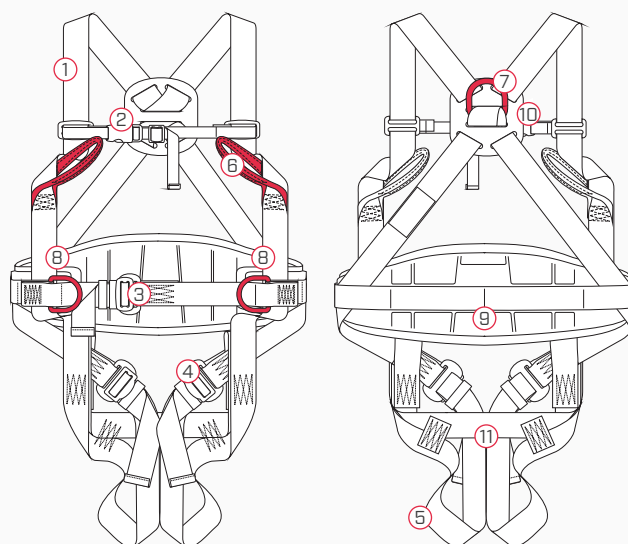
CODE	size	weight [g]	pcs.
APATEMXL	M/XL	1160	1

A. EN 361 | 15 kN
B. EN 358 | 15 kN



TECHNICAL DATA

1. Scapula belt
2. Pectoral belt connection and adjustment buckle
3. Positioning belt connection and adjustment buckle
4. Leg belt connection and adjustment buckle
5. Leg belt
6. Sternal attachment points
7. Dorsal attachment point
8. Lateral attachment points
9. Positioning belt
10. Stabilisation buckles
11. Under gluteus strap



BIA

PROFESSIONAL HARNESS FOR FALL PROTECTION

CE
EN 361
EN 12277/A



- Dorsal attachment point moved up to make wearing easier
- Front attachment point with two large fluorescent yellow rings that facilitate identification
- Gear rings made of bands
- Quick close pectoral buckle for fast and effective placement

Ergonomic work harness.

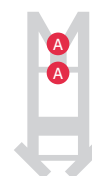
Rear padding makes placement easier and ensures greater breathability.

HT polyester band guarantees excellent stress resistance.

CODES AND DIMENSIONS

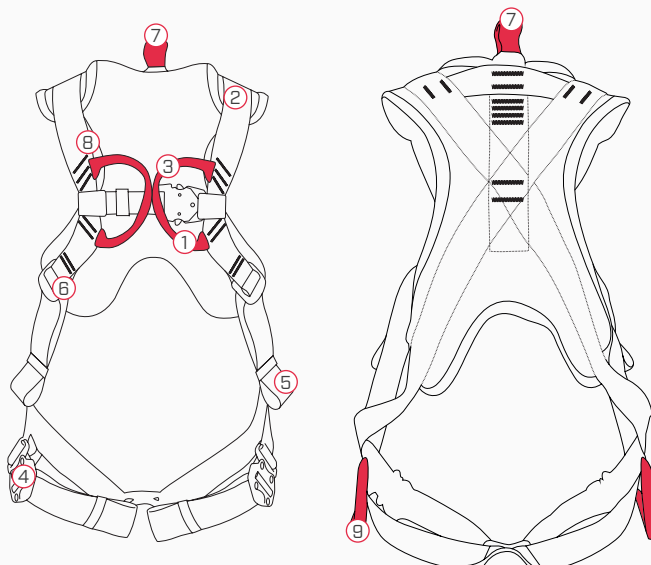
CODE	belt [cm]	leg [cm]	size	weight [g]	pcs.
BIAML	72/105	50/62	M/L	900	1
BIAXL	89/130	62/80	XL	950	1

A. EN 361 | 15 kN



TECHNICAL DATA

1. Quick close positioning buckle
2. Accessory with velcro closure
3. Sternal attachment point
4. Quick close lower buckles
5. Elastic ring for longe connector
6. Quick close buckles
7. Dorsal attachment point
8. HT polyester band
9. Gear rings



HARNESS FOR FALL PROTECTION



- Two attachment points: sternal and dorsal
- Three quick close buckles, pectoral and leg, for fast and effective placement
- Front tool holder at sternum

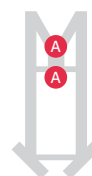
Practical and easily placed work harness, thanks to quick open/close buckles.

Dorsal section and legs padded to ensure excellent comfort for workers.

CODES AND DIMENSIONS

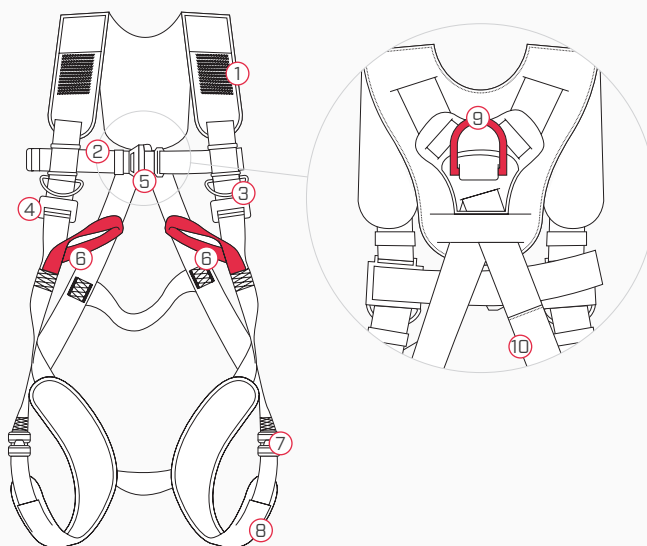
CODE	leg [cm]	size	weight [g]	pcs.
HESTIAS	46/71	S	1270	1
HESTIAMXL	53/92	M/XL	1315	1
HESTIAXXL	63/94	XXL	1365	1

A. EN 361 | 15 kN



TECHNICAL DATA

1. Scapula belt
2. Pectoral belt
3. Tool holder
4. Scapular belt adjustment buckle
5. Pectoral belt connection buckle
6. Front hook knots
7. Leg belt connection buckle
8. Leg belt
9. Rear attachment buckle
10. Harness marking





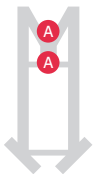
- Two attachment points: sternal and dorsal
- Steel buckles and dorsal connection

Simple and light design and materials made the product ideal for short-term uses.

CODES AND DIMENSIONS

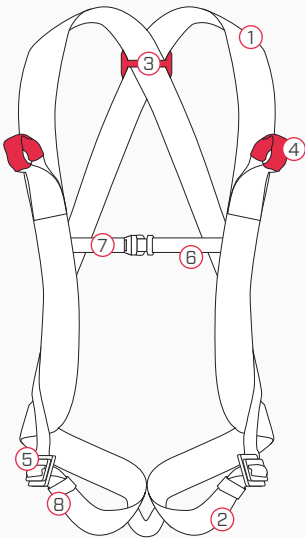
CODE	size	weight [g]	pcs.
IRIS	UNI	580	1

A. EN 361 | 15 kN



TECHNICAL DATA

1. Polyester braces
2. Polyester legs
3. Carbon steel dorsal attachment point
4. Sternal attachment elements in polyester
5. Carbon steel adjustment buckles
6. Polyester sternal band
7. Nylon adjustment buckle
8. Nylon/polyester through elements







rothoblaas

04. FALL ARRESTERS - POSITIONING

FALL ARRESTERS

Fall arresters are systems that go into action when it is necessary to block the worker or stop a possible fall. Devices intended to block the operator are generally certified ropes or bands; in order to function as a fall arrester, they must include an energy absorber which exhausts the energy generated during the fall until the energy acting upon the worker's body no longer exceeds 6 kN.

POSITIONING DEVICES

Positioning devices are intended to hold the worker in place, allowing them to move their hands freely and concentrate on their work. Available with and without length adjusters, they typically consist of a static rope or metal cut-resistant rope, provided with openings to insert connectors. These are also considered fall arresters because they prevent the risk of a fall, but they should never be used to stop a fall from height, no matter how minimal.

REFERENCE STANDARD

- EN 355** Energy absorbers
- EN 353-2** Guided type fall arresters including a flexible anchor line
- EN 358** Personal protective equipment for work positioning and prevention of falls from a height

SINGLE ARM ROPE WITH ENERGY ABSORBER



- Protective fabric holder with velcro closure
- Energy absorber with wear indicator
- Steel carabiners with screw ring nuts included

Single arm fall protection rope made of 30 mm wide elastic bands, with energy absorber.

In the case of a fall, the absorber reduces impact force to ≤ 6 kN.

CODES AND DIMENSIONS

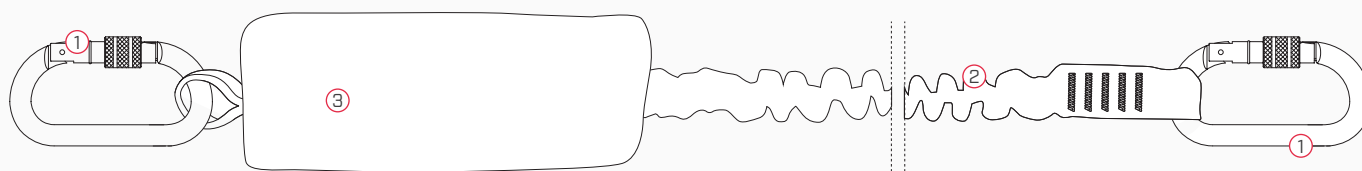
CODE	material	L [m]	weight [g]	pcs.
SIC15	polyamide	1,5	715	1
SIC2	polyamide	2,0	755	1



A. EN 355

TECHNICAL DATA

1. Steel carabiner with **EN 362** screw ring nut included
2. Polyamide elastic rope
3. Energy absorber **EN 355**



DOUBLE SICUROPE

CE
EN 355

DOUBLE ARM ROPE WITH ENERGY ABSORBER



- Protective fabric holder with velcro closure
- Energy absorber with wear indicator
- Steel carabiner with screw ring nut and two aluminium connectors with double safety catch included

Double arm fall protection rope made of 30 mm wide elastic bands, with energy absorber.

In the case of a fall, the absorber reduces impact force to ≤ 6 kN.

CODES AND DIMENSIONS

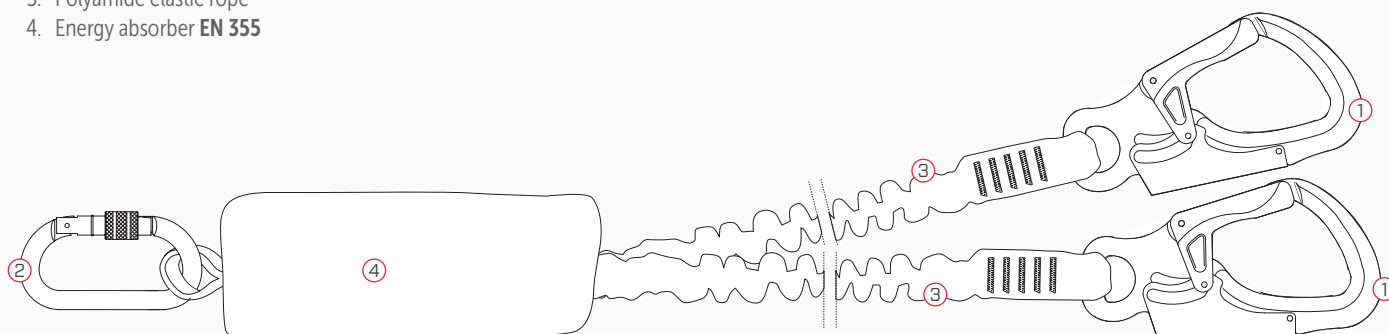
CODE	material	L [m]	weight [g]	pcs.
DSIC15	polyamide	1,5	890	1
DSIC2	polyamide	2,0	930	1



A. EN 355

TECHNICAL DATA

1. Aluminium carabiners with double **EN 362** safety catch
2. Steel carabiner with **EN 362** screw ring nut
3. Polyamide elastic rope
4. Energy absorber **EN 355**



SCAFFOLD DUO

CE
EN 355

DOUBLE ARM ROPE WITH ENERGY ABSORBER



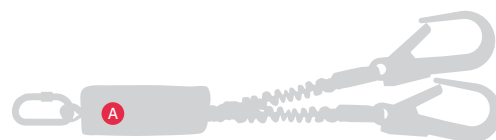
- Protective fabric holder with velcro closure
- Energy absorber with wear indicator
- Steel carabiner with screw ring nut and two aluminium large aperture (56 mm) connectors with double safety catch included

Double arm fall protection rope made of 30 mm wide elastic bands, with energy absorber.

In the case of a fall, the absorber reduces impact force to ≤ 6 kN.

CODES AND DIMENSIONS

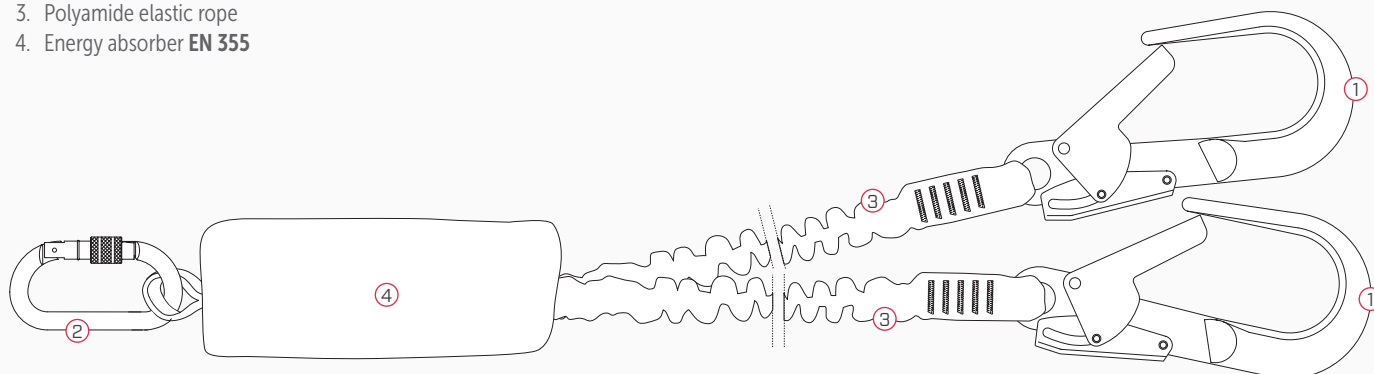
CODE	material	L [m]	weight [g]	pcs.
SCA15	polyamide	1,5	1540	1



A. EN 355

TECHNICAL DATA

1. Aluminium large aperture carabiners with double **EN 362** safety catch
2. Steel carabiner with **EN 362** screw ring nut
3. Polyamide elastic rope
4. Energy absorber **EN 355**



ARRESTER

ENERGY ABSORBER

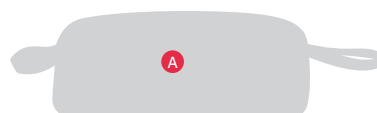


- Protective fabric holder with velcro closure
- Energy absorber with wear indicator

In the case of a fall, the absorber reduces impact force to ≤ 6 kN.

CODES AND DIMENSIONS

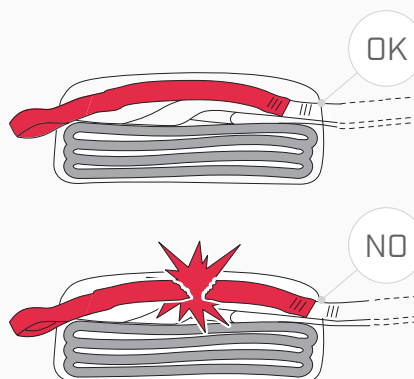
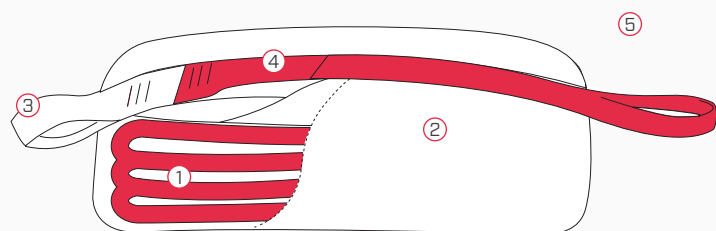
CODE	weight [g]	pcs.
ARRNAK	175	1



A. EN 355

TECHNICAL DATA

1. Polyamide absorption band
2. Polyamide absorption system holder
3. Polyamide fastening ring
4. Safety label
5. Energy absorber EN 355



ARRESTER I

CE
EN 355

SINGLE ARM ROPE WITH ENERGY ABSORBER,
NO CARABINERS



- Protective fabric holder with velcro closure
- Energy absorber with wear indicator

Single arm fall protection rope made of 30 mm wide elastic bands, with energy absorber.

In the case of a fall, the absorber reduces impact force to ≤ 6 kN.

CODES AND DIMENSIONS

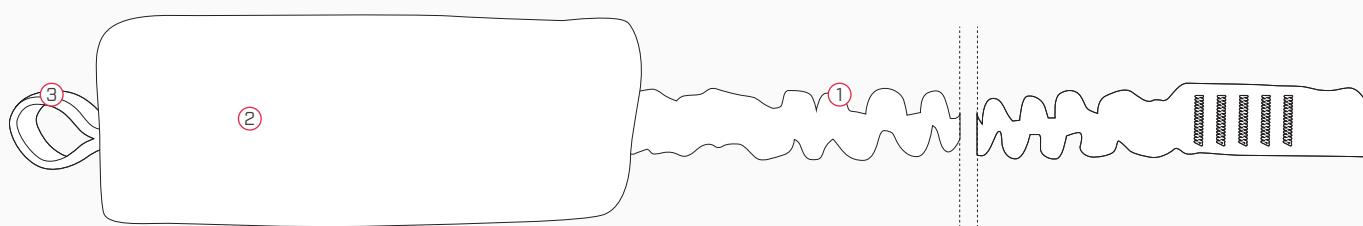
CODE	material	L [m]	weight [g]	pcs.
ARRSIN09	polyamide	0,9	235	1
ARRSIN15	polyamide	1,5	285	1



A. EN 355

TECHNICAL DATA

1. Integrated polyamide elastic rope
2. Energy absorber **EN 355**
3. Polyamide fastening ring



ARRESTER Y

CE
EN 355

DOUBLE ARM ROPE WITH ENERGY
ABSORBER, NO CARABINERS



- Protective fabric holder with velcro closure
- Energy absorber with wear indicator

Double arm fall protection rope made of 30 mm wide elastic bands, with energy absorber.

In the case of a fall, the absorber reduces impact force to ≤ 6 kN.

CODES AND DIMENSIONS

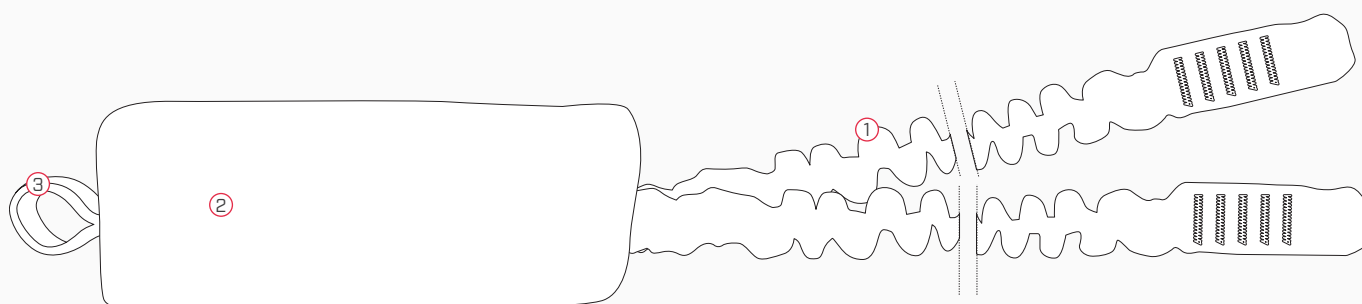
CODE	material	L [m]	weight [g]	pcs.
ARRDOU09	polyamide	0.9	315	1
ARRDOU15	polyamide	1.5	405	1



A. EN 355

TECHNICAL DATA

1. Integrated polyamide elastic rope
2. Energy absorber **EN 355**
3. Polyamide fastening ring



I POSITIONING

POSITIONING DEVICE

CE
EN 358



- Progressive length adjustment device for better work positioning
- Protective cover to safeguard the rope at contact points
- Steel carabiner with screw ring nut and one aluminium carabiner with double safety catch included

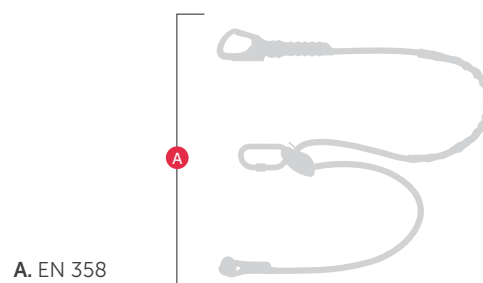
Device used to work with work positioning systems in combination with a fall arrester.

Allows for quick and precise adjustment of length, for ideal positioning based on workplace conditions.

Used with lateral attachment points on the harness to divide up the load of the user resting on their feet: a convenient lever is used for adjustment.

CODES AND DIMENSIONS

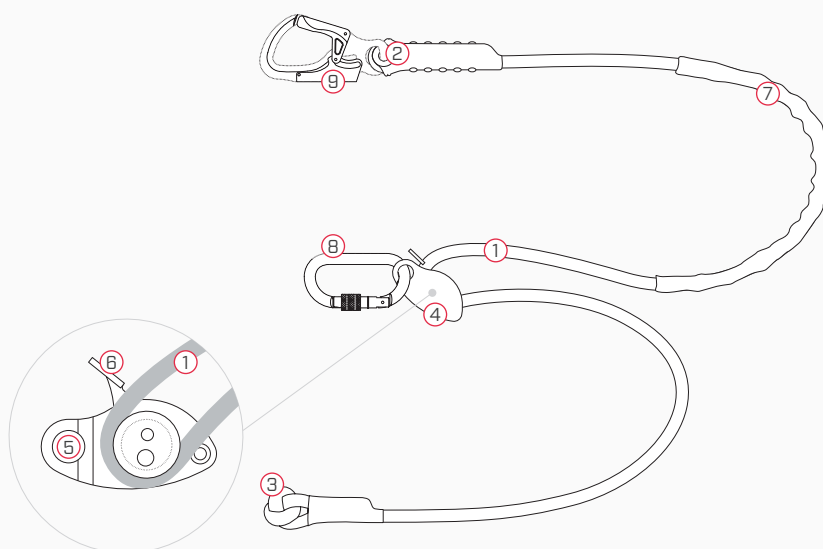
CODE	rope [mm]	L [m]	weight [g]	pcs.
POS2	Ø11	2.0	510	1
POS3	Ø11	3.0	590	1
POS4	Ø11	4.0	670	1



A. EN 358

TECHNICAL DATA

1. Polyamide rope
2. Sewn opening (connection point)
3. Sewn knot (terminal)
4. Aluminium alloy length adjustment device
5. Connection opening
6. Aluminium alloy length adjustment lever
7. Sliding polyester / polyamide protective cover
8. Steel connector with screw ring nut **EN 362**
9. Aluminium connector with double safety lever



I BELT

POSITIONING BELT FOR WORK



- Quick-close buckle for fast placement
- Two large rear gear rings
- Lateral high resistance carbon steel fastening rings

Positioning belt with thick breathable padding for excellent comfort in the case of extended use.

CODES AND DIMENSIONS

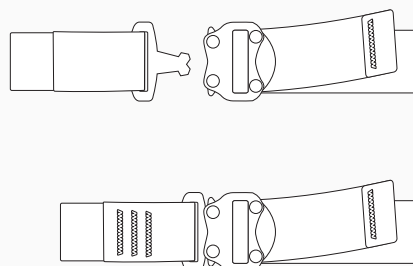
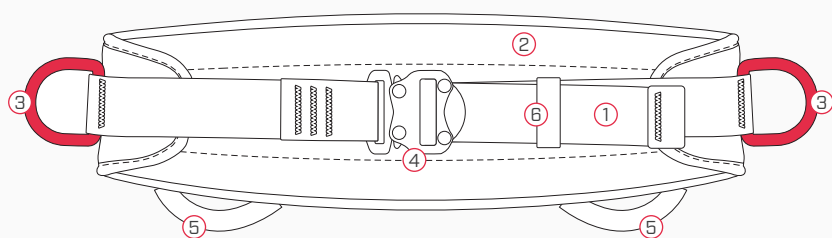
CODE	size	circumference [cm]	weight [g]	pcs.
BELTML	M/L	80/110	550	1
BELTXL	XL	90/130	600	1



A. EN 358

TECHNICAL DATA

1. Polyester band
2. Rear support in polyamide and polyurethane
3. Carbon steel fastening elements
4. Carbon steel buckle
5. Gear holder
6. Nylon/polyester through elements



ADJUSTABLE ROPE WITH ENERGY ABSORBER



- Ø12 rope; one end has a knot to adjust the length, the other is sewn with an attachment knot
- Steel carabiner with screw ring nut and second steel large aperture (50 mm) carabiner with double safety catch

Adjustable fall protection rope with energy absorber.

In the case of a fall, the absorber reduces impact force to ≤ 6 kN.

CODES AND DIMENSIONS

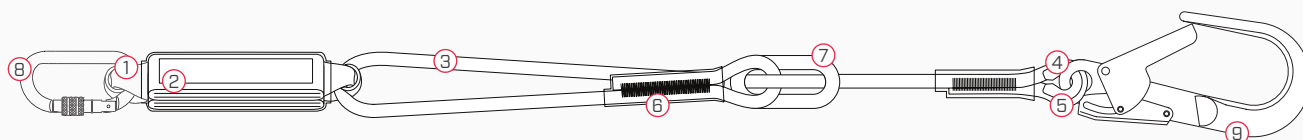
CODE	material	rope [mm]	L [m]	pcs.
ENERGY	polyamide	Ø12	2.0	1



A. EN 355

TECHNICAL DATA

1. Absorber attachment ring
2. Energy absorber
3. Polyamide rope
4. Rope attachment knot
5. Sewn opening with integrated cable thimble
6. Rope stitching
7. Adjustment buckle
8. Steel carabiner with EN 362 screw ring nut
9. Steel large aperture (50 mm) carabiner with double EN 362 safety catch



I PLATROPE

ADJUSTABLE ROPE WITH ENERGY ABSORBER FOR PLATFORMS

CE
EN 355
EN 353-2



- Energy absorber provided with protective fabric holder with velcro closure
- Absorber with wear indicator
- Steel carabiners with screw ring nut and an aluminium large aperture (56 mm) connector with double safety catch
- With **BACK** device that follows the worker both when ascending and descending, stopping any falls
- Using the button, the device allows for normal use or positioning

Static longe with fall protection adjuster including an energy absorber.

In the case of a fall, the absorber reduces impact force to ≤ 6 kN.

CODES AND DIMENSIONS

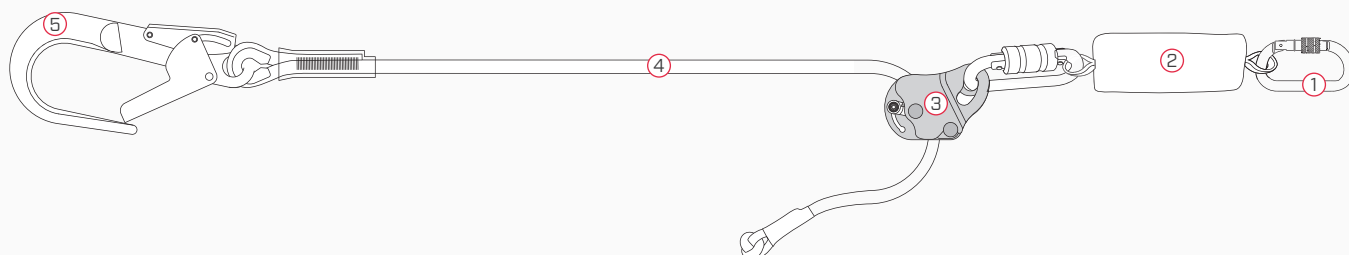
CODE	L [m]	weight [g]	pcs.
PLATROPE	1.9	1430	1



A. EN 355 - B. EN 353-2

TECHNICAL DATA

1. Steel connector with auto block ring nut **EN 362**
2. Energy absorber **EN 355**
3. **BACK** device for rapid length adjustment **EN 353-2**
4. Static longe
5. Aluminium large aperture carabiner with double **EN 362** safety catch





rothoblaas

05. ROPES

The ropes are linear devices that can block the worker in the case of a fall. They consist of a cut-resistant steel core with a cover; for professional use, semi-static ropes with a low elongation coefficient are used. These are different from blocking devices such as ropes and bands, which do not need to be as robust as they do not need to support all of the suspended worker's weight, but merely need to impede the worker from reaching an area with falling risks.

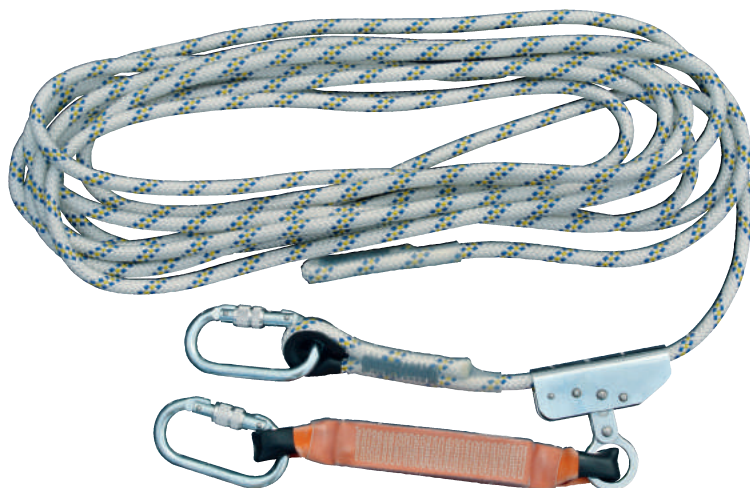
■ REFERENCE STANDARD

- EN 566** Climbing equipment - Rings
- EN 795/B** Anchor devices
- EN 354** Lanyards
- EN 358** Personal protective equipment for work positioning and prevention of falls from a height
- EN 353-2** Guided type fall arresters including a flexible anchor line
- EN 1891** Low stretch kernmantel ropes

LINOSTOP

CE
EN 353-2

GUIDED TYPE FALL ARRESTER ON ANCHOR LINE



- Material: **polyamide**
- Rope: **Ø12 mm**
- Guided and sliding-type fall arrester, with fixed installation on the rope
- Two steel carabiners with screw ring nut

Fall arrester with chromed steel locking device and integrated energy absorber.

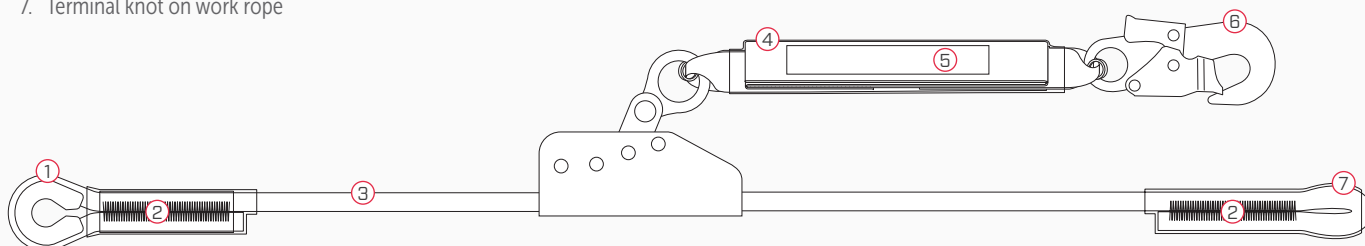
In the case of a fall, the energy absorber reduces the force of impact down to a maximum of 6 kN.

CODES AND DIMENSIONS

CODE	rope [mm]	L [m]	weight [g]	pcs.
LINO10	Ø12	10	2000	1
LINO15	Ø12	15	2500	1
LINO20	Ø12	20	3000	1

TECHNICAL DATA

1. Cable thimble knot on the work rope
2. Seam
3. Polyamide work rope, Ø12 mm
4. Energy absorber element (micro-absorber)
5. Marking
6. Micro-absorber carabiner
7. Terminal knot on work rope



ROPE 1

ROPE WITH LOOPS AND AUTO BLOCK CONNECTOR

CE
EN 566
EN 795/B



- Material: **polyamide**
- Rubber protective terminals
- **Autoblock steel carabiner (three movements to open)**
- Suitable for guided type **BACK** fall arrester (p. 289)

Semi-static loge with two Ø11 openings for positioning and anchoring.

CODES AND DIMENSIONS

CODE	rope [mm]	L [m]	weight [g]	pcs.
ROPE110	Ø11	10	820	1
ROPE115	Ø11	15	1200	1
ROPE120	Ø11	20	1580	1
ROPE130	Ø11	30	2340	1
ROPE150	Ø11	50	3860	1

ROPE 2

SLOTTED-HOLE ROPE

CE
EN 358
EN 354
EN 566
EN 795/B



- Material: **polyamide**
- Rubber protective terminals
- Suitable for guided type **BACK** fall arrester (p. 289)

Semi-static loge with two Ø11 openings for positioning and anchoring.

CODES AND DIMENSIONS

CODE	rope [mm]	L [m]	weight [g]	pcs.
ROPE21	Ø11	1	135	1
ROPE215	Ø11	1.5	172	1
ROPE22	Ø11	2	210	1

ROPE 3

SEMI-STATIC ROPE



- Material: **polyamide**
- To be used in combination with the guided type **BACK2** fall arrester (**EN 353-2**) (p. 294)

Semi-static loge with two openings for positioning and anchoring.

CODES AND DIMENSIONS

CODE	rope [mm]	L [m]	pcs.
ROPE320	Ø14	20	1
ROPE330	Ø14	30	1
ROPE350	Ø14	50	1

ROPE 4

STATIC ROPE



EN 1891/A



CODES AND DIMENSIONS

CODE	rope [mm]	L [m]	weight [g/m]	colour	pcs.
ROPE460R	Ø10.5	60	75	●	1
ROPE4100R	Ø10.5	100	75	●	1
ROPE4200R	Ø10.5	200	75	●	1
ROPE460Y	Ø10.5	60	75	●	1
ROPE4100Y	Ø10.5	100	75	●	1
ROPE4200Y	Ø10.5	200	75	●	1

- The **sandwich structure and special silk fibres** guarantee the safety of the worker even in the case of damage
- Can also be used to lift and suspend loads



ROPE 5

STATIC ROPE



- Reduced length **static rope**, ensures the chosen length is maintained
- Designed for **work at height, rope work, speleology, rescues and similar activities**

CODES AND DIMENSIONS

CODE	rope [mm]	L [m]	colour	pcs.
ROPE560W	Ø11	60	○	1
ROPE560B	Ø11	60	●	1

EDGE

ROPE PROTECTION



- Rope protection (for restraints)
- Compared to classic PVC, it offers **better resistance** and lower weight
- Used on edges where abrasion could damage the rope
- Provided with a ring at the end that allows it to be anchored to a fixed point to keep it in position

CODES AND DIMENSIONS

CODE	material	L [mm]	weight [g]	pcs.
EDGE	cordura	700	95	1

EDGE PRO

LIGHT ALUMINIUM ALLOY ROLLER FOR ROPE MOVEMENT



- Roller for rope **protection and movement**
- Modular device, **five adjustable pieces**
- Provided with **double nylon rollers** that allow two ropes to move independently

CODES AND DIMENSIONS

CODE	material	weight [g]	pcs.
EDGEPRO	aluminium alloy / nylon	1650	1

KNIFE

PROFESSIONAL KNIFE



- Professional knife ideal for **work at height and rescues**
- With a wide opening for easy fastening to the harness with a carabiner
- **High quality blade** able to easily cut slack ropes and lanyards
- Includes a lock button to avoid accidental blade opening

CODES AND DIMENSIONS

CODE	material	blade	weight [g]	pcs.
KNIFE	anodised aluminium	stainless steel	145	1

SCISSOR

PROFESSIONAL SCISSOR



- Scissor with **circular blade**
- Useful in emergencies to **cut ropes under tension**
- **Safety closure**

CODES AND DIMENSIONS

CODE	material	blade	weight [g]	pcs.
SCISSOR	plastic / stainless steel	stainless steel	145	1





06. DESCENDERS - POSITIONING

Descenders are devices that help control speed during descent with a rope. They are systems that take advantage of the friction that is formed between the rope and the descender itself to control descent speed. The anti-panic handle means the same descender can be used even when assisting people in difficulty. Additionally, these devices are designed for easy inspection and maintenance.

Positioning devices are intended to hold the worker in place, leaving their hands free to carry out their tasks. These are linear devices (cut-resistant or metal ropes) that may include openings through which connectors can pass (typically carabiners) and the length can be adjusted. This type of device cannot be used for fall protection.

REFERENCE STANDARD

EN 353-2	Guided type fall arresters including a flexible anchor line
EN 358	Personal protective equipment for work positioning and prevention of falls from a height
EN 567	Climbing equipment - rope clamps
EN 12841 A/B	Access systems with ropes - rope adjustment devices
EN 341	Rescue descent devices
EN 1496	Rescue lifting devices
ANSI/ISEA Z359	Fall protection / Arrest standards

BACK

FALL PROTECTION AND POSITIONING DEVICE



EN 353-2
EN 358
EN 567
EN 12841 A/B
ANSI/ISEA Z359.15-2014



- Steel carabiner with **auto block ring nut included**
- Material: **stainless steel / aluminium alloy**
- Button that switches between fall arrest and positioning modes
- It stops falls from height, slipping on an incline or uncontrolled descents

Fall arrester that can be controlled with one hand, allows the worker to move up or down, stopping any falls.



BACKANSI



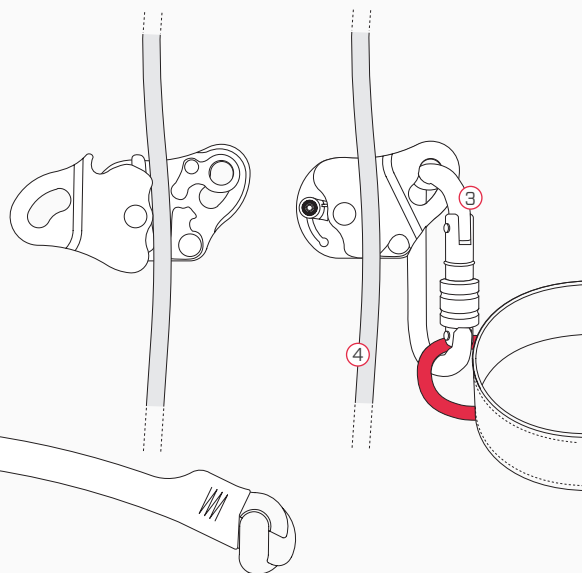
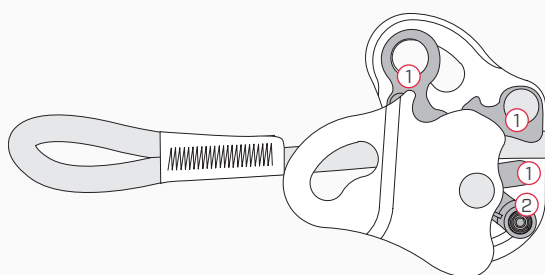
BACKMAG

CODES AND DIMENSIONS

CODE	rope [mm]	weight [g]	pcs.
BACK	Ø10 - Ø12	420	1
BACKANSI	Ø10 - Ø12	435	1
BACKMAG	-	-	1

TECHNICAL DATA

1. Locking device
2. "Free mode" / "lock mode" selection lever
3. Connectors
4. Rope (not included)



BLOCKING SLIDER FOR ROPE / BELT



- Material: **aluminium alloy**
- Wide connection opening that even allows screw ring nut carabiners to rotate
- Can also be used on flat and tubular bands between **10 and 15 mm wide**
- Can be used as an **emergency lock for recovery and self-rescue manoeuvres**

Compact multi-use locking device.

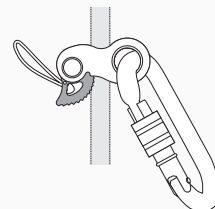
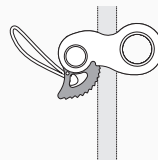
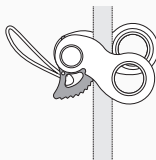
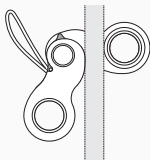
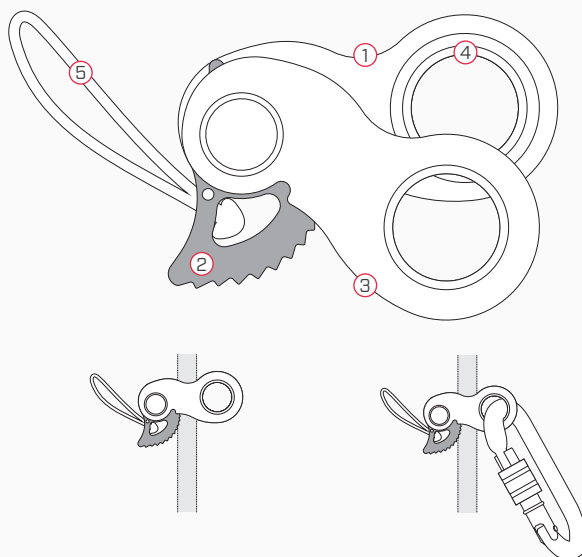


CODES AND DIMENSIONS

CODE	rope [mm]	weight [g]	pcs.
DUCK	Ø8 - Ø13	70	1

TECHNICAL DATA

1. Body
2. Toothed cam
3. Mobile aluminium alloy flange
4. Steel cord movement bushing
5. Rope to be inserted in the cam opening



I BELLY

CAM CLEAN ROPE LOCK

CE
EN 567
EN 12841/B



- Material: **aluminium**
- Excellent locking ability **for rope that are particularly muddy thanks to the evacuation grooves in the cam.**
- **Excellent resistance to wear**, fragility reduced
- Applications: **suspended work, mountain rescues, fire fighting and civil protection, mountaineering, canyoning, speleology, snow and ice.**

Small size ventral lock, designed for speleology and all speleological derived applications such as rescue, canyon rescue, working at heights and canyoning.

The new material and a special thermal and chemical processes give the toothed cam excellent surface hardness.

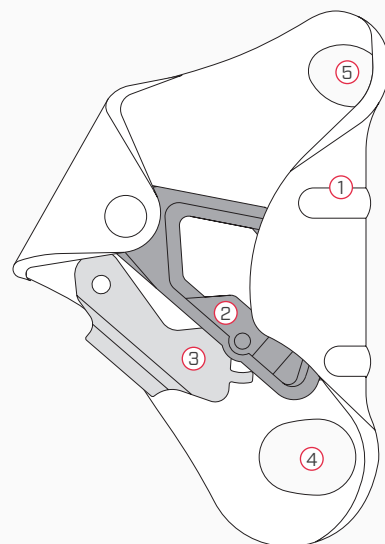
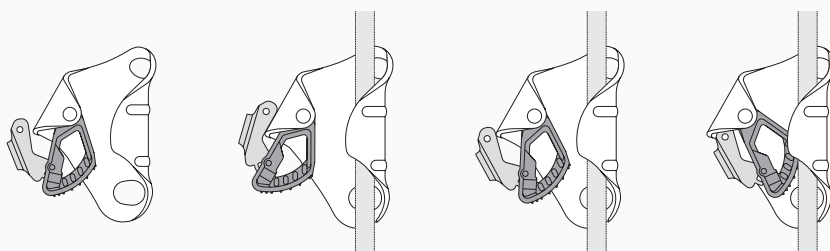
Ergonomic click opening, easy to manoeuvre and well protected from impacts and the risk of accidental opening. Equipped with cam anti-torsion system.

CODES AND DIMENSIONS

CODE	rope [mm]	weight [g]	pcs.
BELLY	Ø8 - Ø13	220	1

TECHNICAL DATA

1. Aluminium alloy body
2. Steel toothed cam
3. Toothed cam security device in aluminium alloy
4. Opening for connection to lower harness
5. Opening for connection to pectoral



ELEVATOR

MOVEABLE ROPE LOCK FOR ASCENT

CE
EN 567
EN 12841/B



ELELEF



ELERIG

- Material: **aluminium alloy**
- Application: moveable rope lock for ascent, in right and left version
- Excellent locking ability for rope that are particularly muddy thanks to the evacuation grooves in the cam and on the side
- Excellent resistance to wear, fragility reduced

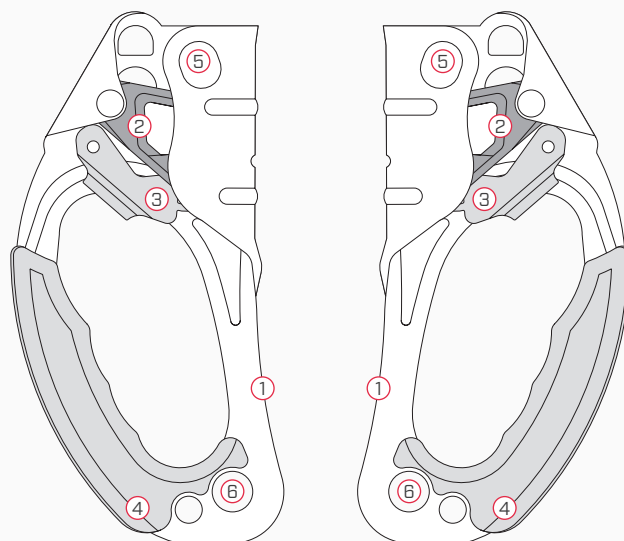
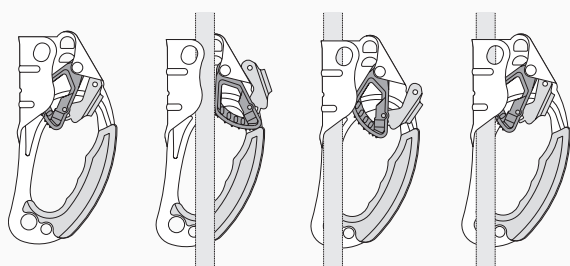
New ergonomic click opening, easy to manoeuvre and well protected from impacts and the risk of accidental opening. Equipped with cam anti-torsion system.

CODES AND DIMENSIONS

CODE	rope [mm]	weight [g]	pcs.
ELELEF	Ø225	225	1
ELERIG	Ø225	225	1

TECHNICAL DATA

1. Aluminium alloy body
2. Steel toothed cam
3. Toothed cam security device in aluminium alloy
4. Ergonomic grip
5. Upper opening
6. Lower opening



EVACUATION

DESCENDERS

EVA1
CE
EN 341

EVA2
CE
EN 341/1A
EN 1496/B



EVA1



EVA2

- Carabiners at ends included
- Rope **Ø9 mm**
- Magnetic braking system that automatically controls descent speed based on the load applied
- **EVA1:** individual evacuation system for work locations at height. Load capacity **1 person**
- **EVA2:** evacuation system for one or more workers. The wheel allow for brief lifting and release of the operator, if necessary. Load capacity **2 people**

Devices that allow for the evacuation of one or more workers from a descent, up to 300 m, from workplaces at height (cranes, wind turbines, metal carpentry structures, power lines).

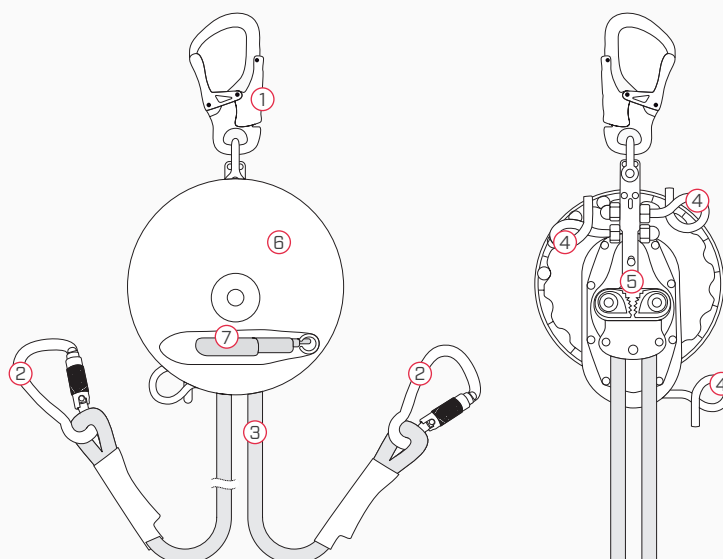
The rope has openings on both sides and allow for evacuation of multiple operators in sequence.

CODES AND DIMENSIONS

CODE	type	speed [m/s]	<> kg	weight [kg]	L [m]	pcs.
EVA30	EVA1	~ 0,8	< 150	4,1	30	1
EVA50	EVA1	~ 0,8	< 150	5,3	50	1
EVA80	EVA1	~ 0,8	< 150	7,1	80	1
EVA250	EVA2	~ 0,8	< 225	7,1	50	1
EVA280	EVA2	~ 0,8	< 225	9,0	80	1

TECHNICAL DATA EVA2

1. EN 362 compliant aluminium alloy anchor connector
2. EN 362 compliant carbon steel terminal connectors
3. EN 1891 class A compliant polyamide rope
4. Pigtail eyebolts
5. Cleat
6. Flywheel
7. Crank



BACK 2

CE
EN 353-2

FALL ARRESTER WITH ENERGY ABSORBER



- Applications: **working at height/fall arrest**
- Integrated energy absorber
- Connector **with double safety lever** included

Self-blocking device with flexible guide.

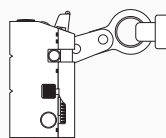
Can **only** be used **with Ø14 mm** polyester ropes (work ropes).

CODES AND DIMENSIONS

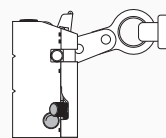
CODE	rope [mm]	weight [g]	pcs.
BACK2	Ø14	220	1

TECHNICAL DATA

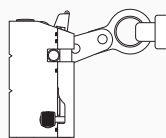
1. Upper end of the work rope (loop with thimble knot)
2. Work rope marking
3. Lower end of the work rope (loop with thimble knot)
4. Self-blocking mechanism
5. Polyester rope guide (work rope) with 14 mm diameter
6. Absorber
7. Connecting element
8. Device marking



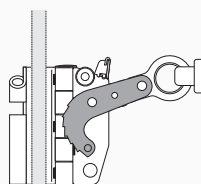
Move the split pin down



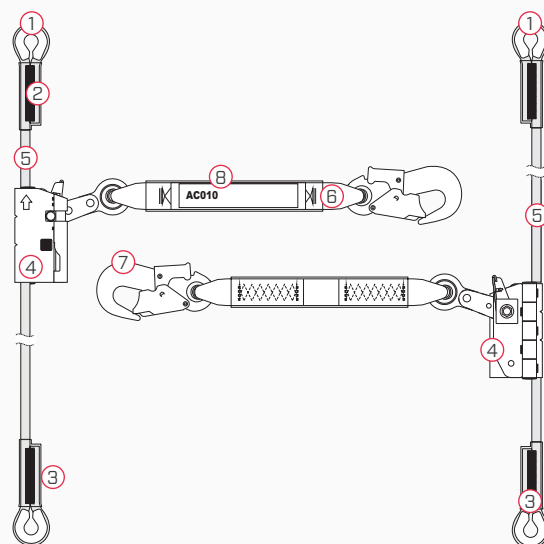
Press the split pin "emergency button"



Open the walls of the mechanism



Position the guide in the folded part of the mechanism wall



ROPE BRAKE

ANTIPANIC DESCENDER

CE
EN 341
EN 12841
NFPA



- Number of workers: **2**
- Material: **stainless steel / aluminium alloy**
- Allows the cord to be recovered for ascent
- Simple easy to manoeuvre activation catch that **guarantees more fluid and precise operation**

Manually controlled descent device with automatic locking that activates both when the lever is released or pulled.

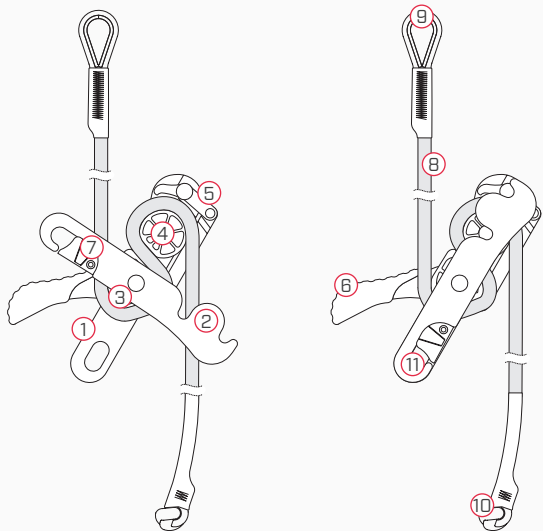
It is also a descender for a work cord, allowing for rapid but controlled descent and hands free stopping on static or dynamic ropes.

CODES AND DIMENSIONS

CODE	material	rope [mm]	weight [g]	pcs.
ROPBRA	stainless steel / aluminium alloy	Ø10 - Ø12	480	1

TECHNICAL DATA

1. Aluminium alloy fixed side
2. Aluminium alloy mobile side
3. Aluminium alloy lower pulley
4. Aluminium alloy upper pulley
5. Stainless steel rope locking teeth
6. Aluminium alloy teeth activation lever
7. Stainless steel safety
8. Rope
9. Terminal with opening (attachment point for anchor point / user)
10. Terminal with limiter
11. Openings on sides (attachment point for anchor point / user)



ROPE BRAKE 2

CE
EN 341/C

DESCENDERS FOR RESCUE WITH CONNECTORS



- Maximum load: **200 kg**
- Steel carabiners **with screw ring nut** included
- Practical bag for transport included

Evacuation and rescue device that is used together with individual fall protection equipment.

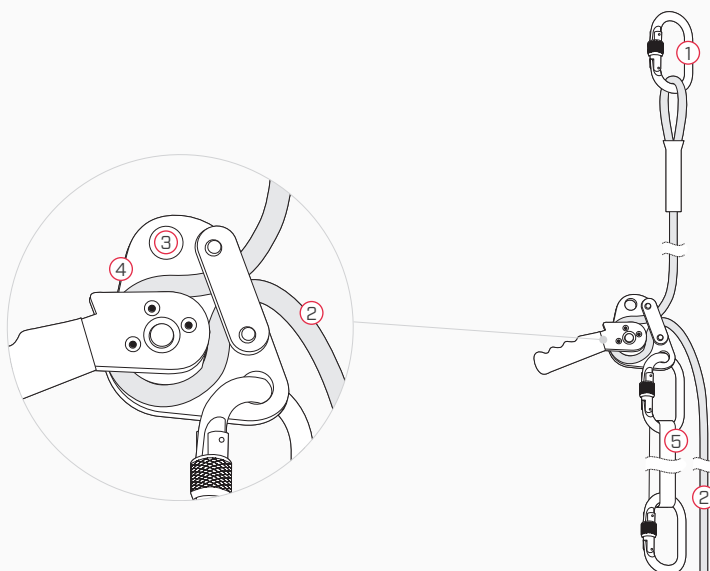
Appropriate for rescue in the case of injured or unconscious workers.

CODES AND DIMENSIONS

CODE	rope [mm]	L [m]	pcs.
ROPBRA2	Ø11	20	1

TECHNICAL DATA

1. Carabiners
2. Rope diameter Ø 11 mm
3. Position indicator
4. Lowering device
5. Band



I EXTENSION

TELESCOPIC POLE



UDI head



hook

- Operating reach with worker: **9,50 m**
- Weight: **4.17 kg**
- Max. rod length: **8,88 m**
- Min. rod length: **1,95 m**
- Load permitted: **5 kg**
- Hook material: **galvanized steel**

The device can be used with anchor hooks, rope installers in order to hang the work rope, acoustic sensors and other components that are compatible with the UDI head.

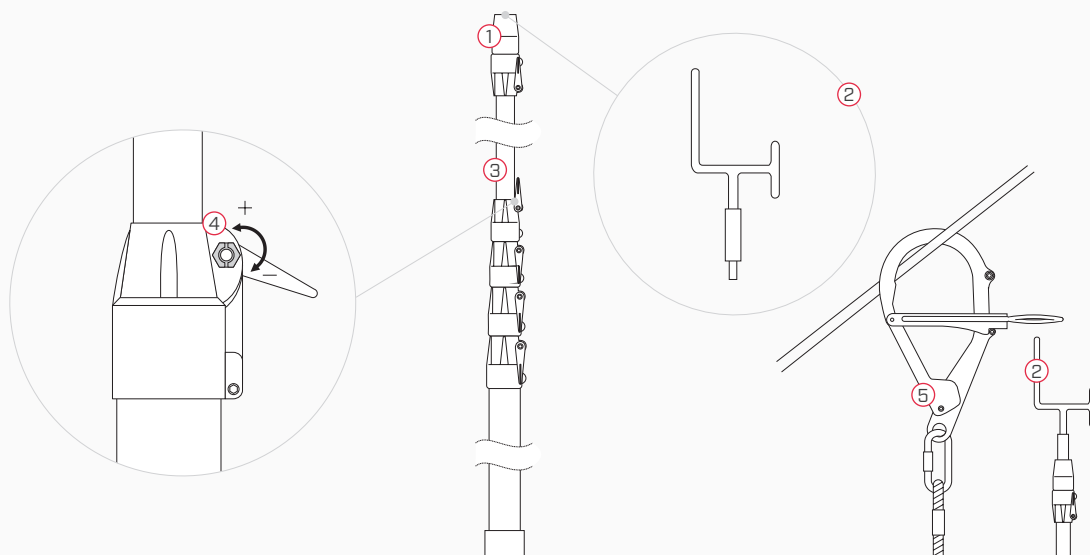
Locking of a particular section of the telescopic pole in any position.

CODES AND DIMENSIONS

CODE	pcs.
EXTENSION	1

TECHNICAL DATA

1. Interchangeable head
2. Hook for hanging
3. Extension
4. Adjustment nut for locking strength
5. Work hook







rothoblaas
BACK-UP



07. RETRACTABLE FALL ARRESTERS

A retractable device is a variable length piece of fall protection equipment that serves to connect the worker's harness to a fixed point, supporting the worker's body during and after a fall. It serves a self-blocking function and operates with an automatic system that tensions and winds up the cable or fabric rope, which during work automatically elongates to offer the worker maximum freedom of movement. Automatic blocking occurs any time a movement exceeds the speed of 1,5 m/s, which the device interprets as the start of a fall. It can be used vertically, horizontally or slantwise.

This is a device which, although used as part of a fall protection system, must be combined with an energy absorber able to exhaust the kinetic energy created during the worker's fall, decreasing until the maximum force working upon the worker's body is 6 kN.

■ REFERENCE STANDARD

EN 360 Retractable type fall arresters

FALL BLOCK

RETRACTABLE DEVICE WITH STEEL CABLE

CE
EN 360
ATEX II 2 G c 7B



FAL10



FAL15 - FAL20

Vertical retractable device with automatic retraction.

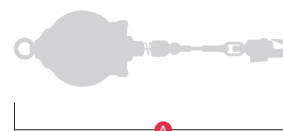
- Material: **galvanised steel / ABS**
- Vertical usage: **10, 15 and 20 m versions**
- Horizontal use: **10 m version**

Guarantees the utmost freedom of movement for the worker during operations on scaffolds, electricity pylons and tubular structures.

Equipped with ultra-resilient ABS casing, 4,5 mm stainless steel cable with opening, thimble eye and connector with safety catch and rotating anti-kink link. Complies with standard EC EN 360 and ATEX II 2 G c T6 for the regulation of equipment intended for use in potentially explosive atmospheres.

CODES AND DIMENSIONS

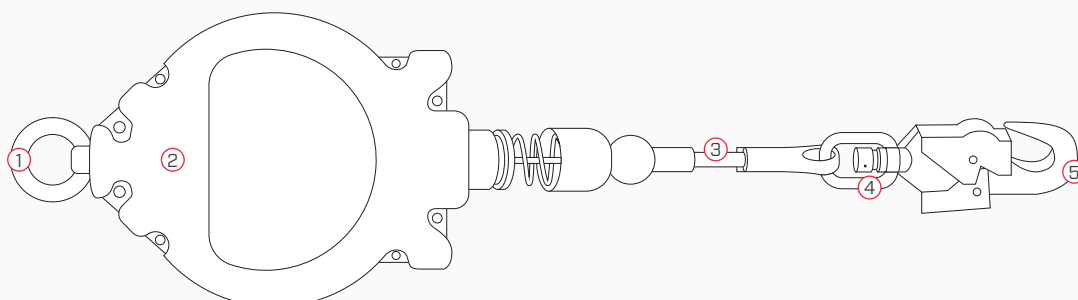
CODE	weight [kg]	L [m]	pcs.
FAL10	4,6	10	1
FAL15	7,2	15	1
FAL20	7,7	20	1



A. EN 360 - ATEX II 2 G c T6

TECHNICAL DATA FAL15 - FAL20

1. Rotating eye bolt
2. Ultra-resistant ABS shell
3. 4,5 mm metal cable
4. Anti-kink link with 3 kN load indicator
5. Connector with EN 362 double safety catch



STRAP 2

RETRACTABLE DEVICE



Retractable automatic retraction fall protection device for both horizontal and vertical use.

- Material: **polyester**
- **Upper rotating** anchor point
- **Twist-lock** carabiner with anti-kink link
- Use: **vertical and horizontal**

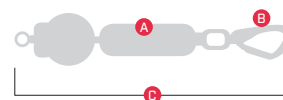
Polyester band, 21 mm wide, 2 m long.

External energy absorber with protective cover that can be opened for inspection.

CODES AND DIMENSIONS

CODE	weight [kg]	L [m]	pcs.
STRAP2	0,9	2	1

- A. EN 355
- B. EN 362
- C. EN 360



STRAP 6

RETRACTABLE DEVICE



Retractable automatic retraction fall protection device for both horizontal and vertical use.

- Material: **polyester**
- **Upper rotating** anchor point
- **Twist-lock** carabiner with anti-kink link
- Use: **vertical and horizontal**

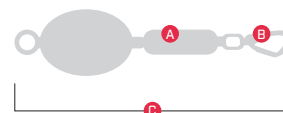
Polyester band, 21 mm wide, 6 m long.

External energy absorber with protective cover that can be opened for inspection.

CODES AND DIMENSIONS

CODE	weight [kg]	L [m]	pcs.
STRAP6	2,4	6	1

- A. EN 355
- B. EN 362
- C. EN 360





CE 0120
EN 360:2002



RETRACTABLE
FALL ARRESTER BLOCK
(SHARP EDGE PROTECTION)



PRODUCT REF. NO. : PCG3101SE1
WIRE ROPE LENGTH : 10.0 MS
BATCH NO. : S10-022
SERIAL NO. : 170010632
MONTH & YR OF MFR. : 04/2017

08. ANCHORS

The rope securing the worker is attached to the anchor point. This point is extremely important, as the effectiveness of the entire safety system relies upon it. The anchor point can consist of a metal or fabric anchor, or of fixed and mobile anchors. These devices allow for connection to fixed or temporary anchor lines, or connection between multiple devices.

REFERENCE STANDARD

EN 354	Lanyards
EN 566	Climbing equipment - rings
EN 795/B/C	Anchor devices

BAND 1

60 cm BANDS

CE
EN 795/B
EN 354
EN 566



BAND2360



BAND3560

CODES AND DIMENSIONS

CODE	L [m]	Q _r [kN]	pcs.
BAND2360	0,6	23	1
BAND3560	0,6	35	1

BAND 2

120 cm BANDS

CE
EN 795/B
EN 354
EN 566



BAND23120



BAND35120

CODES AND DIMENSIONS

CODE	L [m]	Q _r [kN]	pcs.
BAND23120	1,2	23	1
BAND35120	1,2	35	1

BAND 3

180 cm BANDS

CE
EN 795/B
EN 354
EN 566



BAND23180



BAND35180

CODES AND DIMENSIONS

CODE	L [m]	Q _r [kN]	pcs.
BAND23180	1,8	23	1
BAND35180	1,8	35	1

I PLATES



ANCHOR MULTIPLIERS



RIG3



RIG4



RIGBOW

Anchor multipliers designed to organise a **work space and create an easy system of multiple anchors**. Made of light aluminium alloy.

The plates are 10 mm thick and have rounded openings, which **allow fabric devices to be directly anchored (rope, lanyards, bands)**.

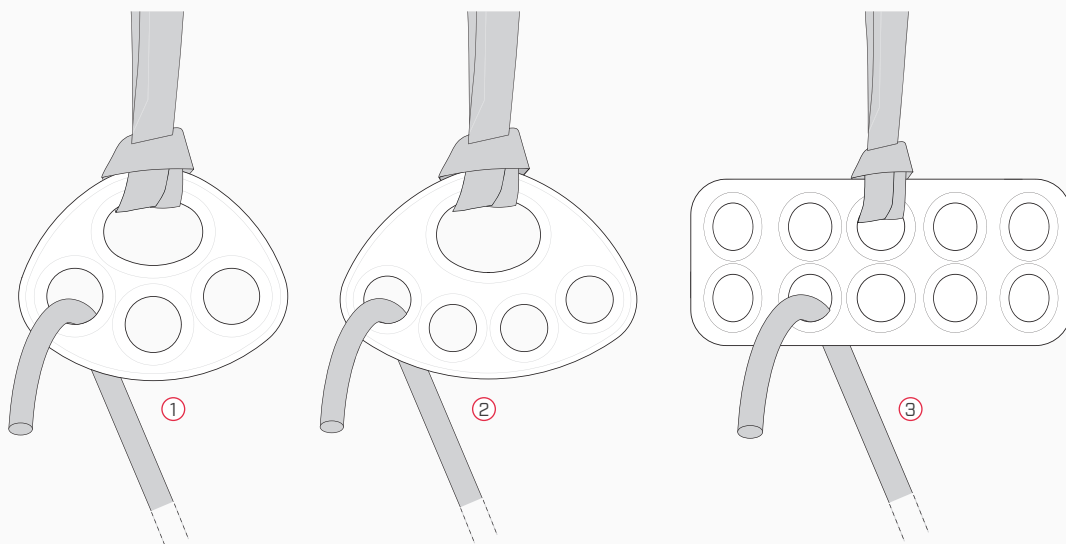
The folded plate allows for points to be attached even **under tension, resting on the ground**.

CODES AND DIMENSIONS

CODE	material	n° anchor	◇ kN	pcs.
RIG3	aluminum alloy	3	36	1
RIG4	aluminum alloy	4	36	1
RIGBOW	aluminum alloy	10	36	1

TECHNICAL DATA

1. RIG3
2. RIG4
3. RIGBOW



I TEMPORARY

TEMPORARY ANCHOR LINE

CE
EN 795/C



Horizontal temporary anchor line that is easy to install, with 30 mm **polyester band with high load bearing capacity** and excellent visibility.

- Number of users: **2**
- Maximum span: **20 m**

The tensioner means the kit can be easily installed even by a single worker, guaranteeing excellent hold and **not damaging the tape**. The anchor line is sewn to its transport case.

CODES AND DIMENSIONS

CODE	description	pcs.
TEMP20	temporary anchor line	1
OVALSTE	large carabiner	1

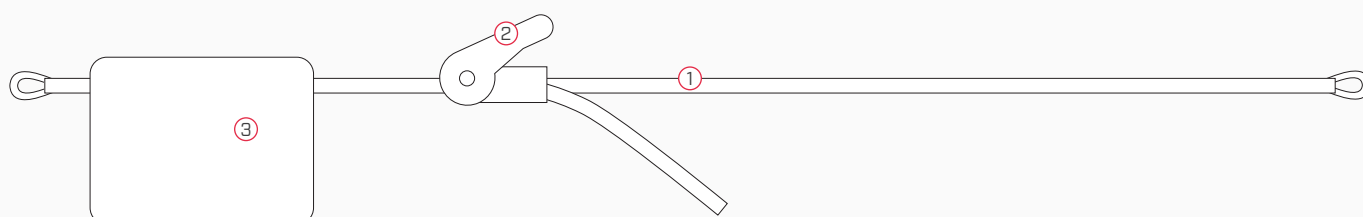
For more information about the carabiner, please see page 313 of this catalogue.



A. EN 795/C

TECHNICAL DATA

1. 30 mm polyester webbing
2. Tensioner
3. Transport bag





The TEMPORARY PLUS temporary anchor line is certified under EN 795:2012 C. It can be used as an anchor line during construction or in other special cases, on a temporary basis.

- Number of users: **2**
- Maximum span: **12 m**
- R_{min} (anchor points) \leq **6 - 9 kN**

Overhead installation is always recommended, to reduce the fall.

The anchor points must hold a minimum of 9 kN. The same holds for the intermediate points, which must be placed every 8 meters, if the line extends along multiple spans.

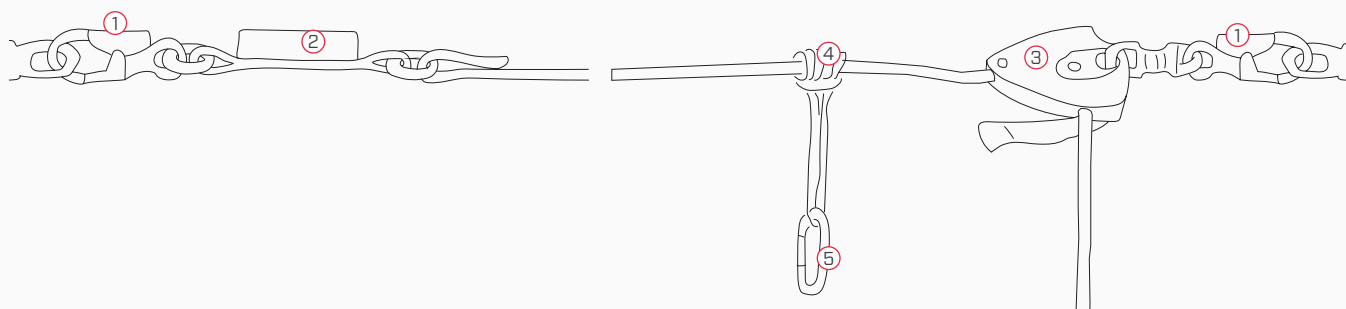
The use of the **BAND** bands found on page 305, together with the **OVAL** carabiners on page 313 are recommended for use as intermediate anchor points

CODES AND DIMENSIONS

CODE	L [m]	pcs.
TEPLUS30	30	1
TEPLUS40	40	1
TEPLUS50	50	1

TECHNICAL DATA

1. Steel carabiner
2. Energy absorber
3. Fall protection rope clamp
4. Aramid tightening element
5. Carabiners





09. CONNECTORS

Connectors are used to attach the connection device (rope or similar) to the harness and the anchor point. Generally, these are carabiners with manual or automatic locking closures, which guarantee worker safety in that at least two consecutive intentional manual movements are required to open them.

Rothoblaas offers a wide range of connectors in various shapes, to meet every usage requirement. Each one is individually inspected and certified and they are available in both stainless steel and carbon steel. Each one has a unique serial number that guarantees traceability if needed.

■ REFERENCE STANDARD

EN 12275/B	Climbing equipment - Connectors
EN 362/B/M	Connectors
ANSI/ASSE Z359	Fall protection / Arrest standards

FAST LINK

SPECIAL CONNECTORS

CE
EN 12275
EN 362/B



FASTD

FASTOVA

FASTTRI

Fast link in carbon steel, half-round "D" shape.

Oval fast link, also available in stainless steel.

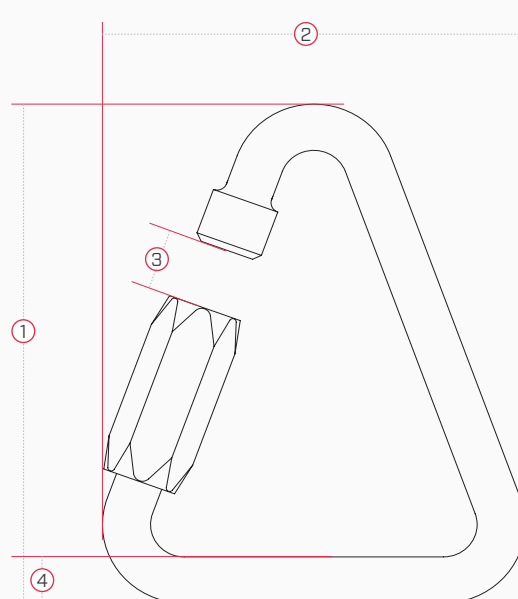
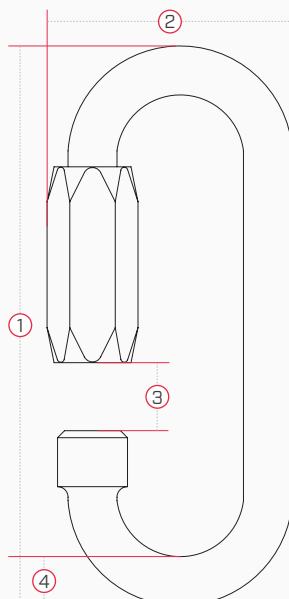
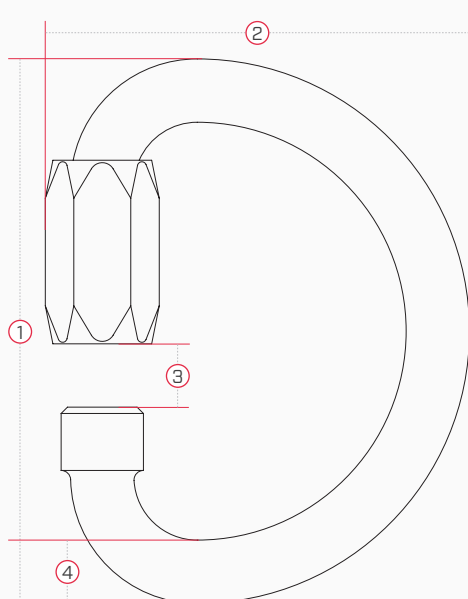
Trapezoidal fast link, available in stainless steel.

CODES AND DIMENSIONS

CODE	material	H [mm]	B [mm]	weight [g]	pcs.
FASTD	carbon steel	87	67	215	1
FASTOVA	carbon steel	74	39	77	1
FASTTRI	stainless steel	72	56	230	1

TECHNICAL DATA

FASTD	FASTOVA	FASTTRI
1. 87 mm	1. 74 mm	1. 72 mm
2. 67 mm	2. 39 mm	2. 56 mm
3. 10 mm	3. -	3. 10 mm
4. 8 mm	4. 11 mm	4. 8 mm



CLASSIC

CONNECTORS FOR USE WITH MOBILE DEVICES

CE
EN 12275
EN 362/B



CLASTE



CLAALU

Oval connector available in **aluminium and carbon steel**, with a circular body that makes it ideal for use with mobile devices (**pulleys, clamps, fall protection, etc.**).

Provided with a **screw ring** nut allowing for use in professional applications as well.

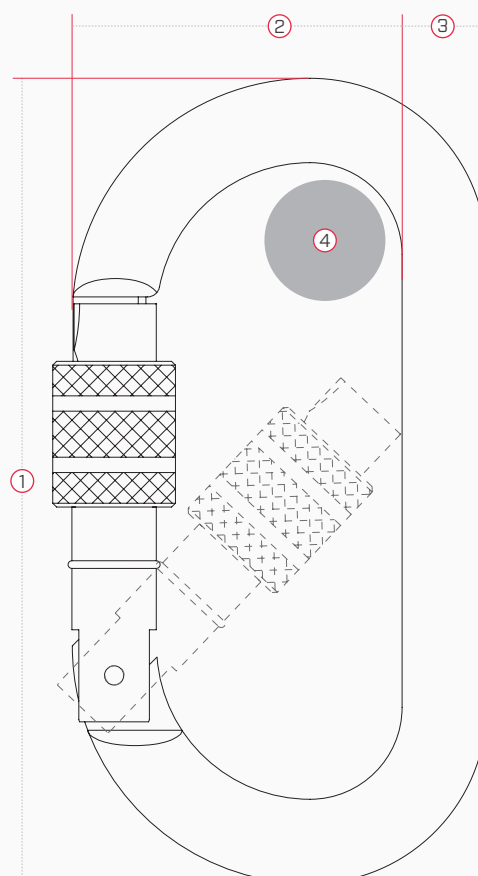
Keylock system that avoids accidental catching of the cord or tangling at the anchor point.

CODES AND DIMENSIONS

CODE	material	weight [g]	<> kN	◇ kN	⌒ kN	pcs.
CLASTE	carbon steel	176	24	10	7	1
CLAALU	aluminium	65	22	7	7	1

TECHNICAL DATA

1. 106,5 mm
2. 54 mm
3. 11 mm
4. Ø 16 mm



OVAL

CONNECTORS FOR CONNECTION TO FIXED POINTS

OVALSTE - OVALALU



EN 12275/B
EN 362/M

OVALANS



EN 12275/B
EN 362/M
ANSI Z359.12



OVALSTE



OVALALU



OVALANS

Oval connector with **wide opening**. Ideal for severe conditions and for **connection to structural anchor points, anchor lines, etc.**

ANSI certified high load connector.

Includes autoblock system.

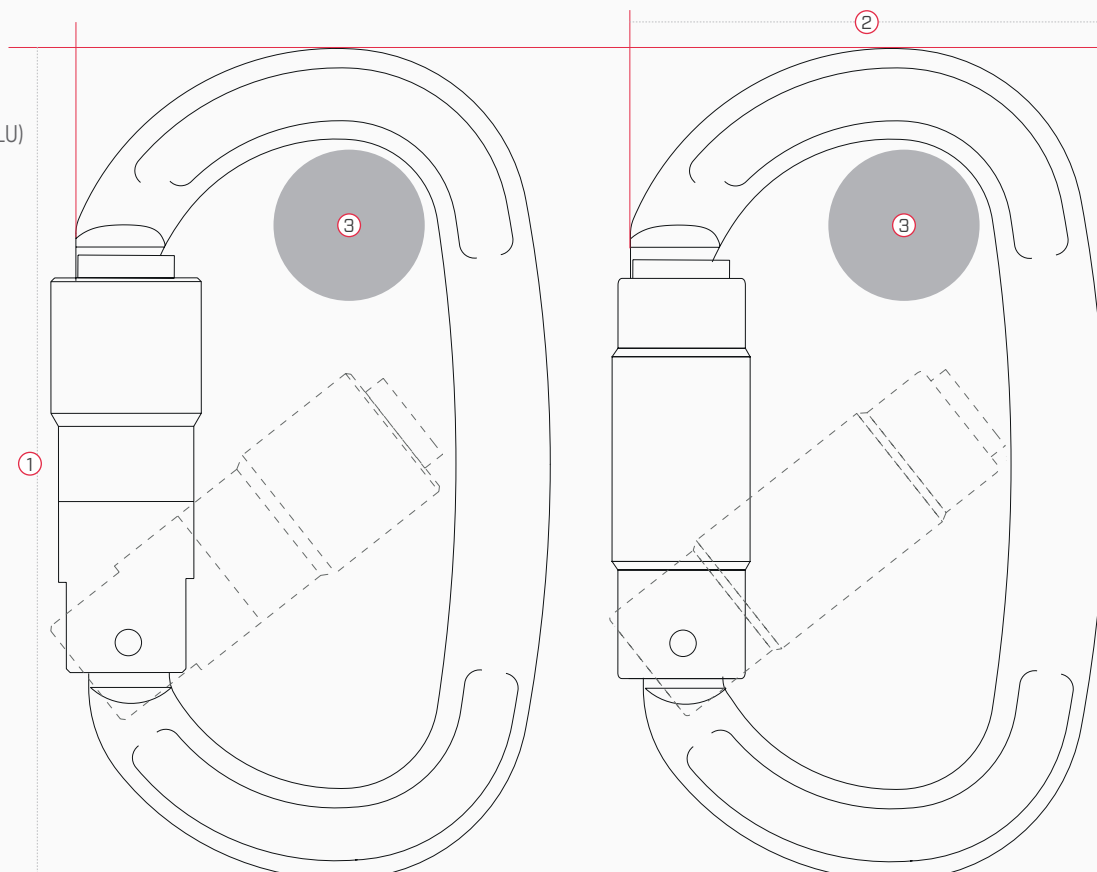
CODES AND DIMENSIONS

CODE	material	weight [g]	<> kN	∧ kN	pcs.
OVALSTE	carbon steel	215	40	15	1
OVALALU	aluminium	77	26	9	1
OVALANS	carbon steel	230	40	20	1

Also available with screw ring nut and twist lock upon request

TECHNICAL DATA

- 110 mm
- 62,6 mm
- Ø 20 mm (OVALSTE , OVALALU)
Ø 19 mm (OVALANS)





XXLSTE

XXLALU

XXLANS

Connector with **wide opening and high breaking load**. The "D" shape prevents the connector from rotating and allows **the load** to be distributed along the major axis.

The carbon steel version can also be obtained with a **special burnished finish** that makes the marking **more visible**.

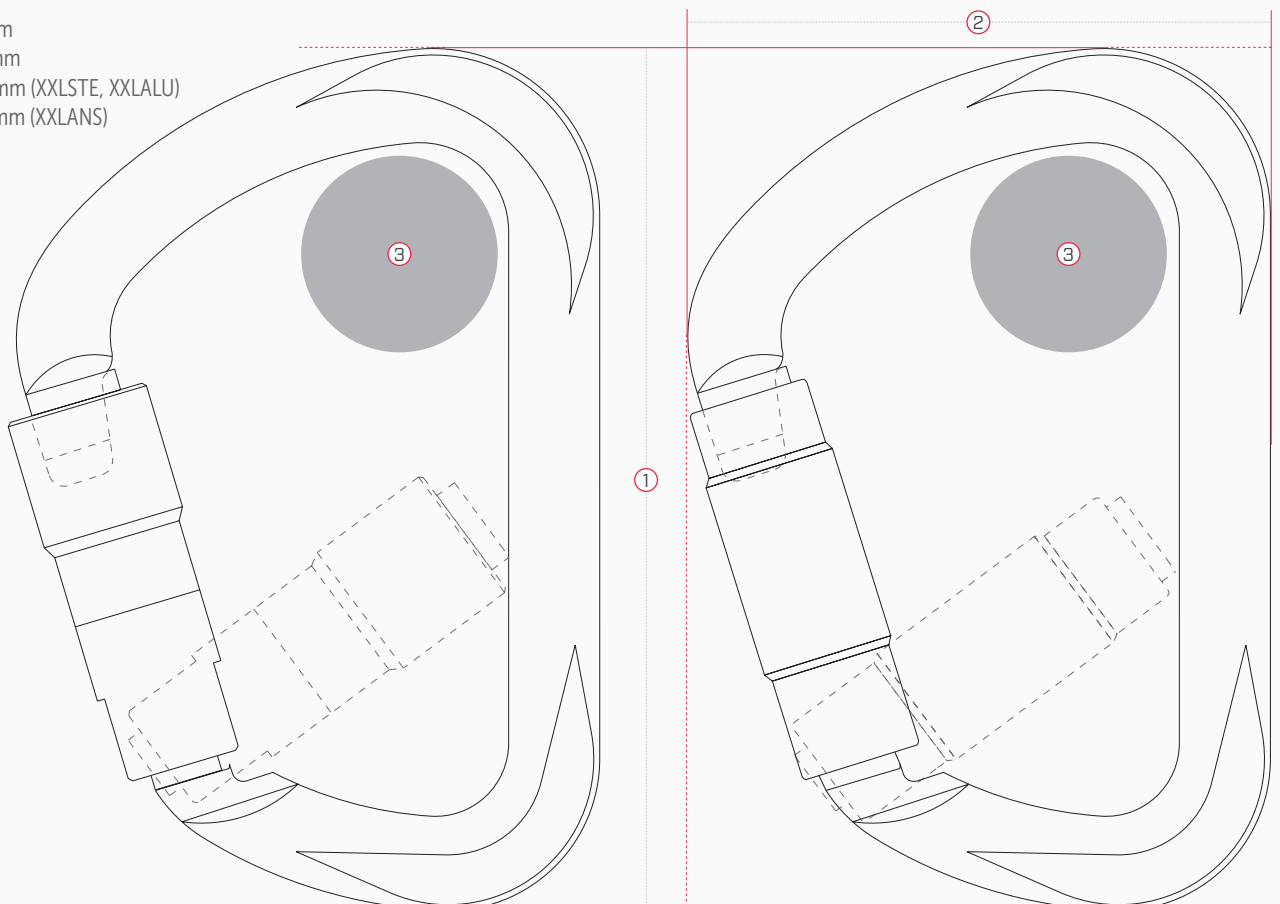
CODES AND DIMENSIONS

CODE	material	weight [g]	<> kN	∇ kN	pcs.
XXLSTE	carbon steel	240	50	13	1
XXLALU	aluminium	95	30	9	1
XXLANS	carbon steel	265	50	20	1

Also available with screw ring nut and twist lock upon request

TECHNICAL DATA

- 114 mm
- 76,5 mm
- Ø 26 mm (XXLSTE, XXLALU)
Ø 25 mm (XXLANS)





10. GLOVES

Work gloves must comply with European directives. Compliance with these directives is indicated in appropriate locations, often combined with pictograms that indicate the specific tests to which the gloves were subjected. The CE marking indicates that the gloves in question meet the minimum requirements established for circulation in the European market, while EN 420 defines the general criteria which protective gloves must meet. Another regulation to be kept in mind when selecting gloves is EN 388, which specifies their resistance to mechanical stresses such as abrasion, shearing, tearing or perforation.

In any case, it should be remembered that there is no such thing as a "universal glove" appropriate for protecting hands for every task.

■ REFERENCE STANDARD

EN 388 Gloves giving protection from mechanical risks

EN 420 Protective gloves

WORK PRO

PROFESSIONAL WORK GLOVES



- Protective gloves in durable leather, combining the sturdiness of a work glove with the precision and sensitivity of a thin light glove
- Excellent for use in work and rescue situations
- The double layer of leather protects the most exposed parts of the hand
- Elastic cuff with velcro closure
- Made of high quality leather for the perfect balance between sturdiness and sensitivity

CODES AND DIMENSIONS

CODE	size	pcs.
WOR8	8	1
WOR9	9	1
WOR10	10	1
WOR11	11	1

MONO

DISPOSABLE NITRILE GLOVES



- Disposable and ambidextrous
- Dust and chlorinate free
- 0,10 mm thick
- Pebbled external finish
- Excellent sensitivity and dexterity
- Appropriate for contact with food
- Appropriate for use in the medical field
- 100 piece package
- Colour: light blue

CODES AND DIMENSIONS

CODE	size	pcs.
MON8	8	100
MON9	9	100
MON10	10	100

ECO

POLYESTER / NITRILE GLOVES



- Palm covered in nitrile for satisfactory protection against liquids, oils and / or grease
- Excellent value for money
- Excellent abrasion resistance
- Ergonomic, seam free, excellent comfort during wear
- Elasticated cuff and ventilated back
- Colour: white / gray

CODES AND DIMENSIONS

CODE	size	pcs.
ECO8	8	12
ECO9	9	12
ECO10	10	12

DYNEEMA®

GLOVES WITH DYNEEMA / POLYURETHANE TECHNOLOGY



- Light and elastic polyurethane coating for a soft, breathable and flexible glove, with excellent tactile sensitivity and dexterity
- Dyneema® Diamond Technology increases protection against cuts, while the glove remains light, thin and comfortable, even for prolonged use, keeping the hand cool for a longer period of time
- With Sanitized® antibacterial treatment
- Elasticated cuff and ventilated back
- Colour: light blue / gray

CODES AND DIMENSIONS

CODE	size	pcs.
DYN8	8	1
DYN9	9	1
DYN10	10	1

LATEX

NYLON / LATEX GLOVES



- Palm covered with a special light latex foam
- Crinkled finish for perfect grip on both dry and wet surfaces
- The fluorescent colour on the support increases glove visibility during use in low light or when visibility is limited
- Extraordinary flexibility. High resistance to wear and high tactile sensitivity
- Elasticated cuff and ventilated back
- Colour: fluorescent yellow / black

CODES AND DIMENSIONS

CODE	size	pcs.
LAT8	8	1
LAT9	9	1
LAT10	10	1

NYLON

NYLON / LATEX GLOVES



- Palm covered with ultralight latex coating, which ensures the utmost flexibility and wear
- Crinkled finish for perfect grip on both dry and wet surfaces
- High wear resistance
- With Sanitized antibacterial treatment
- Ergonomic, seam free, excellent comfort during wear
- Elasticated cuff and ventilated back
- Colour: gray / red

CODES AND DIMENSIONS

CODE	size	pcs.
NYL8	8	1
NYL9	9	1
NYL10	10	1

NYLON-ELASTAN / NITRILE FOAM GLOVES



- Palm covered in nitrile foam
- Lint resistant
- Stippled palm for better grip
- Excellent resistance to abrasion while still offering notable flexibility and dexterity
- Ergonomic, seam free, excellent comfort during wear
- Elasticated cuff and ventilated back
- Colour: gray / black

CODES AND DIMENSIONS

CODE	size	pcs.
NIT8	8	1
NIT9	9	1
NIT10	10	1



11. EYE - EAR

The eyes are one of the most delicate and precious parts of the body, helping to interpret the reality around us. They must always be protected when work is being done, in particular during dangerous activities that could put their integrity at risk. The directive protecting vision in working environments is EN 166.

There are various types of risks for eyes:

- mechanical risks, due to impact with solid elements;
- chemical risks, due to contact with harmful chemical substances;
- light radiation risks, associated with infra-red, UV or laser rays.

Noise can also be a potential danger for workers. In fact, the term "noise" is defined as an undesired sound that disturbs a person carrying out their activities. Noise can cause negative effects that range from a lack of concentration to simple irritation, up to actual pain. For this reason, when operating in environments in which noise is particularly significant in terms of intensity or duration, it is very important to adopt adequate ear protection for workers to perform their work comfortably and with the necessary concentration.

REFERENCE STANDARD

EN 352-1 Hearing protectors

EN 166 Personal eye protection

GLASS 1

GLASSES WITH TEMPLES



CODES AND DIMENSIONS

CODE	description	pcs.
GLASS1	panoramic structure	1

GLASS 2

GLASSES WITH TEMPLES



CODES AND DIMENSIONS

CODE	description	pcs.
GLASS2	gray lenses	1

HEADPHONE

FOLDING EAR MUFFS



CODES AND DIMENSIONS

CODE	SNR [dB]	pcs.
HEAD	29	1

12. PULLEYS

A pulley is a device used to manually lift and lower loads. It consists of a bracket that supports a grooved wheel through which a rope runs, and can be used in various configurations. It can be used to create hoists, to move loads, or for rescue and evacuation in emergency situations.

REFERENCE STANDARD

EN 12278 Pulleys

SINGLE



ALUMINIUM PULLEY WITH SINGLE SHEAVE



Aluminium roller with movable single sheave flanges and high-efficiency ball bearings.

- Loads: **30 kN**
- Applications: **scaffolding/gantries, confined spaces, cable car evacuation, mountain rescue, fire and civil protection, ski lift rescue, mountaineering, adventure parks and boat rides**

For ropes of max. 16 mm diameter.

CODES AND DIMENSIONS

CODE	material	rope [mm]	weight [g]	pcs.
SINGLE	aluminum alloy	Ø16	260	1



- A. EN 12278 | **30 kN**
- B. EN 12278 | **15 kN**

DOUBLE



ALUMINIUM PULLEY WITH DOUBLE SHEAVE



Aluminium roller with movable double sheave flanges and high efficiency ball bearings.

- Loads: **50 kN**
- Material: **aluminium alloy**
- Applications: **scaffolding/gantries, confined spaces, cable car evacuation, mountain rescue, fire and civil protection, ski lift rescue, mountaineering, adventure parks, boat rides**

Equipped with two attachment points for use in complex lifting systems. For ropes of max. 16 mm diameter.



- A. EN 12278 | **50 kN**
- B. EN 12278 | **12,5 kN**

CODES AND DIMENSIONS

CODE	material	rope [mm]	weight [g]	pcs.
DOUBLE	aluminum alloy	Ø16	490	1

13. TRIPODS - BIPODS

Bipods and tripods are mobile devices with two or three legs used to raise and lower loads and persons from confined spaces which would otherwise be difficult to access, or to move work equipment. They are fall arresters governed by EN 795, and can be considered for all purposes as anchor points.

REFERENCE STANDARD

EN 795	Anchor devices
CEN/TS 16415	Anchor devices (Recommendations for anchor devices for use by more than one person simultaneously)
EN 1496	Rescue lifting devices
EN 360	Retractable type fall arresters
CEE 93/42	Medical device

TRIPOD 1

MOBILE DEVICE WITH THREE FEET FOR LOWERING AND LIFTING

+ TRIRAI1
 EN 795/B
 CEN/TS 16415

CE
 EN 795/B
 CEN/TS 16415
 EN 1496

+ TRIFAL
 EN 795/B
 CEN/TS 16415
 EN 360



Tripod that allows for safe lowering in small spaces.

- Number of workers: **2**
- Material: **aluminium / galvanized steel**
- Weight: **37 kg**
- Transport dimensions: **200 x 33 x 31 cm**
- Height: **179 - 289 cm**
- Tripod base opening diameter: **173 - 271 cm**
- Feet distance: **147 - 232 cm**
- Anchor points up front: **3**

The support must be used in conjunction with the fall arresters.

CODES AND DIMENSIONS

CODE	material	pcs.
TRI1	aluminium / galvanized steel	1

COMPLEMENTARY PRODUCTS

CODE	description	pcs.
TRIFAL	stainless steel cable retractable device L = 25 m with recovery device	1
TRIADD	adapter for tripod and retractable device	1
TRIRAI1	lifting winch 20 m for tripod	1
SPACE	high load spacer	1



TRIFAL



TRIADD



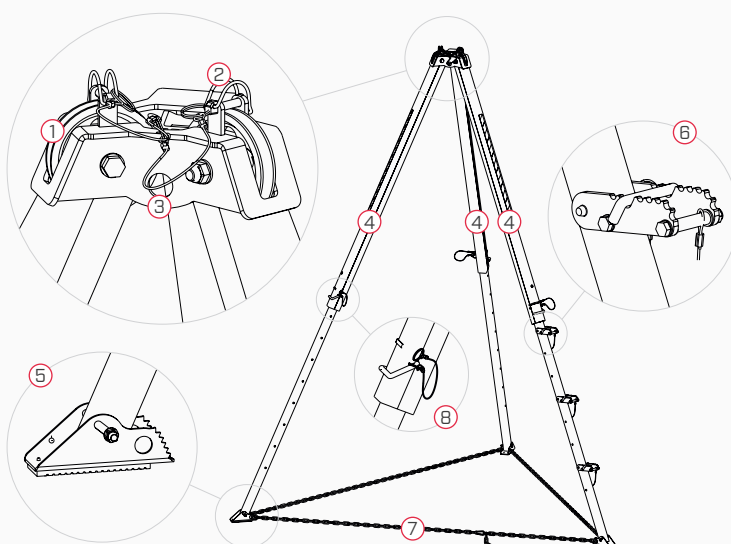
TRIRAI1



SPACE

TECHNICAL DATA

1. Built-in sheave for sliding the work cable
2. Lynchpin
3. Anchor point
4. Leg (3 pieces)
5. Self adjusting support with rubber bushing and non-slip teeth
6. Step to allow the tripod to be stood on
7. Chain
8. Lynchpin for regulation of the tripod leg

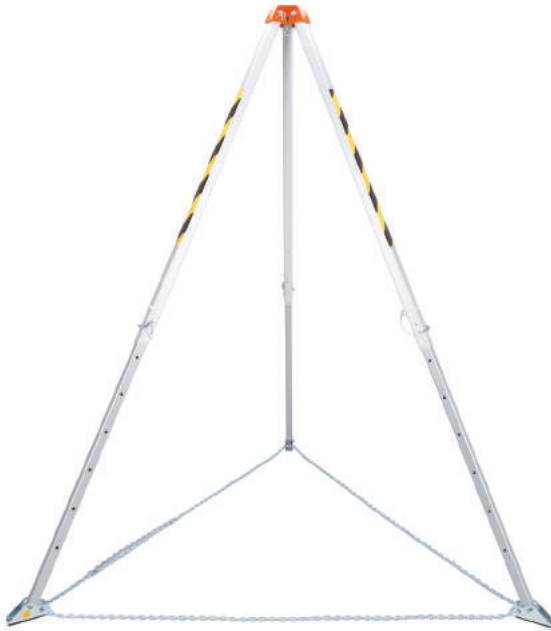


TRIPOD 2

MOBILE DEVICE WITH THREE FEET FOR LOWERING AND LIFTING

+ TRIRAI2
CE
EN 795/B
EN 1496

EN 795/B



- Material: **aluminium / galvanized steel**
- Weight: **17 kg**
- Permissible load capacity: **500 kg**
- Transport dimensions: **180 x 24 x 24 cm**
- Height: **147 - 229 cm**
- Tripod base opening diameter: **140 - 213 cm**
- Feet distance: **119 - 182 cm**
- Anchor points up front: **4**

Tripod that allows for safe lowering in small spaces.

The support must be used in conjunction with the fall arresters.

CODES AND DIMENSIONS

CODE	material	pcs.
TRI2	aluminium / galvanized steel	1

COMPLEMENTARY PRODUCTS

CODE	description	pcs.
TRIRAI2	lifting winch 20 m for tripod	1
TRIHOI	pulley	1
SPACE	high load spacer	1



TRIRAI2



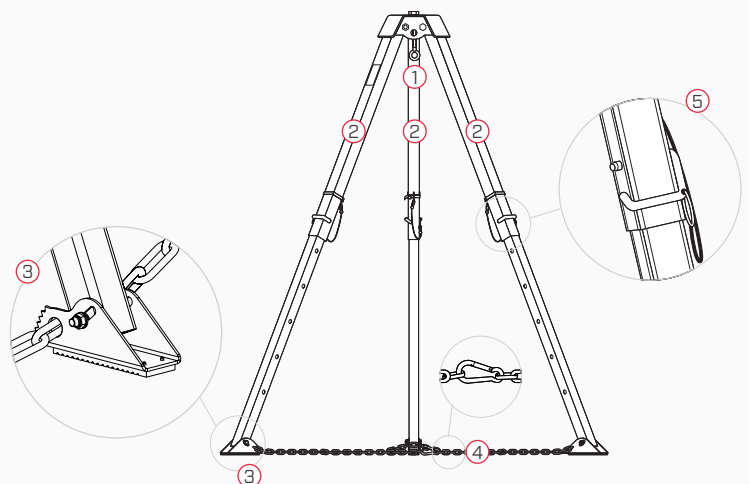
TRIHOI



SPACE

TECHNICAL DATA

1. Anchor point
2. Leg (3 pieces)
3. Self adjusting support with rubber bushing and non-slip teeth
4. Chain
5. Lynchpin for regulation of the tripod leg



TRIPOD 3

MOBILE DEVICE WITH THREE FEET FOR LOWERING AND LIFTING

+ WINCH500 + RTCL10

EN 795/B CEN/TS 16415 EN 795/B CEN/TS 16415 EN 1496 EN 795/B CEN/TS 16415 EN 360



The TRIPOD 3 aluminium / steel safety support is part of the individual fall arrester. TRIPOD 3 has been tested according to EN 795 – TS 16415 as a class B provisional fixed point. The support must be used together with fall arresters.

- Material: **aluminium alloy / steel**
- Number of workers: **2**
- Maximum load: **500 kg**
- Weight: **16,1 kg**
- Transport dimensions: **130,4 x 28,1 x 31 cm**
- Height: **230,1 cm**
- Useful height: **181,4 cm**
- R_{max}: **1500 mm**

Despite its size and sturdiness, TRIPOD 3 is extremely light. It was designed for quick assembly and safe use. It can be used to carry loads or to rescue people. Provided with an anchor point (integrated in the top of the device).

CODES AND DIMENSIONS

CODE	material	pcs.
TRI3	aluminium alloy / steel	1

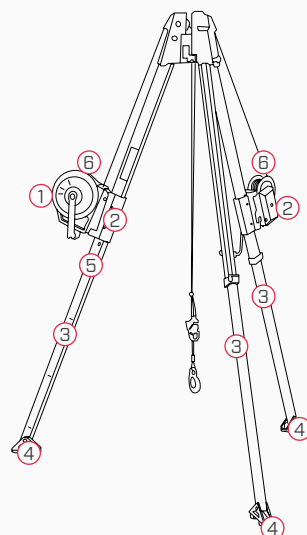
COMPLEMENTARY PRODUCTS

CODE	description	pcs.
TRICABLE12	12 m Ø5 mm cable	1
WINCH500	winch for 500 kg load	1
RTCL10	retractable 10 m	1



TECHNICAL DATA

1. Built-in sheave for sliding the work cable
2. Side attachment point
3. Leg (3 pieces)
4. Self adjusting support with rubber bushing and non-slip teeth
5. Lynchpin for regulation of the tripod leg
6. Retractable 10 m



TRIPOD 4

MOBILE DEVICE WITH THREE FEET FOR LOWERING AND LIFTING ON WHEELS

+ WINCH500 + RTCL10

EN 795/B CEN/TS 16415 EN 795/B CEN/TS 16415 EN 1496 EN 795/B CEN/TS 16415 EN 360



The TRIPOD 4 aluminium / steel safety support is part of the individual fall protection equipment. TRIPOD 4 has been tested according to EN 795 – TS 16415 as a class B provisional fixed point. The support must be used together with fall arresters.

- Material: **aluminium alloy / steel**
- Number of workers: **2**
- Maximum load: **500 kg**
- Weight: **21,7 kg**
- Transport dimensions: **143,2 x 31 x 30,5 cm**
- Height: **220,7 cm**
- Useful height: **197,6 cm**
- R_{max}: **1550 mm**

TRIPOD 4 is excellent for lifting and moving loads of up to 500 kg, for example manholes or other heavy elements used in maintenance work. It was designed for load transport, as well as for use as a safety or rescue device. Provided with an anchor point (integrated in the top of the device).

CODES AND DIMENSIONS

CODE	material	pcs.
TRI4	aluminium alloy / steel	1

COMPLEMENTARY PRODUCTS

CODE	description	pcs.
TRICABLE12	12 m Ø5 mm cable	1
WINCH500	winch for 500 kg load	1
RTCL10	retractable 10 m	1



RTCL10



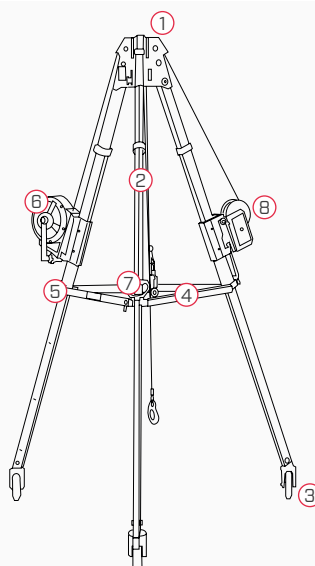
TRICABLE12



WINCH500

TECHNICAL DATA

1. Built-in sheave for sliding the work rope
2. Leg
3. Steering wheel with parking brake
4. Chain
5. Lynchpin for regulation of the tripod leg
6. Retractable 10 m (EN 360)
7. Tow bar for steering wheel
8. Lifting winch (EN 1496)



BIPODE

MOBILE DEVICE WITH TWO FEET FOR
LOWERING AND LIFTING

- Material: **aluminium alloy**
- Weight: **15 kg**
- Transport dimensions: **190 x 30 x 30 cm**
- Height: **185 cm**
- Diagonal: **185 cm**
- Tripod base opening diameter: **135 - 166 cm**
- Feet distance: **155 cm**
- Anchor points up front: **3**

Bipod that, when used as part of a recovery system allows you to raise or lower loads. It is positioned at the edge of a wall to prevent the ropes rubbing against obstacles. The structure of the rotary motion facilitates the final stage of securing recovered cargo. Equipped with reversible feet to guarantee optimal contact with the ground, both on slippery surfaces (grooved side) as well as on smooth surfaces (rubberised side). It is easy to disassemble and can be transported on the shoulder in its bag.

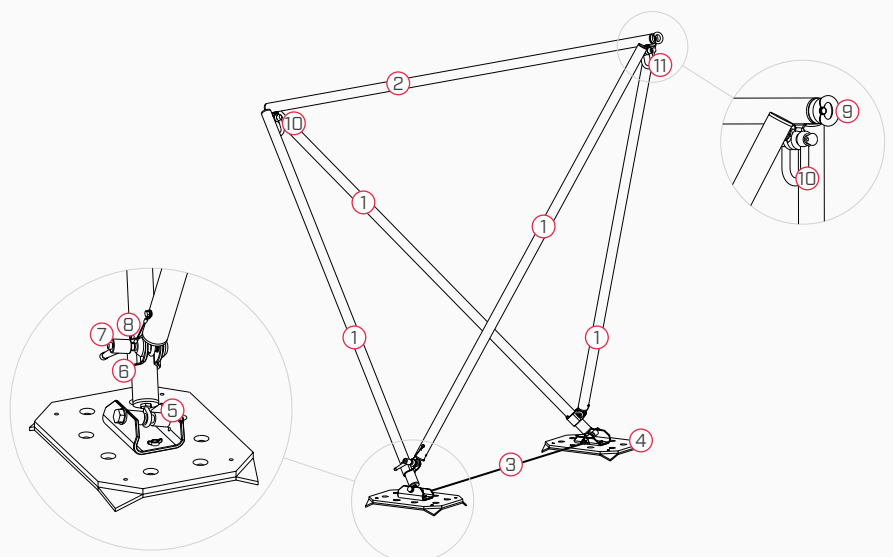


CODES AND DIMENSIONS

CODE	material	pcs.
BIP1	aluminum alloy	1

TECHNICAL DATA

1. Side bars in aluminium alloy
2. Upper bar in aluminium alloy
3. Steel cable
4. Base plates in aluminium alloy
5. Steel junction
6. Aluminium alloy collar
7. Locking lever
8. Elastic reference pin
9. Steel bracing point
10. Connection openings
11. Steel shackles



HOIST

PREASSEMBLED LIFTING SYSTEM



HOIST is a preassembled system that allows a load to be lifted by applying force equal to 1/5 of the load itself. A self-blocking device impedes the load from returning to its previous position.

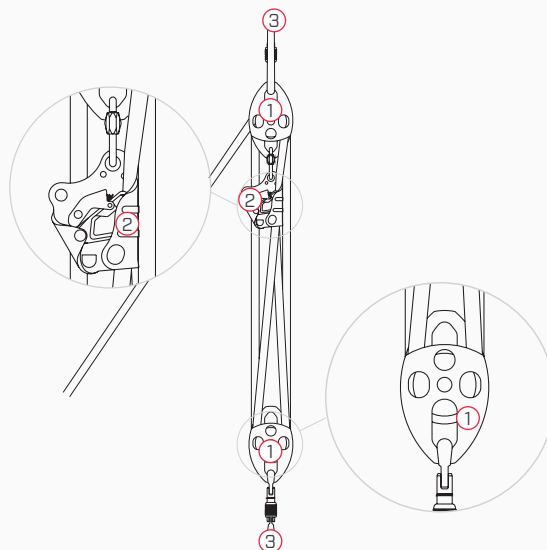
- Preassembled devices: **ropes, pulleys, self-blocking, carabiner and connectors**
- Ratio: **1/5**
- Total rope length: **30 m**
- **Evacuation** manoeuvres
- Recovering **workers on ropes through ascent**
- Recovery from **confined spaces with tripod or bipod**

CODES AND DIMENSIONS

CODE	pcs.
HOIST	1

TECHNICAL DATA

1. Aluminium roller with movable double sheave flanges and high efficiency ball bearings
2. Locking device
3. Carabiners



CRANE

CRANE FOR LIFTING PEOPLE AND LOADS

+ WINCH500 + RTCL10

EN 795/B EN 795/B EN 795/B
CEN/TS 16415 CEN/TS 16415 CEN/TS 16415
EN 1496 EN 1496 EN 360

CE CE CE



The CRANE crane, made of V4A stainless steel, macerated and passivated, is a part of individual fall protection equipment. CRANE has been tested according to EN 795 – TS 16415 as a class B provisional fixed point. The support must be used together with fall arresters.

- Material: **V4A stainless steel / macerated and passivated**
- Number of workers: **3 (2 on the arm, 1 on the strut)**
- Maximum load: **500 kg**
- Total weight: **approx. 40,4 kg**
 - strut weight: **approx. 16,7 kg**
 - arm weight: **approx. 22,7 kg**
 - pulley weight: **approx. 1 kg**
- Arm length: **130 cm**
- Height adjustments: **3**

CRANE can be used as a mobile crane, thanks to fast assembly and disassembly. Three different arm inclinations allow for three possible landings, nearer and farther. Easy 360° rotation, even with a full load, thanks to the centred support.

CODES AND DIMENSIONS

CODE	material	pcs.
CRANE	stainless steel	1

COMPLEMENTARY PRODUCTS

CODE	description	pcs.
CRANEPLATE	horizontal strut	1
CRANEWALL	vertical strut	1
WINCH500	winch for 500 kg load	1
RTCL10	retractable 10 m	1



CRANEPLATE



RTCL10



CRANEWALL



WINCH500

STRETCHER

CE
CEE 93/42

ROLLING STRETCHER FOR CONFINED SPACES



Rolling stretcher designed to perfectly adjust to rescue needs in confined spaces.

This is an extremely flexible rescue system, for use in difficult situations from which people must be evacuated and transported in a rapid manner.

It can be used both vertically and horizontally.

- Stretcher material: **PE**
- Handle material: **Nylon**
- Total weight: **7,3 kg**
- Maximum load: **150 kg**
- Dimensions: **245 x 92 cm**
- Transport dimensions: **Ø30 x 110 cm**



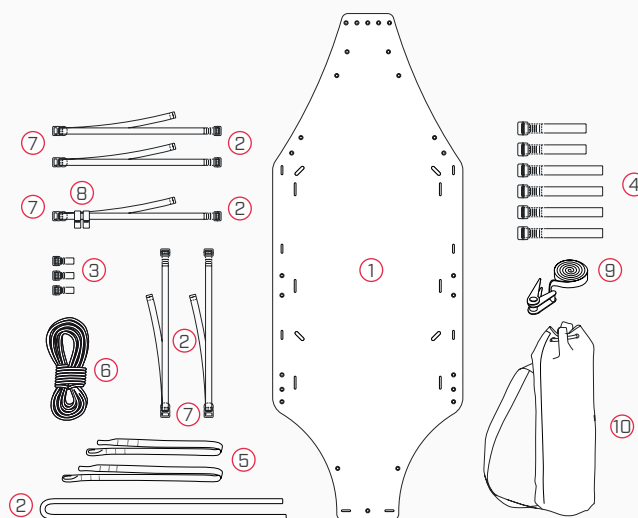
CODES AND DIMENSIONS

CODE	pcs.
STRETCHER	1

Belts to secure the person are included

TECHNICAL DATA

1. High density polyethylene resting surface
2. Polyester bands
3. Polyester bands with openings
4. Nylon handles
5. High tenacity polyester hanging kit
6. Static rope
7. Buckle with aluminium alloy hook
8. Bands with openings
9. Band with ratchet
10. Transport bag





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