

THE BEST SOLUTIONS SINCE 1998



ELKO BIS

LIGHTNING PROTECTION SYSTEMS

CATALOG 2024/2025



www.elkobis.com



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LET'S GET TO KNOW EACH OTHER!

FAMILIAL

LOCAL

GLOBAL

ELKO-BIS Lightning Protection Systems LTD is a family-owned company located in Wrocław, specialized in producing comprehensive lightning protection and earthing systems since 1998. Company operates not only in Poland, but also in most European countries, and outside Europe in markets such as Singapore, United Arab Emirates and Thailand. Every year Elko-Bis expands the offer and is constantly growing.



DAILY CHALLENGES YOU MEET IN YOUR LIFE

ELKO-BIS offer provides full lightning protection system with accessories, enabling appropriate selection for each facility, regardless its purpose. Protection starts from large investments, such as the LNG terminal in Świnoujście, through public use facilities, sports facilities

or Warsaw underground tube lines, and numerous residential buildings and individual investments. Offer is also dedicated for pipelines protection and the increasingly popular photovoltaic panels.



WE WOULD BE HAPPY TO ANSWER YOUR QUESTIONS

Cooperation with ELKO-BIS gives you:

- ▶ the highest quality lightning protection system,
- ▶ immediate orders execution,
- ▶ sales, technical and designing support at every stage,
- ▶ the longest product warranty on the market.

SAFETY AT THE HIGHEST LEVEL!

Company priority is the product compliance with applicable standards and highest quality, being confirmed by tests and warranty period up to 5 years.

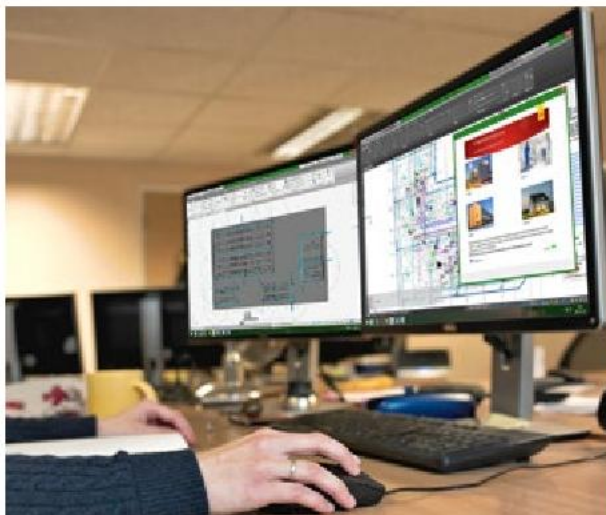
Our designers and engineering team provide service and answers to all questions, including also those related to increasingly popular protection of photovoltaic panels. Investors, get free of charge design proposals for their specific facilities.

Obtained high quality and safety measures, proven by numerous tests and certificates gain recognition in the customers eyes. We aim to spread the knowledge and importance of properly prepared lightning protection system, fighting against accepted stereotypes, ensuring information we provide is clear and understandable for potential investors.

Still there is a lot of work ahead of us, accompanied by great desire which is the recipe for success. We set the bar really high, when it comes to company development.

Apart of all above..

We are a team where people with various competences and skills have found their place and passions - we learn from each other, together achieving our goals!



We also care about the magical Wrocław city civilians!

One of the bravest of all dwarfs, has recently arrived to Wrocław. Dwarf Uziomek, fascinated by the eternal power of lightning strike, made his goal to protect all people from the effects of lightning discharge. Being a professional, Uziomek chose the ELKO-BIS headquarters as his home, to provide and ensure safety not only for Wrocław civilians, but the entire world.

1998

Establishment
of ELKO-BIS

production
and warehouse
halls size is over

6000 m²

9000 m²

external
warehouse
space

the highest
lightning protection
air terminal mast

21 m

PROJECTS PORTFOLIO



HOUSING

- Aura Island, Gdańsk
- Angel Wings, Wrocław
- Residential Estate New Bochenka, Kraków
- Francuska Park, Katowice
- Faktoria Apartments, Katowice
- Madison Apartments, Warszawa



COMMERCIAL AND PUBLIC BUILDINGS

- Magnolia Shopping Centre, Wrocław
- Felicity Shopping Galery, Lublin
- Wola Park, Warszawa
- Ikea, Bielany Wrocławskie
- Bonarka Shopping Centre, Kraków
- Mazur Gate, Ełk
- Auchan, Kraków Bronowice



PUBLIC BUILDINGS

- Warsaw Underground, Warszawa
- Stadiums – e.g. Warsaw National Stadium, Łuźniki Moscow, National Forum of Music, Wrocław
- Warsaw Medical University
- MSWiA Hospital, Warszawa
- Regional Hospital, Białystok
- Parliament Building, Warszawa

Check out our realizations: www.elkobis.com



POWER ENGINEERING / ENERGY SECTOR

- Kozienice Power Plant
- Power Plant Gorzów Wielkopolski
- Power Plant Opole
- LNG Świnoujście,
- Bio-Gas Power Plant Gdańsk,
- Water Power Plant Dolna Odra, Szczecin,
- Wind Power Plants



INDUSTRIAL BUILDINGS

- VW Factory, Września
- Ikea Industry - Wielkopolska
- 3M Factory Plant, Wrocław
- Copper Smelter KGHM, Głogów
- Bridgestone Factory Plant, Stargard
- Nestle Purina, Bielany Wrocławskie
- Michelin Factory Plant, Olsztyn



PHOTOVOLTAICS

- Malow Suwałki, Suwałki
- Solar Park, Postomino
- Caparol, Żłobnica
- Bieldruk Printing House, Białystok
- Leroy Merlin: Radom, Mirków, Tarnów

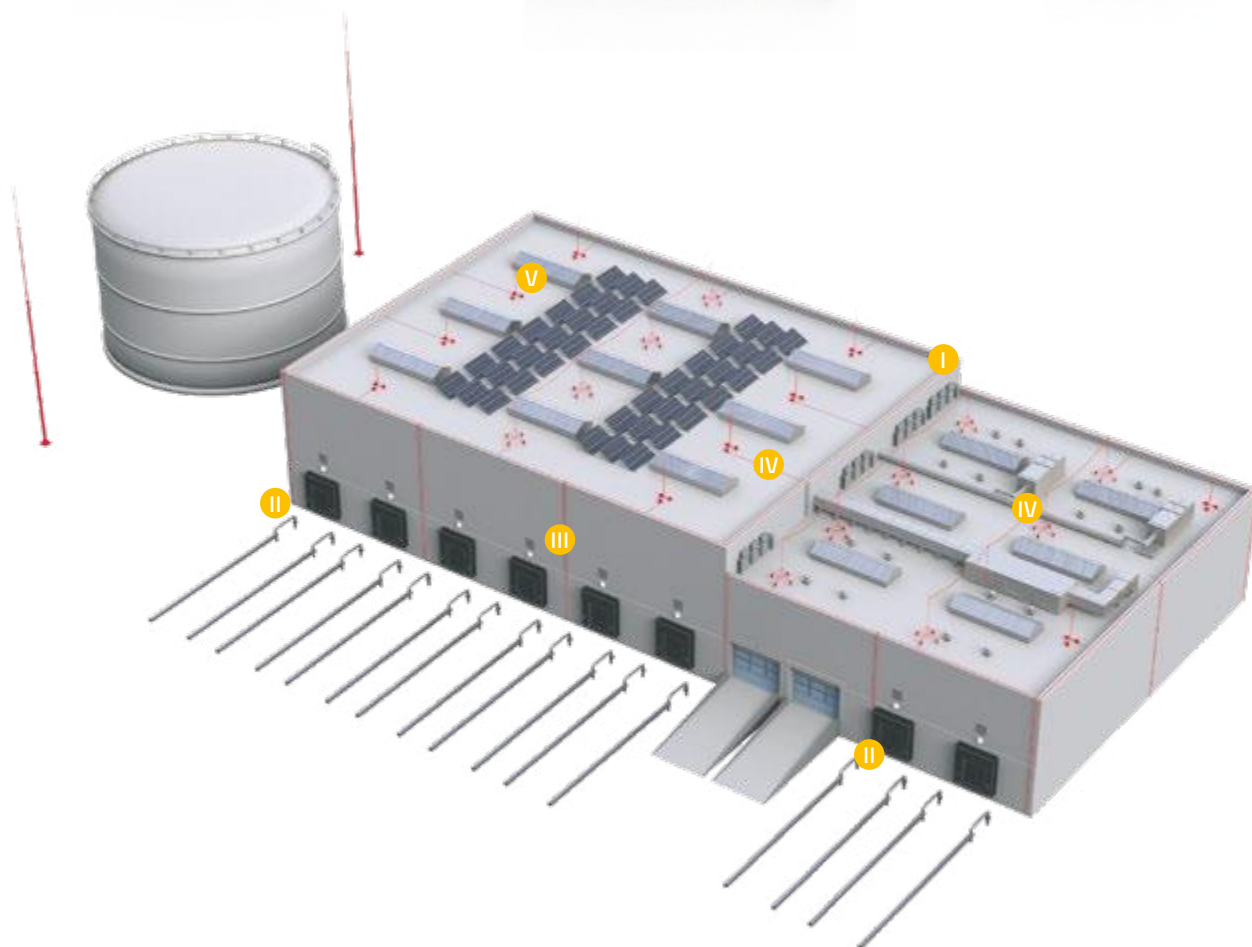
GROUP I Page 11
CONNECTING COMPONENTS



GROUP II Page 21
EARTHING &
EQUIPOTENTIAL BONDING



GROUP III Page 37
DOWN CONDUCTORS



GROUP IV Page 47
AIR TERMINATION



GROUP V Page 67
AIR TERMINATION:
INTERCEPTION
MASTS, SPIRES



GROUP VI Page 102
HIGH VOLTAGE
AIR TERMINATION



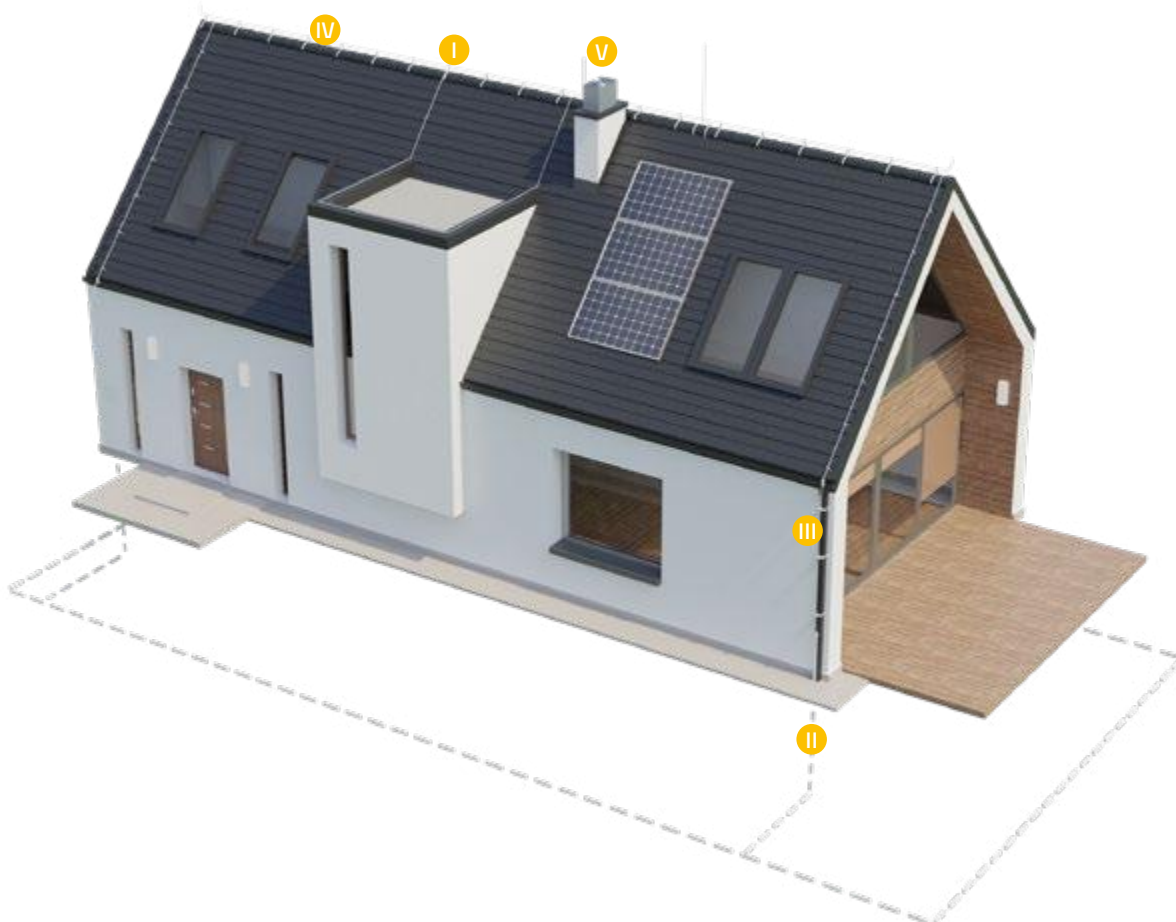
GROUP I Page 11
CONNECTING COMPONENTS



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GROUP IV Page 47
AIR TERMINATION



GROUP V Page 67
AIR TERMINATION:
INTERCEPTION MASTS, SPIRES



GROUP VII Page 112
ACCESSORIES



The product index is located at Page 132

HOW TO READ CATALOGUE INDEXES?

NEW INDEX STRUCTURE



HOW TO ESTABLISH INDEX (EXAMPLE)

To order universal copper screwed roofing tile holder

1. Choose screwed product option index;
2. In the selected number **91010102** you change the last two digits to the equivalent of the CU copper version;

St/Zn	01	St/tZn	02	Cu	03	StSt (V2A)	05	RAL	16
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3. Your number is **91010103**;

CAT. NUM.	TYPE	Version
91010002	10. 6	clinched
91010102	10. 6/S	screwed

NOTE!

To order a specific material option, replace last two digits into material equivalent from Material Options specification.

91010102 hot galvanized steel
 ↓
 91010103 copper

MATERIAL OPTION NUMERICAL DESIGNATION

St/bare	00	bare steel	StSt (V2A)	05	stainless steel V2A	Al	09	aluminum
St/Zn	01	galvanized steel	StSt (V4A)	55	stainless steel V4A	CuZn	10	brass
St/tZn	02	hot galvanized steel	Cu – CuZn – St/Zn	06	brass spacer	RAL	16	varnished galvanized steel
Cu	03	copper	St/Zn – CuZn – Cu	07	brass spacer			
St/Cu	04	copper-bonded steel	PVC	08	PVC			

To order a specific material option, replace last two digits into material equivalent from Material Options specification

Colour OPTIONS

The material version numerical designation **RAL 16** indicates the possibility of ordering a lacquered version of the product in the chosen colour. When ordering the lacquered version, change the last two digits of the catalog number according to the table below.

We varnish our products in five basic colors, but other colour versions are available on request (for an additional charge).

RAL 3011	RAL 8004	RAL 8017	RAL 9005	RAL 7016
LA 3011 12	LA 8004 13	LA 8017 14	LA 9005 15	LA 7016 17

Real colors may slightly differ from presented samples.

Catalog products reserve the right to introduce changes in performance, configuration technology and dimensions, due to course of technical progress. Data are shown with no obligation on a day of their publication, and may change. Follow up-to-date information on the website www.elkobis.com.pl

GROUP I Connecting Components



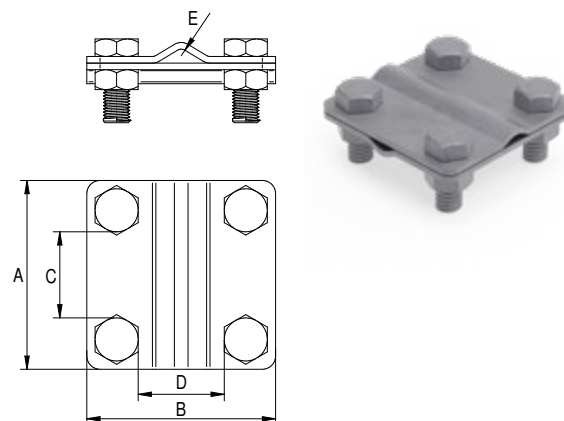
4 Screws cross connection clamp

For cross wire connections. Two parts 2 mm thick, assembled with 4 screws M8. Option 90100101 suitable to connect wires with diameter up to 8mm, as option 90100201 suitable to connect wires with diameter up to 10mm.

CAT. NUM.	TYPE	A	B	C	D	E	BOLT
90100102	1.1	57	57	30	30	up to 8	4×M8×20
90100202	1.2	57	57	30	30	up to 10	4×M8×30

To order a specific material option, replace last two digits into material equivalent from Material Options specification.

St/Zn 01 St/tZn 02 Cu 03 StSt (V2A) 05 StSt (V4A) 55 Cu-CuZn-St/Zn 06 CuZn 10



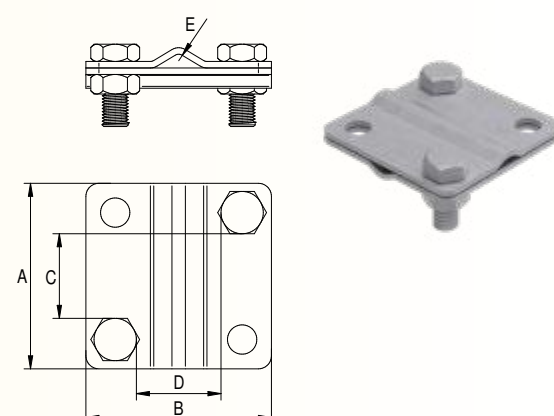
2 Screws cross connection clamp

For cross wire connections. Two parts 2 mm thick, assembled with 2 screws M8. Option 90200101 suitable to connect wires with diameter up to 8mm, as option 90200201 suitable to connect wires with diameter up to 10mm.

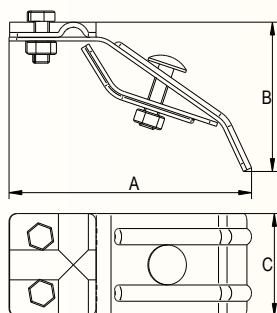
CAT. NUM.	TYPE	A	B	C	D	E	BOLT
90200102	2.1	57	57	30	30	up to 8	2×M8×20
90200202	2.2	57	57	30	30	up to 10	2×M8×30

To order a specific material option, replace last two digits into material equivalent from Material Options specification.

St/Zn 01 St/tZn 02 Cu 03 StSt (V2A) 05 StSt (V4A) 55 Cu-CuZn-St/Zn 06 CuZn 10



Gutter wire holder



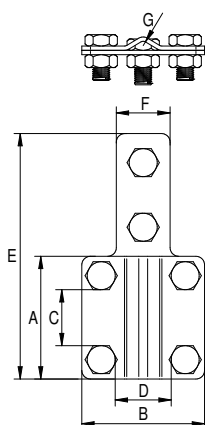
To connect wire with all types of gutters. Two parts 2mm thick, assembled with M6 screw.

CAT. NUM.	TYPE	A	B	C	BOLT
90300202	3.1/5	93	54	40	2×M6×16; M6×25

To order a specific material option, replace last two digits into material equivalent from Material Options specification.

St/Zn	01	St/tZn	02	Cu	03	StSt (V2A)	05	CuZn	10	RAL	16
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4 Screws control clamp



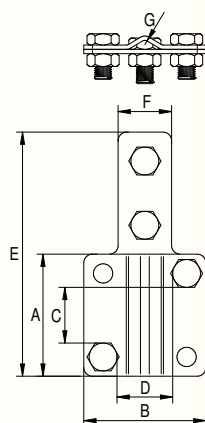
Control connection between down conductors & earthing system for separation points. Two parts 2mm thick, assembled with 6 screws M8. Additional brass spacer allows to connect copper wire with steel tape conductor (option 90400106) and steel rod with copper tape conductor (option 90400107).

CAT. NUM.	TYPE	A	B	C	D	E	F	G	BOLT
90400102	4.1	57	57	30	30	114	25	Ø8-10	6×M8×16

To order a specific material option, replace last two digits into material equivalent from Material Options specification.

St/Zn	01	St/tZn	02	Cu	03	StSt (V2A)	05	Cu-CuZn-St/Zn	06	St/Zn-CuZn-Cu	07
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2 Screws control clamp



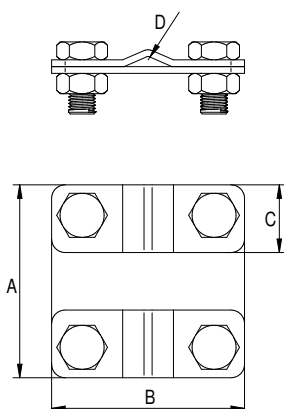
Control connection between down conductors & earthing system for separation points. Two parts 2mm thick, assembled with 4 screws M8. Additional brass spacer allows to connect copper wire with steel tape conductor (option 90500106) and steel rod with copper tape conductor (option 90500107).

CAT. NUM.	TYPE	A	B	C	D	E	F	G	BOLT
90500102	5.1	57	57	30	30	114	25	Ø8-10	4×M8×16

To order a specific material option, replace last two digits into material equivalent from Material Options specification.

St/Zn	01	St/tZn	02	Cu	03	StSt (V2A)	05	Cu-CuZn-St/Zn	06	St/Zn-CuZn-Cu	07
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Wire-wire control clamp



Control connection between wire conductors for separation points. 3 parts 2mm thick, assembled with 4 screws M8. Appropriate for wires with diameter 8-10mm.

CAT. NUM.	TYPE	A	B	C	D	BOLT
90600102	6.1	57	57	20	Ø8-10	4×M8×16

To order a specific material option, replace last two digits into material equivalent from Material Options specification.

St/Zn	01	St/tZn	02	Cu	03	StSt (V2A)	05
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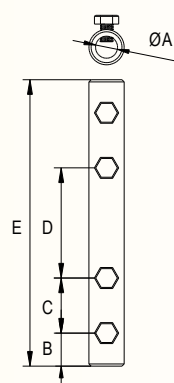
Connecting sleeve

To connect sections of horizontal wires. Assembled with 4 screws M8. Use brass option 90710110 to connect copper with steel wire. Option 90710101 to be used for connection of wires with diameter 8-10mm, as option 90710201 for connection of rods with diameter 16mm.

CAT. NUM.	TYPE	A	B	C	D	E	BOLT
90710102	7.1 R	10	15	25	50	130	4×M6×8
90710202	7.2 R	16	25	26	51	150	4×M6×8

To order a specific material option, replace last two digits into material equivalent from Material Options specification.

St/Zn 01 St/tZn 02 CuZn 10



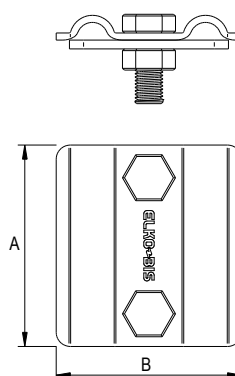
2 - Elements universal clamp

To connect sections of horizontal wires. 2 parts 2mm thick, assembled with 2 screws M8. Use brass option 90700210 to connect copper with steel wire. Appropriate for wires with diameter 8-10mm.

CAT. NUM.	TYPE	A	B	BOLT
90700102	7.1	57	53	2×M8×20

To order a specific material option, replace last two digits into material equivalent from Material Options specification.

St/Zn 01 St/tZn 02 Cu 03 StSt (V2A) 05 CuZn 10



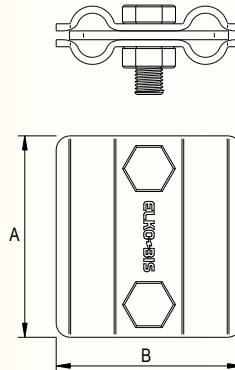
3 - Elements universal clamp

To connect sections of horizontal wires. 3 parts 2mm thick, assembled with 2 screws M8. Enables connection up to 4 wire conductors. Use brass option 90700210 to connect copper with steel wire. Appropriate for wires with diameter 8-10mm.

CAT. NUM.	TYPE	A	B	BOLT
90800102	8.1	57	53	2×M8×20

To order a specific material option, replace last two digits into material equivalent from Material Options specification.

St/Zn 01 St/tZn 02 Cu 03 StSt (V2A) 05 CuZn 10



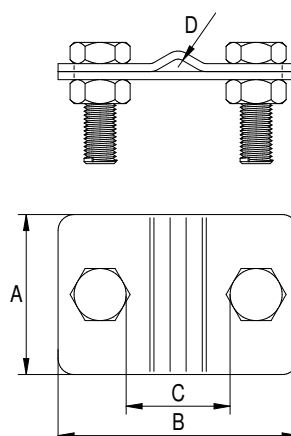
Ground connector

To connect conductors: wire to tape or tape to tape. 2 parts 3mm thick, assembled with 2 screws M8.

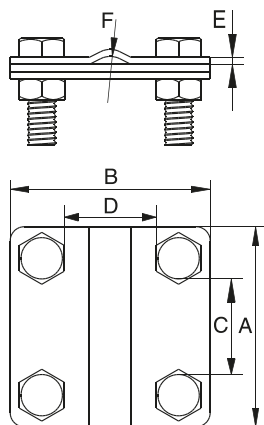
CAT. NUM.	TYPE	A	B	C	D	BOLT
90900102	9.1	40	57	30	Ø8-10	4×M8×25
90900202	9.2	40	70	40	Ø8-10	4×M8×25

To order a specific material option, replace last two digits into material equivalent from Material Options specification.

St/Zn 01 St/tZn 02 Cu 03 StSt (V2A) 05



Universal connection clamp - wire / tape conductor



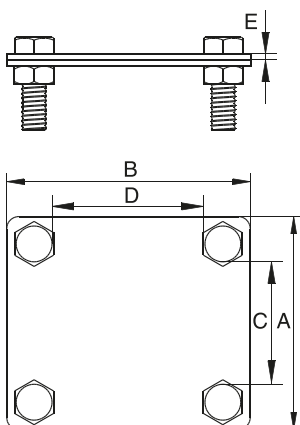
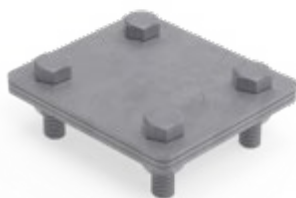
To connect wire conductor with tape conductor. 2 or 3 parts 2 mm thick, assembled with 4 screws M8.

CAT. NUM.	TYPE	A	B	C	D	E	F	BOLT	NOTES
91400102	14.1	57	57	31	31	2	Ø8	4xM8x25	3 parts
91400202	14.2	57	80	31	51	2	Ø8	4xM8x25	3 parts
91403302	14.3.3	70	80	43	53	2	Ø8	4xM8x25	2 parts
91403502	14.3.5	70	80	43	53	2	Ø8	4xM8x30	3 parts

To order a specific material option, replace last two digits into material equivalent from Material Options specification.

St/Zn 01	St/tZn 02	Cu 03	StSt (V2A) 05	StSt (V4A) 55	Cu-CuZn-St/Zn 06	St/Zn-CuZn-Cu 07	CuZn 10
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Universal connection clamp - tape / tape conductor



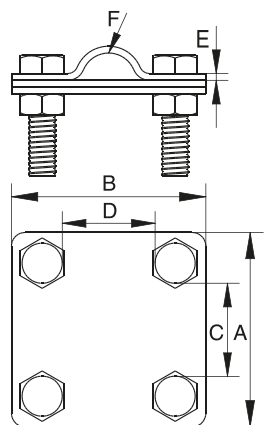
To connect tape conductors. 2 or 3 parts 2 mm thick, assembled with 4 screws M8.

CAT. NUM.	TYPE	A	B	C	D	E	BOLT	NOTES
91400302	14.3	70	80	43	53	2	4xM8x25	3 parts
91402302	14.3.2	70	80	43	53	2	4xM8x20	2 parts
91400402	14.4	100	100	65	65	2	4xM10x30	3 parts
91400702	14.7	57	57	31	31	2	4xM8x20	2 parts
91401702	14.7.1	57	57	31	31	2	4xM8x30	3 parts

To order a specific material option, replace last two digits into material equivalent from Material Options specification.

St/Zn 01	St/tZn 02	Cu 03	StSt (V2A) 05	StSt (V4A) 55	Cu-CuZn-St/Zn 06	CuZn 10
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Universal connection clamp - earthing rod / tape conductor



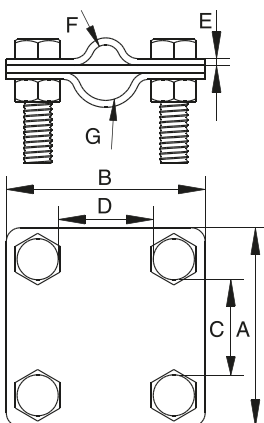
To connect tape conductor with earthing rod. 3 parts 2 mm thick, assembled with 4 screws M8.

CAT. NUM.	TYPE	A	B	C	D	E	F	BOLT	NOTES
91401302	14.3.1	70	80	43	53	2	Ø16	4xM8x30	3 parts
91400502	14.5	57	57	31	31	2	Ø16	4xM8x30	3 parts
91400602	14.6	57	80	31	51	2	Ø16	4xM8x30	3 parts

To order a specific material option, replace last two digits into material equivalent from Material Options specification.

St/Zn 01	St/tZn 02	Cu 03	StSt (V2A) 05	StSt (V4A) 55	Cu-CuZn-St/Zn 06	St/Zn-CuZn-Cu 07	CuZn 10
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Universal connection clamp - earthing rod / wire conductor



To connect wire conductor with earthing rod. 3 parts 2 mm thick, assembled with 4 screws M8.

CAT. NUM.	TYPE	A	B	C	D	E	F	G	BOLT	NOTES
91401102	14.1.1	57	57	31	31	2	Ø8	Ø8	4xM8x30	3 parts
91403402	14.3.4	70	80	43	53	2	Ø8	Ø16	4xM8x40	3 parts
91401502	14.5.1	57	57	31	31	2	Ø8	Ø16	4xM8x30	3 parts
91401602	14.6.1	57	80	31	51	2	Ø8	Ø16	4xM8x30	3 parts

To order a specific material option, replace last two digits into material equivalent from Material Options specification.

St/Zn 01	St/tZn 02	Cu 03	StSt (V2A) 05	StSt (V4A) 55	Cu-CuZn-St/Zn 06	St/Zn-CuZn-Cu 07	CuZn 10
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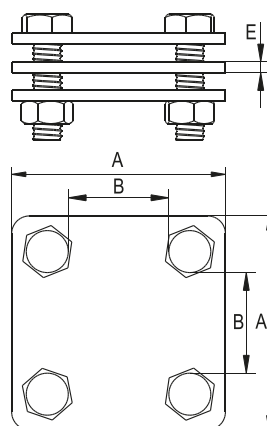
Universal connection clamp - tape/tape conductor

To connect tape conductors. 2 or 3 parts 3 mm thick, assembled with 4 screws M8. For cross or parallel connections.

CAT. NUM.	TYPE	A	B	E	BOLT	NOTES
21400102	214.1	60	31	3	4×M8×25	2 parts
21401102	214.1.1	60	31	3	4×M8×30	3 parts
21500102	215.1	80	51	3	4×M8×25	2 parts
21501102	215.1.1	80	51	3	4×M8×30	3 parts

To order a specific material option, replace last two digits into material equivalent from Material Options specification.

St/Zn	01	St/tZn	02	Cu	03	StSt (V2A)	05	CuZn	10
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NEW

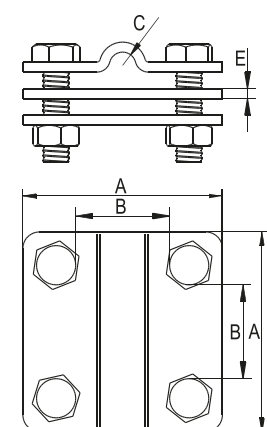
Universal connection clamp - wire/tape conductor

To connect wire conductor with tape conductor. 2 or 3 parts 3 mm thick, assembled with 4 screws M8. For cross or parallel connections.

CAT. NUM.	TYPE	A	B	C	E	BOLT	NOTES
21400202	214.2	60	31	Ø8	3	4×M8×30	2 parts
21401202	214.2.1	60	31	Ø8	3	4×M8×30	3 parts
21500202	215.2	80	51	Ø8	3	4×M8×30	2 parts
21501202	215.2.1	80	51	Ø8	3	4×M8×30	3 parts

To order a specific material option, replace last two digits into material equivalent from Material Options specification.

St/Zn	01	St/tZn	02	Cu	03	StSt (V2A)	05	CuZn	10
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NEW

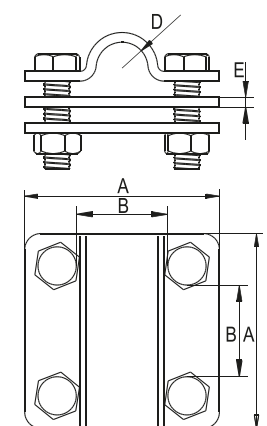
Universal connection clamp - earth rod/tape conductor

To connect earthing rod with tape conductor. 2 or 3 parts 3 mm thick, assembled with 4 screws M8. For cross or parallel connections.

CAT. NUM.	TYPE	A	B	D	E	BOLT	NOTES
21400302	214.3	60	31	Ø16	3	4×M8×30	2 parts
21401302	214.3.1	60	31	Ø16	3	4×M8×35	3 parts
21500302	215.3	80	51	Ø16	3	4×M8×30	2 parts
21501302	215.3.1	80	51	Ø16	3	4×M8×35	3 parts

To order a specific material option, replace last two digits into material equivalent from Material Options specification.

St/Zn	01	St/tZn	02	Cu	03	StSt (V2A)	05	CuZn	10
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NEW

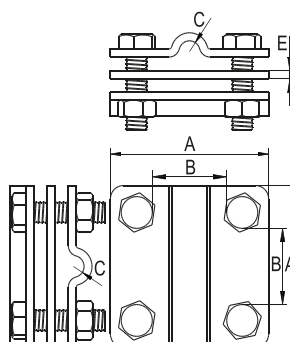
Universal connection clamp - wire/wire

To connect wire conductors. 2 or 3 parts 3 mm thick, assembled with 4 screws M8. 2 plates for cross connections, 3 plates for cross and parallel connections.

CAT. NUM.	TYPE	A	B	C	E	BOLT	NOTES
21400402	214.4	60	31	Ø8	3	4×M8×30	2 parts
21401402	214.4.1	60	31	Ø8	3	4×M8×30	3 parts
21500402	215.4	80	51	Ø8	3	4×M8×30	2 parts
21501402	215.4.1	80	51	Ø8	3	4×M8×30	3 parts

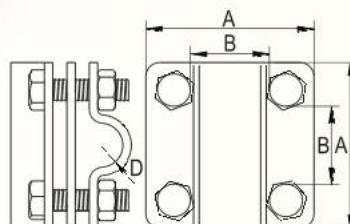
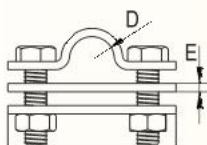
To order a specific material option, replace last two digits into material equivalent from Material Options specification.

St/Zn	01	St/tZn	02	Cu	03	StSt (V2A)	05	CuZn	10
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NEW

Universal connection clamp - earth rod $\varnothing 16$ /earth rod $\varnothing 16$



To connect earthing rods. 3 parts 3 mm thick, assembled with 4 screws M8.

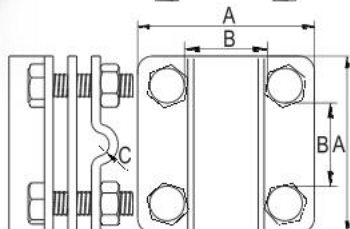
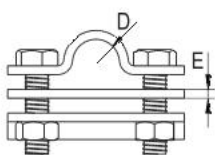
CAT. NUM.	TYPE	A	B	D	E	BOLT	NOTES
21401502	214.5.1	60	31	$\varnothing 16$	3	4xM8x40	3 parts
21501502	215.5.1	80	51	$\varnothing 16$	3	4xM8x40	3 parts

To order a specific material option, replace last two digits into material equivalent from Material Options specification.

St/Zn	01	St/tZn	02	Cu	03	StSt (V2A)	05	CuZn	10
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NEW

Universal connection clamp - wire/earth rod $\varnothing 16$



To connect wire conductor with earthing rod. 2 or 3 parts 3 mm thick, assembled with 4 screws M8. 2 plates for cross connections, 3 plates for cross and parallel connections.

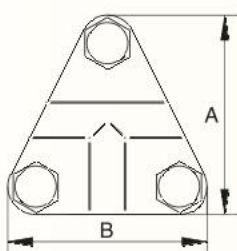
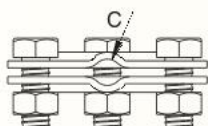
CAT. NUM.	TYPE	A	B	C	D	E	BOLT	NOTES
21400602	214.6	60	31	$\varnothing 8$	$\varnothing 16$	3	4xM8x35	2 parts
21401602	214.6.1	60	31	$\varnothing 8$	$\varnothing 16$	3	4xM8x35	3 parts
21500602	215.6	80	51	$\varnothing 8$	$\varnothing 16$	3	4xM8x35	2 parts
21501602	215.6.1	80	51	$\varnothing 8$	$\varnothing 16$	3	4xM8x35	3 parts

To order a specific material option, replace last two digits into material equivalent from Material Options specification.

St/Zn	01	St/tZn	02	Cu	03	StSt (V2A)	05	CuZn	10
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NEW

T-type connection clamp



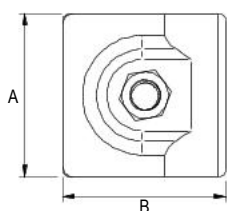
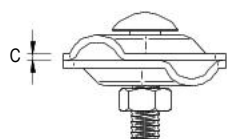
To connect wire conductors. 2 parts 2 mm thick, assembled with 3 screws M8.

CAT. NUM.	TYPE	A	B	C	BOLT
95400102	54.1	57	57	$\varnothing 8$	3xM8x20

To order a specific material option, replace last two digits into material equivalent from Material Options specification.

St/Zn	01	St/tZn	02	Cu	03
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Single screw cross connection clamp



For cross connections of wire conductors, or to connect wire conductor with metal roof elements. 2 parts 2 mm thick, assembled with single M8 screw. Option 95500201 is 2,5 mm thick, assembled with single M10 screw. Appropriate for wires with diameter 8-10 mm.

CAT. NUM.	TYPE	A	B	C	BOLT
95500102	55.1	45	45	2	M8x30
95500202	55.2	45	45	2,5	M10x35

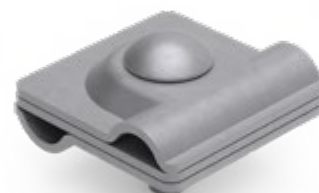
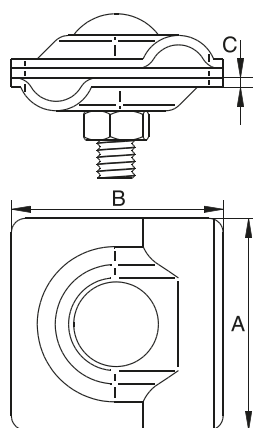
To order a specific material option, replace last two digits into material equivalent from Material Options specification.

St/Zn	01	St/tZn	02	Cu	03	StSt (V2A)	05	CuZn	10	StSt (V4A)	55
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NEW

Single screw cross connection clamp 3-part

For cross connections of wire conductors, or to connect wire conductor with metal roof elements. 3 parts 2 mm thick, assembled with single M8 screw. Appropriate for wires with diameter 8-10 mm.



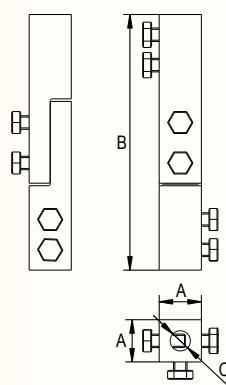
NEW

CAT. NUM.	TYPE	A	B	C	BOLT	NOTES
95501102	55.1.1	45	45	2	M8x30	3 parts

St/Zn	01	St/tZn	02	Cu	03	StSt (V2A)	05	CuZn	10
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Aluminium control connection clamp

For control conductors connection: wire-wire or wire-tape. 2 aluminium parts, assembled with 6 screws M8

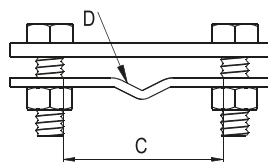


CAT. NUM.	TYPE	A	B	C	BOLT
95600109	56.1	25	151,5	Ø12	6xM8x20

Al

Marking connection clamp

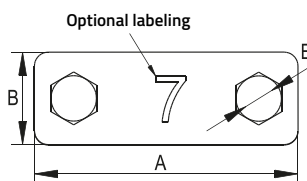
To mark control clamp. 2 parts 3mm thick, assembled with 2 screws M6. Numbers need to be provided, when placing an order.



CAT. NUM.	TYPE	A	B	C	D	BOLT	NOTES
97200109	72.1	57	20	34	Ø7	2xM6x16	Unmarked
97201109	72.1.1	57	20	34	Ø7	2xM6x16	Marked

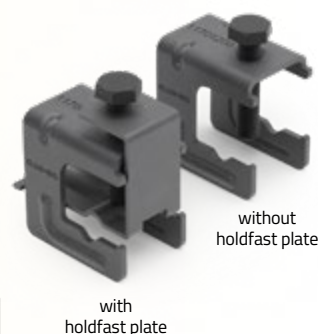
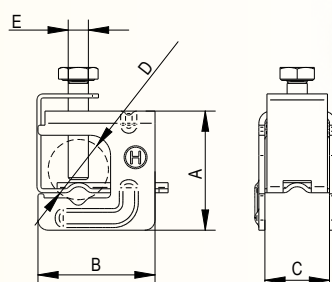
To order a specific material option, replace last two digits into material equivalent from Material Options specification.

Cu	03	Al	09
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Rebar and earthing foundation clamp

To connect tape conductors with reinforcing bars at foundation earthing and in reinforced concrete columns. Black steel or hot-dip galvanized options.

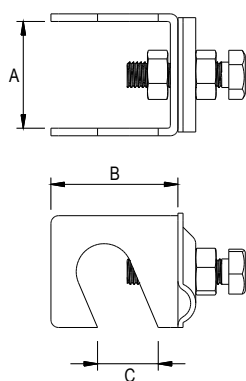


CAT. NUM.	TYPE	A	B	C	D	E	TAPE CONDUCTOR	NOTES
11700200	117.2	59	58	32	Ø28	M10x50	MAX 30x4	with holdfast plate
11700300	117.3	73	69	42	Ø38	M10x50	MAX 40x5	with holdfast plate
11701200	117.2.1	59	58	32	Ø28	M10x50	MAX 30x4	without holdfast plate
11701300	117.3.1	73	69	42	Ø38	M10x50	MAX 40x5	without holdfast plate

St/bare	00	St/tZn	02
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NEW

Rod - tape conductor connection clamp



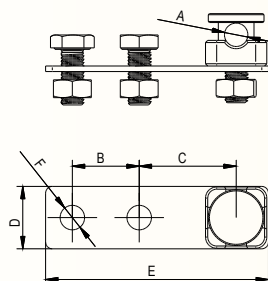
To connect tape conductor with the reinforcement foundation bar (diameter 22 mm). Can be also used to connect tape conductor with earthing rod. Maximum tape size - 40x5 mm. Option with additional cap allows to connect wire with diameter 8-10 mm.

CAT. NUM.	TYPE	VERSION	A	B	C	BOLT
11700102	—	without cap	42	50	Ø22	M10×40
11701102	—	with cap	42	50	Ø22	M10×40

To order a specific material option, replace last two digits into material equivalent from Material Options specification.

St/Zn	01	St/tZn	02
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Ks connector flat



NEW

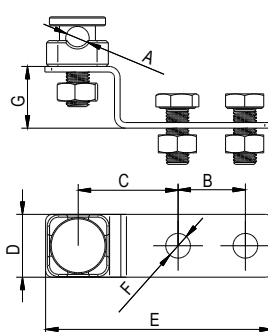
Use to attach the wire conductor to roof metal elements for example attic covering, profiles, poles, landings, other roof elements used as natural lightning conductors, etc. Assembled with M10 screws.

CAT. NUM.	TYPE	A	B	C	D	E	F	BOLT
21600102	216.1	Ø10	30	43,5	28	100	Ø11	2×M10×25

To order a specific material option, replace last two digits into material equivalent from Material Options specification.

St/tZn	02	StSt (V2A)	05
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Ks connector type „z“



NEW

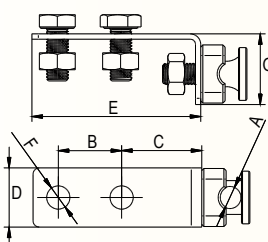
Use to attach the wire conductor to roof metal elements for example attic covering, profiles, poles, landings, other roof elements used as natural lightning conductors, etc. Assembled with M10 screws.

CAT. NUM.	TYPE	A	B	C	D	E	F	G	BOLT
21600202	216.2	Ø10	30	44,5	28	100	Ø11	28	2×M10×25

To order a specific material option, replace last two digits into material equivalent from Material Options specification.

St/tZn	02	StSt (V2A)	05
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Ks connector angle type



NEW

Use to attach the wire conductor to roof metal elements for example attic covering, profiles, poles, landings, other roof elements used as natural lightning conductors, etc. as well as machinery and equipment. Assembled with M10 screws.

CAT. NUM.	TYPE	A	B	C	D	E	F	G	BOLT
21600302	216.3	Ø10	30	33,5	28	80	Ø11	33,5	2×M10×25

To order a specific material option, replace last two digits into material equivalent from Material Options specification.

St/tZn	02	StSt (V2A)	05
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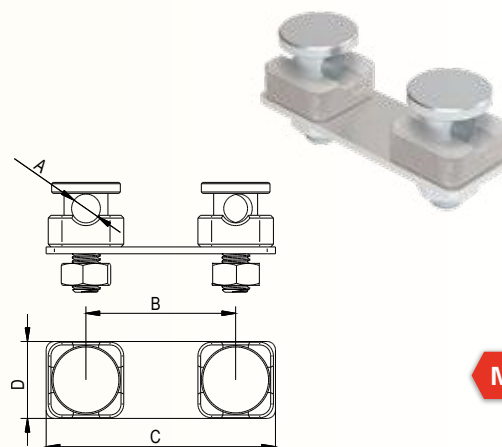
Ks connector wire / wire

Use to connect sections of horizontal or down wire conductors.
Assambled with M10 screws.

CAT. NUM.	TYPE	A	B	C	D
21600402	216.4	Ø10	55	83,5	28

To order a specific material option, replace last two digits into material equivalent from Material Options specification.

St/tZn 02 StSt (V2A) 05



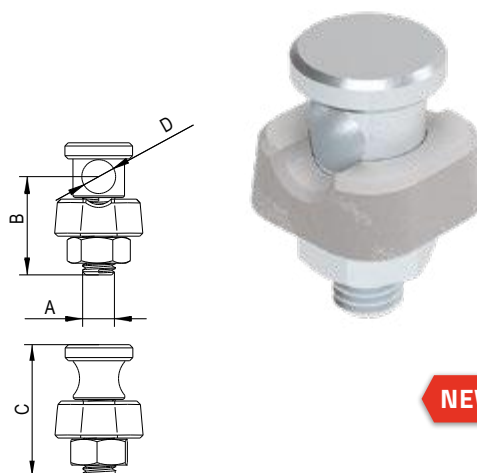
NEW

Ks screw

A part for KS conectors, appropriate for wire conductor with diameter 8-10mm.

CAT. NUM.	TYPE	A	B	C	D
21600001	-	M10	31	42	Ø10

St/Zn



NEW

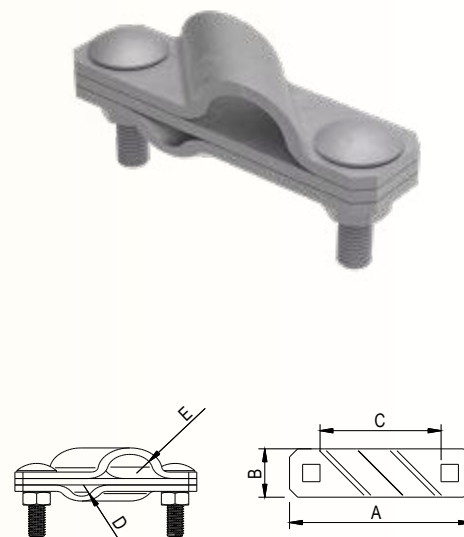
Angular cross connection clamp rod/rod

Used for cross earthing connections of two earthing rods or earthing rod with wire conductor. 3 parts, assembled with M10 screws.

CAT. NUM.	TYPE	A	B	C	D	E	BOLT
11600102	116.1	113	30	75	Ø8	Ø20	2xM10x40
11600202	116.2	113	30	75	Ø8	Ø16	2xM10x40
11600302	116.3	113	30	75	Ø8	Ø14	2xM10x40
11600402	116.4	113	30	75	Ø8	Ø8	2xM10x40
11600502	116.5	113	30	75	Ø14	Ø20	2xM10x40
11600602	116.6	113	30	75	Ø14	Ø16	2xM10x40
11600702	116.7	113	30	75	Ø14	Ø14	2xM10x40
11600802	116.8	113	30	75	Ø16	Ø20	2xM10x40
11600902	116.9	113	30	75	Ø16	Ø16	2xM10x40
11601002	116.10	113	30	75	Ø20	Ø20	2xM10x40

To order a specific material option, replace last two digits into material equivalent from Material Options specification.

St/Zn 01 St/tZn 02 Cu 03 StSt (V2A) 05



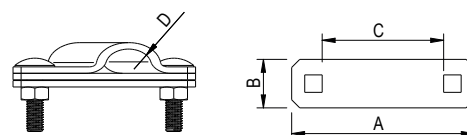
Angular cross connection clamp rod/flat tape

Used for cross earthing connections: tape conductor with earthing rod or with wire conductor. 2 or 3 parts, assembled with M10 screws.

CAT. NUM.	TYPE	A	B	C	D	TAPE CONDUCTOR	BOLT	NOTES
116100 02	116.0.1	113	30	75	-	MAX 50x4	2xM10x40	2 parts
116020 02	116.0.2	113	30	75	-	MAX 50X4	2xM10x40	3 parts
116011 02	116.1.1	113	30	75	Ø20	MAX 50x4	2xM10x40	2 parts
116021 02	116.1.2	113	30	75	Ø20	MAX 50X4	2xM10x40	3 parts
116012 02	116.2.1	113	30	75	Ø16	MAX 50x4	2xM10x40	2 parts
116022 02	116.2.2	113	30	75	Ø16	MAX 50X4	2xM10x40	3 parts
116013 02	116.3.1	113	30	75	Ø14	MAX 50x4	2xM10x40	2 parts
116023 02	116.3.2	113	30	75	Ø14	MAX 50X4	2xM10x40	3 parts
116014 02	116.4.1	113	30	75	Ø8	MAX 50x4	2xM10x40	2 parts
116024 02	116.4.2	113	30	75	Ø8	MAX 50X4	2xM10x40	3 parts

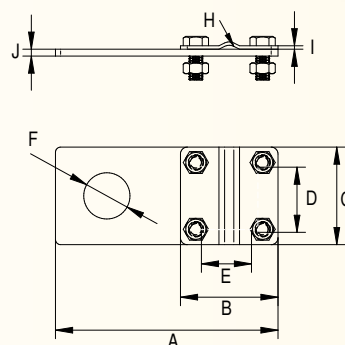
To order a specific material option, replace last two digits into material equivalent from Material Options specification.

St/Zn 01 St/tZn 02 Cu 03 StSt (V2A) 05



Metal constructions control clamp

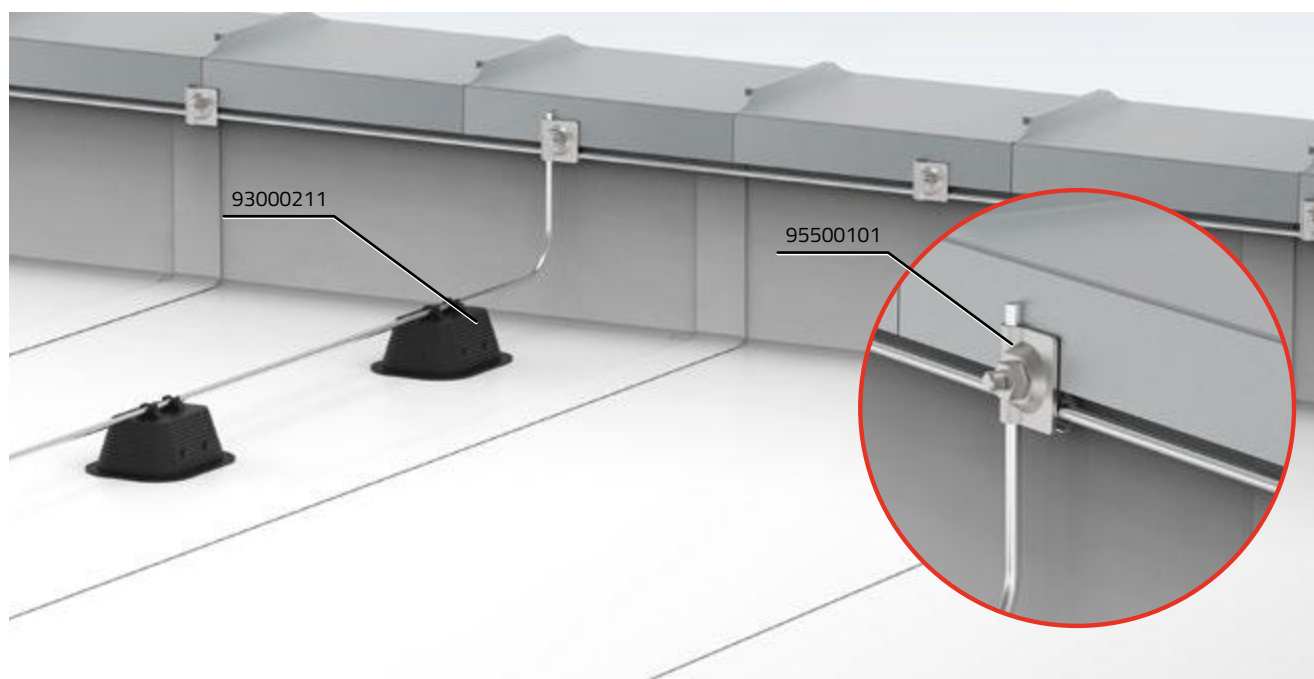
For control connection of steel structure with earthing system.



CAT. NUM.	TYPE	A	B	C	D	E	F	H	I	J	BOLT
94124 102	4.1 M24	160	57	57	31	31	Ø27	Ø8	2	4	4xM8x16
94132 102	4.1 M32	130	57	57	31	31	Ø35	Ø8	2	4	4xM8x16

To order a specific material option, replace last two digits into material equivalent from Material Options specification.

St/tZn 02 StSt (V2A) 05



GROUP II

Earthing & Equipotential Bonding



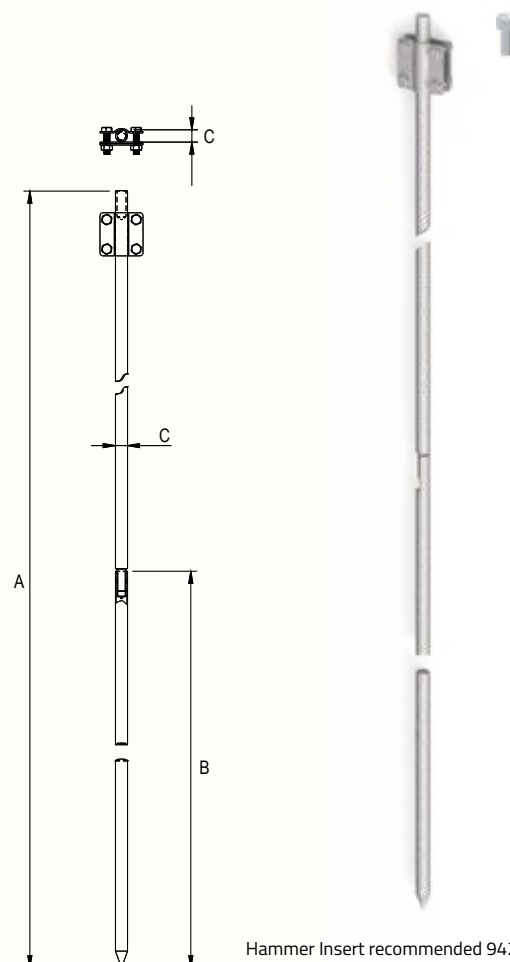
Threaded earthing rod 3-9 meters

For vertical earthing. Mounted by successive rod installation Ø16 or Ø20, reaching earthing resistance ≤ 10 Ohm (for lightning protection systems). Set comes with an impact tip and clamping, suitable to connect tape or earthing rod. Great to use in energy sector, rail infrastructure and building industry.

CAT. NUM.	TYPE	A	B	C
94173002	–	3000	1500	Ø16
94174502	–	4500	1500	Ø16
94176002	–	6000	1500	Ø16
94177502	–	7500	1500	Ø16
94179002	–	9000	1500	Ø16
94183002	–	3000	1500	Ø20
94184502	–	4500	1500	Ø20
94186002	–	6000	1500	Ø20
94187502	–	7500	1500	Ø20
94189002	–	9000	1500	Ø20

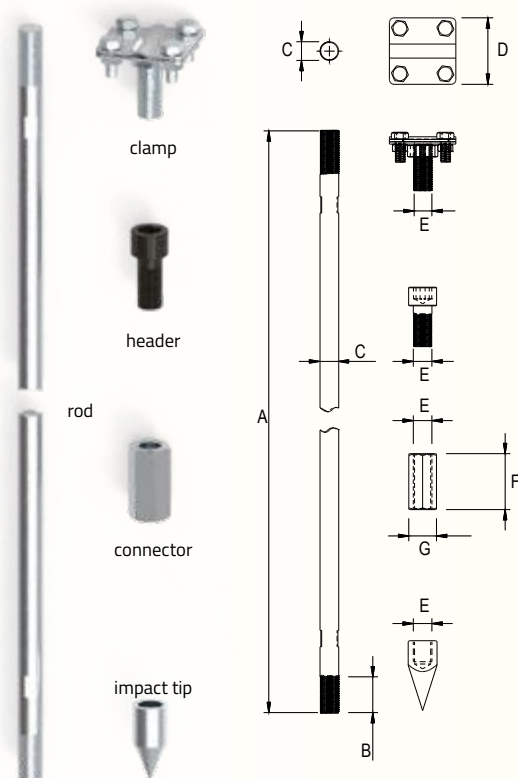
To order a specific material option, replace last two digits into material equivalent from Material Options specification.

St/tZn 02 StSt (V2A) 05 StSt (V4A) 55



Hammer Insert recommended 94209901
– Page 27.

Threaded earthing rod elements



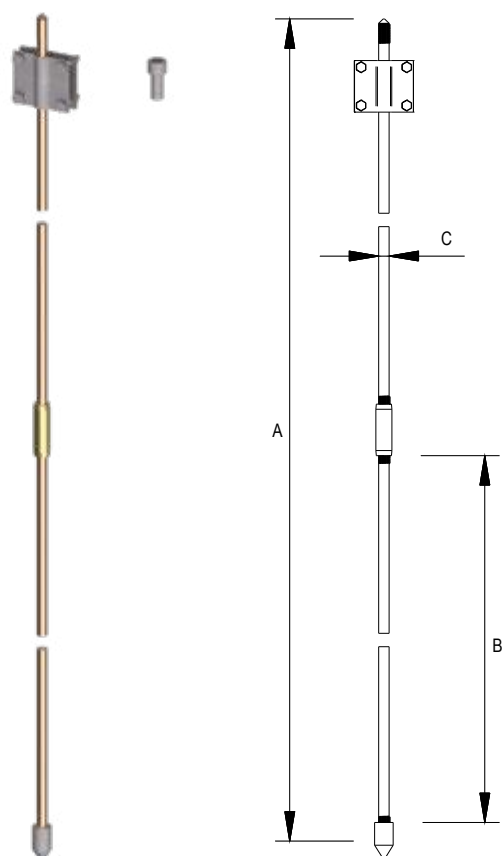
For vertical earthing. Mounted by successive rod installation $\varnothing 16$ or $\varnothing 20$ rods, reaching earthing resistance ≤ 10 Ohm (for lightning protection systems). Set comes with an impact tip and clamping, suitable to connect tape conductor or earthing rod. Great to use in energy sector, rail infrastructure and building industry.

CAT. NUM.	TYPE	VERSION	A	B	C	D	E	F	G	BOLT
94200101	42.1	earthing rod	1000	22,5	$\varnothing 16$	–	–	–	–	–
94201101	42.1.1	earthing rod	1500	22,5	$\varnothing 16$	–	–	–	–	–
94200201	42.2	screwed clamping	–	–	–	57	M16	–	–	4xM8x20
94200301	42.3	header	–	–	–	–	M16	–	–	–
94200401	42.4	clamp	–	–	–	–	M16	48	24	–
94200501	42.5	impact tip	–	–	–	–	M16	–	–	–
94210101	42.10	earthing rod	1000	22,5	$\varnothing 20$	–	–	–	–	–
94211101	42.10.1	earthing rod	1500	22,5	$\varnothing 20$	–	–	–	–	–
94211201	42.2.1	screwed clamping	–	–	–	57	M20	–	–	4xM8x20
94211301	42.3.1	header	–	–	–	–	M20	–	–	–
94211401	42.4.1	connector	–	–	–	–	M20	60	30	–
94211501	42.5.1	impact tip	–	–	–	–	M20	20	–	–

Hammer Insert recommended 94209901
– Page 27.

St/Zn

Copper bonded earthing rod - complete



For vertical earthing type A. Extension of earthing by wedging single rods (3/4" or 5/8") reaching earthing resistance point ≤ 10 Ohm. Set with end tip and clamp. Great to use in energy sector, rail infrastructure and building industry. 250 μm type use in earthing of lightning protection instalations. 100 μm type use for equipotentialisation of electric devices over 1 kV.

CAT. NUM.	TYPE	A	B	C	COAT THICKNESS
14103004	–	3000	1500	$\varnothing 14,2$	100 μm
14113004	–	3000	1500	$\varnothing 17,2$	100 μm
14123004	–	3000	1500	$\varnothing 14,2$	250 μm
14133004	–	3000	1500	$\varnothing 17,2$	250 μm
14104504	–	4500	1500	$\varnothing 14,2$	100 μm
14114504	–	4500	1500	$\varnothing 17,2$	100 μm
14124504	–	4500	1500	$\varnothing 14,2$	250 μm
14134504	–	4500	1500	$\varnothing 17,2$	250 μm
14106004	–	6000	1500	$\varnothing 14,2$	100 μm
14116004	–	6000	1500	$\varnothing 17,2$	100 μm
14126004	–	6000	1500	$\varnothing 14,2$	250 μm
14136004	–	6000	1500	$\varnothing 17,2$	250 μm

Hammer Insert recommended 94209901
– Page 27.

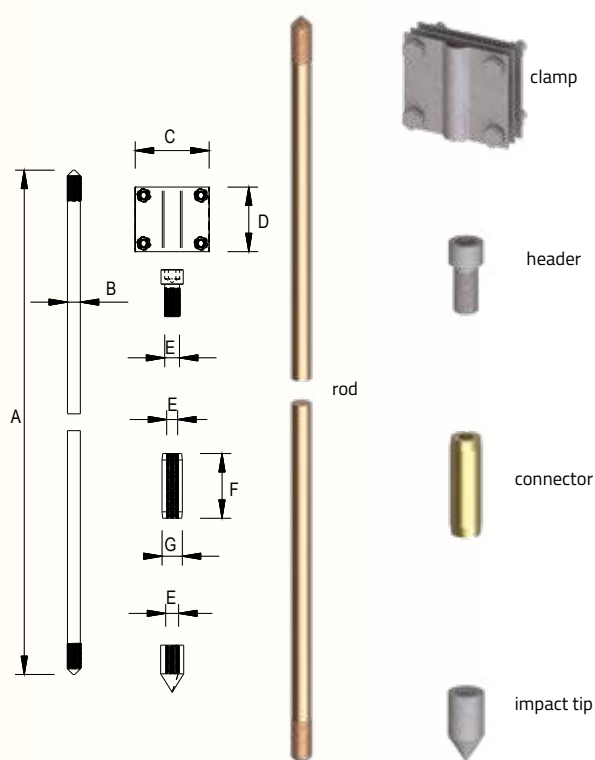
St/Cu

Copper bonded earthing rod - elements

For vertical earthing type A. Extension of earthing by wedging single rods (3/4" lub 5/8") reaching earthing resistance point ≤ 10 Ohm. Set with end tip and clamp. Great to use in energy sector, rail infrastructure and building industry. 250 μ m type use in earthing of lightning protection instalations. 100 μ m type use for equipotentialisation of electric devices over 1 kV.

CAT. NUM.	TYPE	VERSION	A	B	C	D	E	F	G
14221104	-	rod 3/4 100	1000	$\varnothing 17,2$			3/4"		
14220104	-	rod 5/8 100	1000	$\varnothing 14,2$			5/8"		
14231104	-	rod 3/4 250	1000	$\varnothing 17,2$			3/4"		
14230104	-	rod 5/8 250	1000	$\varnothing 14,2$			5/8"		
14201104	-	rod 3/4 100	1500	$\varnothing 17,2$			3/4"		
14200104	-	rod 5/8 100	1500	$\varnothing 14,2$			5/8"		
14211104	-	rod 3/4 250	1500	$\varnothing 17,2$			3/4"		
14210104	-	rod 5/8 250	1500	$\varnothing 14,2$			5/8"		
14211410	-	connector 3/4					3/4"	70	25
14210410	-	connector 5/8					5/8"	70	22
14201501	-	impact tip 3/4					3/4"		
14200501	-	impact tip 5/8					5/8"		
91401305	14.3.1	clamp 14.3.1			80	70			
14201301	-	header 3/4					3/4"		
14200301	-	header 5/8					5/8"		

St/Zn 01 St/tZn 02 Cu 03 StSt (V2A) 05 Cu-CuZn-St/Zn 06 CuZn 10



Hammer Insert recommended 94209901
- Page 27.

Threaded earthing rod 3-9 meters

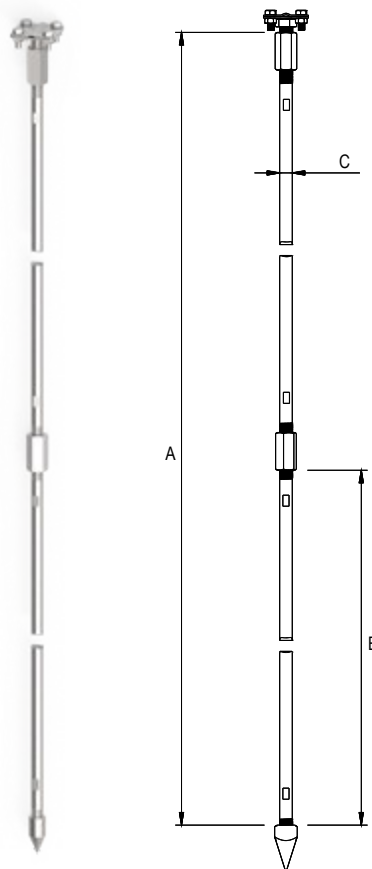
For vertical earthing. Mounted by successive rod installation $\varnothing 16$ or $\varnothing 20$, reaching earthing resistance ≤ 10 Ohm (for lightning protection systems). Set comes with an impact tip and clamp, suitable to connect tape or earthing rod. Great to use in energy sector, rail infrastruc- ture and building industry.

Grounding rod $\varnothing 16$

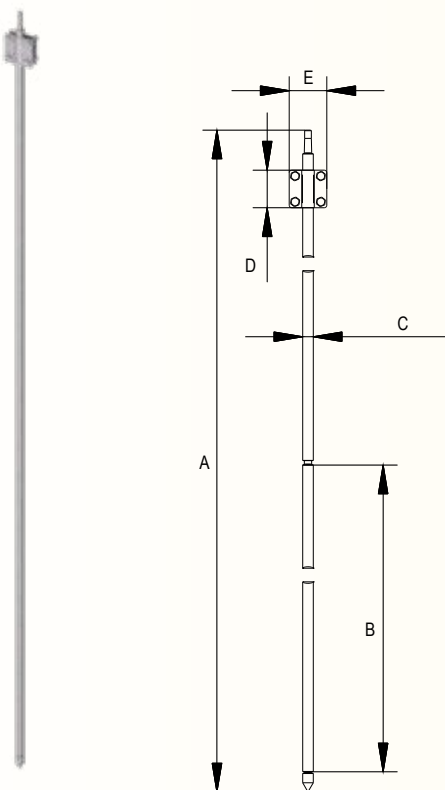
CAT. NUM.	TYPE	A	B	C	BOLT
94103001	41.1	3000	1000	$\varnothing 16$	4xM8x20
94123001	41.1.1	3000	1500	$\varnothing 16$	4xM8x20
94124501	41.45	4500	1500	$\varnothing 16$	4xM8x20
94106001	41.6	6000	1500	$\varnothing 16$	4xM8x20
94129001	41.9	9000	1500	$\varnothing 16$	4xM8x20

Grounding rod $\varnothing 20$

CAT. NUM.	TYPE	A	B	C	BOLT
94133001	41.10	3000	1000	$\varnothing 20$	4xM8x20
94113001	41.10.1	3000	1500	$\varnothing 20$	4xM8x20
94134501	41.45.1	4500	1500	$\varnothing 20$	4xM8x20
94136001	41.60	6000	1500	$\varnothing 20$	4xM8x20
94139001	41.90	9000	1500	$\varnothing 20$	4xM8x20



Complete „elkonomic” earthing rod 3-9 meters with driving spike



Assembly with SDS MAX Hammer
Insert for "Elkonomic" Earthing Rods
94209899

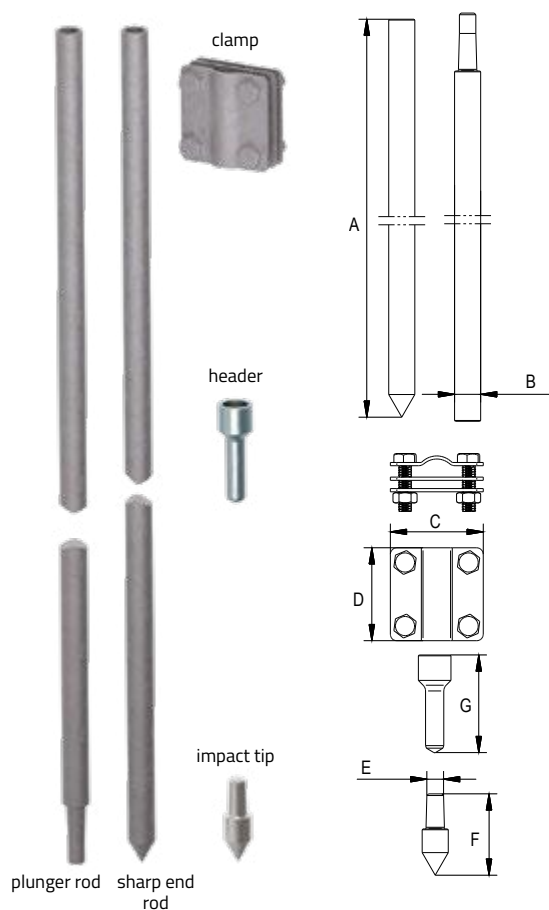
For vertical earthing type A. Set consists 1,5 meter rods, getting connection by hammering. Sharp end of rod for easier ground set up. Extension of earthing by wedging single rods together, to the moment of reaching earthing resistance point $\leq 10 \text{ Ohm}$ (for lightning protection systems according to EN 62305-3-2011). Simple construction speeds up assembly. Available in 3 material options: hot deep galvanised up to $100 \mu\text{m}$, stainless steel V2A and V4A. Product in accordance with norm IEC 62561-2-2018-04. Great to use in energy sector, rail infrastructure and building industry.

CAT. NUM.	TYPE	A	B	C	D	E
94273005	-	3000	1500	$\varnothing 16$	57	57
94274505	-	4500	1500	$\varnothing 16$	57	57
94276005	-	6000	1500	$\varnothing 16$	57	57
94277505	-	7500	1500	$\varnothing 16$	57	57
94279005	-	9000	1500	$\varnothing 16$	57	57
94283005	-	3000	1500	$\varnothing 20$	57	57
94284505	-	4500	1500	$\varnothing 20$	57	57
94286005	-	6000	1500	$\varnothing 20$	57	57
94287505	-	7500	1500	$\varnothing 20$	57	57
94289005	-	9000	1500	$\varnothing 20$	57	57

To order a specific material option, replace last two digits into material equivalent from Material Options specification.

St/tZn 02 StSt (V2A) 05 StSt (V4A) 55

„Elkonomic” unthreaded earthing rod elements



For vertical earthing type A. Mounted by successive rod installation, reaching earthing resistance $\leq 10 \text{ Ohm}$ (for lightning protection systems according to EN 62305-3-2011). Elements sold separately allows to get demanded length of earthing in order to reach lower resistance.

„Elkonomic” Unthreaded Earthing Rod Elements

CAT. NUM.	TYPE	VERSION	A	B	C	D	E	F	G
94251102	-	sharp end rod	1500	$\varnothing 16$	-	-	-	-	-
94252102	-	plunger rod	1500	$\varnothing 16$	-	-	-	-	-
94261102	-	sharp end rod	1500	$\varnothing 20$	-	-	-	-	-
94262102	-	plunger rod	1500	$\varnothing 20$	-	-	-	-	-
94213301	-	header	-	-	-	-	-	-	60
91400502	-	clamp	-	-	57	57	-	-	-
91401302	-	clamp	-	-	70	80	-	-	-

Elements of „Elkonomic” Earthing Rod with driving spike

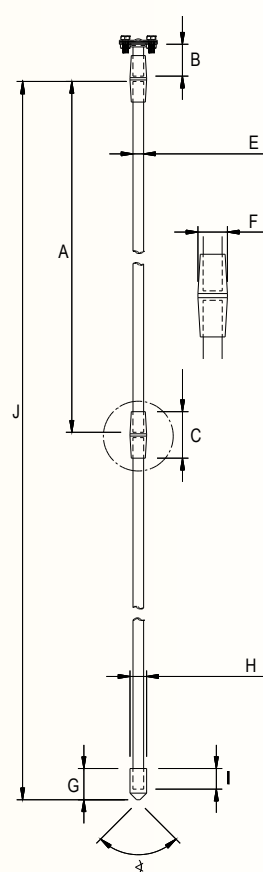
CAT. NUM.	TYPE	VERSION	A	B	C	D	E	F	G
94252102	-	plunger rod	1500	$\varnothing 16$	-	-	-	-	-
94262102	-	plunger rod	1500	$\varnothing 20$	-	-	-	-	-
91400502	-	clamp	-	-	57	57	-	-	-
91401302	-	clamp	-	-	70	80	-	-	-
94253002	-	impact tip $\varnothing 16$	-	-	-	-	$\varnothing 10$	50	-
94263002	-	impact tip $\varnothing 20$	-	-	-	-	$\varnothing 10$	53	-

To order a specific material option, replace last two digits into material equivalent from Material Options specification.

St/tZn 02 StSt (V2A) 05 StSt (V4A) 55

„Terra-grom®“ unthreaded earthing rod 3-9 meters

For vertical earthing rods type A. Mounted by successive rod installation, reaching earthing resistance ≤ 10 Ohm (for lightning protection systems). Set comes with $\varnothing 16$ rods and coupling connector, impact tip and clamping, suitable to connect tape or earthing rod. Unique anti-corrosive coating above 100 μm . Rods connection by impact. Patent protection. Great to use in energy sector, rail infrastructure and building industry.



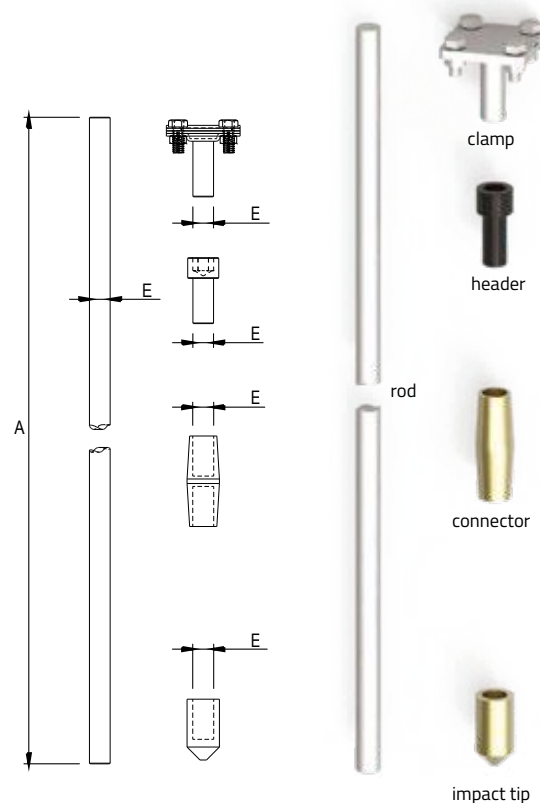
Hammer Insert recommended 94209901
– Page 27.

CAT. NUM.	TYPE	A	B	C	E	F	G	H	I	J	$\angle$	BOLT
94143002	41.1.1 T	1500	50	70	$\varnothing 16$	$\varnothing 25$	47	$\varnothing 25$	36	3000	87°	4xM8x20
94144502	41.45 T	1500	50	70	$\varnothing 16$	$\varnothing 25$	47	$\varnothing 25$	36	4500	87°	4xM8x20
94146002	41.6 T	1500	50	70	$\varnothing 16$	$\varnothing 25$	47	$\varnothing 25$	36	6000	87°	4xM8x20
94147502	41.75 T	1500	50	70	$\varnothing 16$	$\varnothing 25$	47	$\varnothing 25$	36	7500	87°	4xM8x20
94149002	41.9 T	1500	50	70	$\varnothing 16$	$\varnothing 25$	47	$\varnothing 25$	36	9000	87°	4xM8x20

St/tZn

„Terra-grom®“ unthreaded earthing rod elements

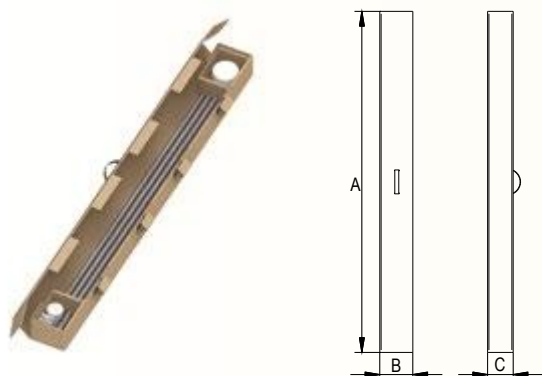
For vertical earthing rods type A. Mounted by successive rod installation up to reaching earthing resistance ≤ 10 Ohm (for lightning protection systems). Set comes with $\varnothing 16$ rods and coupling connector, impact tip and clamp, suitable to connect tape or earthing rod. Unique anticorrosive coating above 100 μm .



CAT. NUM.	TYPE	VERSION	A	E
94221102	42.1.1 T OG	rod	1500	$\varnothing 16$
94229202	42.2 T OG	clamp	–	$\varnothing 16$
94220301	42.3 T	header (to successive rod impact)	–	$\varnothing 16$
94220410	42.4 T MS	connector	–	$\varnothing 16$
94220510	42.5 T MS	impact tip	–	$\varnothing 16$

Hammer Insert recommended 94209901
– Page 27.

„Elkonomic“ earthing rods



Set of earthing rods with accessories necessary to provide vertical earthing. Set includes: rods, connectors, impact tip, tape conductor clamp (max. 50 mm), technical vaseline and anticorrosive tape.

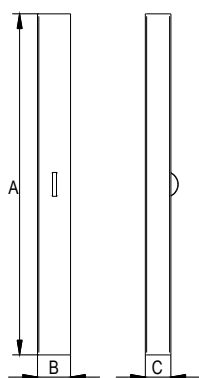
CAT. NUM.	TYPE	A	B	C	TOTAL LENGTH	ROD DIAMETER
24173002	-	1550	150	110	3-meters	16
24176002	-	1550	150	110	6-meters	16

St/tZn

Copper bonded earthing rods



Set of earthing rods with accessories necessary to provide vertical earthing. Set includes: rods, connectors, impact tip, tape conductor clamp (max. 50 mm), technical vaseline and anticorrosive tape.

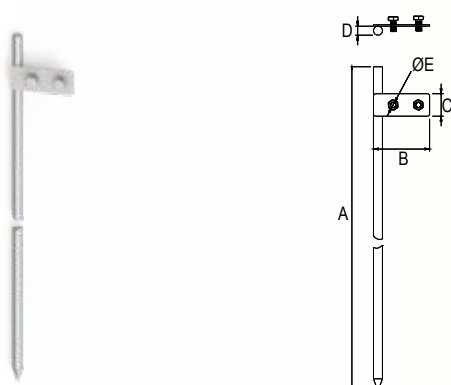


CAT. NUM.	TYPE	A	B	C	TOTAL LENGTH	ROD DIAMETER	COPPER BONDING THICKNESS
24113004	-	1550	150	110	3m	Ø14,2	250 µm
24116004	-	1550	150	110	6m	Ø14,2	250 µm
24123004	-	1550	150	110	3m	Ø17,2	250 µm
24126004	-	1550	150	110	6m	Ø17,2	250 µm

CAT. NUM.	TYPE	A	B	C	TOTAL LENGTH	ROD DIAMETER	COPPER BONDING THICKNESS
24133004	-	1550	150	110	3m	Ø14,2	100 µm
24136004	-	1550	150	110	6m	Ø14,2	100 µm
24143004	-	1550	150	110	3m	Ø17,2	100 µm
24146004	-	1550	150	110	6m	Ø17,2	100 µm

St/Cu

Earthing rod



For vertical earthing type A. Mounted by successive rod installation, reaching earthing resistance $\leq 10 \text{ Ohm}$ (for lightning protection systems). Great to use in energy sector, rail infrastructure and building industry.

CAT. NUM.	TYPE	A	B	C	D	E	BOLT
94000102	40.1	2000	100	40	16	11	2xM10x20

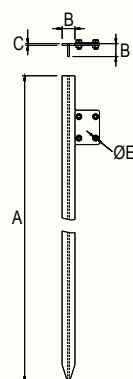
St/tZn

T profile earthing rod

For vertical earthing type A. Mounted by successive rod installation, reaching earthing resistance $\leq 10 \text{ Ohm}$ (for lightning protection systems). Great to use in energy sector, rail infrastructure and building industry.

CAT. NUM.	TYPE	A	B	C	E	BOLT
94000302	40.3	2000	30	4	9	4xM8x20
94000402	40.4	3000	30	4	9	4xM8x20

St/tZn

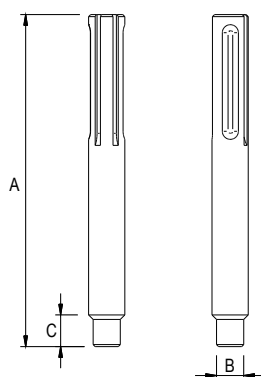


Hammer insert

For driving down earth rods using vibrating hammers. SDS-MAX fixing holder standard. Only direct use with header of earthing rod.

CAT. NUM.	TYPE	A	B	C
94209901	42.3 SDS	165	Ø13,5	14

St/Zn

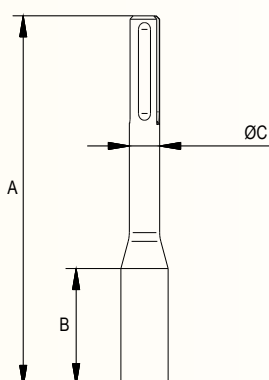


NOTE! Dedicated to „Elkonomic“
Unthreaded Earthing Rod 3-9 meters

Sds max hammer insert for „elconomic“ earthing rods

For driving down earth rods "Elconomic", using vibrating hammers. SDS-MAX fixing holder standard. Only direct use with header of earthing rod.

CAT. NUM.	TYPE	A	B	C
94209899	-	220	70	Ø18



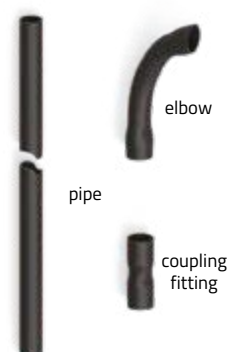
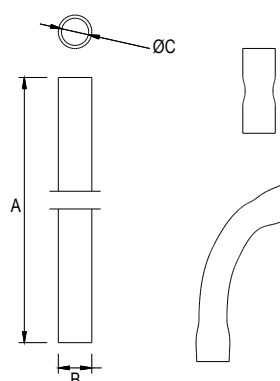
NOTE! Dedicated to Complete
„Elkonomic“ Earthing Rod 3-9 meters
with driving spike - Page 24.

Tape conductor assembly pipe

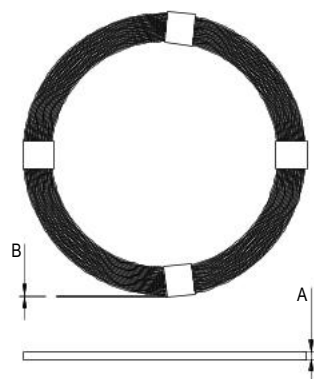
To lead tape under facade or under plaster of the building. Material ensures sufficient stiffness and non flammability. Diameter allows to use maximum sectional dimension 30 x 4. For wall mounting use 94800901 clamp.

CAT. NUM.	TYPE	VERSION	A	B	C
10420108	-	pipe	3000	40	34
10500308	-	coupling fitting	-	-	-
10500408	-	elbow	-	-	-

PVC



Tape conductor

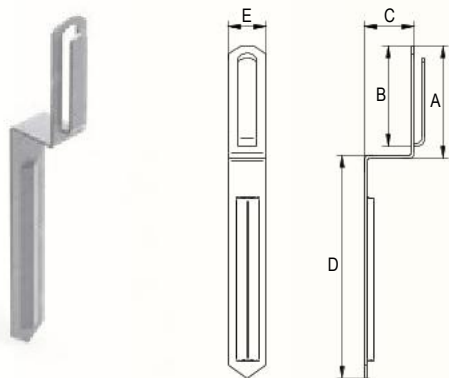


Before order check availability and leadtime.

Use for foundation earthing, lattice mats or ring earthing conductors and down conductors, equipotential installations. Coating thickness comply with EN 62561-2:2012 norm (zinc plated minimum 350g/m², copper bonded minimum 70 µm). Available coil weight: 25 kg or 50 kg. Cut-to-length sales also available. A tolerance of +/- 5% applies.

CAT. NUM.	MATERIAL	SIZE	A	B	WEIGHT [kg/m]
82503002	Zinc plated	25×3	25	3	0,588
82504002	Zinc plated	25×4	25	4	0,785
83003502	Zinc plated	30×3,5	30	3,5	0,824
83004002	Zinc plated	30×4	30	4	0,961
84004002	Zinc plated	40×4	40	4	1,285
84005002	Zinc plated	40×5	40	5	1,601
85004002	Zinc plated	50×4	50	4	1,601
82503003	Copper	25×3	25	3	0,668
82504003	Copper	25×4	25	4	0,890
83004003	Copper	30×4	30	4	1,068
84004003	Copper	40×4	40	4	1,424
84005003	Copper	40×5	40	5	1,780
82504004	Copper bonded	25×4	25	4	0,790
83004004	Copper bonded	30×4	30	4	0,980
84004004	Copper bonded	40×4	40	4	1,285
84005004	Copper bonded	40×5	40	5	1,630
83003505	Stainless Steel type V4A	30×3,5	30	3,5	0,833
83013505	Stainless Steel type V2A	30×3,5	30	3,5	0,833

Tape conductor holder



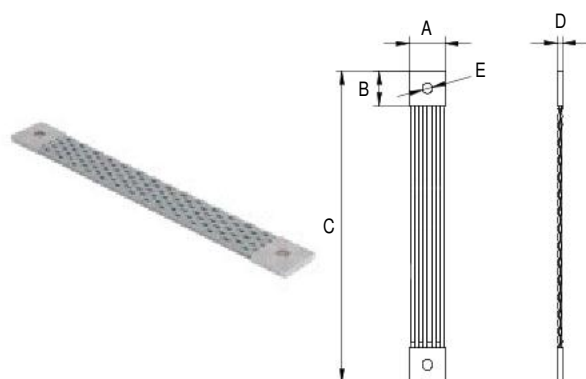
To fix tape conductor in foundation or ring type earthing. Keeping the distance of 1 meter between holders, ensures sufficient stiffness, whilst deeping the tape in foundation. Footer shape ensures accurate assembly in concrete, preventing corrosion. Maximum sectional fixing dimensions of tape 50x5mm.

CAT. NUM.	TYPE	A	B	C	D	E
97100102	71.1	75	67	33	149	25

To order a specific material option, replace last two digits into material equivalent from Material Options specification.

St/tZn 02

Flexible tin-plated copper bridging braid



For flexible connections of wire and / or tape conductors.

CAT. NUM.	TYPE	A	B	C	D	E
10100403	101.2 CU/30	40	40	300	6	12
10100503	101.2 CU/40	40	40	400	6	12

Cu

Tape conductor holder

To lead tape conductor (max 40 x 5) over the facade walls and various steel constructions. 2 types with or without connector for direct mounting to flat surface.

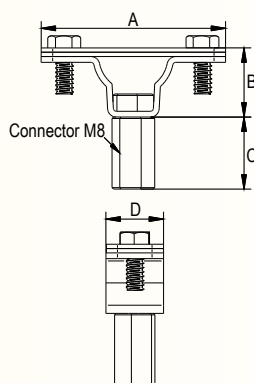
CAT. NUM.	TYPE	A	B	C	D	BOLT	NOTES
12600102	126.1	64	24	x	20	2×M6×16	without connector

To order a specific material option, replace last two digits into material equivalent from Material Options specification.

St/Zn 01 St/tZn 02 StSt (V2A) 05

12601105	126.1.1	64	24	25	20	2×M6×16	with connector
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StSt (V2A)



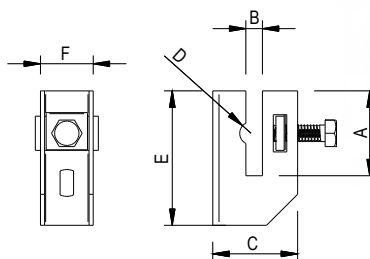
Tape conductor holder with tightening screw

For wall tape mounting. Fastened with fixing extension plugs. Maximum sectional dimension of tape 50x5 mm.

CAT. NUM.	TYPE	A	B	C	D	E	F	BOLT
97400102	74.1	41	8	41	Ø8-Ø10	65	25	M8×25

To order a specific material option, replace last two digits into material equivalent from Material Options specification.

St/Zn 01 St/tZn 02 Cu 03



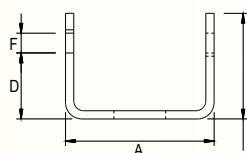
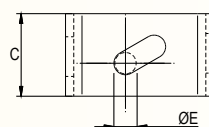
Tape conductor holder

For wall and ceiling tape mounting. Fastened with fixing extension plugs. Option 97400201 - maximum sectional dimension of tape 30x4 mm. Option 97401201 - maximum sectional dimension of tape 50x4 mm.

CAT. NUM.	TYPE	A	B	C	D	E	F
97400202	74.2	45	32	25	20	Ø7	6
97401202	74.2.1	70	35	44	19	Ø8	6

To order a specific material option, replace last two digits into material equivalent from Material Options specification.

St/Zn 01 St/tZn 02 Cu 03 StSt (V2A) 05 RAL 16



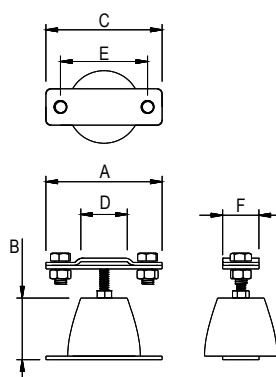
Insulation tape conductor holder

For wall and ceiling tape mounting. Can be also mounted on cable trays. Polyamide Insulator reinforced with fibreglass up to 1 kV. Maximum sectional dimension of tape 40x5 mm. Distance between holders should not exceed 1 meter.

CAT. NUM.	TYPE	A	B	C	D	E	F	BOLT
97400402	—	80	40	80	40	60	25	2×M6×16

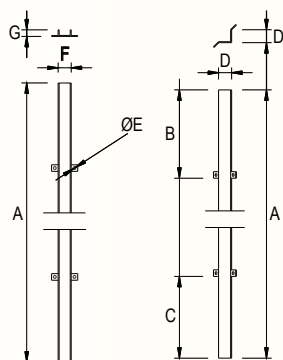
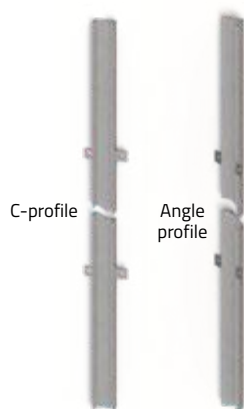
To order a specific material option, replace last two digits into material equivalent from Material Options specification.

St/Zn 01 St/tZn 02



Earth conductor cover

Mechanical cover of earth conductor. Prevents mechanical damages especially in traffic areas, such as warehouse for example.

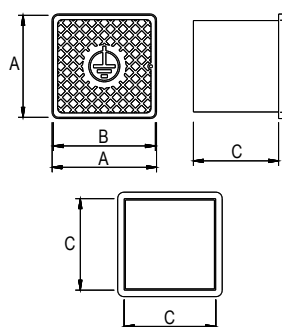


CAT. NUM.	TYPE	VERSION	A	B	C	D	E	F	G
93900102	39.1	C-profile	1400	250	250	40	9	40	20
93900202	39.2	Angle profile	1400	250	250	40	9	40	20

To order a specific material option, replace last two digits into material equivalent from Material Options specification.

St/tZn 02 RAL 16

Ground inspection pit



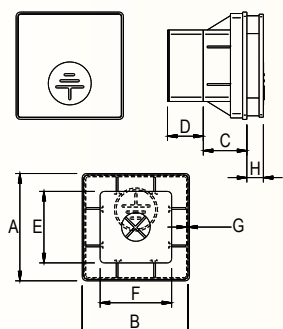
For ground control connections. Used in the places where there is no communication paths. One screw lid, enables fast and easy access to control connection in order to interim test/review of LPS.

CAT. NUM.	TYPE	A	B	C
94900108	49.1	200	193	166

PVC

See also facade control pits
– Page 46.

Ground inspection pit



For ground control connections. Modul construction enables regulation of assembly deepness (by adding distance element). Cover guarantee excellent mechanical resistance, test proven with accordance to LPS norm EN 62561-5:2011. Can be used in communication paths dedicated for heavy transport. Two screws lid, enables fast and easy access to control connection in order to interim test/review of LPS.

CAT. NUM.	TYPE	TYPE	A	B	C	D	E	F	G	H
95000108	50.1	set	300	300	120	93	200	200	5	33
95010108	50.A	lid	–	–	–	–	–	–	–	33
95020108	50.B	foundation	300	300	120	–	–	–	–	–
95030108	50.C	distance element	–	–	–	93	200	200	5	–
95040108	50.D	bottom	–	–	–	–	–	–	–	–

PVC

See also facade control pits
– Page 46.

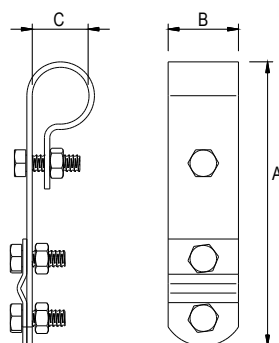
Earthing clamp

For equipotential connections at pipe constructions and instalations.

CAT. NUM.	TYPE	A	B	C [mm]	C [cal]	BOLT
96409005	64.1	105	26	Ø21,3	1/2"	2xM6x16, M6x20
96409105	64.2	120	26	Ø26,9	3/4"	2xM6x16, M6x20
96409205	64.3	123	26	Ø33,7	1"	2xM6x16, M6x20
96409305	64.4	126	26	Ø42,4	1 1/4"	2xM6x16, M6x20
96409405	64.5	140	26	Ø48,3	1 1/2"	2xM6x16, M6x20
96409505	64.6	150	26	Ø60,3	2"	2xM6x16, M6x20

To order a specific material option, replace last two digits into material equivalent from Material Options specification.

Cu 03 StSt (V2A) 05



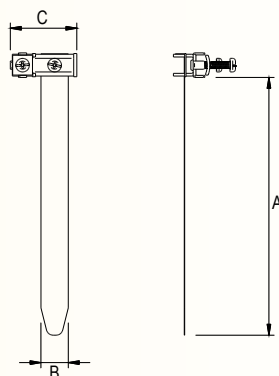
Earthing tensioning strap

For equipotential connections at pipe constructions and instalations. Pipe diameter scale in table form. Clamp sectional dimensions for conductor connection from 2,5 up to 16mm. Strap 96440101 also used for earthing semiconductive external coating of high voltage cable 30000199.

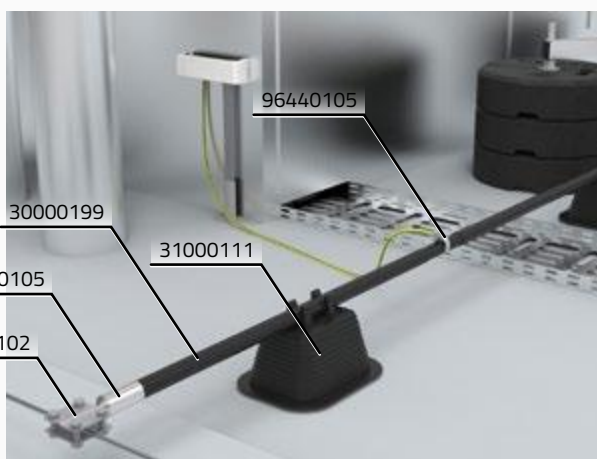
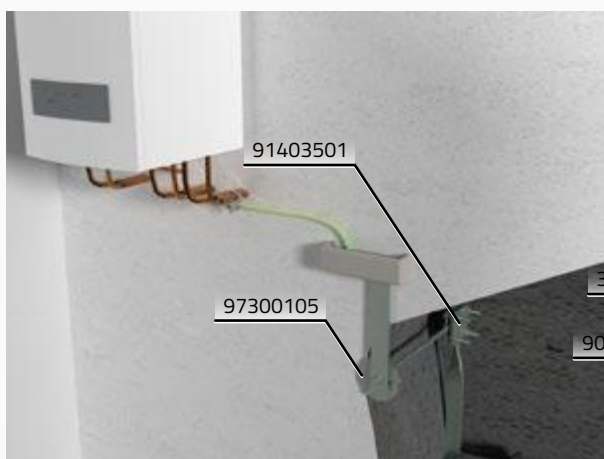
CAT. NUM.	TYPE	A	B	C	PIPE DIAMETER	PIPE DIAMETER
96440101	64.1/E	136	14	32	3/8"	< Ø36
96440201	64.2/E	209	20	48	1 1/2"	< Ø55
96440301	64.3/E	428	20	48	4"	< Ø125
96440401	64.4/E	605	20	48	6"	< Ø180
96440501	64.5/E	1000	20	48	10"	< Ø300

To order a specific material option, replace last two digits into material equivalent from Material Options specification.

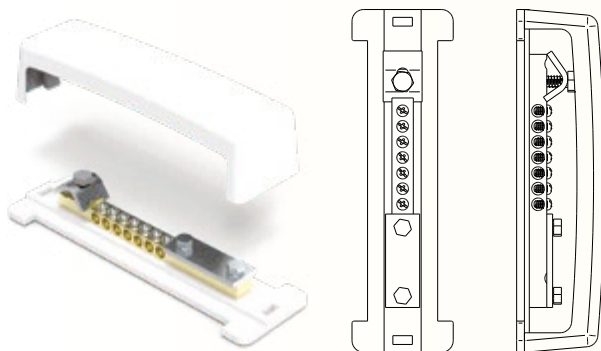
St/Zn 01 StSt (V2A) 05



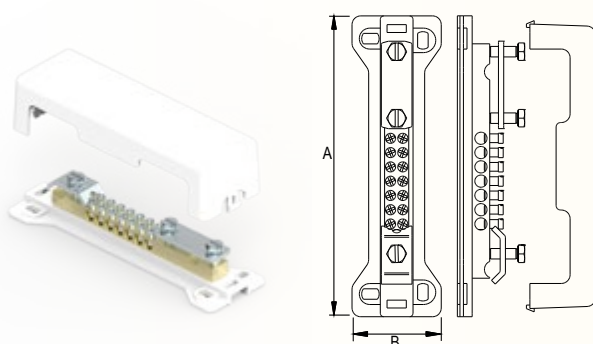
► An example of the use of an Earthing Tensioning Strap and an Equipotential Bar for grounding electrical devices and high-voltage installations.



Equipotential bar



Used in surge protection and electric shock installation. Enables direct equipotential bonding between earthing and conducting parts such as piping, reinforcement bars, construction parts of building, covers of electrical devices. Equipotential bar is to get similar potential on conducting parts in the normal work conditions, either in case of installation defects and failure of electric devices.

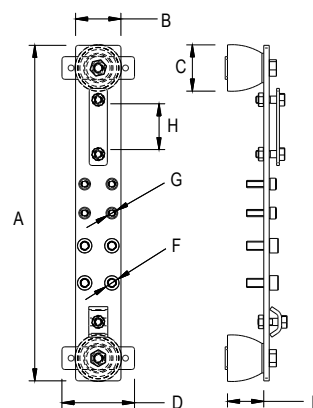


CAT. NUM.	TYPE	A	B	CONNECTION OPTIONS	VERSION
99200199	92.1	170	50	7×16 mm ²	single-row
				1×50 mm ²	
				1×tape conductor max. 25×4 mm	
99201199	92.1.1	170	50	14×16 mm ²	double-row
				1×50 mm ²	
				1×tape conductor max. 25×4 mm	

Main earthing equipotential bar



Used in LPS, surge protection and electric shock installation. Enables direct equipotential bonding between earthing and conducting parts such as piping, reinforcement bars, construction parts of building, covers of electrical devices. Equipotential bar is to get similar potential on conducting parts in the normal work conditions, either in case of installation defects and failure of electric devices.



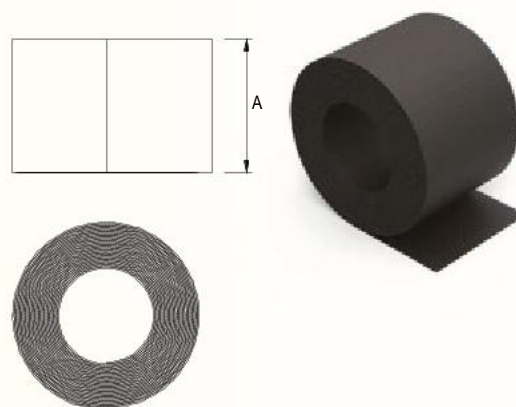
CAT. NUM.	TYPE	BOLT	A	B	C	D	E	F	G	H
99200210	-	4×M8, 4×M10	370	50	50	80	40	M10	M8	51

CuZn 10

Denso tape

Anti-corrosive tape, humidity protection of pipelines, weldings, rods, screws connection and conduits. Tape made of waterproofing fabric, improves corrosion resistance.

CAT. NUM.	TYPE	A	LENGTH	WEIGHT
11210099	112.100	100	10 m	~0,24 kg
11220099	112.200	200	10 m	~0,52 kg



Anti-corrosive tape for earth connections

Anti-corrosive, humidity protection of earthing rods, earth weldings and screws connection. Waterproofed with good electric resistance. Works with bituminous insulation and PE.

CAT. NUM.	TYPE	A	LENGTH
11103099	111.30	30	10 m
11105099	111.50	50	10 m
11110099	111.100	100	10 m

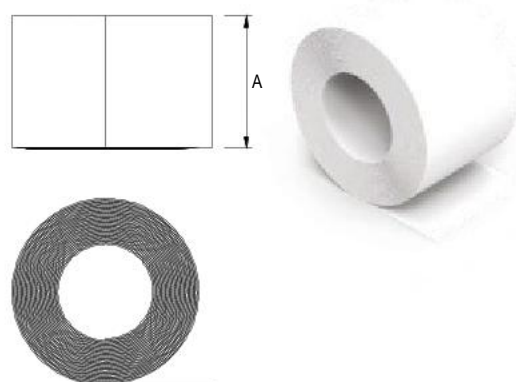


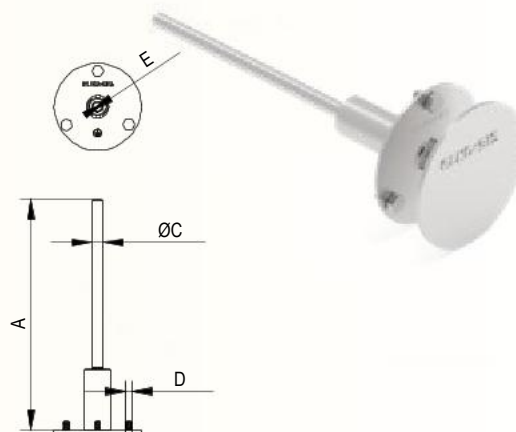
Plate type earthing connector

Used in LPS connections or equipotential installations. Plate with a clamp need to be extended outside the building. Before concrete filling, fix plate permanently to formwork and tight up the rod. Other side of rod permanently connected with reinforcement bars by welding or using universal unit clamps (ordered separately). Use 94200201 for connecting tape conductor with grounding.

CAT. NUM.	TYPE	A	B	C	D	E
97300105	73.1	225	85	Ø10	3xM6x16	M10
97300205	73.2	225	85	Ø12	3xM6x16	M12
97300305	73.3	225	85	Ø16	3xM6x16	M16

To order a specific material option, replace last two digits into material equivalent from Material Options specification.

StSt (V2A)

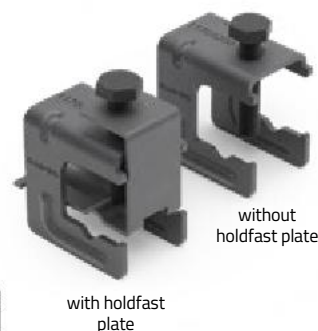
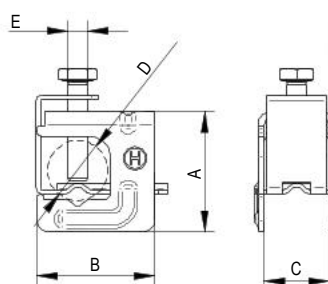


Rebar and earthing foundation clamp

To connect flat tapes with the reinforcing bar at foundation earthing and in reinforced concrete columns. Black steel or hot-dip galvanized options.

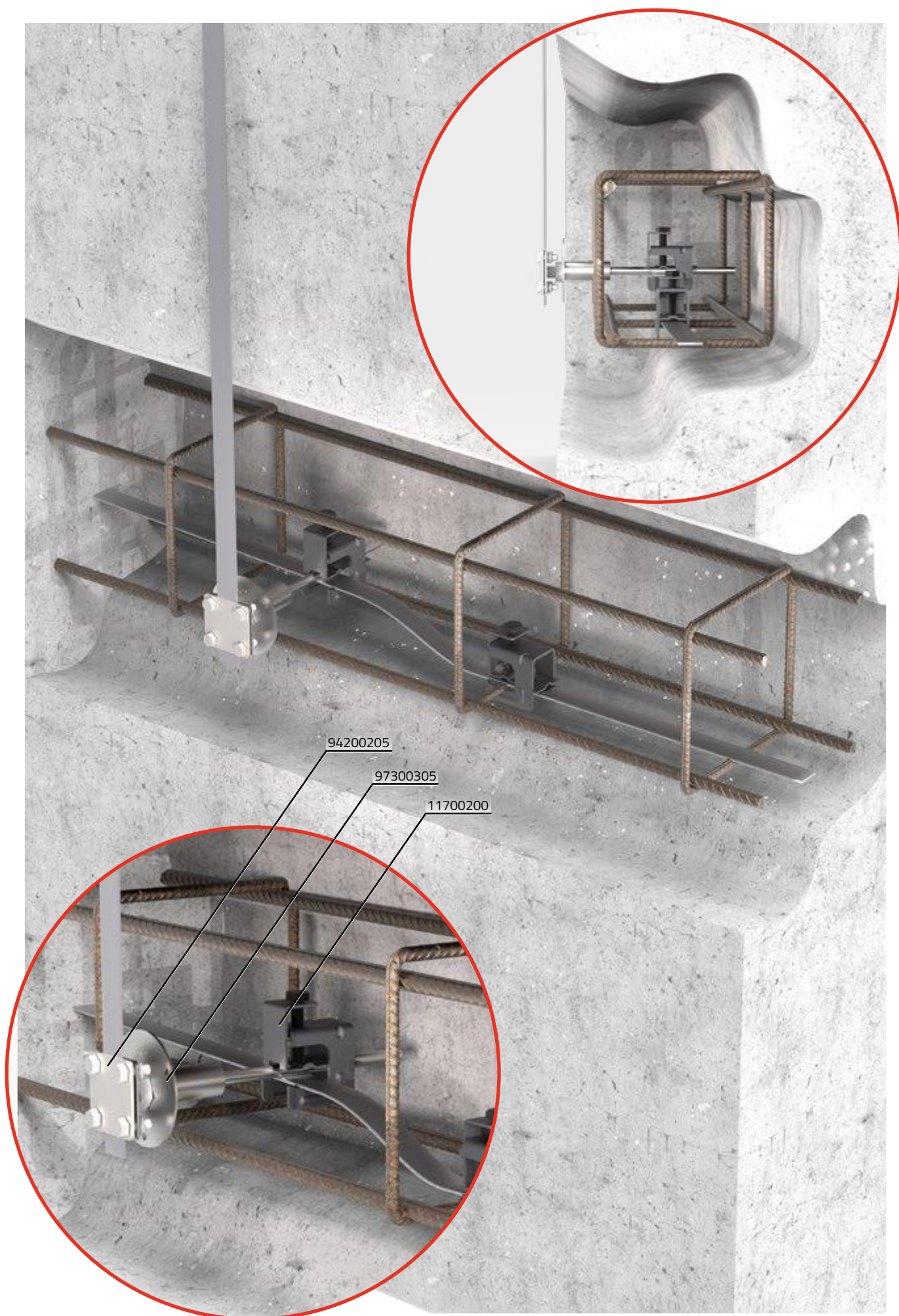
CAT. NUM.	TYPE	A	B	C	D	E	NOTES
11700200	117.2	59	58	32	Ø28	M10x50	with holdfast plate
11700300	117.3	73	69	42	Ø38	M10x50	with holdfast plate
11701200	117.2.1	59	58	32	Ø28	M10x50	without holdfast plate
11701300	117.3.1	73	69	42	Ø38	M10x50	without holdfast plate

St/bare 00 St/tZn 02

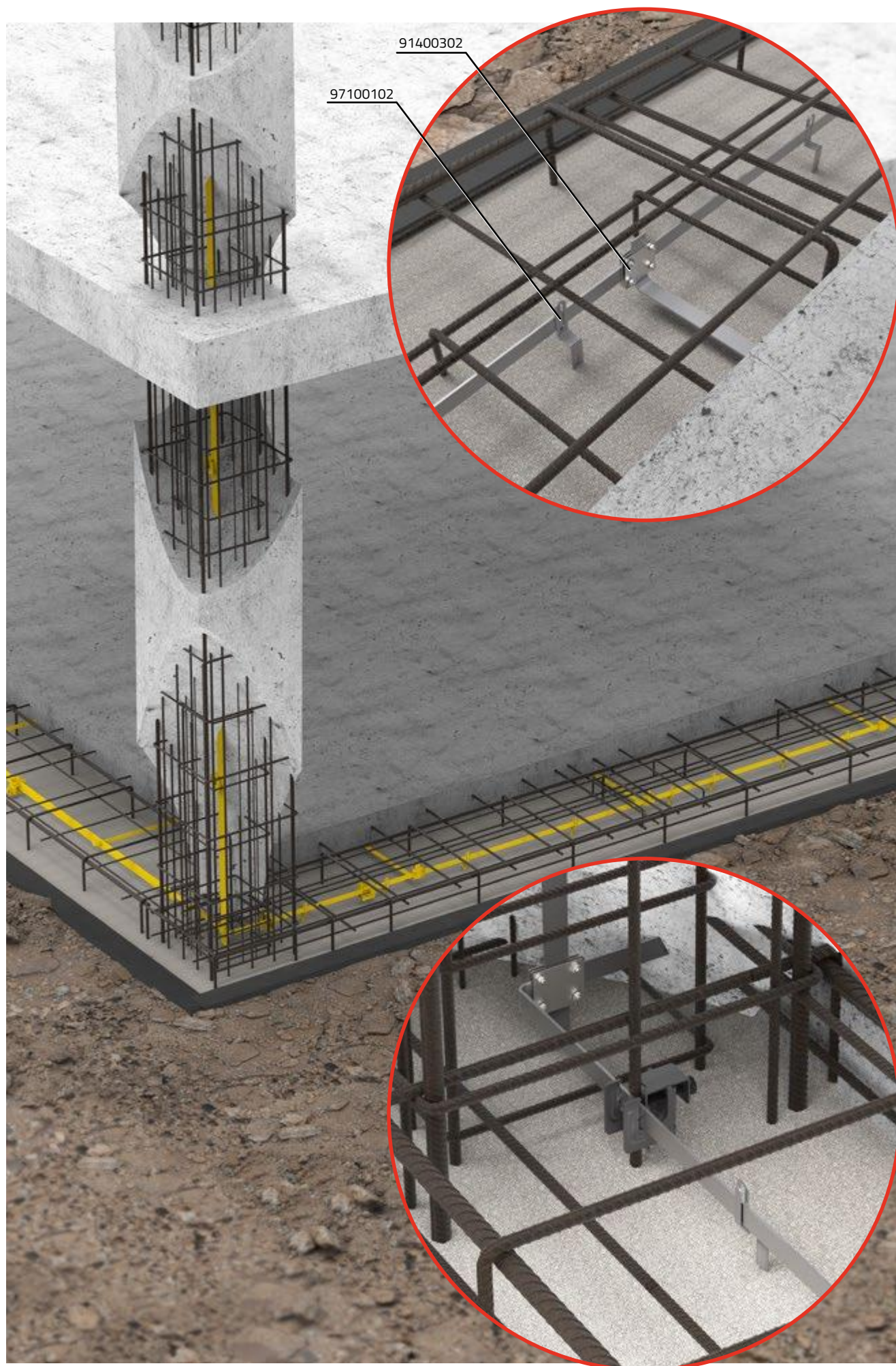


NEW

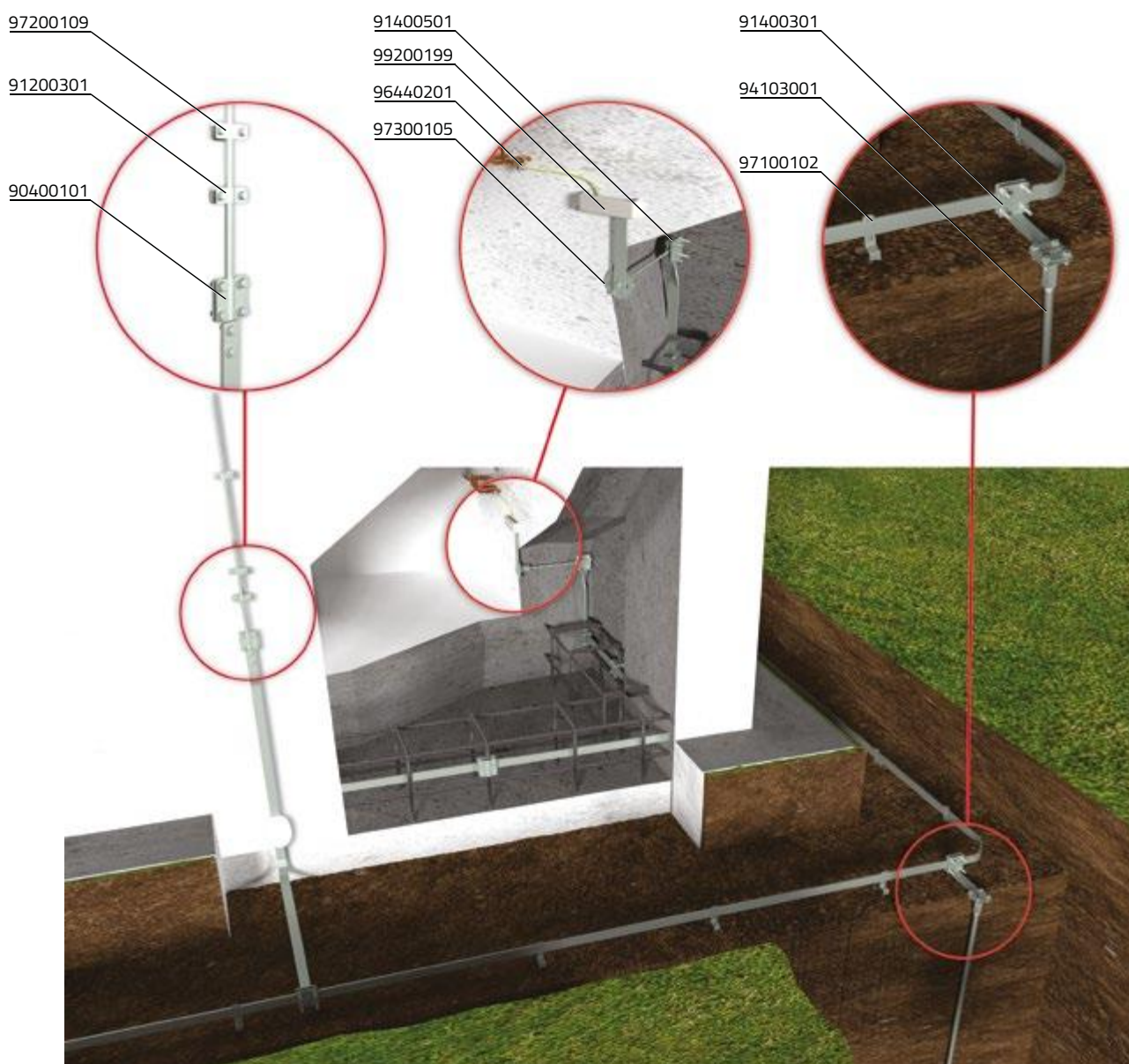
Example of grounding and equipotential bonding



Example of grounding and equipotential bonding



Example of grounding and equipotential bonding



An example of grounding using an Earthing Electrode.

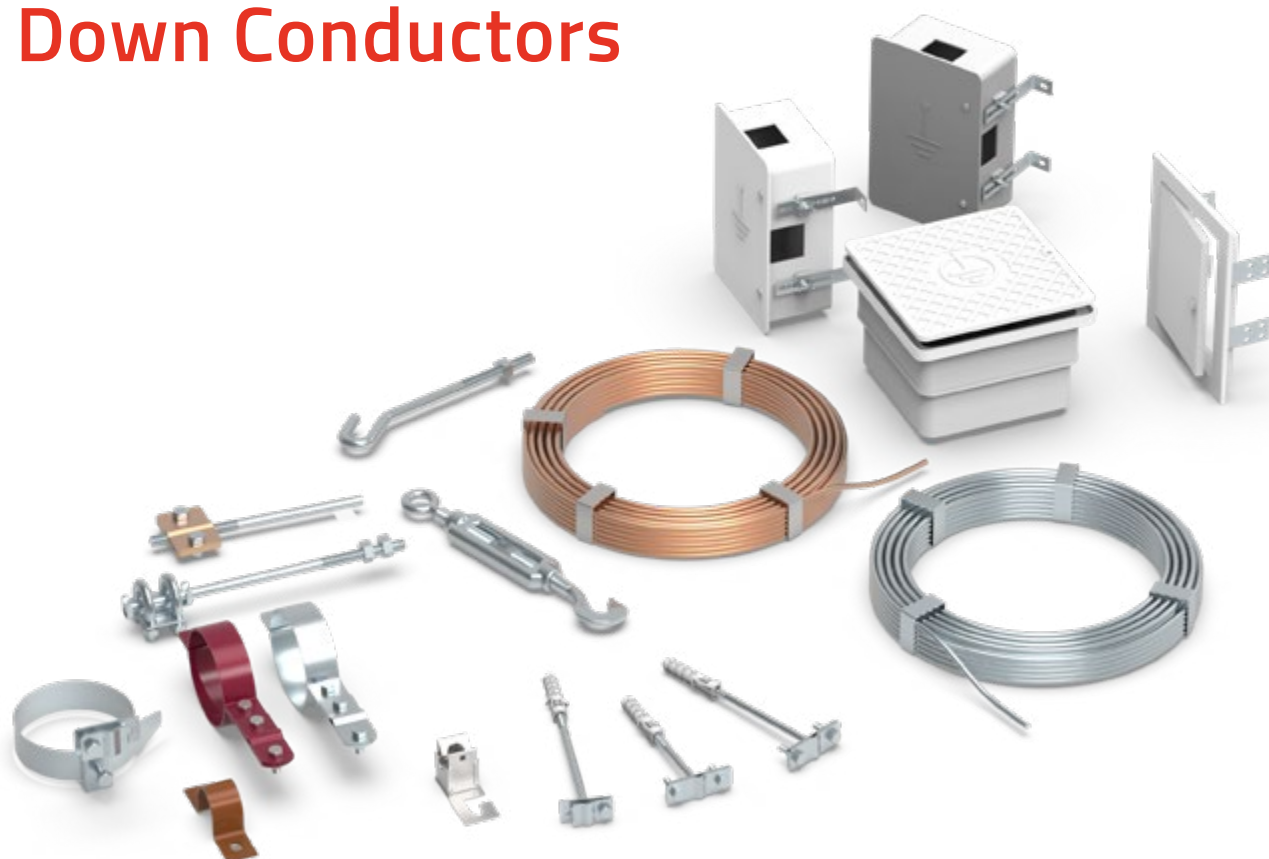


An example of grounding using a Tape Conductor.



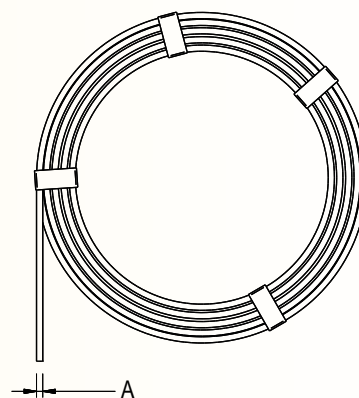
GROUP III

Down Conductors



Wire conductor

To be used as down or horizontal conductor. Coating thickness comply with EN 62561-2:2012 norm (zinc plated minimum 350g/m², copper bonded minimum 70 µm). Available packing: 20 kg coils (aluminium wire), 50 kg coils (galvanised & stainless steel wires). Cut-to-length sales also available. A tolerance of +/- 5% applies.



CAT. NUM.	TYPE	MATERIAL	A	WEIGHT [kg/m]
80100601	DR6	Zinc plated	Ø6	0,220
80000802	DR8	Zinc plated	Ø8	0,395
80001002	DR10	Zinc plated	Ø10	0,620
80000603	DR6	Copper	Ø6	0,252
80000803	DR8	Copper	Ø8	0,447
80001003	DR10	Copper	Ø10	0,699
80000809	DR8	Aluminium	Ø8	0,136
80001009	DR10	Aluminium	Ø10	0,212
80000804	DR8	Copper bonded	Ø8	0,410
80000805	DR8	Stainless Steel type V2A	Ø8	0,391
80000855	DR8	Stainless Steel type V4A	Ø8	0,391

Before order check availability and leadtime.

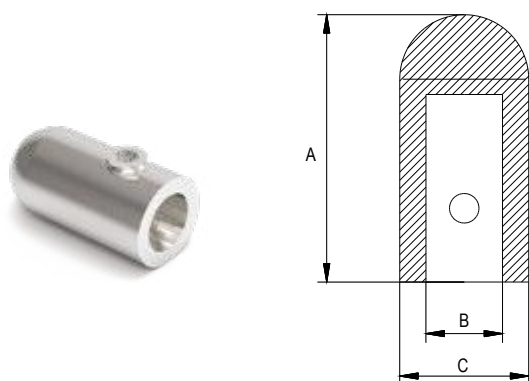
PVC insulated wire conductor



To be used as down or horizontal conductor, PVC insulation protects the conductor from mechanical damages.

CAT. NUM.	TYPE	A	PVC COATING	WEIGHT [kg/m]
80101001	DR 10 OC/PVC	Ø10	1,5	0,62
80100809	DR 8 AL/PVC	Ø8	1,5	0,203

Wire conductor cap

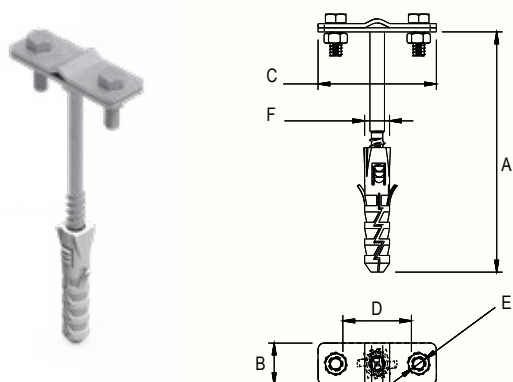


Anti-corrosion protection cap. Should be used with galvanised or copper bonded wires.

CAT. NUM.	TYPE	A	B	C	BOLT
12400105	124.1	30	8,5	14	M6

StSt (V2A)

Fixing holder (screwed)



For wire conductor wall fixing. Fixed into surface using wall plug. Distance between holders max each 1 meter according to EN 62305-3:2011.

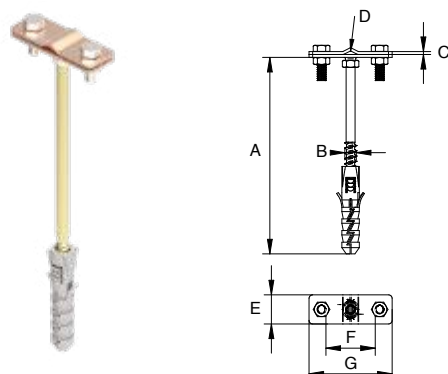
CAT. NUM.	TYPE	A*	B	C	D	E	F	BOLT
91200102	12.1	100	20	57	30	7	10	2×M6×16
91200202	12.2	120	20	57	30	7	12	2×M6×16
91200302	12.3	160	20	57	30	7	12	2×M6×16
91200902	12.9	200	20	57	30	7	12	2×M6×16
91200402	12.4	250	20	57	30	7	12	2×M6×16
91200502	12.5	300	20	57	30	7	12	2×M6×16
91200602	12.6	400	20	57	30	7	12	2×M6×16

To order a specific material option, replace last two digits into material equivalent from Material Options specification.

St/Zn 01 St/tZn 02 StSt (V2A) 05 RAL 16

*Size may be changed.

Copper installation holder with screw and fixing plug



For wire conductor wall fixing. Fixed into surface using wall plug. Distance between holders max each 1 meter according to EN 62305-3:2011.

CAT. NUM.	TYPE	A	B	C	D	E	F	G	BOLT
91200226	12.2	120	M8	2	Ø8	20	34	57	2×M6×16
91200326	12.3	120	M8	2	Ø8	20	34	57	2×M6×16

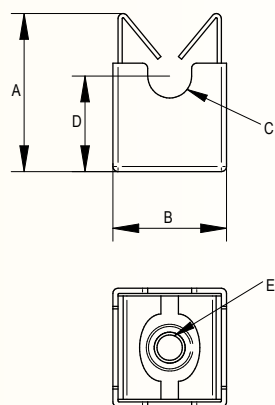
Cu/CuZn

Low profiled wire holder

Used to mount wire conductor on metal roof tiles or on tar paper roofs, can be also used for wire down conductor wall fixing. Fixed into surface using tek screw or expansion plug (accessories to be ordered separately). Maximum distance between holders according to EN 62305-3:2011 should be 1 m.

CAT. NUM.	TYPE	A	B	C	D	E
25902105	–	31	22	Ø8	18,5	M6

StSt (V2A)

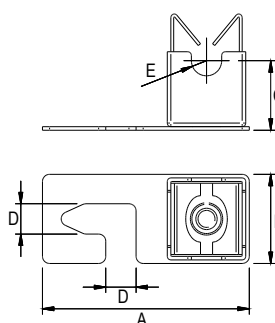


Low profiled wire holder with latch

Used to mount wire conductor on corrugated roofs. Fixed into roof surface using either a screw (to be ordered separately) or already existing roof mounting screws, with no necessity for additional drilling in the roof surface.

CAT. NUM.	TYPE	A	B	C	D	E
25903105	–	58	25	19,5	8,5	Ø8

StSt (V2A)



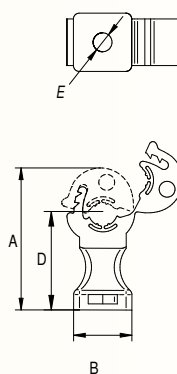
NEW

Plastic clip holder

For wire conductor wall fixing. Fixed into surface using expansion plug. Available colours: grey, brown, black, brick. Appropriate only for wire conductor with diameter 8 mm.

CAT. NUM.	TYPE	VERSION	A	B	C	D	E
12000108	120.1	clip	50	20	–	35	M6
12007001	120.70	screw	–	–	70	–	–

St/Zn 01 PVC 08



available colours:

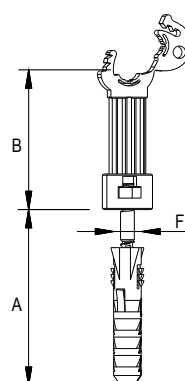


Plastic clip holder with with expansion plug

For wire conductor wall fixing. Fixed into surface using expansion plug. Available colours: grey, black, brick. Appropriate only for wire conductor with diameter 8 mm.

CAT. NUM.	TYPE	A	B	F
91220101	12.1/P	50	70	Ø10
91220201	12.2/P	65	70	Ø12
91220301	12.3/P	105	70	Ø12
91220401	12.4/P	190	70	Ø12

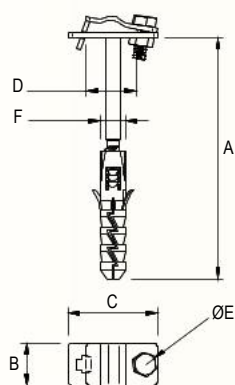
St/Zn



available colours:



Wire holder with fixing plug



For wire wall mounting. Fastened to surface with fixing extension plugs. Appropriate for wire conductor with diameter 8-10 mm.

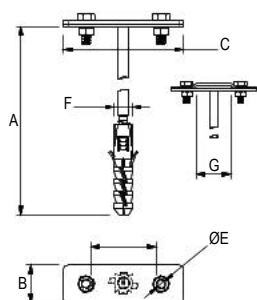
CAT. NUM.	TYPE	A*	B	C	D	E	F	BOLT
91210102	12.1.1	100	20	43	30	Ø7	10	M6×16
91210202	12.2.1	120	20	43	30	Ø7	12	M6×16
91210302	12.3.1	160	20	43	30	Ø7	12	M6×16
91210902	12.4.1	250	20	43	30	Ø7	12	M6×16

To order a specific material option, replace last two digits into material equivalent from Material Options specification.

St/Zn 01 St/tZn 02 RAL 16

*Size may be changed.

Tape conductor holder with fixing plug



For wire wall mounting. Fastened to surface with fixing expansion plugs. Appropriate for wire conductor with diameter 8-10 mm.

CAT. NUM.	TYPE	VERSION	A*	B	C	D	E	F	G	BOLT
91230302	12.3/B	creased	160	25	80	50	Ø7	12	40	2×M6×16
91231302	12.3.1/B	creased	120	25	80	50	Ø7	12	40	2×M6×16
91230802	12.8/B	noncreased	160	25	80	50	Ø7	12	–	2×M6×16
91231802	12.8.1/B	noncreased	120	25	80	50	Ø7	12	–	2×M6×16

NEW

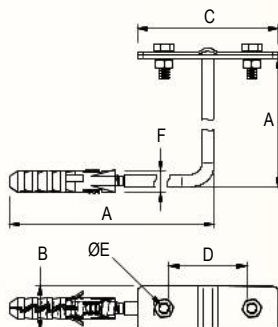
NEW

To order a specific material option, replace last two digits into material equivalent from Material Options specification.

St/Zn 01 St/tZn 02 StSt (V2A) 05 RAL 16

*Size may be changed.

Angle holder with fixing plug



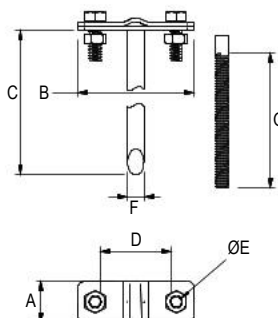
For wire conductor wall fixing, for example on firewalls. Fixed into surface using expansion plug. Appropriate for wire conductor with diameter 8-10 mm.

CAT. NUM.	TYPE	A	B	C	D	E	F	BOLT
91240102	12.4 K	200	20	57	30	Ø7	12	2×M6×16

To order a specific material option, replace last two digits into material equivalent from Material Options specification.

St/Zn 01 St/tZn 02 RAL 16

Distance holder: screwed or hammered



For wire or tape conductor wall fixing. Fixed into surface by screwing or hammering. Maximum distance between holders according to EN 62305-3:2011 should be 1 m. Appropriate for wire conductor with diameter 8-10 mm.

CAT. NUM.	TYPE	VERSION	A	B	C	D	E	F	G	BOLT
92400101	24.1	hammerd	20	57	160	30	Ø7	8	–	2×M6×16
92400201	24.2	hammerd	20	57	250	30	Ø7	8	–	2×M6×16
92401101	24.1/GW	threaded	20	57	160	30	Ø7	8	80	2×M6×16
92401201	24.2/GW	threaded	20	57	250	30	Ø7	8	80	2×M6×16

To order a specific material option, replace last two digits into material equivalent from Material Options specification.

St/Zn 01 Cu 03 StSt (V2A) 05 RAL 16

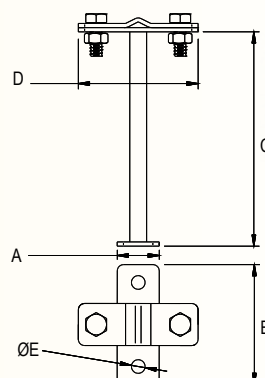
Screwed distance holder

For wire or tape conductor wall fixing. Fixed into surface by screwing in. Maximum distance between holders according to EN 62305-3:2011 should be 1 m. Appropriate for wire conductor with diameter 8-10 mm.

CAT. NUM.	TYPE	A	B	C	D	E	BOLT
96300102	63.1	20	57	100	57	Ø7	2×M6×16
96300202	63.2	20	57	50	57	Ø7	2×M6×16

To order a specific material option, replace last two digits into material equivalent from Material Options specification.

St/Zn	01	St/tZn	02	Cu	03	StSt (V2A)	05
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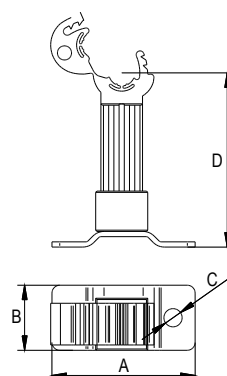
Screwed plastic clip distance holder

For wire conductor wall fixing. Fixed into surface by screwing in. Available colours: grey, black, brick. Appropriate only for wire conductor with diameter 8 mm.

CAT. NUM.	TYPE	A	B	C	D
96304102	63.1/P	55	20	7	70

To order a specific material option, replace last two digits into material equivalent from Material Options specification.

St/Zn	01	St/tZn	02	Cu	03	RAL	16
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available colours:



Wire conductor holder

For wire conductor wall or metal structure fixing. Two options available: one with a connector enabling to use double threaded screw & without a connector enabling screwing the holder to the surface directly on a flat surface. Appropriate for wire conductor with diameter 8-10 mm.

CAT. NUM.	TYPE	A	B	C	D	E	BOLT	NOTES
12500105	125.1	64	32	x	20	8-10	2×M6×16	without connector

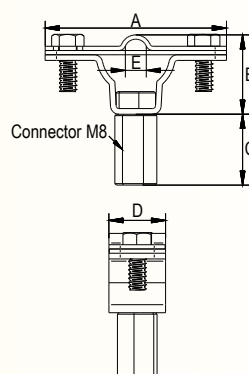
To order a specific material option, replace last two digits into material equivalent from Material Options specification.

St/Zn	01	St/tZn	02	StSt (V2A)	05
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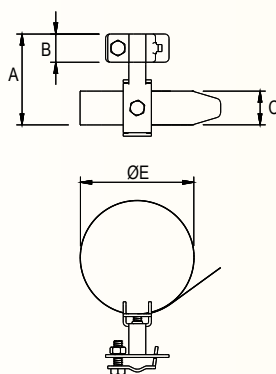
12501105	125.1.1	64	24	25	20	8-10	2×M6×16	with connector
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To order a specific material option, replace last two digits into material equivalent from Material Options specification.

StSt (V2A)



Stainless steel universal clamp



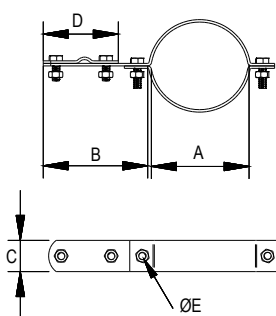
Used to fix the wire conductor to a drain pipe or any other hollow profile. Appropriate for wire conductor with diameter 8–10 mm.

CAT. NUM.	TYPE	A	B	C	E*	BOLT
96432105	64.1/U Ni	75	21	24	up to 80	2×M6×20
96432205	64.2/U Ni	75	21	24	up to 160	2×M6×20

StSt (V2A)

*Other sizes available on request.

Drainage pipe holder



Used to fix the wire conductor to a drain pipe. Appropriate for wire conductor with diameter 8–10 mm. Holders appropriate for different pipe diameters available on request.

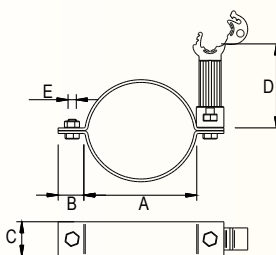
CAT. NUM.	TYPE	A	B	C	E	D
96410805	64.08/S	80	80	26	Ø7	60
96411005	64.10/S	100	80	26	Ø7	60

To order a specific material option, replace last two digits into material equivalent from Material Options specification.

Cu 03 StSt (V2A) 05 RAL 16

*Other sizes available on request.

Drainage pipe plastic clip holder



Used to fix the wire conductor to a drain pipe. Available colours: grey, black, brick. Appropriate only for wire conductor with diameter 8 mm.

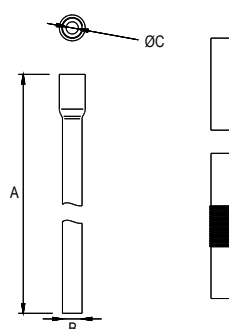
CAT. NUM.	TYPE	A	B	C	D	E
96420805	64.08/P	80	25	26	70	Ø7
96421005	64.10/P	100	25	26	70	Ø7

To order a specific material option, replace last two digits into material equivalent from Material Options specification.

Cu 03 StSt (V2A) 05 RAL 16

*Other sizes available on request.

Wire assembly lightning pipe



Used to mount the wire along or inside the wall. Sections of 2 & 3 m available. The shape of a pipe enables easy fixing one to another.

CAT. NUM.	TYPE	VERSION	A	B	C
10400208	104.1/2	pipe	2000	20	Ø12
10400308	104.1/3	pipe	3000	20	Ø12
10500108	105.1	straight coupling	–	–	–
10500208	105.2	flexible coupling	–	–	–

PVC

See also tape conductor assembly pipe–
Page 27.

UJ metal holder

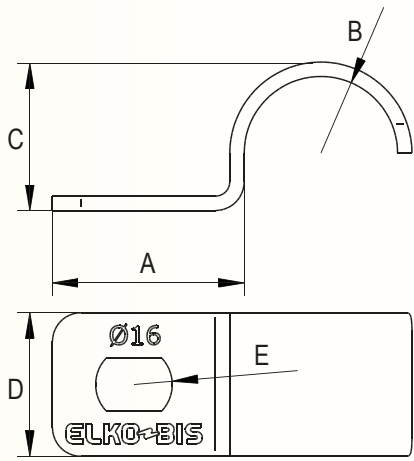
Used to mount different types of pipes: telecommuniacion, sanitary, electric instalations; steel or PVC. Vast sizes range available. Galvanized or varnished at any colour.



CAT. NUM.	TYPE	A	B	C	D	E
94700101	47.1	20	Ø16	15,5	15	5x8
94700201	47.2	20	Ø18	17,5	15	5x8
94700301	47.3	20	Ø20	19,5	15	5x8
94700401	47.4	20	Ø22	21,5	15	5x8
94700501	47.5	20	Ø28	27,5	15	5x8
94700601	47.6	20	Ø32	31,5	15	5x8
94700701	47.7	20	Ø37	36,5	15	5x8
94700801	47.8	20	Ø47	46,5	15	5x8
94700901	47.9	20	Ø40	39,5	15	5x8

To order a specific material option, replace last two digits into material equivalent from Material Options specification.

St/Zn 01 RAL 16



UD metal holder

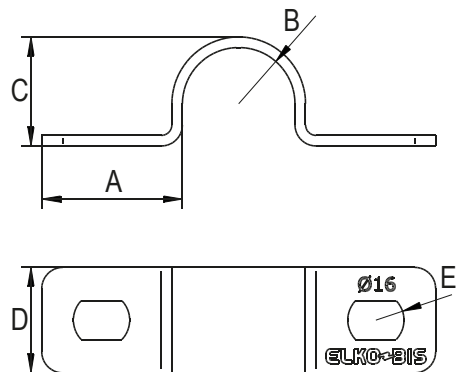
Used to mount different types of pipes: telecommuniacion, sanitary, electric instalations; steel or PVC. Vast sizes range available. Galvanized or varnished at any colour.



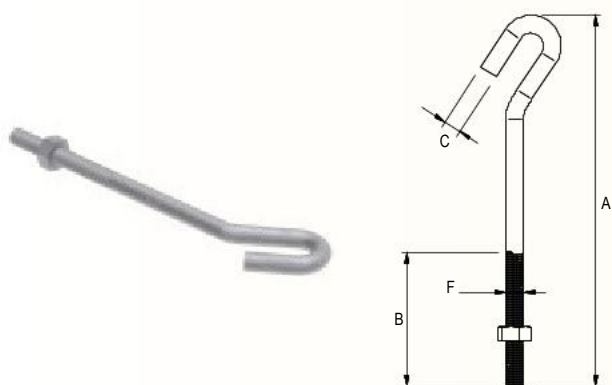
CAT. NUM.	TYPE	A	B	C	D	E
94800101	48.1	20	Ø16	15,5	15	5x8
94800201	48.2	20	Ø18	17,5	15	5x8
94800301	48.3	20	Ø20	19,5	15	5x8
94800401	48.4	20	Ø22	21,5	15	5x8
94800501	48.5	20	Ø28	27,5	15	5x8
94800601	48.6	20	Ø32	31,5	15	5x8
94800701	48.7	20	Ø37	36,5	15	5x8
94800801	48.8	20	Ø47	46,5	15	5x8
94800901	48.9	20	Ø40	39,5	15	5x8

To order a specific material option, replace last two digits into material equivalent from Material Options specification.

St/Zn 01 RAL 16



Tensioning holder



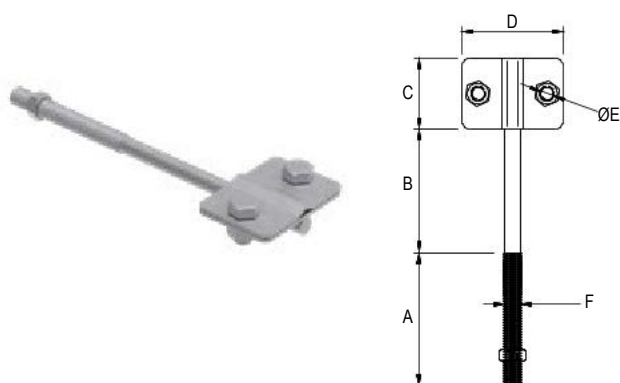
Holders 200 & 300 mm length are recommended to use together with a tensioning pipe or tensioning rod (cat. num 92800xxx). Longer holders (of 500 & 700 mm) are used for wire tensioning on the firewalls.

CAT. NUM.	TYPE	A	B	C	F
926000 02	26.0	200	75	8,6	M10
926001 02	26.1	300	75	8,6	M10
926002 02	26.2	500	75	8,6	M10
926003 02	26.3	700	75	8,6	M10

To order a specific material option, replace last two digits into material equivalent from Material Options specification.

St/Zn 01 St/tZn 02

Tensioning control connector



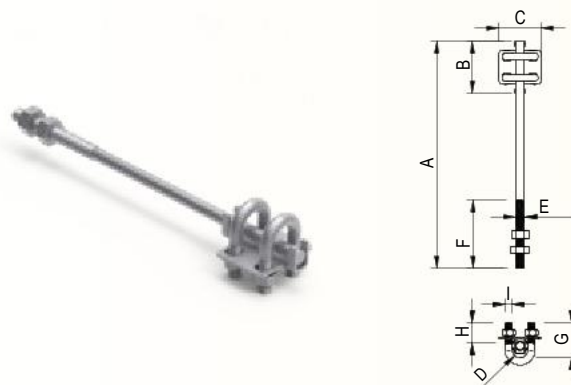
Used for wire conductor tensioning, recommended to use together with a tensioning pipe or tensioning rod (cat. num. 92800xxx). Appropriate for tensioning the wire conductor with diameter 8-10 mm.

CAT. NUM.	TYPE	A	B	C	D	E	F	BOLT
913001 02	13.1	75	70	40	57	Ø9	M10	2×M8×16

To order a specific material option, replace last two digits into material equivalent from Material Options specification.

St/Zn 01 St/tZn 02 StSt (V2A) 05

Tensioning clamp holder



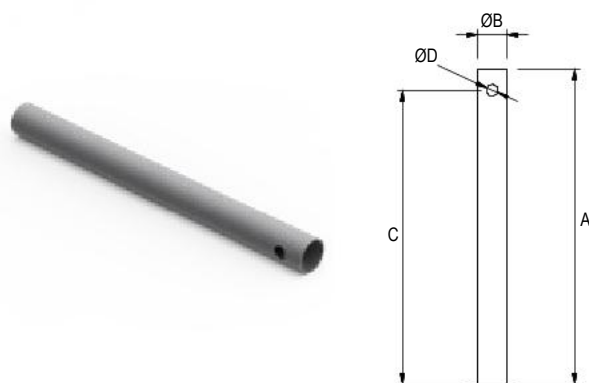
Used for wire conductor tensioning, recommended to use together with a tensioning pipe or tensioning rod (cat. num 92800xxx).

CAT. NUM.	TYPE	A	B	C	D	E	F	G	H	I
927001 02	27.1	250	57	46	Ø17	M10	75	38	24	M8

To order a specific material option, replace last two digits into material equivalent from Material Options specification.

St/Zn 01 St/tZn 02 StSt (V2A) 05

Tensioning pipe



Used for wire conductor tensioning, mounting to surface by hammering in or by using a chemical anchor.

CAT. NUM.	TYPE	A	B	C	D
928001 02	28.1	300	Ø27	280	Ø11
928002 02	28.2	400	Ø27	380	Ø11

To order a specific material option, replace last two digits into material equivalent from Material Options specification.

St/Zn 01 St/tZn 02 RAL 16

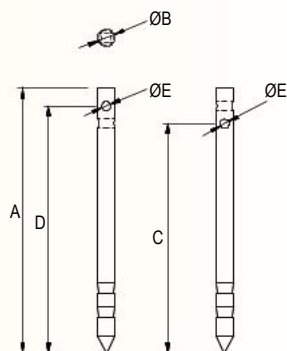
Tensioning rod

Used for wire conductor tensioning, mounting to surface by hammering in or by using a chemical anchor.

CAT. NUM.	TYPE	A	B	C	D	E
92800302	28.3	300	Ø20	260	280	10,5
92800402	28.4	400	Ø20	360	380	10,5

To order a specific material option, replace last two digits into material equivalent from Material Options specification.

St/Zn	01	St/tZn	02	StSt (V2A)	05
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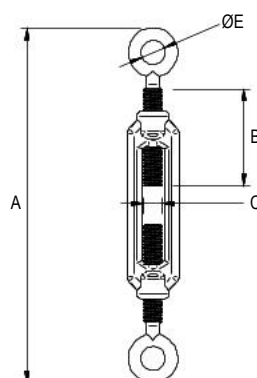
Turnbuckle screw „eye-eye“

Used for wire conductor tensioning.

CAT. NUM.	TYPE	A	B	C	E
93200101	32.1	167–247	80	M6	Ø9
93200201	32.2	179–254	84	M8	Ø10
93200301	32.3	210–295	105	M10	Ø14
93200401	32.4	230–310	115	M12	Ø16
93200501	32.5	250–340	122	M14	Ø18
93200601	32.6	330–440	165	M16	Ø22

St/Zn

*Other sizes available on request.



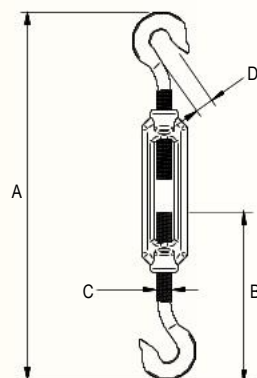
Turnbuckle screw „hook-hook“

Used for wire conductor tensioning.

CAT. NUM.	TYPE	A	B	C	D
93400101	34.1	180–260	85	M6	8,5
93400201	34.2	195–270	85	M8	11
93400301	34.3	230–315	112	M10	13,5
93400401	34.4	250–330	117	M12	15,51
93400501	34.5	280–370	122	M14	8,5
93400601	34.6	320–430	138	M16	19

St/Zn

*Other sizes available on request.



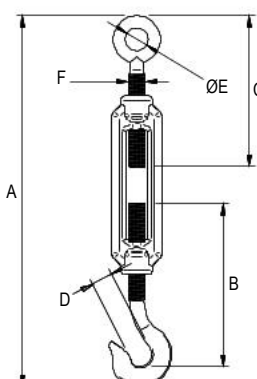
Turnbuckle screw „hook-eye“

Used for wire conductor tensioning.

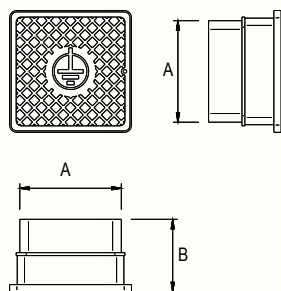
CAT. NUM.	TYPE	A	B	C	D	E	F
93500101	35.1	170–252	85	80	8,5	Ø9	M6
93500201	35.2	182–257	85	84	11	Ø10	M8
93500301	35.3	213–298	112	105	13,5	Ø14	M10
93500401	35.4	238–318	117	115	15,5	Ø16	M12
93500501	35.5	263–353	122	122	8,5	Ø18	M14
93500601	35.6	320–430	138	165	19	Ø22	M16

St/Zn

*Other sizes available on request.



Facade control pit



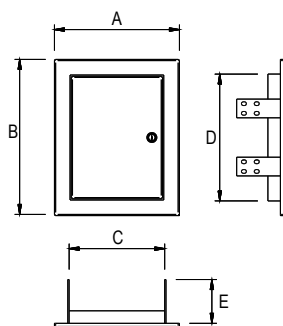
*Colour may slightly differ from sample. See also ground control pits – Page 30.

Used for separation points when mounting the wire conductor under the wall or in the thermal insulation layer. Mounting by drilling into the wall. Flammability class V0 acc to UL94, cover doors – UV resistant.

CAT. NUM.	TYPE	Colour*	A	B	BOLT
96800108	68.1/B	white	140	60	2×screw
96800208	68.2/B	white	140	100	2×screw
96801108	68.1/SZ	grey	140	60	2×screw
96801208	68.2/SZ	grey	140	100	2×screw

PVC

Inspection doors



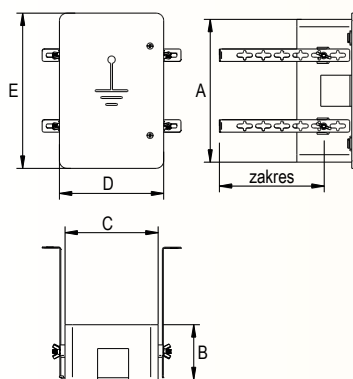
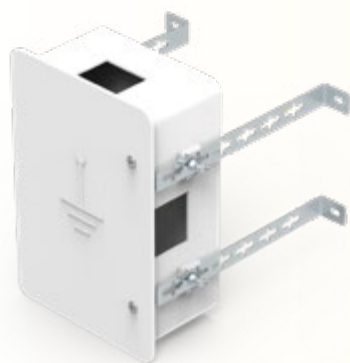
Used for separation points when mounting the wire conductor under the wall. Stainless steel frame and assembly parts. Mounting by drilling into the wall niche.

CAT. NUM.	TYPE	A	B	C	D	E
96800305	68.3	200	250	150	200	70

To order a specific material option, replace last two digits into material equivalent from Material Options specification.

Cu 03 StSt (V2A) 05 RAL 16

Facade control pit



*Colour may slightly differ from sample. See also ground control pits – Page 30.

Used for separation points when mounting the wire conductor under the wall or in the thermal insulation layer. Mounting by drilling into the wall using adjustable angle brackets. Regulated brackets allow to adjust embedding depth by manual break of narrowing points. Flammability class V0 acc to UL94, cover doors – UV resistant. Assembly kit consist 4 sets of brackets allowing assembly in insulation with a thickness up to 20 cm.

CAT. NUM.	TYPE	COLOUR*	INSERTION DEPTH	A	B	C	D	E
96801408	68.4/B	white	35-200	230	85	150	168	250
96802408	68.4/SZ	grey	35-200	230	85	150	168	250
96803408	68.4/K	cream	35-200	230	85	150	168	250
96804408	68.4/BR	brown	35-200	230	85	150	168	250

ABS

GROUP IV Air Termination



BE AWARE!

Best solution for varnished under tile holders is choice of screwed type holders.

Angle wire holder

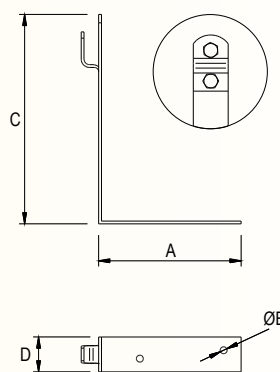
For fixing wire on the roof surface covered with bituminous and wooden shingle. Screwed or nailed. Use screwed type holders for wire with diameter 10 mm. Holder allows to lead the wire along the roof edge.

CAT. NUM.	TYPE	VERSION	A	C	D	E
91000102	10.1	clinched	100	150	25	5
91000702	10.1.1	clinched	100	100	25	5
91001102	10.1/S	screwed	100	150	25	5
91001602	10.1.1/S	screwed	100	100	25	5

To order a specific material option, replace last two digits into material equivalent from Material Options specification.

St/tZn 02 Cu 03 RAL 16

We varnish only the screwed version.



Twisted angle wire holder

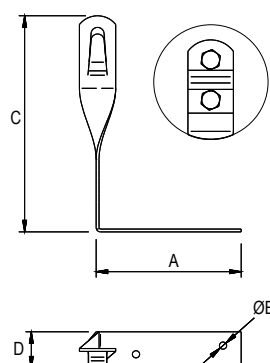
For fixing wire on the roof surface covered with bituminous and wooden shingle. Screwed or nailed. Use screwed type holders for wire with diameter 10 mm. Holder allows to lead the wire along the roof edge.

CAT. NUM.	TYPE	VERSION	A	C	D	E
91100102	11.1	clinched	100	150	25	Ø5
91100702	11.1.1	clinched	100	100	25	Ø5
91101102	11.1/S	screwed	100	150	25	Ø5
91101602	11.1.1/S	screwed	100	100	25	Ø5

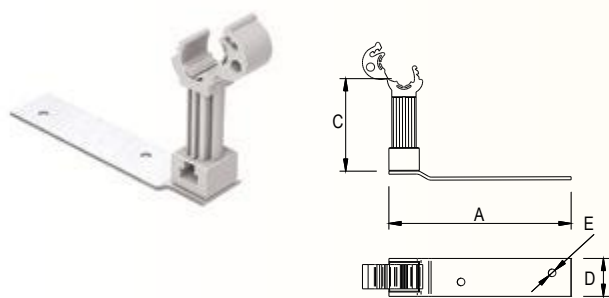
To order a specific material option, replace last two digits into material equivalent from Material Options specification.

St/tZn 02 Cu 03 RAL 16

We varnish only the screwed version.



PVC angle wire holder



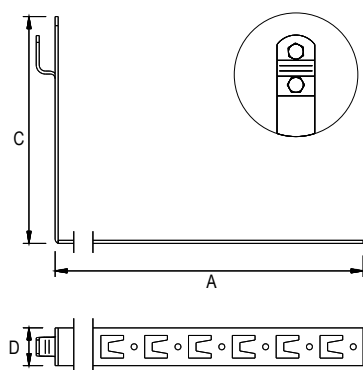
For fixing wire on the roof surface covered with bituminous and wooden shingle. Screwed or nailed. Appropriate only for wire conductor with diameter 8 mm. Holder allows to lead the wire along the roof edge.

CAT. NUM.	TYPE	A	C	D	E
91002002	10.1/P	120	70	25	Ø5

To order a specific material option, replace last two digits into material equivalent from Material Options specification.

St/tZn	02	Cu	03	RAL	16
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Under tile wire holder with hook



For fixing wire on the roof surface covered with flat tiles. Screwed, nailed or hooked to the tile, using embossed hook. Use screwed type holders for wire with diameter 10 mm. Holder allows to lead the wire along the roof edge.

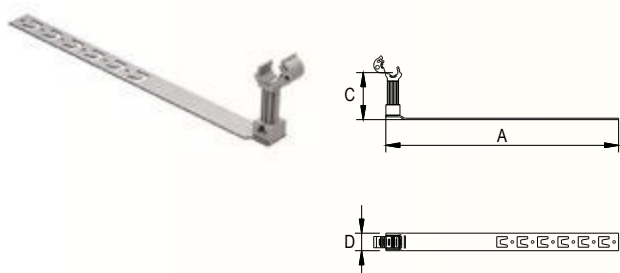
CAT. NUM.	TYPE	VERSION	A	C	D
91002402	10.2/Z	clinched	330	150	25
91002502	10.3/Z	clinched	415	150	25
91002602	10.4/Z	clinched	450	150	25
91002702	10.2.1/Z	clinched	330	100	25
91002802	10.3.1/Z	clinched	415	100	25
91002902	10.4.1/Z	clinched	450	100	25
91003002	10.2/Z/S	screwed	330	150	25
91003102	10.3/Z/S	screwed	415	150	25
91003202	10.4/Z/S	screwed	450	150	25
91003302	10.2.1/Z/S	screwed	330	100	25
91003402	10.3.1/Z/S	screwed	415	100	25
91003502	10.4.1/Z/S	screwed	450	100	25

To order a specific material option, replace last two digits into material equivalent from Material Options specification.

St/tZn	02	Cu	03	RAL	16
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We varnish only the screwed version.

PVC under tile wire holder with hook



For fixing wire on the roof surface covered with flat tiles. Screwed, nailed or hooked to the tile, using embossed hook. Appropriate only for wire conductor with diameter 8 mm. Holder allows to lead the wire along the roof edge.

CAT. NUM.	TYPE	A	C	D
91003702	10.2/Z/P	330	70	25
91003802	10.3/Z/P	415	70	25
91003902	10.4/Z/P	450	70	25

To order a specific material option, replace last two digits into material equivalent from Material Options specification.

St/tZn	02	Cu	03	RAL	16
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Twisted under tile wire holder with hook

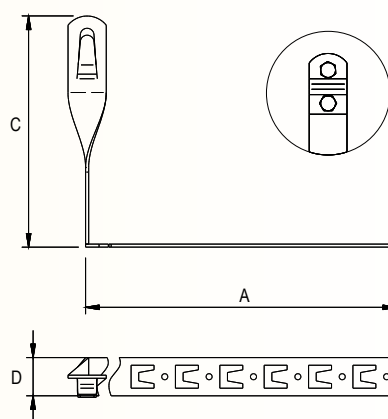
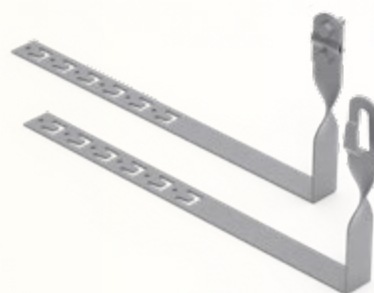
For fixing wire on the roof surface covered with flat tiles. Screwed, nailed or hooked to the tile, using embossed hook. Appropriate only for wire conductor with diameter 8 mm. Holder allows to lead the wire along the roof edge.

CAT. NUM.	TYPE	VERSION	A	C	D
91102402	11.2/Z	clinched	330	150	25
91102502	11.3/Z	clinched	415	150	25
91102602	11.4/Z	clinched	450	150	25
91102702	11.2.1/Z	clinched	330	100	25
91102802	11.3.1/Z	clinched	415	100	25
91102902	11.4.1/Z	clinched	450	100	25
91103002	11.2/Z/S	screwed	330	150	25
91103102	11.3/Z/S	screwed	415	150	25
91103202	11.4/Z/S	screwed	450	150	25
91103302	11.2.1/Z/S	screwed	330	100	25
91103402	11.3.1/Z/S	screwed	415	100	25
91103502	11.4.1/Z/S	screwed	450	100	25

To order a specific material option, replace last two digits into material equivalent from Material Options specification.

St/tZn 02 Cu 03 RAL 16

We varnish only the screwed version.



Under tile wire holder with hook

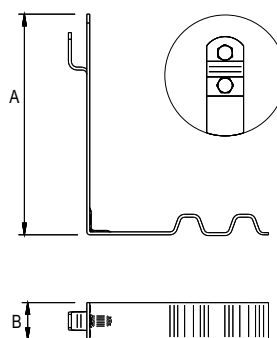
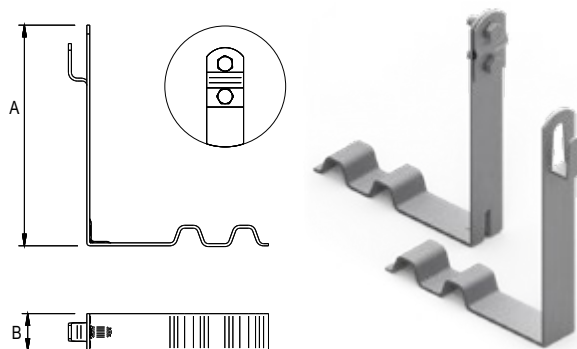
For fixing wire on the roof surface covered with flat tiles. Screwed, nailed or hitched to the tile, using embossed hitch. Use screwed type holders for wire with diameter 10 mm. Holder allows to lead the wire along the roof edge.

CAT. NUM.	TYPE	VERSION	A	B
91005002	10.5	clinched	150	25
91008002	10.5.1	clinched	100	25
91006002	10.5/S	screwed	150	25
91009002	10.5.1/S	screwed	100	25

To order a specific material option, replace last two digits into material equivalent from Material Options specification.

St/tZn 02 Cu 03 StSt (V2A) 05 RAL 16

We varnish only the screwed version.



When placing an order, specify the version

Check the tile profiles and list of wire holders at pages 148-149.

Twisted under tile wire holder with hook

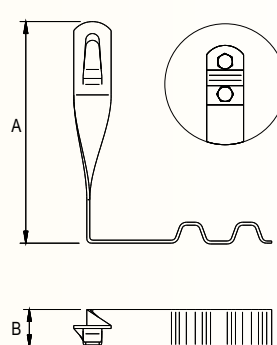
For fixing wire on the roof surface covered in ceramic roof tiles with lock. Applied to lock between roof tiles. Use screwed type holders for wire with diameter 10 mm. Holder allows to lead the wire along the roof edge.

CAT. NUM.	TYPE	VERSION	A	B
91105002	11.5	clinched	150	25
91108002	11.5.1	clinched	100	25
91106002	11.5/S	screwed	150	25
91109002	11.5.1/S	screwed	100	25

To order a specific material option, replace last two digits into material equivalent from Material Options specification.

St/tZn 02 Cu 03 StSt (V2A) 05 RAL 16

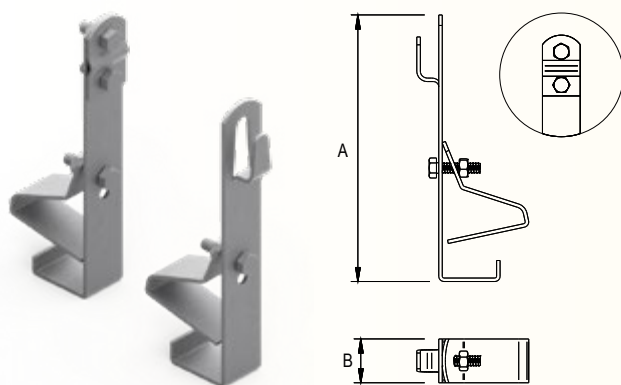
We varnish only the screwed version.



When placing an order, specify the version

Check the tile profiles and list of wire holders at pages 148-149.

Universal wire holder



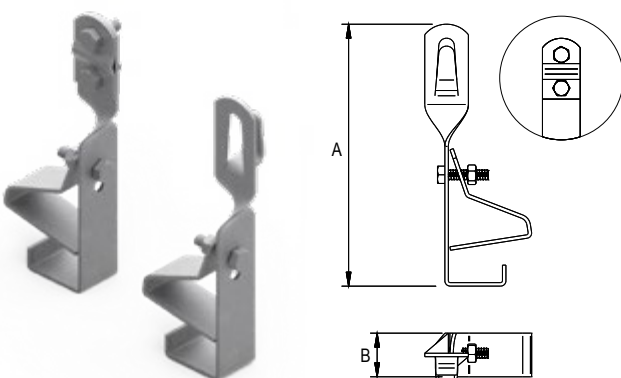
For fixing wire on the roof surface covered in ceramic or concrete roof tiles. Clinched to tile front. Clinching makes holder useful to all tile types. Use screwed type holders for wire with diameter 10 mm. Holder allows to lead the wire along the roof edge.

CAT. NUM.	TYPE	VERSION	A	B
91010002	10.6	clinched	150	25
91010102	10.6/S	screwed	150	25

To order a specific material option, replace last two digits into material equivalent from Material Options specification.

St/tZn 02 Cu 03 StSt (V2A) 05 RAL 16 We varnish only the screwed version.

Twisted universal wire holder



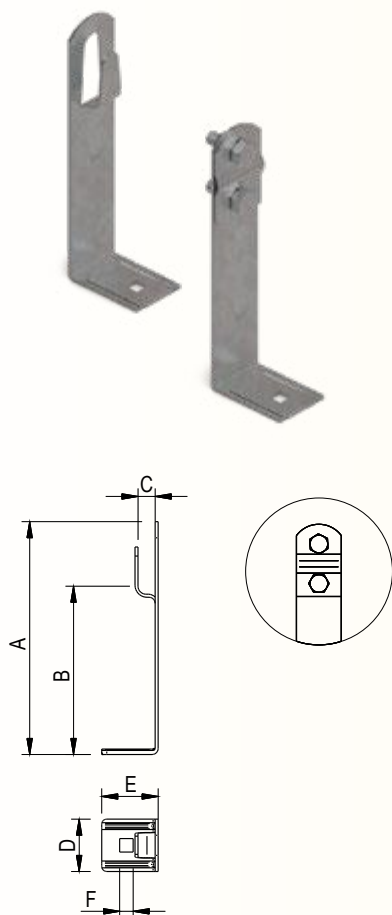
For fixing wire on the roof surface covered in ceramic or concrete roof tiles. Clinched to tile front. Clinching makes holder useful to all tile types. Use screwed type holders for wire with diameter 10 mm. Holder allows to lead the wire along the roof edge.

CAT. NUM.	TYPE	VERSION	A	B
91110002	11.6	clinched	150	25
91110102	11.6/S	screwed	150	25

To order a specific material option, replace last two digits into material equivalent from Material Options specification.

St/tZn 02 Cu 03 StSt (V2A) 05 RAL 16 We varnish only the screwed version.

Universal wire holder



For fixing wire on the roof surface covered in trapezoidal sheet, steel panel tiles or tar board shingle. Self-drilled to surface using self drilling screw 99900101- separate order. Use screwed type holders for wire with diameter 10 mm. Holder allows to lead the wire along the roof edge.

CAT. NUM.	TYPE	VERSION	A	B	C	D	E	F
95902102	59.1B	clinched	115	84	8,5	26	28	7
95912102	59.1B/S	screwed	115	94	8-10	26	28	7

To order a specific material option, replace last two digits into material equivalent from Material Options specification.

St/Zn 01 St/tZn 02 Cu 03 StSt (V2A) 05 RAL 16

We varnish only the screwed version.

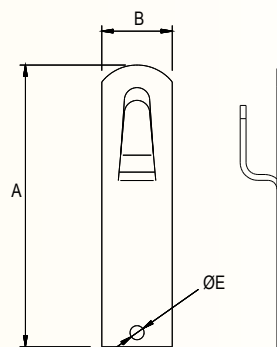
GERARD, TILCOR type wire holder

For fixing wire on the roof surface covered in GERARD or TILCOR type roof tile. Self-drilled to tile front using self-drilling screw 99900101. Appropriate only for wire conductor with diameter 8 mm. This holder allows the wire along the roof edge.

CAT. NUM.	TYPE	VERSION	A	B	E
91010202	10.7	clinched	110	25	Ø5
91012202	10.7/S	screwed	110	25	Ø5

To order a specific material option, replace last two digits into material equivalent from Material Options specification.

St/tZn	02	Cu	03	RAL	16
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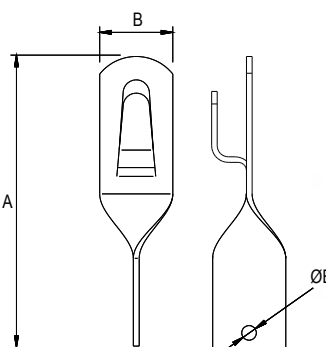
Twisted GERARD, TILCOR type wire holder

For fixing wire on the roof surface covered in GERARD or TILCOR type roof tile. Self-drilled to tile front using self-drilling screw 99900101. Appropriate only for wire conductor with diameter 8 mm. This holder allows perpendicular lead to roof edge.

CAT. NUM.	TYPE	VERSION	A	B	E
91110202	11.7	clinched	110	25	Ø5
91140202	11.7/S	screwed	110	25	Ø5

To order a specific material option, replace last two digits into material equivalent from Material Options specification.

St/tZn	02	Cu	03	RAL	16
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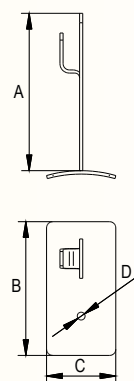
Perforated „Eurofala“ steel sheet roof holder

To lead wire conductor over the roofs covered in perforated Eurofala type steel sheets. Screwed into the surface.

CAT. NUM.	TYPE	A	B	C	D
91080002	10.1 FALA B5	100	85	44	Ø5
91090002	10.1/S FALA B5	100	85	44	Ø5

To order a specific material option, replace last two digits into material equivalent from Material Options specification.

St/Zn	01	St/tZn	02
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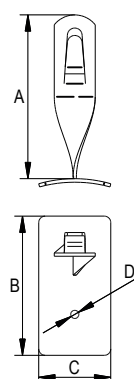
Twisted perforated „Eurofala“ steel sheet roof holder

To lead wire conductor over the roofs covered in perforated Eurofala type steel sheets. Screwed into the surface.

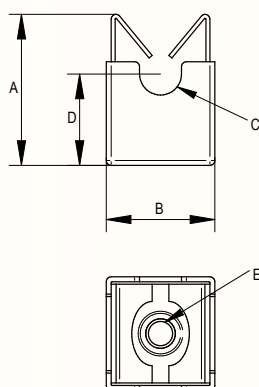
CAT. NUM.	TYPE	A	B	C	D
91180002	11.1 FALA B5	100	85	44	Ø5
91190002	11.1/S FALA B5	100	85	44	Ø5

To order a specific material option, replace last two digits into material equivalent from Material Options specification.

St/Zn	01	St/tZn	02
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Low profiled wire holder



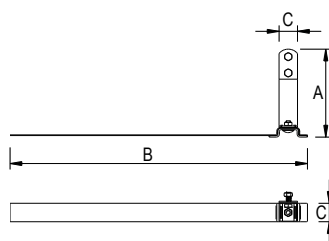
Screwless support system with loose leading of 8 mm diameter wire. Used on roofs covered in steel panel tiles or tar board shingle, also for wall/facade mounting. Fastened to surface with fixing extension plugs (ordered separately). Holder allows to lead wire parallel and perpendicular to roof edge.

CAT. NUM.	TYPE	A	B	C	D	E
25902105	–	31	22	Ø8	18,5	M6

StSt (V2A)

NEW

Tape universal under tile wire holder

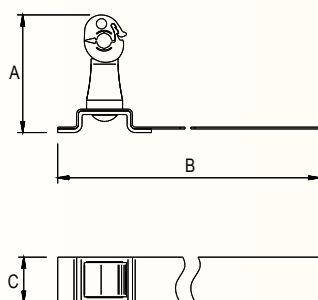


For fixing wire on the roof surface covered in roof tiles with lock. Tape is made of bendable aluminium, allowing easy adoption to each type of roof tile. Steel fixing element type St/Zn, St/tZn or RAL. Holder allows to lead wire parallel and perpendicular to roof edge.

CAT. NUM.	TYPE	A	B	C
91004009	10.10/S AL	120	400	25

Al

PVC tape universal under tile wire holder



available colours:

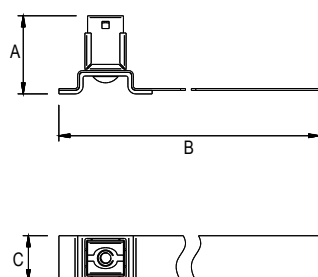


For fixing wire on the roof surface covered in roof tiles with lock. Tape is made of bendable aluminium, allowing easy adoption to each type of roof tile. Plastic clip holder. Holder allows to lead wire parallel and perpendicular to roof edge.

CAT. NUM.	TYPE	A	B	C
91004101	10.10/P	70	400	25

Al

Low profiled tape universal under tile wire holder



For fixing wire on the roof surface covered in roof tiles with lock. Tape is made of bendable aluminium, allowing easy adoption to each type of roof tile. Stainless steel grip element. Holder allows to lead wire parallel and perpendicular to roof edge.

CAT. NUM.	TYPE	A	B	C
21004005	–	44	400	25

StSt (V2A)

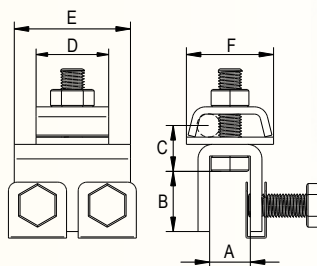
Seam wire holder

To lead wire conductor over the steel sheets ribs.

CAT. NUM.	TYPE	A	B	C	D	E	F	BOLT
99600102	96.0	14	21	16	25	40	30	2xM8x20; M8x30
99600202	96.1	25	21	16	25	40	30	2xM8x20; M10x35

To order a specific material option, replace last two digits into material equivalent from Material Options specification.

St/Zn	01	St/tZn	02	Cu	03	StSt (V2A)	05
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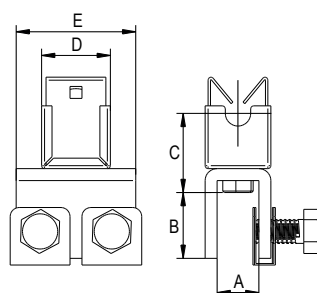
Seam wire holder

To lead wire conductor over the steel sheets ribs.

CAT. NUM.	TYPE	A	B	C	D	E	BOLT
99604102	-	14	22	26,5	23	40	2xM8x20; M6x16

To order a specific material option, replace last two digits into material equivalent from Material Options specification.

St/Zn	01	St/tZn	02	StSt (V2A)	05
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NEW

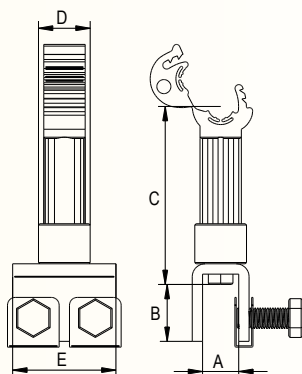
Seam wire holder

To lead wire through lap joints of steel covers. Plastic tip end gives distance and insulation. Appropriate for wire conductor with diameter 6-8 mm. Quick and easy assembly. Rotating tip end.

CAT. NUM.	TYPE	A	B	C	D	E	BOLT
99610102	96.0/P	14	22	69	20	40	2xM8x20; M6x16

To order a specific material option, replace last two digits into material equivalent from Material Options specification.

St/Zn	01	St/tZn	02	Cu	03	StSt (V2A)	05
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available colours:

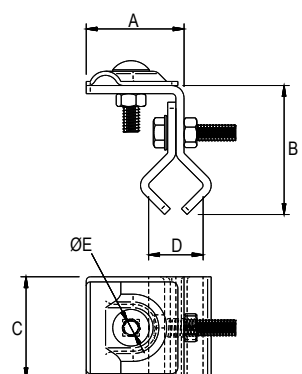


Universal seam wire holder - small

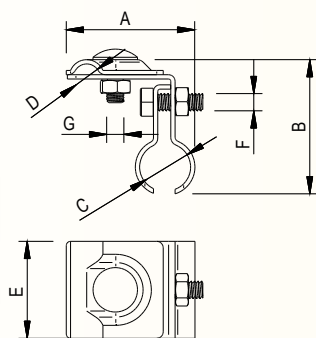
Used as a leading and supporting element at non typical LPS installations. Fits with Kalzip steel sheets.

CAT. NUM.	TYPE	A	B	C	D	E	BOLT
99603109	96.0/M	45	70	55	Ø16 + Ø30	Ø8,5	M8x30

Al



Kalzip type wire holder



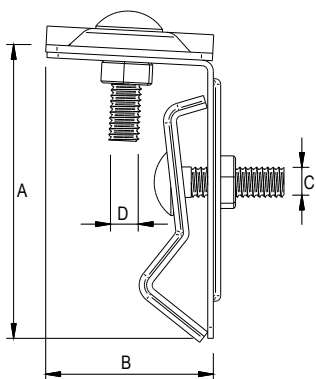
To mount wire conductor on a Kalzip type roof sheets. Rounded fastening part, ensures secure grip without damaging roof sheet surface.

CAT. NUM.	TYPE	A	B	C	D	E	F	G
99603205	96.3	60	62	Ø22	Ø10	45	M8×25	M8×25

StSt (V2A)

NEW

Seam wire holder



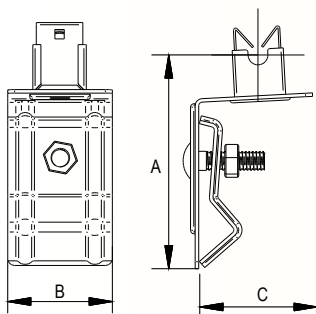
To lead wire conductor over the steel sheets ribs.

CAT. NUM.	TYPE	A	B	C	D
99600302	96.2	80	45	M8	M8

To order a specific material option, replace last two digits into material equivalent from Material Options specification.

St/Zn 01 St/tZn 02 StSt (V2A) 05

Seam wire holder



To lead wire conductor over the steel sheets ribs.

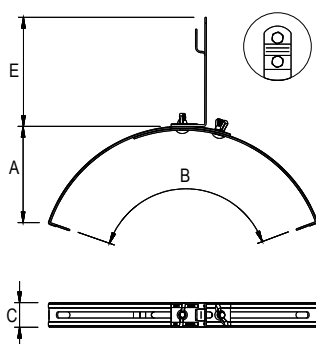
CAT. NUM.	TYPE	A	B	C
99601302	-	92	45	45

To order a specific material option, replace last two digits into material equivalent from Material Options specification.

St/Zn 01 St/tZn 02 StSt (V2A) 05

NEW

Universal ridge tile wire holder G5



For fixing wire on the roof tops covered in roof tiles. Large adjustment/regulation scale, allows assembly to the majority of ridge tiles. Use screwed holders for wire with diameter 10mm.

CAT. NUM.	TYPE	VERSION	A	B	C	E	BOLT
95900102	59.1	clinched	65	200–390	26	115	2×M6×16
95910102	59.1/5	screwed	65	200–390	26	115	2×M6×16

To order a specific material option, replace last two digits into material equivalent from Material Options specification.

St/Zn 01 St/tZn 02 Cu 03 StSt (V2A) 05 RAL 16

We varnish only the screwed version.

See also ridge tile spires
– Page 84–85.

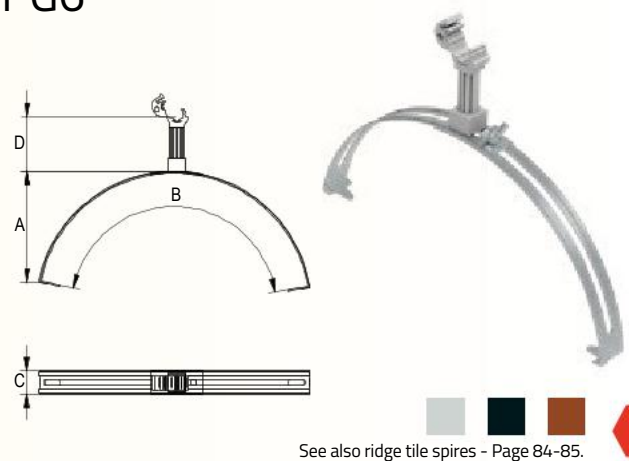
PVC universal ridge tile wire holder G6

For fixing wire on the roof tops covered in roof tiles. Large adjustment/regulation scale, allows assembly to the majority of ridge tiles. Appropriate only for wire conductor with diameter 8 mm. Plastic made wire fixing element.

CAT. NUM.	TYPE	A	B	C	D	BOLT
95900202	59.2	65	200-390	26	70	M6×16

To order a specific material option, replace last two digits into material equivalent from Material Options specification.

St/Zn	01	St/tZn	02	Cu	03	StSt (V2A)	05	RAL	16
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See also ridge tile spires - Page 84-85.

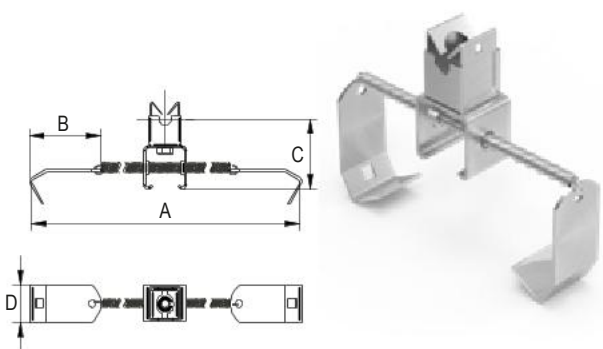
Universal ridge tile holder

To lead wire conductor on a roof tops covered in ceramic or steel sheet roof tiles. Flexible spring mounting to ridge tile, fits with majority of ridge tile types. Appropriate only for wire conductor with diameter 8 mm.

CAT. NUM.	TYPE	A	B	C	D
25910105	-	140-400	55	48,5	26
25910205	-	400-700	55	48,5	26

NEW

StSt (V2A)

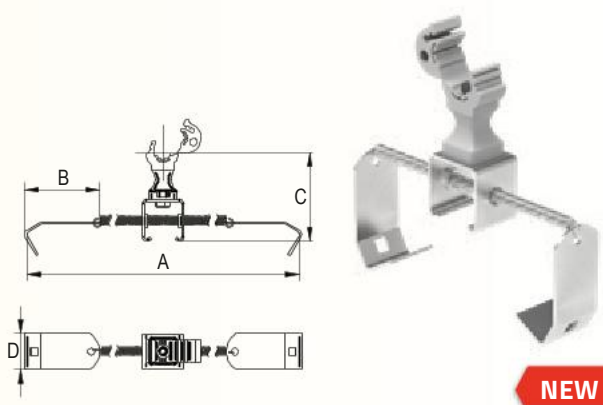


Universal ridge tile holder with plastic clip wire holder

To lead wire conductor on a roof tops covered in ceramic or steel sheet roof tiles. Flexible spring mounting to ridge tile, fits with majority of ridge tile types. Appropriate only for wire conductor with diameter 8 mm.

CAT. NUM.	TYPE	A	B	C	D
25920105	-	140-400	55	64	26
25920205	-	400-700	55	64	26

StSt (V2A)



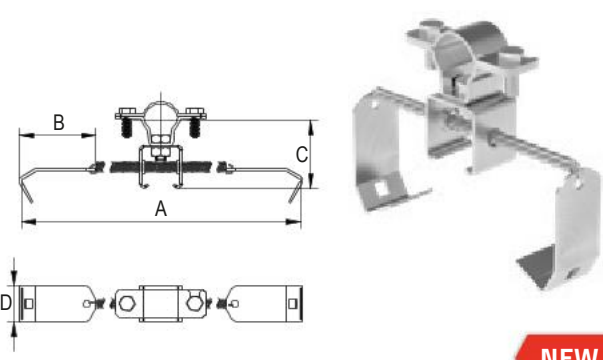
NEW

Universal ridge tile holder for high voltage cable

To lead High Voltage Insulated Cable on a roof tops covered in ceramic or steel sheet roof tiles. Flexible spring mounting to ridge tile, fits with majority of ridge tile types.

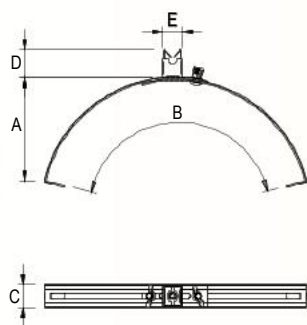
CAT. NUM.	TYPE	A	B	C	D
25930105	-	140-400	55	47,5	26
25930205	-	400-700	55	47,5	26

StSt (V2A)



NEW

Low profiled ridge tile wire holder



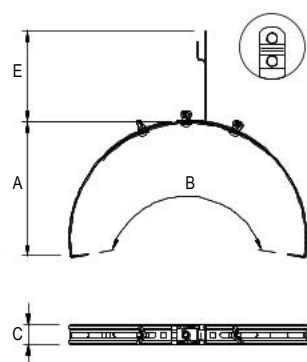
For fixing wire on the roof tops covered in roof tiles. Large adjustment/regulation scale, allows assembly to most of ridge tiles. Appropriate only for wire conductor with diameter 8 mm. Stainless steel fixing element. Wire can be lead on the side of ridge tile.

CAT. NUM.	TYPE	A	B	C	D	E
25900102	—	65	200–390	26	31	20

To order a specific material option, replace last two digits into material equivalent from Material Options specification.

St/Zn 01 St/tZn 02 StSt (V2A) 05

Universal ridge tile wire holder G5 MAX



For fixing wire on the roof tops covered in roof tiles and sheet panel tiles. Large adjustment/regulation scale, allows assembly to most of ridge tiles. Use screwed holders for wire with diameter 10 mm.

CAT. NUM.	TYPE	VERSION	A	B	C	E	BOLT
95901102	59.1 MAX	clinched	160	430–550	26	115	3×M6×16
95911102	59.1/S MAX	screwed	160	430–550	26	115	3×M6×16

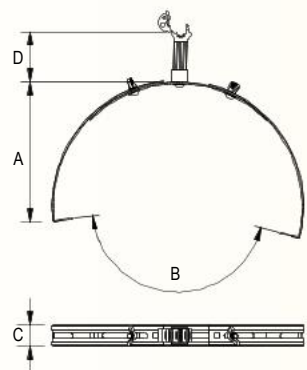
To order a specific material option, replace last two digits into material equivalent from Material Options specification.

St/Zn 01 St/tZn 02 Cu 03 StSt (V2A) 05 RAL 16

We varnish only the screwed version.

See also ridge tile spires
– Page 84–85.

PVC universal ridge tile wire holder G6 MAX



For fixing wire on the roof tops covered in roof tiles and sheet panel tiles. Large adjustment/regulation scale, allows assembly to most of ridge tiles. Appropriate only for wire conductor with diameter 8 mm. Plastic made wire fixing element.

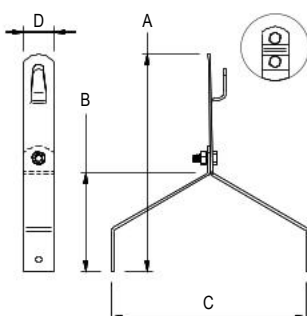
CAT. NUM.	TYPE	A	B	C	D	BOLT
95901202	59.2 MAX	160	430–550	26	70	2×M6×16

To order a specific material option, replace last two digits into material equivalent from Material Options specification.

St/Zn 01 St/tZn 02 Cu 03 StSt (V2A) 05 RAL 16

See also ridge tile spires
– Page 84–85.

Ridge tile wire holder gerard Corona/Senator/Tilcor



For fixing wire on the roof tops covered in roof tiles Types: GERRARD Corona, Tilcor and Senator. Self-drilled to ridge tile using 99900101 self-drilling screws – ordered separately. Use screwed holders for wire with diameter 10 mm.

CAT. NUM.	TYPE	VERSION	A	B	C	D
95900302	59.3	clinched	180	80	160	25
95910302	59.3/S	screwed	180	80	160	25

To order a specific material option, replace last two digits into material equivalent from Material Options specification.

St/tZn 02 Cu 03 RAL 16

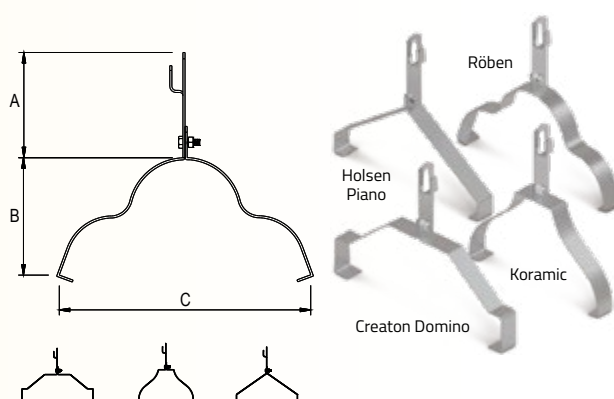
Ridge tile wire holder

For fixing wire on the roof tops covered in particular roof tiles types: stated in a table sheet. Appropriate profile exactly fits on the ridge tile. Screw use assembly.

CAT. NUM.	TYPE	RIDGE TILE TYPE	A	B	C
95930102	–	Creaton Domino	100	100	275
95930202	–	Röben	100	110	248
95930302	–	Koramic 2	100	118	208
95930402	–	Holsen Piano	100	103	235

To order a specific material option, replace last two digits into material equivalent from Material Options specification.

St/tZn 02 Cu 03 RAL 16



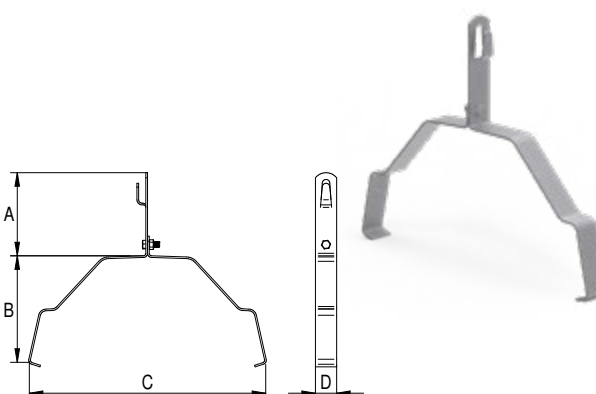
Ridge tile wire holder Creaton Simpla

For fixing wire on the roof tops covered in roof tiles Creaton Simpla. Appropriate profile exactly fits on the ridge tile. Screw use assembly.

CAT. NUM.	TYPE	VERSION	A	B	C	D
95931002	59.1	clinched	100	126	280	25
95941002	59.1/S	screwed	100	126	280	25

To order a specific material option, replace last two digits into material equivalent from Material Options specification.

St/tZn 02 Cu 03 StSt (V2A) 05



Roof top wire holder

For fixing wire on the roof tops covered in steel sheets or tar board shingle. Screwed or nailed. Use screwed holders for wire with diameter 10 mm.

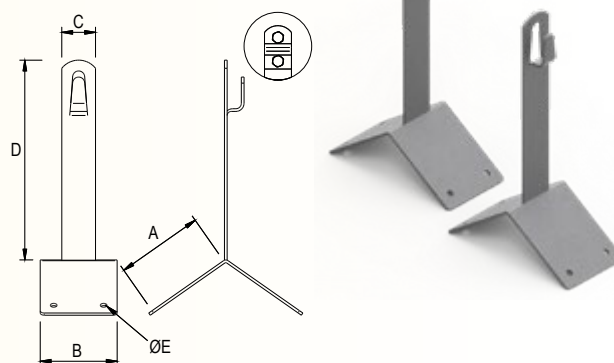
Glue assembly details, see: www.elkobis.com.

CAT. NUM.	TYPE	VERSION	A	B	C	D	E
92000102	20.1	clinched	70	57	25	150	5
92000402	20.1.1	clinched	70	57	25	100	5
92000202	20.1/S	screwed	70	57	25	150	5
92000502	20.1.1/S	screwed	70	57	25	100	5

To order a specific material option, replace last two digits into material equivalent from Material Options specification.

St/Zn 01 St/tZn 02 Cu 03 RAL 16

We varnish only the screwed version.



PVC roof top wire holder

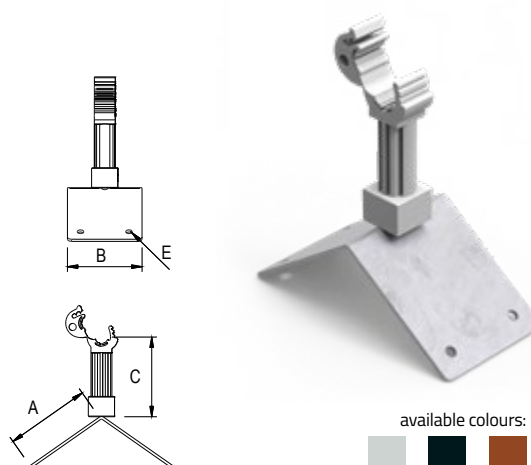
For fixing wire on the roof tops covered in steel sheets or tar board shingle. Screwed or nailed. Appropriate only for wire conductor with diameter 8 mm.

Glue assembly details, see: www.elkobis.com.

CAT. NUM.	TYPE	A	B	C	E
92000302	20.1/P	70	57	70	Ø5

To order a specific material option, replace last two digits into material equivalent from Material Options specification.

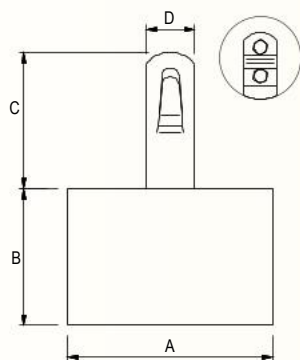
St/Zn 01 St/tZn 02 Cu 03 RAL 16



available colours:



Concrete wire holder



Use Adhesive Mass for gluing
– Page 109

For fixing wire on the flat roofs. Can be glued to roof surface using glueing composition 99401099. Use screwed holders for wire with diameter 10 mm.

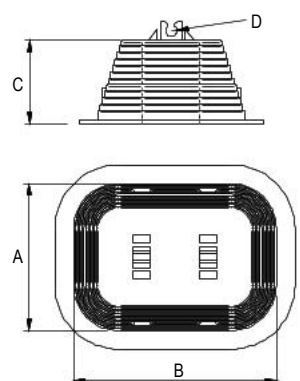
Glue assembly details, see: www.elkobis.com.

CAT. NUM.	TYPE	VERSION	A	B	C	D	WEIGHT
92900105	29.1	clinched	105	70	70	26	~1,3 kg
92900205	29.1/S	screwed	105	70	70	26	~1,4 kg

To order a specific material option, replace last two digits into material equivalent from Material Options specification.

Cu 03 StSt (V2A) 05

PVC covered concrete wire holder



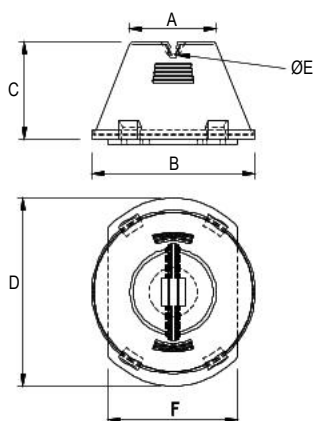
For fixing wire on the flat roofs. Can be glued to roof surface using glueing composition 99401099 (only option with concrete bottom).

Glue assembly details, see: www.elkobis.com.

CAT. NUM.	TYPE	A	B	C	D	WEIGHT
93000211	30.2	105	145	60	6–8	~1,1 kg
93010211	30.2 FI 10	105	145	60	10	~1,0kg

PVC

PVC covered concrete conductor holder



For fixing wire conductor over the flat roofs. Assembly height of 10 cm for flammable roof covers. Fixed to surface using ELKO-FIX adhesive 99300199 or membrane glue 11000599. Appropriate only for wire conductor with diameter 8 mm. Assembly details on www.elkobis.com.

CAT. NUM.	TYPE	DESCRIPTION	A	B	C	D	E	F	WEIGHT
93001111	30.1.1	concrete bottom	70	130	75	–	6–8	–	~1,2 kg
93002111	30.1.2	plastic bottom	70	135	75	–	6–8	–	~1,0 kg
93005111	–	concrete bottom	70	130	75	–	8–10	–	~1,3 kg
93006111	–	plastic bottom	70	135	75	–	8–10	–	~0,9 kg
93003211	30.1.3	cliped bottom	–	–	–	155	–	107	–

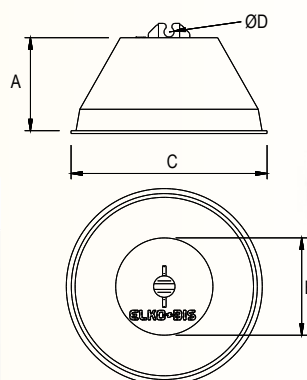
PVC

PVC covered concrete wire holder

For fixing wire on the flat roofs. Can be glued to roof surface using glueing composition 99401099 (only option with concrete bottom).

Glue assembly details, see: www.elkobis.com.

CAT. NUM.	TYPE	DESCRIPTION	A	B	C	D	WEIGHT
93000111	30.1	concrete bottom	75	70	130	6-8	~1,1 kg
93020111	30.1D PL	plastic bottom	75	70	138	6-8	~1,1 kg
93010111	–	concrete bottom	75	70	130	8-10	~1,0 kg
93030111	–	plastic bottom	75	70	138	8-10	~1,1 kg



High profiled PVC covered concrete wire holder

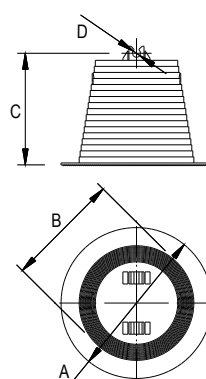
For fixing conductor over the flat roofs. Assembly height of 10 cm for flammable roof covers. Can be glued to roof surface using glueing composition ELKO-FIX 99300199 or membrane glue 11000599.

Glue assembly details, see: www.elkobis.com.

CAT. NUM.	TYPE	A	B	C	D	WEIGHT
93001211	30.2.1	150	114	111	Ø8	~1,4 kg
93011211	30.2.1 FI 10	150	114	111	Ø10	~1,4 kg

NEW

PVC



Use Adhesive Mass for gluing
– Page 109

High profiled PVC covered concrete wire holder

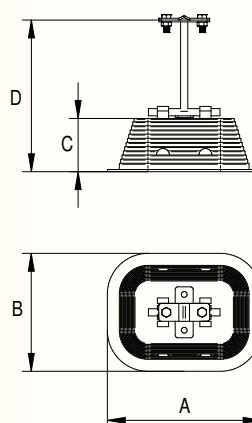
For fixing wire over the flat roofs. Assembly 16 cm height use 93070211 holder. Concrete PVC covered holder can be glued to roof surface using glueing composition ELKO-FIX 99300199 or membrane glue 11000599.

Glue assembly details, see: www.elkobis.com.

CAT. NUM.	TYPE	A	B	C	D	WEIGHT
93050211	30.2/W	170	130	60	160	~1,2 kg

PVC

Other dimensions (D) on request.



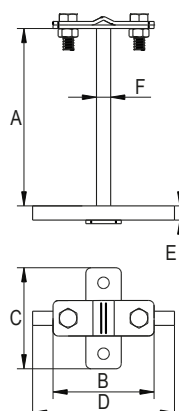
High profiled wire holder

For fixing 8-10 mm diameter wire on the flat roofs. For higher conductor lead - 16 cm. To be used with PVC coated concrete holder (93000201).

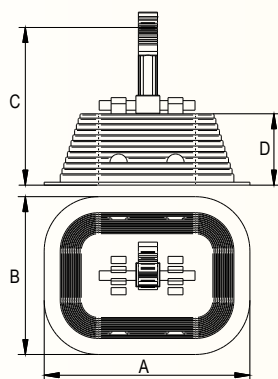
CAT. NUM.	TYPE	A	B	C	D	E	F	BOLT
93070201	30.2 W OC	100	57	57	80	Ø8	Ø8	2xM6x16

St/Zn

Other dimensions (A) on request.



PVC covered concrete wire holder with plastic clip



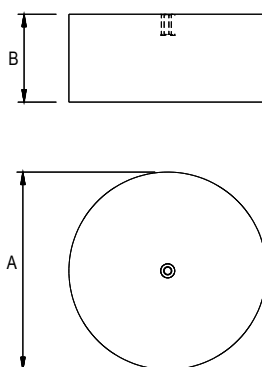
For fixing wire on the flat roofs. Can be glued to roof surface using glueing composition ELKO-FIX 99300199 or membrane glue 11000599. Appropriate only for wire conductor with diameter 8 mm.

Glue assembly details, see: www.elkobis.com.

CAT. NUM.	TYPE	A	B	C	D	WEIGHT
93090211	30.2/P	170	130	120	60	~1,2 kg

PVC

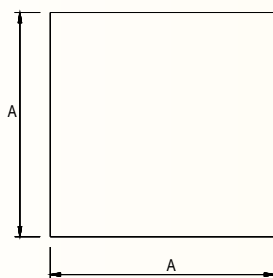
Concrete holder for cable trays



For flat roofs routing cable trays and high voltage cable 30000199. Can be glued to roof surface using glueing composition 99401099 or dedicated pad 94308111. Ecologically impregnated, highly resistance for atmosphere conditions. Glue assembly details, see: www.elkobis.com.

CAT. NUM.	TYPE	A	B	WEIGHT	THREAD
92910101	29.1K	180	80	~5,1 kg	M8

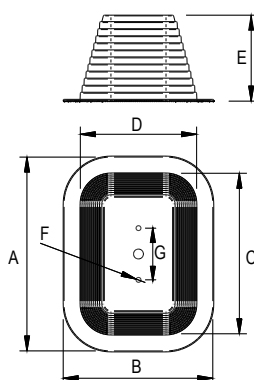
Concrete base underneath pad for cable trays



For additional protection of roof surface. Use with concrete holder (92910101). Additionally it is recommended to cover roof with a layer of membrane.

CAT. NUM.	TYPE	VERSION	A
94308122	43.81/P	to roof	200
94308111	43.81/F	to mambrane	200

PVC covered concrete cable traces holder



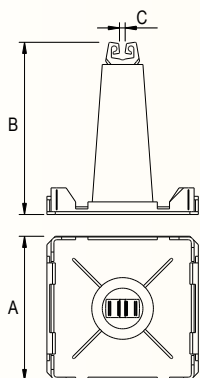
To fix cable traces over the flat roofs. Two fixing holes for screws. Recommended distance between holders is 1 meter.

CAT. NUM.	TYPE	A	B	C	D	E	F	G	WEIGHT
92910311	-	160	208	165	125	95	Ø4	55	~2,1 kg

PVC



PVC conductor holder

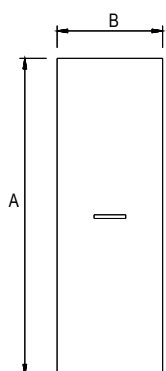
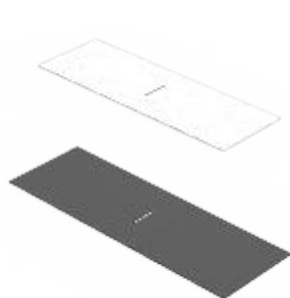


To lead wire conductor over the flat roofs. Fixed to surface using adhesive membrane strap. Fast and easy fixing. Assembly details on: www.elkobis.com.

CAT. NUM.	TYPE	A	B	C	COLOUR
93001311	30.3/M PL	102	118	Ø6-Ø8	white
93000311	30.3/P PL	102	118	Ø6-Ø8	black

PVC

Fastening strap

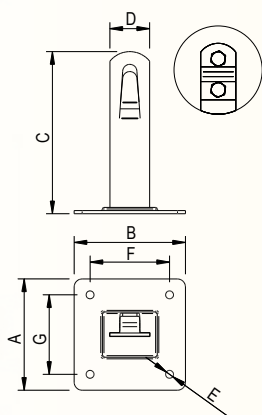


For fixing holder 93000311 on the flash or sloping roofs covered in tar board or membrane foil.

Glue assembly details, see: www.elkobis.com.

CAT. NUM.	TYPE	VERSION	A	B
93020311	30.3/P	tar board	300	100
93010311	30.3/M	membrane	300	100

Flat base roof wire holder



For fixing wire on the roofs covered in metal sheets. Screwed or nailed. Use screwed holder for wire with diameter 10mm.

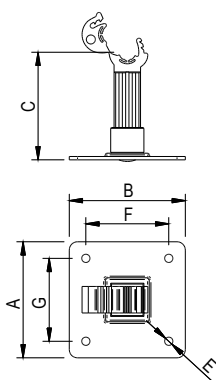
Glue assembly details, see: www.elkobis.com.

CAT. NUM.	TYPE	VERSION	A	B	C	D	E	F	G
91500102	15.1	clinched	70	70	150	25	Ø5	50	50
91500402	15.1.1	clinched	70	70	100	25	Ø5	50	50
91500202	15.1/S	screwed	70	70	150	25	Ø5	50	50
91500502	15.1.1/S	screwed	70	70	100	25	Ø5	50	50

To order a specific material option, replace last two digits into material equivalent from Material Options specification.

St/Zn 01 St/tZn 02 Cu 03 StSt (V2A) 05 RAL 16 We varnish only the screwed version.

PVC clip flat base roof wire holder



available colours:



For fixing wire on the roofs covered in metal sheets. Screwed or nailed. Appropriate only for wire conductor with diameter 8 mm. Glue assembly details, see: www.elkobis.com.

CAT. NUM.	TYPE	A	B	C	E	F	G
91500302	15.1/P	70	70	65	Ø5	50	50

To order a specific material option, replace last two digits into material equivalent from Material Options specification.

St/Zn 01 St/tZn 02 Cu 03 RAL 16

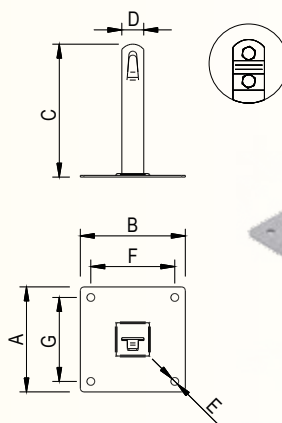
Flat base roof wire holder - MAX

For fixing wire on the roofs covered in metal sheets. Screwed or nailed. Use screwed holder for 10 mm diameter wire. Glue assembly details, see: www.elkobis.com.

CAT. NUM.	TYPE	VERSION	A	B	C	D	E	F	G
91600102	16.1	clinched	120	120	150	25	Ø5	96	96
91600402	16.1.1	clinched	120	120	100	25	Ø5	96	96
91600202	16.1/S	screwed	120	120	150	25	Ø5	96	96
91600502	16.1.1/S	screwed	120	120	100	25	Ø5	96	96

To order a specific material option, replace last two digits into material equivalent from Material Options specification.

St/Zn 01 St/tZn 02 Cu 03 RAL 16



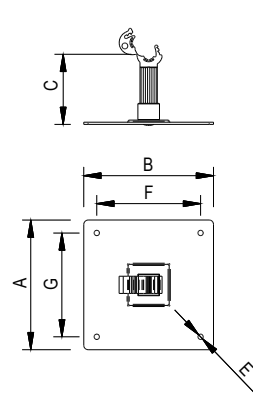
PVC clip flat base roof wire holder - MAX

For fixing wires on the roofs covered in metal sheets. Screwed, nailed or glueing assembly. Appropriate only for wire conductor with diameter 8 mm. Glue assembly details, see: www.elkobis.com.

CAT. NUM.	TYPE	A	B	C	E	F	G
91600302	16.1/P	120	120	65	Ø5	96	96

To order a specific material option, replace last two digits into material equivalent from Material Options specification.

St/Zn 01 St/tZn 02 Cu 03 RAL 16



available colours:



Special roof wire holder

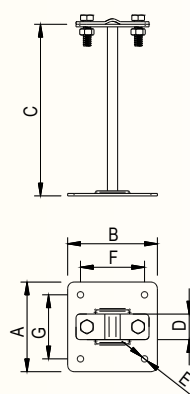
For fixing 8-10 mm diameter wire on the roofs covered in metal sheets. Screwed or nailed.

Glue assembly details, see: www.elkobis.com.

CAT. NUM.	TYPE	A	B	C	D	E	F	G	BOLT
91700102	17.1	70	70	135	20	Ø5	50	50	2×M6×16
91700202	17.2	120	120	405	20	Ø5	96	96	2×M6×16
91700302	17.3	120	120	605	20	Ø5	96	96	2×M6×16

To order a specific material option, replace last two digits into material equivalent from Material Options specification.

St/Zn 01 St/tZn 02 Cu 03 RAL 16



Flat base cross unit roof wire holder

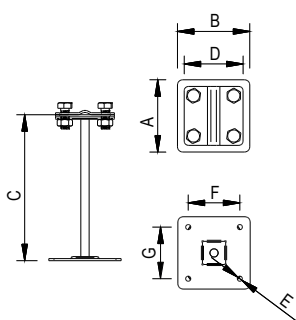
For fixing 8-10 mm diameter wire on the roofs covered in metal sheets. Screwed or nailed.

Glue assembly details, see: www.elkobis.com.

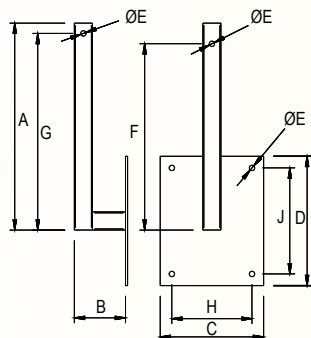
CAT. NUM.	TYPE	A	B	C	D	E	F	G	BOLT
92200102	22.1	70	70	135	57	Ø5	50	50	4×M8×20
92200402	22.1.1	70	70	75	57	Ø5	50	50	4×M8×20

To order a specific material option, replace last two digits into material equivalent from Material Options specification.

St/Zn 01 St/tZn 02 Cu 03



Side tensioning holder



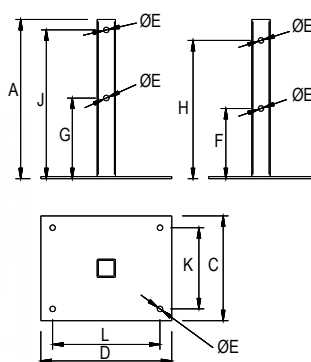
For horizontal tensioning of conductors. Anchor assembly to walls and attics. To tension the wire use tensioning clamp holder 92700101.

CAT. NUM.	TYPE	A	B	C	D	E	F	G	H	J
98700101	87.1	400	100	200	250	Ø11	360	380	155	205

To order a specific material option, replace last two digits into material equivalent from Material Options specification.

St/tZn	01	RAL	16
--------	----	-----	----

Straight tensioning holder



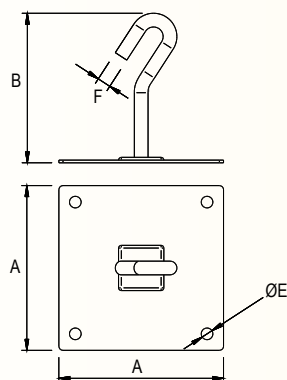
For horizontal tensioning of conductors. Anchor assembly to walls and attics. To tension the wire use tensioning clamp holder 92700101.

CAT. NUM.	TYPE	A	C	D	E	F	G	H	J	K	L
98700201	87.2	300	200	250	Ø11	130	150	260	280	155	205

To order a specific material option, replace last two digits into material equivalent from Material Options specification.

St/tZn	01	RAL	16
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Horizontal tensioning holder



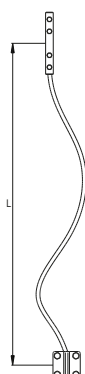
For horizontal tensioning of conductors. Anchor assembly to walls and attics. To tension the wire use Turnbuckles 93500401.

CAT. NUM.	TYPE	A	B	E	F
98800101	88.1	120	105	Ø8	10

To order a specific material option, replace last two digits into material equivalent from Material Options specification.

St/tZn	01	RAL	16
--------	----	-----	----

Compensation connection clamp



For flexible connections of wire and/or tape conductors. Connection made with use of aluminium line ALDREY - equatorial diameter 50 mm². Recommended use distance between connection clamps is 40 meters.

CAT. NUM.	TYPE	L	APPLICATION
10100301	101.1 DD	1 m	wire / wire
10100201	101.1 DB	1 m	wire / tape conductor
10100101	101.1 BB	1 m	tape conductor / tape conductor

AI

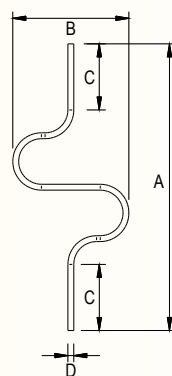
The connectors used here:
90700101 – Page 13,
91400101 – Page 14.

Compensation piece

To compensate effect of wire conductor widening and shrinkage under the influence of temperature. Recommended when distance of wire is more than 40 meters, than use aluminium compensation piece.

CAT. NUM.	TYPE	A	B	C	D
12300109	123.1	330	158	60	Ø8

Al

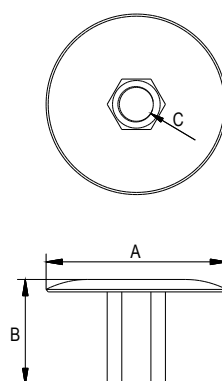


Air termination stud

To protect flat roofs with communication channels, such as roofs of multi-storey car parks, green roofs. Mounted at the intersection of the horizontal air terminal grid.

CAT. NUM.	TYPE	A	B	C	NOTES
11400105	114.1	85	52	M16	without connector

StSt (V2A)



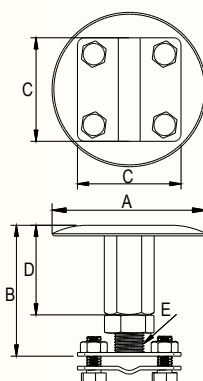
NEW

Air termination stud with connector

To protect flat roofs with communication channels, such as roofs of multi-storey car parks, green roofs. Mounted at the intersection of the horizontal air terminal grid. Sold in a set.

CAT. NUM.	TYPE	A	B	C	D	E	BOLT	NOTES
11401105	114.1.1	85	62-80	57	52	M16	4xM8x20	with connector
11402105	114.1.2	85	132-150	57	52	M16	4xM8x20	with connector

StSt (V2A)



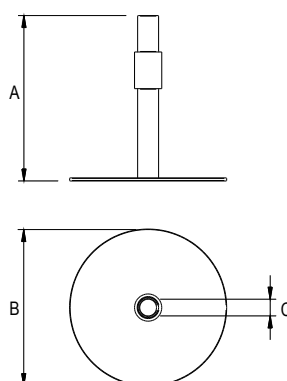
NEW

Wire conductor sealant

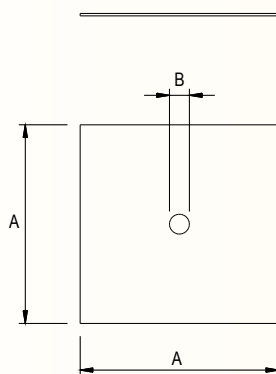
For seal 8-10 mm diameter wire conduits on tar board or membrane covered roofs. Bonding to surface using ELKO-FIX adhesive (see page 109). Heat shrink tubing attached. Use with flat rubber sealant.

CAT. NUM.	TYPE	A	B	C
10900199	109.1/M	155	150	Ø20

PVC



Flat rubber sealant

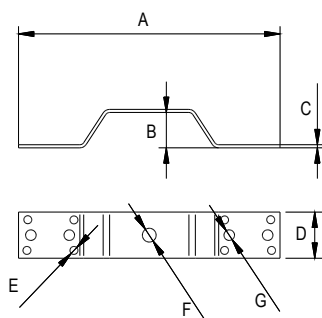


For sealing roof conduits. Ensures appropriate bonding to roof surface and moisture/humidity protection. Fix to membrane using glue/adhesive 11000599 - Page 105, bonding to tar board by heat treatment or using ELKO-FIX adhesive (Page105).

CAT. NUM.	TYPE	A	B	VERSION
10900221	109.2/M	250	Ø25	membrane
10900222	109.2/P	250	Ø25	tar board

PVC

Bridging braid



Use to connect steel sheets on firewalls or other natural wire connections. Connect with screwing.

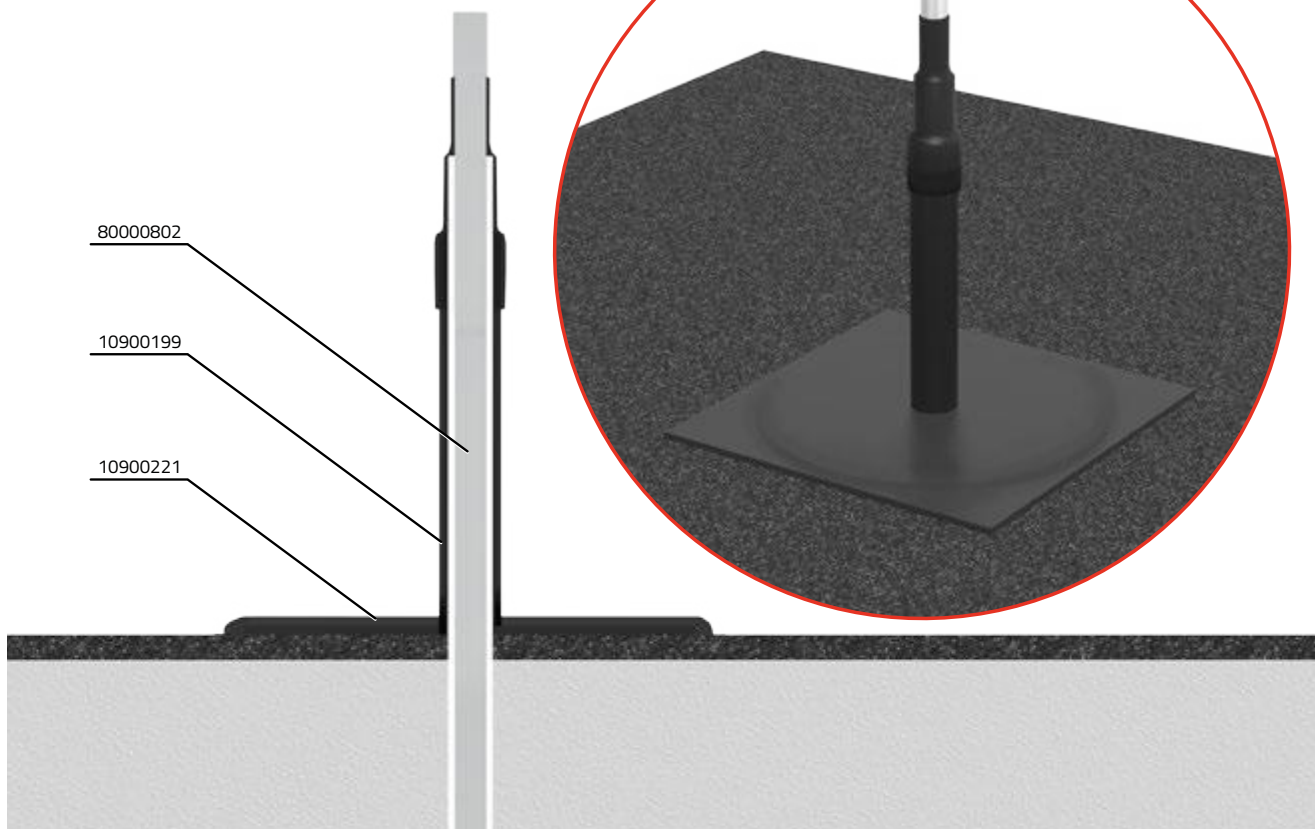
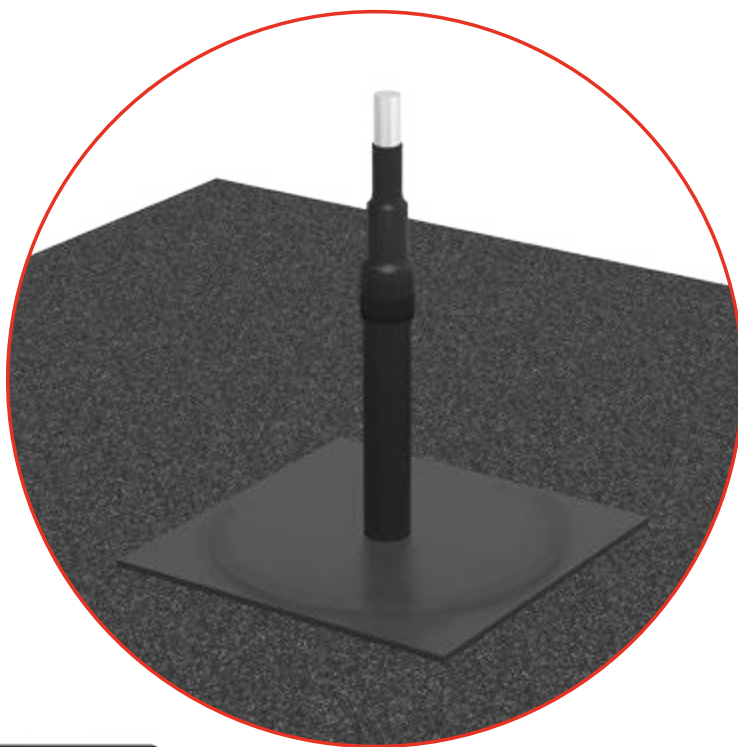
CAT. NUM.	TYPE	A	B	C	D	E	F	G
12200109	122.1	170	25	2	30	Ø5,2	Ø9	Ø6,9

Al

80000802

10900199

10900221



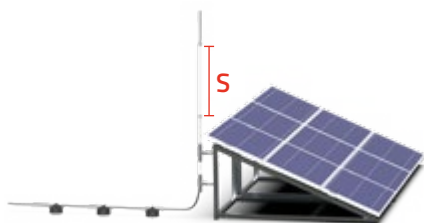
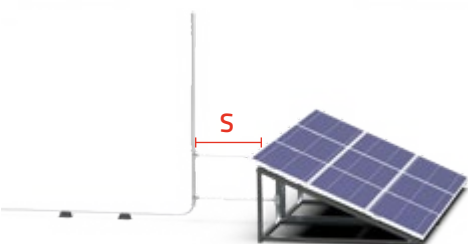
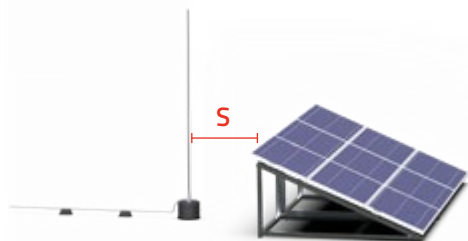
GROUP V

Air Termination: Interception Masts, Rods, Spires, Insulated Air Termination System



INTERCEPTION AIR RODS

Air termination rods are used to protect metal roof components and devices such as: skylights, air conditioners, air handling units, ventilation ducts, gas and water pipes. There are insulated and non - insulated air termination systems.



Insulated systems are used directly on protected equipment or less than calculated minimum separation distance (s). For non-insulated air termination, the minimum separation distance (s) must be maintained.

▶ Maintaining the separation distance without interfering into a protected device.

Used in cases where appropriate separation distance can be maintained, having enough space for lightning protection masts / air termination rods.

▶ Maintaining the separation distance using insulation bars.

Used in cases where air termination rod can be directly assembled to device or blind structures. Using insulation bars made of non-conductive material, keeps separation distance, despite the mechanical connection.

▶ Maintaining the separation distance using Insulated High Voltage Cable System.

Used at objects where there is no possibility to keep separation distance, due to lack of enough space or simply esthetic reasons. Insulated High Voltage Cable system according to norm EN 62305 give us 75 cm separation distance.

▶ More info regarding calculation of separation distance on Page 128.

WIND LOADING

Non-insulated air termination rods/masts are most often used in free-standing option (on tripods or single foundations without permanent connection to the object surface), therefore manufacturing materials must be high quality to guarantee wind loading resistance. European Union norms which constructions comply with: Eurocode 1: Actions on structures Part 1-4: General actions - Wind

actions. After years of research and computer calculations Elko-Bis managed to create appropriate constructions, providing the highest quality, wind and corrosion resistance. Being aware of masts high quality, Elko-Bis as the only among others, provides 5 years guarantee.

SELECTION OF INTERCEPTION AIR RODS

For non-experienced person, selection of appropriate lightning protection masts for given object can be difficult issue. Apart of choosing the right height and location of masts, we also need to determine their type and loading to ensure adequate wind resistance.

Wind speed depends on 3 factors: wind zone (location), terrain category (roughness), and mast height above the ground.

THERE ARE FOUR STEPS TO DETERMINE WIND SPEED:

An example of wind zones map.



1. Determination of wind zone.

To determine the wind zone of the facility's location, please use the wind zone map appropriate for that location.



TERRAIN CATEGORY 0

Sea, sea shore opened for sea.

2. Determination of terrain category.

The shape of terrain environment affects the wind speed. The more area around the object is flat and free from other building structures or trees, the value of wind speed may be higher.

The terrain category is determined according to the following classification.



TERRAIN CATEGORY I

Lakes or areas with a negligible small amount of vegetation plants with no other obstacles.



TERRAIN CATEGORY II

Areas with low vegetation plants such as grass, and single obstacles (trees, buildings distant from each other not less than 20 times of their height).



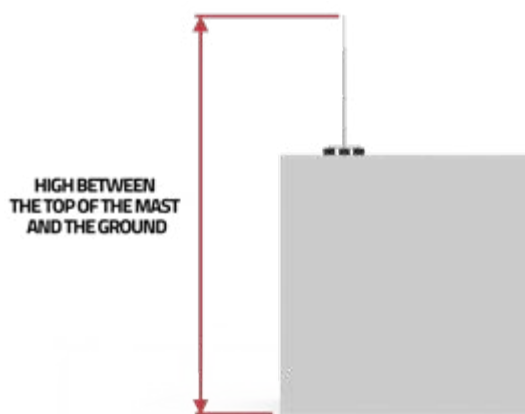
TERRAIN CATEGORY III

Areas regularly covered with vegetation plants either buildings or with single obstacles spaced apart on distanced not more than 20 times of their height (like villages, suburban areas, forests).



TERRAIN CATEGORY IV

Areas where at least 15% is covered by medium-sized buildings exceeding 15 m height.



3. Determination of height to the ground.

It is the height between the top of the mast and the ground.

4. Determination of wind speed.

After the wind zone, terrain category and height are determined we can read the maximum wind speed that can occur for our building object:

Zone 1 and 3 (0 to 300 m. a. s. l)		TERRAIN CATEGORY				
		0	I	II	III	IV
Height of the mast top above ground level [m]	0	97	90	70	58	40
	5	120	114	101	94	73
	10	127	122	109	99	86
	15	131	126	114	103	89
	20	134	130	118	107	93
	25	137	133	122	109	95
	30	139	135	125	112	98
	40	143	139	129	116	102
	50	145	143	133	119	105
	75	151	149	141	126	113
100	155	153	147	132	118	

Zone 2 (0 to 300 m. a. s. l.)		TERRAIN CATEGORY				
		0	I	II	III	IV
Height of the mast top above ground level [m]	0	114	106	83	68	47
	5	142	135	119	111	86
	10	150	144	129	117	102
	15	155	149	135	122	106
	20	159	154	140	126	109
	25	162	157	144	129	113
	30	164	160	147	132	115
	40	169	165	153	137	120
	50	172	169	158	141	125
	75	178	176	166	149	133
	100	183	181	173	155	140

Zone 3 (300 to 500 m. a. s. l.)		TERRAIN CATEGORY				
		0	I	II	III	IV
Height of the mast top above ground level [m]	0	x	100	79	65	45
	5	x	128	113	105	82
	10	x	136	122	111	97
	15	x	142	128	116	100
	20	x	146	133	119	104
	25	x	149	136	122	107
	30	x	152	140	125	109
	40	x	156	145	130	114
	50	x	160	149	134	118
	75	x	167	158	141	126
	100	x	172	164	147	133

After determination of the maximum wind speed in the region, selection of masts can be proceed. It is important that selected masts have a wind resistance index higher than the calculated theoretical wind speed.

HEIGHT	WIND RESISTANCE	A	B	C	D	E	F	G	H	M
8	122 km/h	8050			1600					5x16 kg
	116 km/h	8060	3000	3000	1700					4x16 kg
	101 km/h	8070			1800					3x16 kg
7	140 km/h	7050			600					5x16 kg
	133 km/h	7060	3000	3000	700					4x16 kg
	117 km/h	7070			800	Ø40	Ø16	Ø1357	Ø340	3x16 kg
	97 km/h	7080			900					2x16 kg
	140 km/h	6550			100					5x16 kg
6,5	133 km/h	6560	3000	3000	200					4x16 kg

INCREASE OF MAST WIND SPEED

It is possible to increase mast wind resistance load by using a mast bracket type: **67900211**



Supportive Air Rod Bars 67900211
- Page 93.

If you encounter design difficulties, we recommend consulting ELKO-BIS technical support department. Our experts are knowledgeable and experienced, which ensures the highest level of advice.

+48 607 728 500

+48 669 162 100

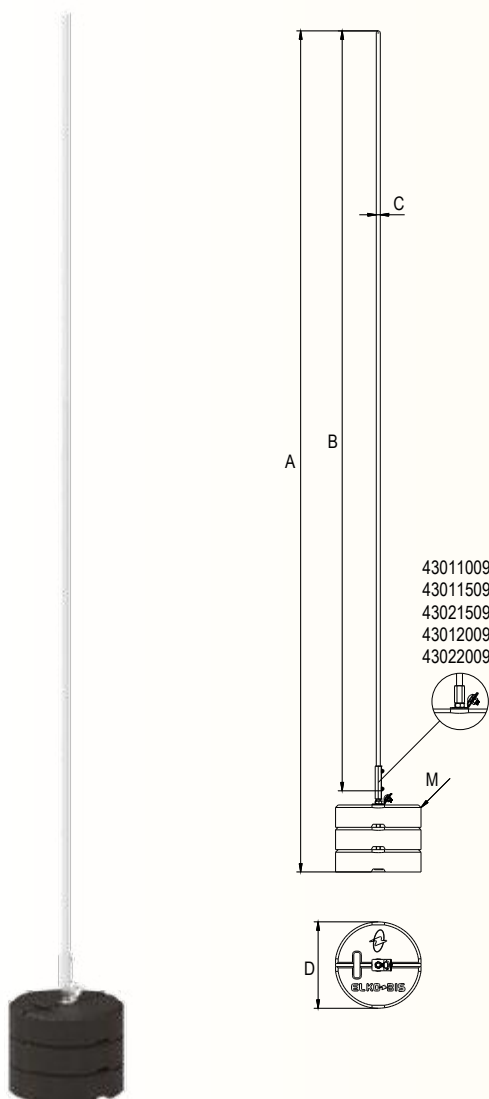
+48 607 267 237

+48 669 252 528

export@elkobis.com.pl

Single concrete base interception air terminal

Aluminium made Air Terminal for lightning protection of roof elements and devices (skylights, air conditioners, air handling units, air handling channels) Wire conductor clamp included. Use concrete base pad underneath 44408208- to be ordered separately. Additionally it is recommended to cover roof with a layer of membrane.



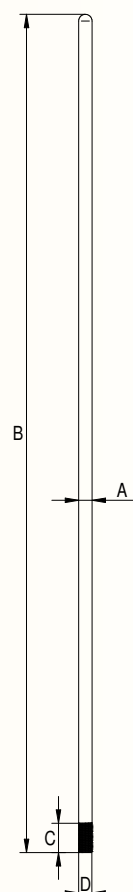
CAT. NUM.	TYPE	HEIGHT	WIND RESISTANCE	A	B	C	D	M
43044009	43.4 AL 4p cz	4	116 km/h	4340	4000	Ø16	340	4x16 kg
43034009	43.4 AL 3p cz		107 km/h	4255				3x16 kg
43043509	43.35 AL 4p cz	3,5	116 km/h	3840	3500	Ø16	340	4x16 kg
43033509	43.35 AL 3p cz		107 km/h	3755				3x16 kg
43043009	43.3 AL 4p cz	3	155 km/h	3340	3000	Ø16	340	4x16 kg
43033009	43.3 AL 3p cz		142 km/h	3255				3x16 kg
43023009	43.3 AL 2p cz		118 km/h	3170				2x16 kg
43042509	43.25 AL 4p cz	2,5	155 km/h	2840	2500	Ø16	340	4x16 kg
43032509	43.25 AL 3p cz		142 km/h	2755				3x16 kg
43022509	43.25 AL 2p cz		118 km/h	2670				2x16 kg
43022009	43.2 AL 2p cz	2	174 km/h	2170	2000	Ø16	340	2x16 kg
43012009	43.2 AL 1p cz		125 km/h	2085				1x16 kg
43021509	43.15 AL 2p cz	1,5	174 km/h	1670	1500	Ø16	340	2x16 kg
43011509	43.15 AL 1p cz		125 km/h	1585				1x16 kg
43011009	43.1 AL 1p cz	1	247 km/h	1085	1000	Ø16	340	1x16 kg

Aluminium interception air rod

For lightning protection of roof elements and devices (skylights, air conditioners, air handling units, air handling channels). Choose correct mast holders depending on assembly place. Mast holder 96000101 for wall mounting, wire clamp 94200201 and connector 94200401.

CAT. NUM.	TYPE	A	B	C	D
94301009	43.010	Ø16	1000	35	M16
94301509	43.015	Ø16	1500	35	M16
94302009	43.020	Ø16	2000	35	M16
94302509	43.025	Ø16	2500	35	M16
94303009	43.030	Ø16	3000	35	M16
94303509	43.035	Ø16	3500	35	M16
94304009	43.040	Ø16	4000	35	M16

AI

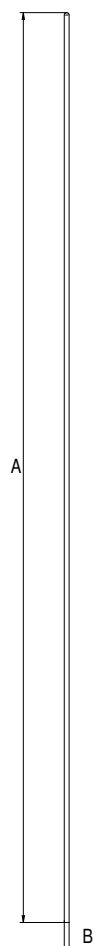


Aluminium interception air rod

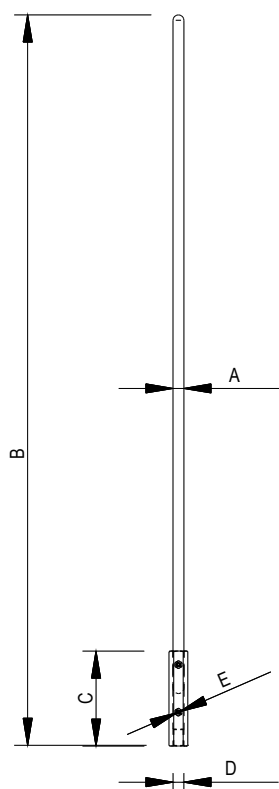
For lightning protection of roof elements and devices (skylights, air conditioners, air handling units, air handling channels). Choose correct mast holders depending on assembly place.

CAT. NUM.	TYPE	A	B
44331009	443.010	1000	Ø16
44331509	443.015	1500	Ø16
44332009	443.020	2000	Ø16
44332509	443.025	2500	Ø16
44333009	443.030	3000	Ø16
44333509	443.035	3500	Ø16
44334009	443.040	4000	Ø16

AI



Aluminium interception air rod with stabilizer

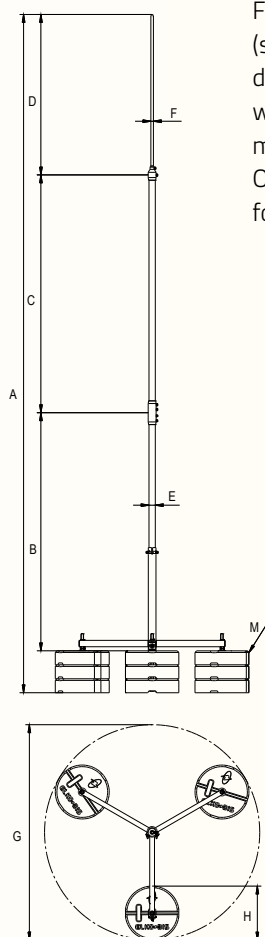


For lightning protection of roof elements and devices (sky lights, air conditioners, air handling units, air handling channels). Appropriate air terminal holders to be chosen. Stabilizer spire allows fixing into concrete and steel bases.

CAT. NUM.	TYPE	A	B	C	D	E
44322509	443.025 S AL	Ø16	2500	130	M16	M8
44323009	443.030 S AL	Ø16	3000	130	M16	M8
44323509	443.035 S AL	Ø16	3500	130	M16	M8
44324009	443.040 S AL	Ø16	4000	130	M16	M8

Al

Tripod lightning protection mast



For lightning protection of roof elements and devices (skylights, air conditioners, air handling units, air handling channels). Tripod concrete base gives appropriate wind resistance. Free standing mast. It is recommended to use pads under concrete base 44408208. Option 94308022 for tar board roofs and option 94308021 for membrane roofs.

The masts are also available with a foldable tripod frame. More information on the next Page.

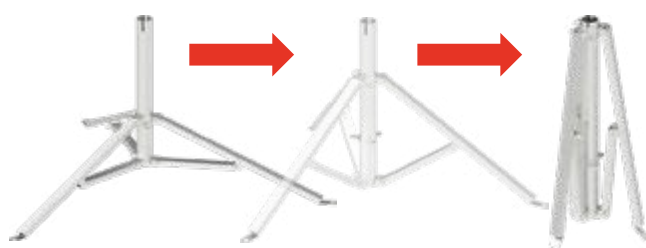


CAT. NUM.	TYPE	HEIGHT	WIND RESISTANCE	A	B	C	D	E	F	G	H	M
65058009	65.8 5p cz	8	122 km/h	8425	3000	3000	2000	Ø40	Ø16	Ø1350	Ø340	15x16 kg
65048009	65.8 4p cz		116 km/h	8340	3000	3000	2000	Ø40	Ø16	Ø1350	Ø340	12x16 kg
65038009	65.8 3p cz		101 km/h	8255	3000	3000	2000	Ø40	Ø16	Ø1350	Ø340	9x16 kg
65057009	65.7 5p cz	7	140 km/h	7425	3000	3000	1000	Ø40	Ø16	Ø1350	Ø340	15x16 kg
65047009	65.7 4p cz		133 km/h	7340	3000	3000	1000	Ø40	Ø16	Ø1350	Ø340	12x16 kg
65037009	65.7 3p cz		117 km/h	7255	3000	3000	1000	Ø40	Ø16	Ø1350	Ø340	9x16 kg
65027009	65.7 2p cz	6,5	97 km/h	7170	3000	3000	1000	Ø40	Ø16	Ø1350	Ø340	6x16 kg
65056509	65.65 5p cz		140 km/h	6925	3000	3000	500	Ø40	Ø16	Ø1350	Ø340	15x16 kg
65046509	65.65 4p cz		133 km/h	6840	3000	3000	500	Ø40	Ø16	Ø1350	Ø340	12x16 kg
65036509	65.65 3p cz	6	117 km/h	6755	3000	3000	500	Ø40	Ø16	Ø1350	Ø340	9x16 kg
65026509	65.65 2p cz		97 km/h	6670	3000	3000	500	Ø40	Ø16	Ø1350	Ø340	6x16 kg
65056009	65.6 5p cz		149 km/h	6425	3000	2000	1000	Ø40	Ø16	Ø1350	Ø340	15x16 kg
65046009	65.6 4p cz	5,5	146 km/h	6340	3000	2000	1000	Ø40	Ø16	Ø1350	Ø340	12x16 kg
65036009	65.6 3p cz		127 km/h	6255	3000	2000	1000	Ø40	Ø16	Ø1350	Ø340	9x16 kg
65026009	65.6 2p cz		106 km/h	6170	3000	2000	1000	Ø40	Ø16	Ø1350	Ø340	6x16 kg
65055509	65.55 5p cz	5	149 km/h	5925	3000	2000	500	Ø40	Ø16	Ø1350	Ø340	15x16 kg
65045509	65.55 4p cz		146 km/h	5840	3000	2000	500	Ø40	Ø16	Ø1350	Ø340	12x16 kg
65035509	65.55 3p cz		127 km/h	5755	3000	2000	500	Ø40	Ø16	Ø1350	Ø340	9x16 kg
65025509	65.55 2p cz	4,5	106 km/h	5670	3000	2000	500	Ø40	Ø16	Ø1350	Ø340	6x16 kg
65045009	65.5 4p cz		175 km/h	5340	2000	2000	1000	Ø40	Ø16	Ø1350	Ø340	12x16 kg
65035009	65.5 3p cz		153 km/h	5255	2000	2000	1000	Ø40	Ø16	Ø1350	Ø340	9x16 kg
65025009	65.5 2p cz	4	127 km/h	5170	2000	2000	1000	Ø40	Ø16	Ø1350	Ø340	6x16 kg
65015009	65.5 1p cz		93 km/h	5085	2000	2000	1000	Ø40	Ø16	Ø1350	Ø340	3x16 kg
65044509	65.45 4p cz		175 km/h	4840	2000	2000	500	Ø40	Ø16	Ø1350	Ø340	12x16 kg
65034509	65.45 3p cz	3,5	153 km/h	4755	2000	2000	500	Ø40	Ø16	Ø1350	Ø340	9x16 kg
65024509	65.45 2p cz		127 km/h	4670	2000	2000	500	Ø40	Ø16	Ø1350	Ø340	6x16 kg
65014509	65.45 1p cz		93 km/h	4585	2000	2000	500	Ø40	Ø16	Ø1350	Ø340	3x16 kg
65034009	65.4 3p cz	3	192 km/h	4255	3000	----	1000	Ø40	Ø16	Ø1350	Ø340	9x16 kg
65024009	65.4 2p cz		159 km/h	4170	3000	----	1000	Ø40	Ø16	Ø1350	Ø340	6x16 kg
65014009	65.4 1p cz		116 km/h	4085	3000	----	1000	Ø40	Ø16	Ø1350	Ø340	3x16 kg
65033509	65.35 3p cz	3	192 km/h	3755	3000	----	500	Ø40	Ø16	Ø1350	Ø340	9x16 kg
65023509	65.35 2p cz		159 km/h	3670	3000	----	500	Ø40	Ø16	Ø1350	Ø340	6x16 kg
65013509	65.35 1p cz		116 km/h	3585	3000	----	500	Ø40	Ø16	Ø1350	Ø340	3x16 kg
65033009	65.3 3p cz	3	258 km/h	3255	2000	----	1000	Ø40	Ø16	Ø1350	Ø340	9x16 kg
65023009	65.3 2p cz		213 km/h	3170	2000	----	1000	Ø40	Ø16	Ø1350	Ø340	6x16 kg
65013009	65.3 1p cz		155 km/h	3085	2000	----	1000	Ø40	Ø16	Ø1350	Ø340	3x16 kg

Al/StSt (V2A)

Tripod concrete base interception mast

Composed construction to ease and reduce logistic processes.



NOTE!

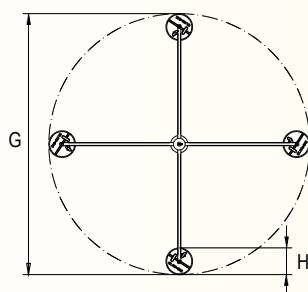
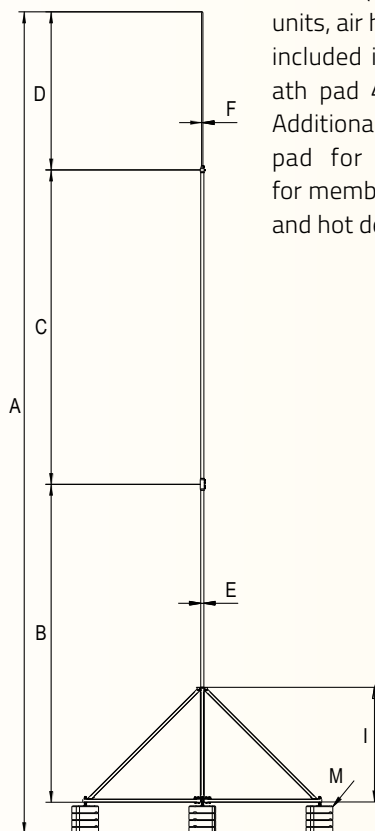
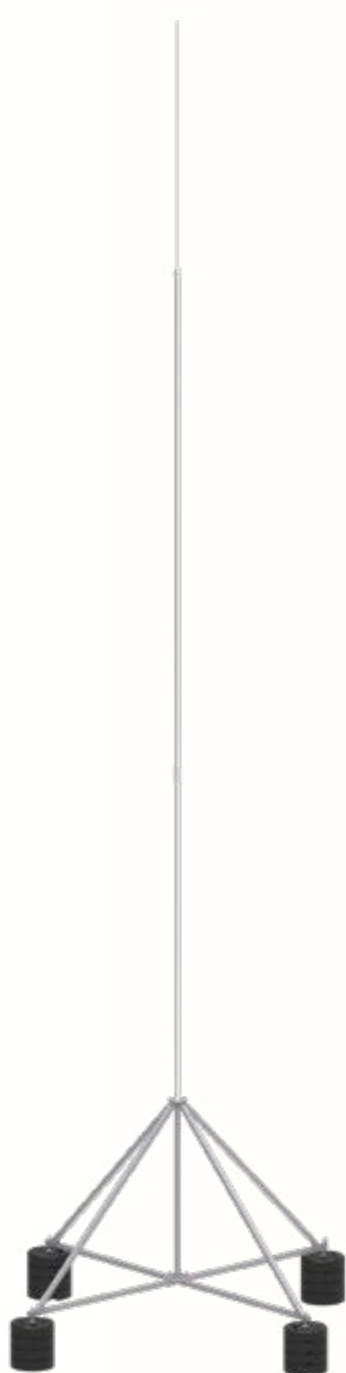
To order mast with foldable tripod frame construction, change second digit in the catalog number.

65045009 - Interception Air Rod 5m with standard tripod frame

67045009 - Interception Air Rod 5m with foldable tripod frame

Fourpod lightning protection mast

For lightning protection of roof elements and devices (skylights, air conditioners, air handling units, air handling channels). Wire conductor clamp included in the set. Use concrete base underneath pad 44408208 - to be ordered separately. Additionally it is recommended to use 94308022 pad for tarboard roofs cover or 94308021 for membrane cover. Aluminium made air terminal and hot deep galvanized base frame.



NOTE!

To order stainless steel fourpod base frame, change 2 last digits of catalog number for "09".



CAT. NUM.	TYPE	HEIGHT	WIND RESISTANCE	A	B	C	D	E	F	G	H	I	M
65451092	65.10.1 AL/OG 5P CZ	10	145 km/h	10530	4000	4000	2000	Ø40	Ø16	Ø3320	Ø340	1460	20x16 kg
65441092	65.10.1 AL/OG 4P CZ		134 km/h	10442	4000	4000	2000	Ø40	Ø16	Ø3320	Ø340	1460	16x16 kg
65431092	65.10.1 AL/OG 3P CZ		120 km/h	10354	4000	4000	2000	Ø40	Ø16	Ø3320	Ø340	1460	12x16 kg
65421092	65.10.1 AL/OG 2P CZ		103 km/h	10266	4000	4000	2000	Ø40	Ø16	Ø3320	Ø340	1460	8x16 kg
65440992	65.9.1 AL/OG 4P CZ	9	148 km/h	9442	4000	4000	1000	Ø40	Ø16	Ø3320	Ø340	1460	16x16 kg
65430992	65.9.1 AL/OG 3P CZ		133 km/h	9354	4000	4000	1000	Ø40	Ø16	Ø3320	Ø340	1460	12x16 kg
65420992	65.9.1 AL/OG 2P CZ		115 km/h	9266	4000	4000	1000	Ø40	Ø16	Ø3320	Ø340	1460	8x16 kg
65450892	65.8.1 AL/OG 5P CZ	8	185 km/h	8530	3000	3000	2000	Ø40	Ø16	Ø3320	Ø340	1460	20x16 kg
65440892	65.8.1 AL/OG 4P CZ		169 km/h	8442	3000	3000	2000	Ø40	Ø16	Ø3320	Ø340	1460	16x16 kg
65430892	65.8.1 AL/OG 3P CZ		150 km/h	8354	3000	3000	2000	Ø40	Ø16	Ø3320	Ø340	1460	12x16 kg
65420892	65.8.1 AL/OG 2P CZ		130 km/h	8266	3000	3000	2000	Ø40	Ø16	Ø3320	Ø340	1460	8x16 kg

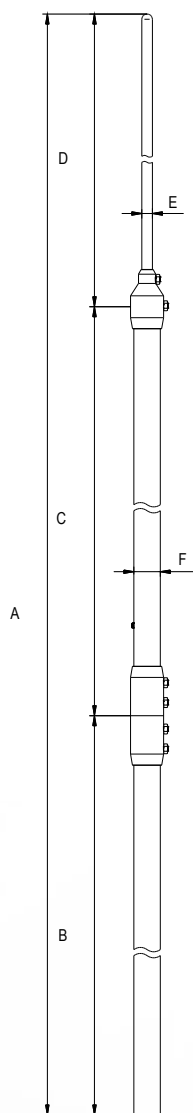
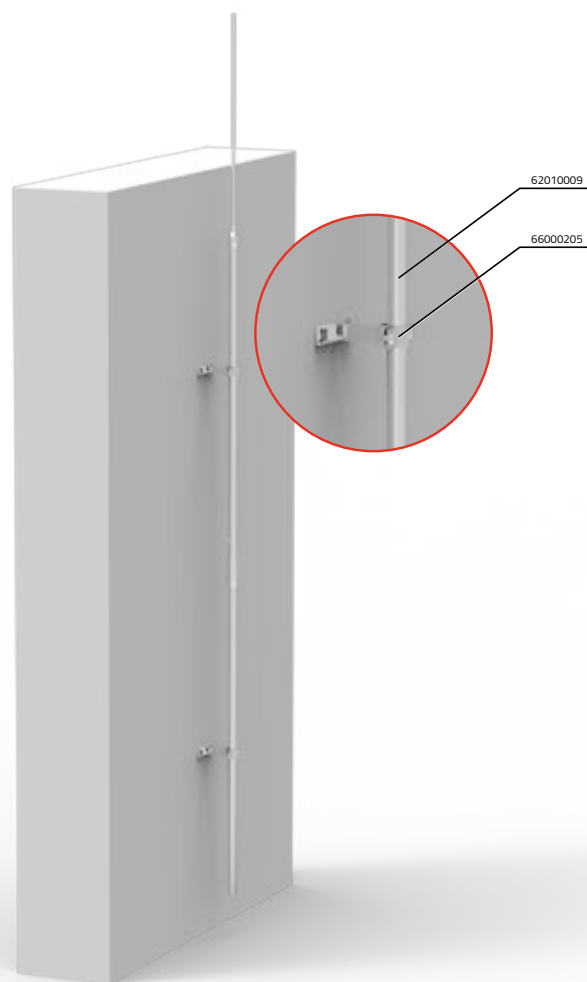
To order a specific material option, replace last two digits into material equivalent from Material Options specification.

Al/St/tZn 92 Al /StSt (V2A) 09

The AL/St/tZn version is an Aluminium Interception Air Rod with a Zinc plated flame quadrant. The AL version is Aluminium Interception Air Rod with a stainless steel quadrant.

Lightning protection air terminal

For lightning protection of roof elements and devices (skylights, air conditioners, air handling units, air handling channels). Depending on assembly location, appropriate holder need to be applied example 66000205 (wall holder) Air terminal made of durable aluminium.



CAT. NUM.	TYPE	WIND RESISTANCE	A	B	C	D	E	F
62010009	62.10 AL	145 km/h	10000	4000	4000	2000	Ø16	Ø40
62009009	62.9 AL	148 km/h	9000	4000	4000	1000	Ø16	Ø40
62008009	62.8 AL	185 km/h	8000	3000	3000	2000	Ø16	Ø40
62007009	62.7 AL	140 km/h	7000	3000	3000	1000	Ø16	Ø40
62006509	62.65 AL	140 km/h	6500	3000	3000	500	Ø16	Ø40
62006009	62.6 AL	149 km/h	6000	3000	2000	1000	Ø16	Ø40
62005509	62.55 AL	149 km/h	5500	3000	2000	500	Ø16	Ø40
62005009	62.5 AL	175 km/h	5000	2000	2000	1000	Ø16	Ø40
62004509	62.45 AL	175 km/h	4500	2000	2000	500	Ø16	Ø40
62004009	62.4 AL	192 km/h	4000	3000	----	1000	Ø16	Ø40
62003509	62.35 AL	192 km/h	3500	3000	----	500	Ø16	Ø40
62003009	62.3 AL	192 km/h	3000	2000	----	1000	Ø16	Ø40

MASTS FOR HIGH HORIZONTAL AIR TERMINATION

These masts are used to protect dense systems of electrical devices (air conditioners, air handling units, ventilation ducts, systems of cables supply and transmission pipes). High horizontal air termination

provided by Aldrey rope or aluminium wire, stretched between the tops of air terminals. The grid system of such masts can be extended from 1x1 to 5x5 (maximum 50 meters!).

Masts available in standard non-insulated and insulated options:

NON - INSULATED MAST - Entirely made of aluminium. Used for high horizontal air termination, bringing the atmospheric charge to air terminals grid on the roof to earthing. It is required to keep separation distance (s) from electrical devices.

INSULATED MAST - Made of aluminium and includes insulation bar. Due to its isolation from horizontal air termination grid, can be used nearby electrical devices at a distance shorter, than the required separation distance (s).

When using masts, they should be optimally matched to the prevailing conditions in a given wind zone:

1. Wind zone

Using the wind speed zone map it is required to define wind zone where our facility is located.

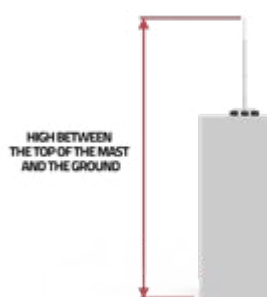


2. Terrain Category

Wind speed depends on terrain surroundings. The more area around the protected facility is flat and free from other buildings or trees, the higher wind blows can be. Terrain category is determined accordingly to below classification.

3. Height to ground level

It is height between top of air terminal and ground level the object is located.



4. Wind speed estimation

Once wind zone, terrain category and height are defined, the maximum wind speed can be estimated using table with such estimations. Table available at the Elko-Bis catalog.

AIR TERMINALS MESH DETERMINATION

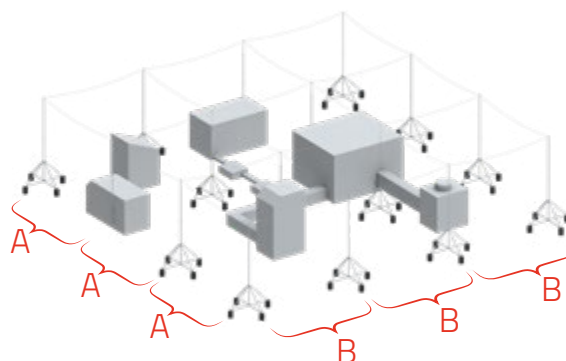
To determine mesh size, count the number of **A** and **B** dimensions in the assumed mesh: example on the right, presents 3x3 grid.

If the number **A** does not equal the number **B**, (e.g. 2x4, 3x5 etc.) to determine the speed, higher value need to be chosen and raised the lower value to it.

Example: Mesh 2x4 is required. 4 is the higher value, so wind speed for 4x4 mesh is acceptable.

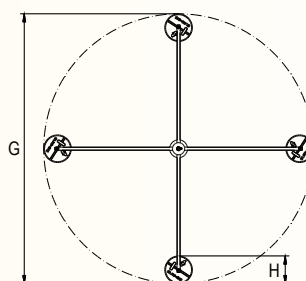
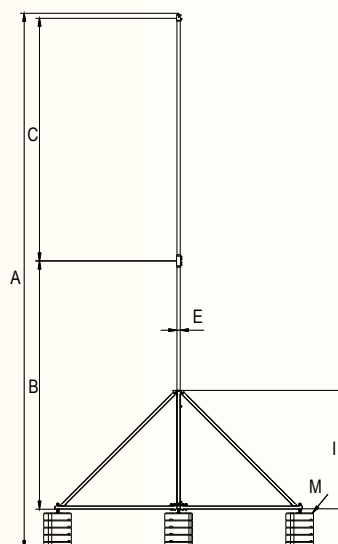
Ordering, please specify number of masts, holders and length of Aldrey rope required.

The distance between Aldrey rope connected masts, can not exceed 8 meter for masts mounted to the structures and 10 meter for free-standing masts.



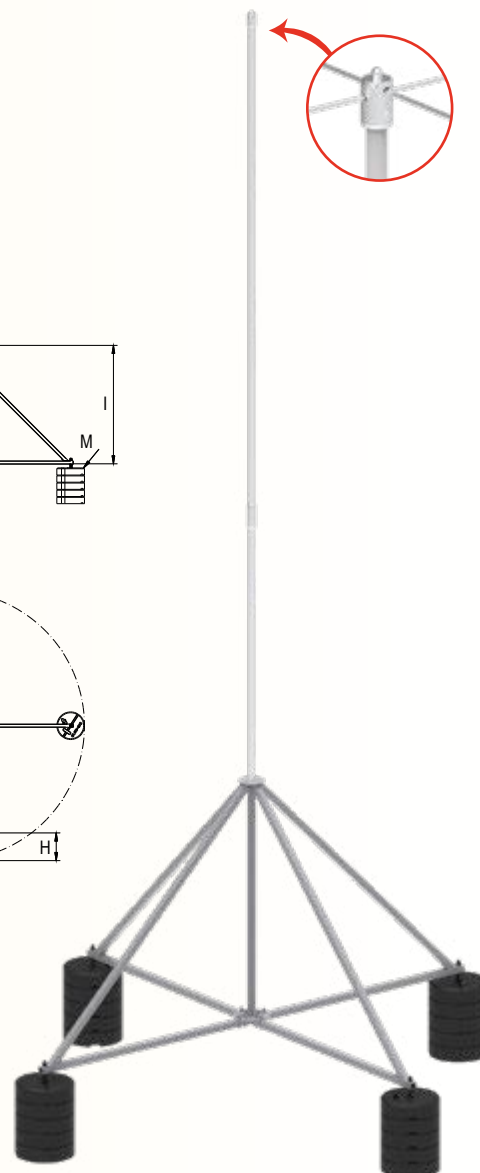
Fourpod lightning protection mast for high air termination

For lightning protection of roof elements and devices (skylights, air conditioners, air handling units, air handling channels). Providing supporting structure for high horizontal air termination with use of Aldrey rope. Composed of durable aluminium mast and hot-dip galvanized steel fourpod frame. Distance between Aldrey rope connected masts can not exceed 10 meters. Conductor connection clamp included in the set. Use concrete base underneath pad 44408208 - to be ordered separately. Additionally it is recommended to use 94308022 pad for tarboard roofs cover or 94308021 for mambrane cover.



NOTE!

To order stainless steel fourpod base frame, change 2 last digits of catalog number for "09".



CAT. NUM.	TYPE	HEIGHT	WIND RESISTANCE	A	B	C	E	G	H	I	M
65156092	65.6 AL/OG ZA 5P CZ	6	147 km/h	6590	3000	3000	Ø40	Ø3320	Ø340	1460	20x16 kg
65146092	65.6 AL/OG ZA 4P CZ		142 km/h	6502	3000	3000	Ø40	Ø3320	Ø340	1460	16x16 kg
65136092	65.6 AL/OG ZA 3P CZ		125 km/h	6414	3000	3000	Ø40	Ø3320	Ø340	1460	12x16 kg
65126092	65.6 AL/OG ZA 2P CZ		106 km/h	6326	3000	3000	Ø40	Ø3320	Ø340	1460	8x16 kg
65155092	65.5 AL/OG ZA 5P CZ	5	178 km/h	5590	3000	2000	Ø40	Ø3320	Ø340	1460	20x16 kg
65145092	65.5 AL/OG ZA 4P CZ		160 km/h	5502	3000	2000	Ø40	Ø3320	Ø340	1460	16x16 kg
65135092	65.5 AL/OG ZA 3P CZ		141 km/h	5414	3000	2000	Ø40	Ø3320	Ø340	1460	12x16 kg
65125092	65.5 AL/OG ZA 2P CZ		120 km/h	5326	3000	2000	Ø40	Ø3320	Ø340	1460	8x16 kg
65154092	65.4 AL/OG ZA 5P CZ	4	140 km/h	4590	2000	2000	Ø40	Ø1820	Ø340	1040	20x16 kg
65144092	65.4 AL/OG ZA 4P CZ		120 km/h	4502	2000	2000	Ø40	Ø1820	Ø340	1040	16x16 kg
65134092	65.4 AL/OG ZA 3P CZ		102 km/h	4414	2000	2000	Ø40	Ø1820	Ø340	1040	12x16 kg
65153092	65.3 AL/OG ZA 5P CZ	3	159 km/h	3580	3000	-	Ø40	Ø1820	Ø340	1040	20x16 kg
65143092	65.3 AL/OG ZA 4P CZ		137 km/h	3492	3000	-	Ø40	Ø1820	Ø340	1040	16x16 kg
65133092	65.3 AL/OG ZA 3P CZ		113 km/h	3404	3000	-	Ø40	Ø1820	Ø340	1040	12x16 kg
65152092	65.2 AL/OG ZA 5P CZ	2	140 km/h	2580	2000	-	Ø40	Ø1820	Ø340	1040	20x16 kg
65142092	65.2 AL/OG ZA 4P CZ		110 km/h	2492	2000	-	Ø40	Ø1820	Ø340	1040	16x16 kg

To order a specific material option, replace last two digits into material equivalent from Material Options specification.

Al/St/tZn 92 Al / StSt (V2A) 09

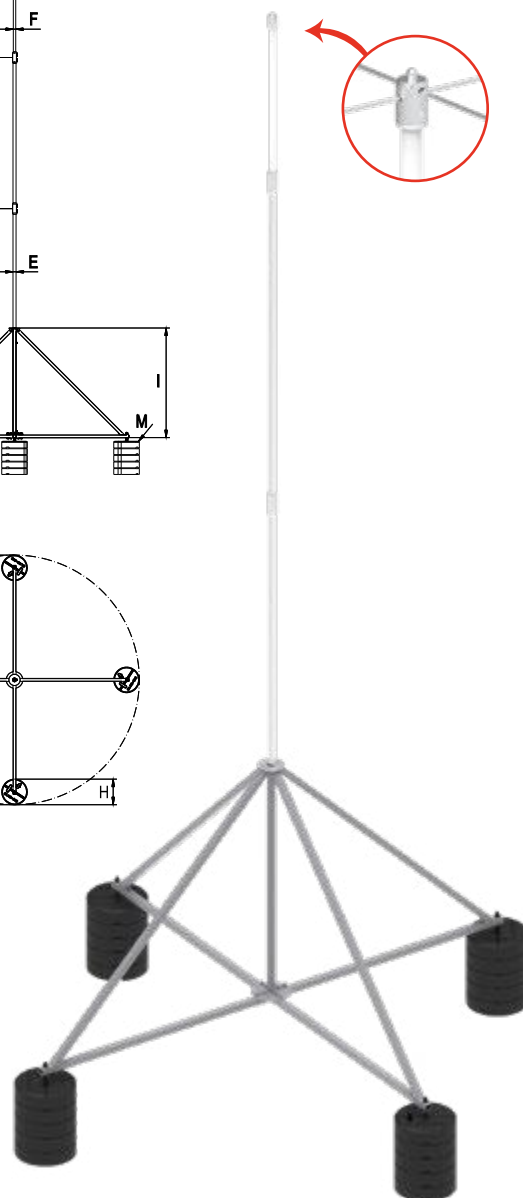
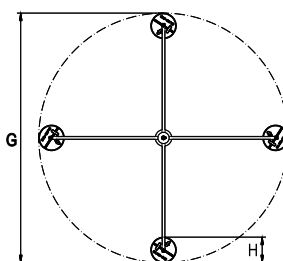
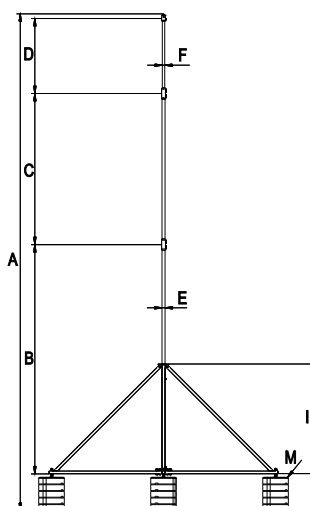
The AL/St/tZn version is an Aluminium Interception Air Rod with a Zinc plated flame quadrant. The AL version is Aluminium Interception Air Rod with a stainless steel quadrant.

Fourpod insulated lightning protection mast for high air termination

For lightning protection of roof elements and devices (skylights, air conditioners, air handling units, air handling channels). Providing supporting structure for high horizontal air termination with use of Aldrey rope. Made of durable aluminium, finished with 1 meter insulation bar, allowing to be placed near by the devices with lower distance, than required separation distance. Frame stainless steel made. Distance between Aldrey rope connected masts can not exceed 10 meters. Conductor connection clamp included in the set. Use concrete base underneath pad 44408208 - to be ordered separately. Additionally it is recommended to use 94308022 pad for tarboard roofs cover or 94308021 for mambrane cover.

NOTE!

To order stainless steel fourpod base frame, change 2 last digits of catalog number for "09".



CAT. NUM.	TYPE	HEIGHT	WIND RESISTANCE	A	B	C	D	E	F	G	H	I	M
65356092	65.6 AL/OG IZ 5P CZ	6	147 km/h	6600	3000	2000	1000	Ø40	Ø32	Ø3320	Ø340	1460	20x16 kg
65346092	65.6 AL/OG IZ 4P CZ		142 km/h	6512	3000	2000	1000	Ø40	Ø32	Ø3320	Ø340	1460	16x16 kg
65336092	65.6 AL/OG IZ 3P CZ		125 km/h	6424	3000	2000	1000	Ø40	Ø32	Ø3320	Ø340	1460	12x16 kg
65326092	65.6 AL/OG IZ 2P CZ		106 km/h	6336	3000	2000	1000	Ø40	Ø32	Ø3320	Ø340	1460	8x16 kg
65355092	65.5 AL/OG IZ 5P CZ	5	178 km/h	5600	2000	2000	1000	Ø40	Ø32	Ø3320	Ø340	1460	20x16 kg
65345092	65.5 AL/OG IZ 4P CZ		160 km/h	5512	2000	2000	1000	Ø40	Ø32	Ø3320	Ø340	1460	16x16 kg
65335092	65.5 AL/OG IZ 3P CZ		141 km/h	5424	2000	2000	1000	Ø40	Ø32	Ø3320	Ø340	1460	12x16 kg
65325092	65.5 AL/OG IZ 2P CZ		120 km/h	5336	2000	2000	1000	Ø40	Ø32	Ø3320	Ø340	1460	8x16 kg
65354092	65.4 AL/OG IZ 5P CZ	4	140 km/h	4600	3000	-	1000	Ø40	Ø32	Ø1820	Ø340	1040	20x16 kg
65344092	65.4 AL/OG IZ 4P CZ		120 km/h	4512	3000	-	1000	Ø40	Ø32	Ø1820	Ø340	1040	16x16 kg
65334092	65.4 AL/OG IZ 3P CZ		102 km/h	4424	3000	-	1000	Ø40	Ø32	Ø1820	Ø340	1040	12x16 kg
65353092	65.3 AL/OG IZ 5P CZ	3	159 km/h	3590	2000	-	1000	Ø40	Ø32	Ø1820	Ø340	1040	20x16 kg
65343092	65.3 AL/OG IZ 4P CZ		137 km/h	3502	2000	-	1000	Ø40	Ø32	Ø1820	Ø340	1040	16x16 kg
65333092	65.3 AL/OG IZ 3P CZ		113 km/h	3414	2000	-	1000	Ø40	Ø32	Ø1820	Ø340	1040	12x16 kg
65352092	65.2 AL/OG IZ 5P CZ	2	140 km/h	2790	1200	-	1000	Ø40	Ø32	Ø1820	Ø340	1040	20x16 kg
65342092	65.2 AL/OG IZ 4P CZ		110 km/h	2702	1200	-	1000	Ø40	Ø32	Ø1820	Ø340	1040	16x16 kg

To order a specific material option, replace last two digits into material equivalent from Material Options specification.

Al/St/tZn 92 Al /StSt (V2A) 09

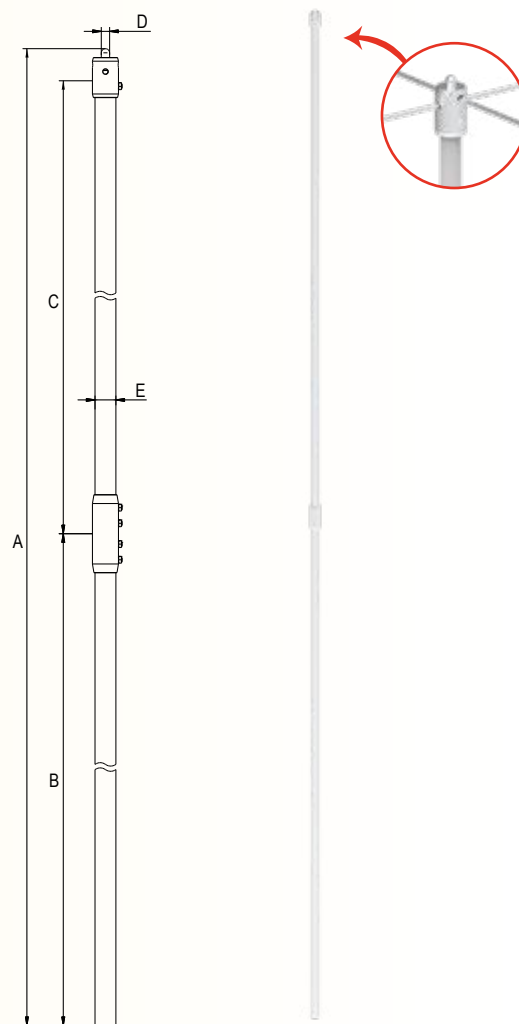
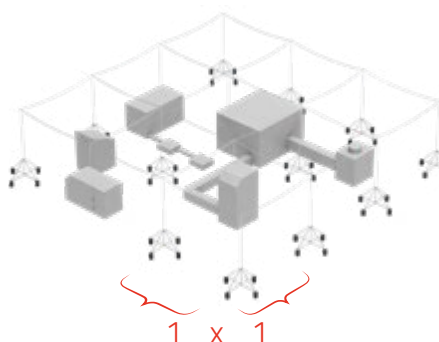
The AL/OG version is an Aluminium Interception Air Rod with a Zinc plated flame quadrant. The AL version is Aluminium Interception Air Rod with a stainless steel quadrant.

Mast air terminal for high air termination

For lightning protection of roof elements and devices (skylights, air conditioners, air handling units, air handling channels). Providing supportive structure for Aldrey rope supplied between the masts spaced appropriately, keeping separation distance from the protected devices. 2 lines of Aldrey rope through mounting possible. Distance between Aldrey rope connected masts can not exceed 8 meters. Strengthened masts more resistant to wind speed. Depending on the mounting location, appropriate holders should be applied e.g. 66000105. Made of durable aluminium.

NOTE!

Wind resistance of masts is dependent on the number of masts in the mesh. Read the correct value from the table below!



CAT. NUM.	TYPE	VERSION	HEIGHT	WIND RESISTANCE	A	B	C	D	E
62057009	62.7.1 AL ZA	enhanced	7		7065	4000	3000	Ø16	Ø40
62056009	62.6.1 AL ZA	enhanced	6		6065	3000	3000	Ø16	Ø40
62046009	62.6 AL ZA	standard			6065	3000	3000	Ø16	Ø40
62055009	62.5.1 AL ZA	enhanced	5		5065	3000	2000	Ø16	Ø40
62045009	62.5 AL ZA	standard			5065	3000	2000	Ø16	Ø40
62054009	62.4.1 AL ZA	enhanced	4		4065	2000	2000	Ø16	Ø40
62044009	62.4 AL ZA	standard			4065	2000	2000	Ø16	Ø40
62043009	62.3 AL ZA	standard	3		3045	3000	-	Ø16	Ø40
62042009	62.2 AL ZA	standard	2		2045	2000	-	Ø16	Ø40

Masts wind speed resistance dependent on masts number used in the mesh

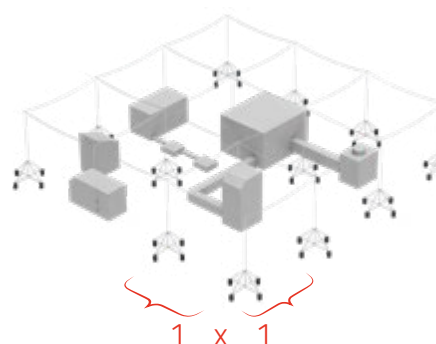
CAT. NUM.	TYPE	HEIGHT	5x5	4x4	3x3	2x2	1x1
62057009	62.7.1 AL ZA	7	107	107	108	112	129
62056009	62.6.1 AL ZA	6	123	124	125	128	148
62046009	62.6 AL ZA		99	100	102	105	122
62055009	62.5.1 AL ZA	5	142	143	145	149	172
62045009	62.5 AL ZA		116	117	119	123	141
62054009	62.4.1 AL ZA	4	168	171	173	178	203
62044009	62.4 AL ZA		138	140	143	147	167
62043009	62.3 AL ZA	3	166	169	174	182	201
62042009	62.2 AL ZA	2	198	202	208	220	250

Insulated mast air terminal for high air termination

For lightning protection of roof elements and devices (skylights, air conditioners, air handling units, air handling channels). Providing supporting structure for high horizontal air termination with use of Aldrey rope. Made of durable aluminium, finished with 1 meter insulation bar, allowing to be placed near by the devices with lower distance, than required separation distance. 2 lines of Aldrey rope through mounting possible. Distance between Aldrey rope connected masts can not exceed 8 meters. Strengthened masts more resistant to wind speed. Depending on the mounting location, appropriate holders should be applied e.g. 66000105.

NOTE!

Wind resistance of masts is dependent on the number of masts in the mesh. Read the correct value from the table below!



CAT. NUM.	TYPE	VERSION	HEIGHT	WIND RESISTANCE	A	B	C	D	E	F	G
62077009	62.7.1 AL IZ	enhanced	7		7075	3000	3000	1000	Ø16	Ø32	Ø40
62076009	62.6.1 AL IZ	enhanced	6		6075	3000	2000	1000	Ø16	Ø32	Ø40
62066009	62.6 AL IZ	standard			6075	3000	2000	1000	Ø16	Ø32	Ø40
62075009	62.5.1 AL IZ	enhanced	5		5075	2000	2000	1000	Ø16	Ø32	Ø40
62065009	62.5 AL IZ	standard			5075	2000	2000	1000	Ø16	Ø32	Ø40
62074009	62.4.1 AL IZ	enhanced	4		4065	3000	-	1000	Ø16	Ø32	Ø40
62064009	62.4 AL IZ	standard			4065	3000	-	1000	Ø16	Ø32	Ø40
62063009	62.3 AL IZ	standard	3		3065	2000	-	1000	Ø16	Ø32	Ø40
62062009	62.2 AL IZ	standard	2		2065	1000	-	1000	Ø16	Ø32	Ø40

Masts wind speed resistance dependent on masts number used in the mesh

CAT. NUM.	TYPE	HEIGHT	5x5	4x4	3x3	2x2	1x1
62077009	62.7.1 AL IZ	7	107	107	108	112	129
62076009	62.6.1 AL IZ	6	123	124	125	128	148
62066009	62.6 AL IZ		99	100	102	105	122
62075009	62.5.1 AL IZ	5	142	143	145	149	172
62065009	62.5 AL IZ		116	117	119	123	141
62074009	62.4.1 AL IZ	4	168	171	173	178	203
62064009	62.4 AL IZ		138	140	143	147	167
62063009	62.3 AL IZ	3	166	169	174	182	201
62062009	62.2 AL IZ	2	198	202	208	220	250

ALDREY lightning protection rope

For horizontal conductors grid between air termination masts. Maximum distance between masts should not exceed 10 meters. For technical advice and project of such solution please contact our team at: export@elkobis.com.pl.



CAT. NUM.	TYPE	STRAND TYPE	WEIGHT [kg/m]	DIAMETER
80200809	ALDREY 50 mm	19xØ1,8 mm	0,14 kg	Ø8

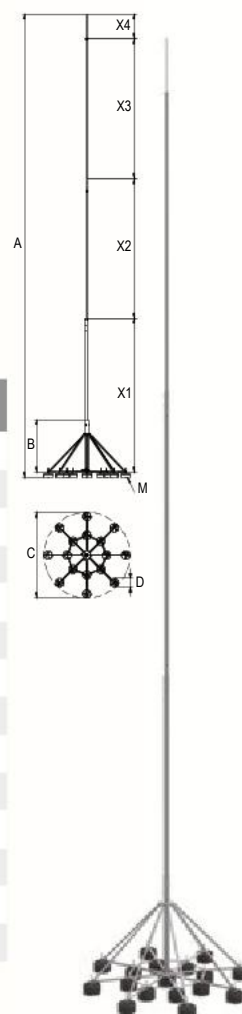
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Free standing lightning protection masts 12-18m

Used to protect metal elements of the roof and devices (skylights, air conditioners, air handling units, ventilation ducts) against the effects of lightning. The supporting structure is an octopod frame base with concrete blocks, ensuring adequate wind load resistance. Mast mounting sets allow vertical plumbing in the range of 0° - 1.5°. 44408208 PVC pad should be applied under the concrete blocks - to be ordered separately. Additionally, we recommend use of washers 94308222 for roofs covered with tar paper and 94308221 for roofs covered in membrane. Aluminium made mast and stainless steel octagonal frame base.

CAT. NUM.	TYPE	HEIGHT	WIND RESISTANCE	A	B	C	D	X1	X2	X3	X4	M
65221809	65.18 AL 2P CZ	18000	144 km/h	18250	2000	3380	340	6000	6000	6000	1000	34x16kg
65211809	65.18 AL 1P CZ	18000	122 km/h	18160	2000	3380	340	6000	6000	6000	1000	17x16kg
65221709	65.17 AL 2P CZ	17000	176 km/h	17250	2000	3380	340	6000	4000	6000	2000	34x16kg
65211709	65.17 AL 1P CZ	17000	133 km/h	17160	2000	3380	340	6000	4000	6000	2000	17x16kg
65221609	65.16 AL 2P CZ	16000	198 km/h	16250	2000	3380	340	3000	6000	6000	2000	34x16kg
65211609	65.16 AL 1P CZ	16000	144 km/h	16160	2000	3380	340	3000	6000	6000	2000	17x16kg
65221509	65.15 AL 2P CZ	15000	215 km/h	15250	2000	3380	340	3000	6000	6000	1000	34x16kg
65211509	65.15 AL 1P CZ	15000	144 km/h	15160	2000	3380	340	3000	6000	6000	1000	17x16kg
65221409	65.14 AL 2P CZ	14000	223 km/h	14250	2000	3380	340	3000	4000	6000	2000	34x16kg
65211409	65.14 AL 1P CZ	14000	167 km/h	14160	2000	3380	340	3000	4000	6000	2000	17x16kg
65221309	65.13 AL 2P CZ	13000	241 km/h	13250	2000	3380	340	3000	3000	6000	2000	34x16kg
65211309	65.13 AL 1P CZ	13000	176 km/h	13160	2000	3380	340	3000	3000	6000	2000	17x16kg
65221209	65.12 AL 2P CZ	12000	253 km/h	12250	2000	3380	340	3000	3000	6000	1000	34x16kg
65211209	65.12 AL 1P CZ	12000	191 km/h	12160	2000	3380	340	3000	3000	6000	1000	17x16kg

AI

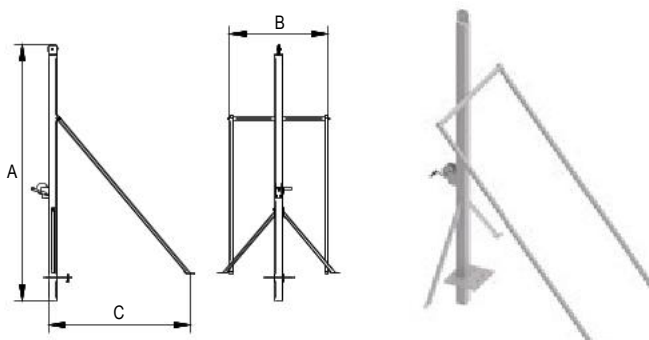


Lifting device for free standing masts 12-18 m

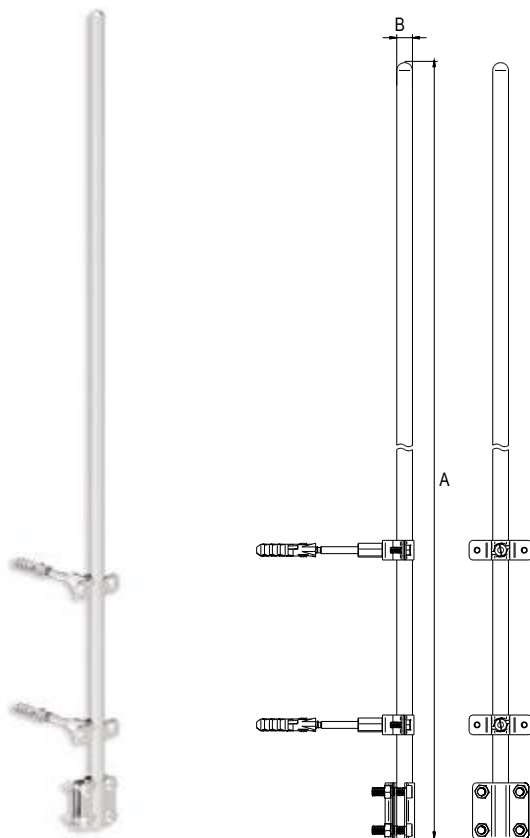
Used to lift lightning protection masts on an octopod frame base to a vertical position. Enables the installation of masts without use of crane or other heavy equipment.

CAT. NUM.	TYPE	A	B	C
60000002	-	3131	1205	1730

St/tZn



Chimney spire



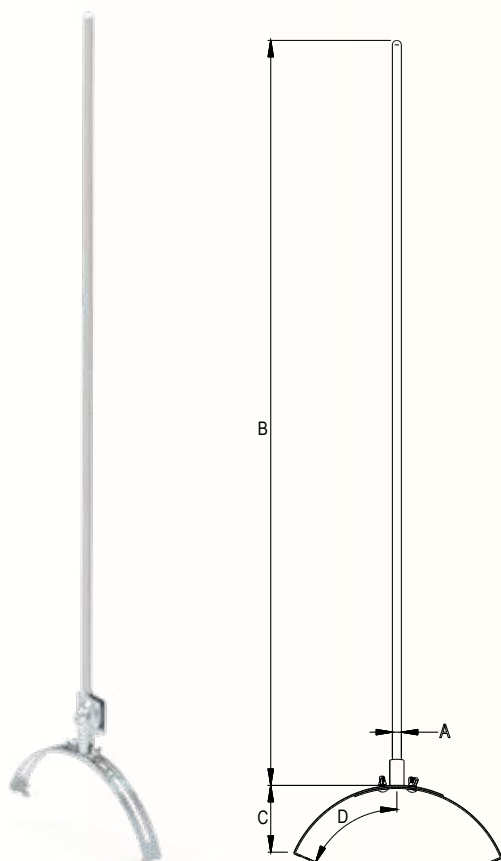
For chimneys protection. Spire set include 2 fix plug holders and wire connector. Can be use as a protection of attic and elements around it. Spire weight is maximum 3 kg.

CAT. NUM.	TYPE	A	B	BOLT
97001009	70.10	1000	16	4×M8×20
97001509	70.15	1500	16	4×M8×20
97002009	70.20	2000	16	4×M8×20
97002509	70.25	2500	16	4×M8×20
97003009	70.30	3000	16	4×M8×20

To order a specific material option, replace last two digits into material equivalent from Material Options specification.

Cu	03	StSt (V2A)	05	Al	09
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Single ridge tile spire



For lightning protection of roof elements and devices (skylights, air conditioners, air handling units, air handling channels). For tile roofs. Direct screw assembly to ridge tile. Complete set includes horizontal wire connector.

CAT. NUM.	TYPE	A	B	C	D
97111009	71.10/1	Ø12	1000	65	125÷205

Al

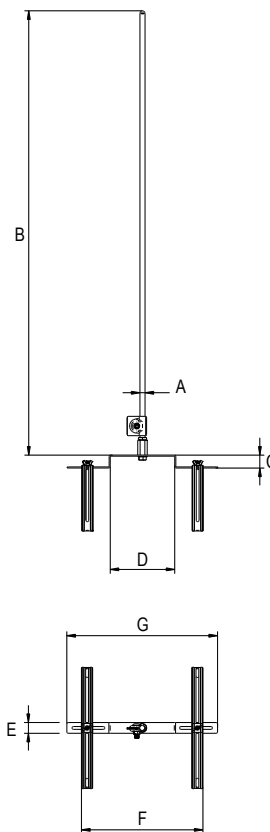
Double ridge tile spire

For lightning protection of roof elements and devices (skylights, air conditioners, air handling units, air handling channels). For tile roofs. Direct screw assembly to ridge tile. Complete set include horizontal wire connector. Stability of spire up to 2 meters.

CAT. NUM.	TYPE	A	B	C	D	E	F	G
97101009	71.10	Ø12	1000	30	150	25	206-346	350
97101509	71.15	Ø12	1500	30	150	25	206-346	350
97102009	71.20	Ø12	2000	30	150	25	206-346	350

To order a specific material option, replace last two digits into material equivalent from Material Options specification.

Cu 03 Al 09

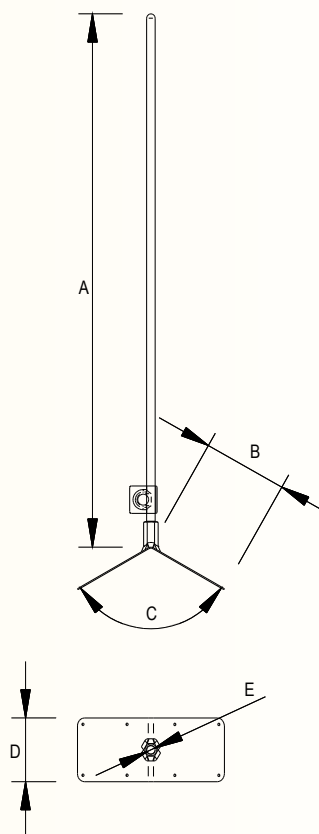


Top roof spire

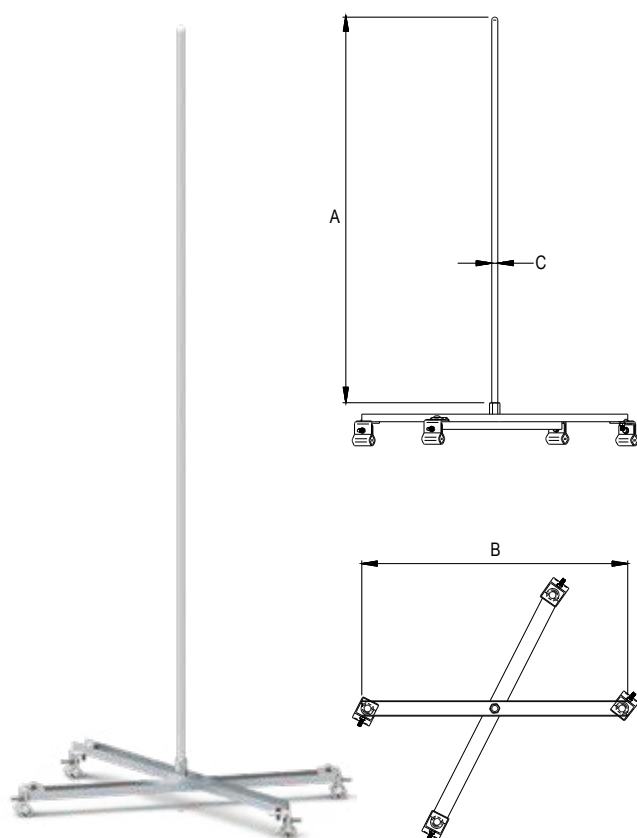
For lightning protection of top roof elements and devices (skylights, air conditioners, air handling units, air handling channels) covered in trapezoid and seam steel sheets. Complete set with connector allowing spire connection to horizontal conductor on the roof.

CAT. NUM.	TYPE	A	B	C	D	E
97131009	71.10.1/M	1000	160	120	120	12
97131509	71.15.1/M	1500	160	120	120	12
97132009	71.20.1/M	2000	160	120	120	12

Al



Steel roofs spire

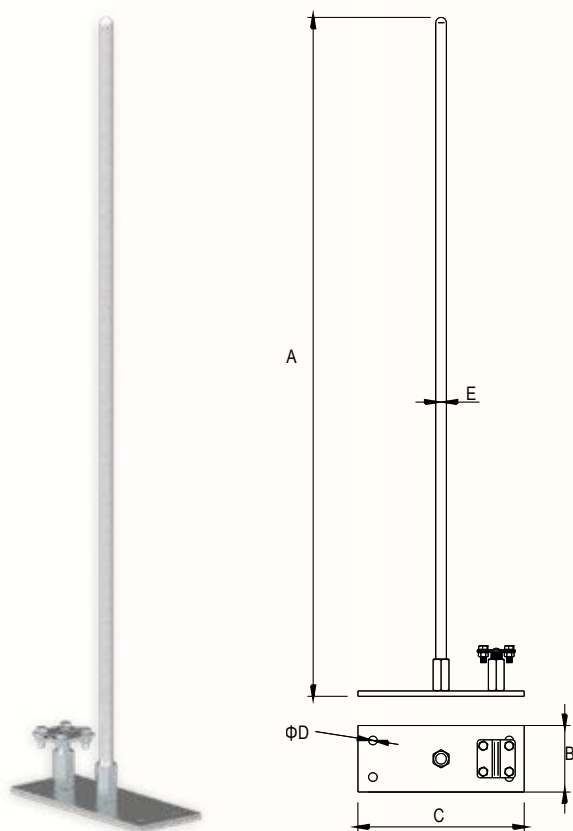


For lightning protection of roof elements and devices (skylights, air conditioners, air handling units, air handling channels). Dedicated to roofs covered in standing seam, steel sheets. Aluminium made spire with zinc plated steel base. On the roofs with large slope angle, use regulation set 96540001 for vertical lining.

CAT. NUM.	TYPE	A	B	C
97121009	71.10/M AL	1000	700	Ø16
97121509	71.15/M AL	1500	700	Ø16
97122009	71.20/M AL	2000	700	Ø16

AI

Steel base interception mast



For lightning protection of roof elements and devices (skylights, air conditioners, air handling units, air handling channels). Permanent fixing of steel base using screws or anchors. Total weight up to 5 kg.

CAT. NUM.	TYPE	WIND RESISTANCE	A	B	C	D	E
94384009	43.4/M	116 km/h	4000	200	250	Ø11	Ø16
94383509	43.35/M	116 km/h	3500	200	250	Ø11	Ø16
94383009	43.3/M	155 km/h	3000	200	250	Ø11	Ø16
94382509	43.25/M	155 km/h	2500	200	250	Ø11	Ø16
94382009	43.2/M	174 km/h	2000	100	250	Ø11	Ø16
94381509	43.15/M	174 km/h	1500	100	250	Ø11	Ø16
94381009	43.1/M	247 km/h	1000	100	250	Ø11	Ø16

Can be used for III – th wind loading zone (acc. PN 77/B-0211) being permanently fixed to surface.

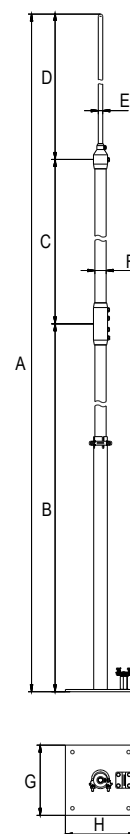
AI

Steel base interception mast

For lightning protection of roof elements and devices (skylights, air conditioners, air handling units, air handling channels). Permanent fixing of steel base using screws or anchors. Total weight up to 20 kg.

CAT. NUM.	TYPE	WIND RESISTANCE	A	B	C	D	E	F	G	H
65607009	65.7/M AL	140 km/h	7023	3000	3000	1000	Ø16	Ø40	250	250
65606509	65.65/M AL	140 km/h	6523	3000	3000	500	Ø16	Ø40	250	250
65606009	65.6/M AL	149 km/h	6023	3000	2000	1000	Ø16	Ø40	250	250
65605509	65.55/M AL	149 km/h	5523	3000	2000	500	Ø16	Ø40	250	250
65605009	65.5/M AL	175 km/h	5023	2000	2000	1000	Ø16	Ø40	250	250
65604509	65.45/M AL	175 km/h	4523	2000	2000	500	Ø16	Ø40	250	250
65604009	65.4/M AL	192 km/h	4023	3000	-	1000	Ø16	Ø40	250	250

Al



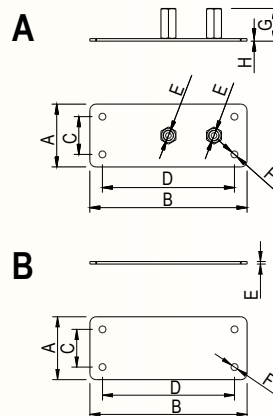
Small steel interception mast base

For masts fixing e.g 94383009. Permanent fixing using screws or anchors. Fixing to construction surface or sub-construction derived above roof surface.

CAT. NUM.	TYPE	A	B	C	D	E	F	G	H
94301302	43.13A	100	250	60	210	M16	Ø11	52	4
94301402	43.14A	250	200	210	160	M16	Ø11	52	4
94311302	43.13B	100	250	60	210	4	Ø11	-	4
94311402	43.14B	200	250	160	210	4	Ø11	-	4

To order a specific material option, replace last two digits into material equivalent from Material Options specification.

St/tZn 02 StSt (V2A) 05



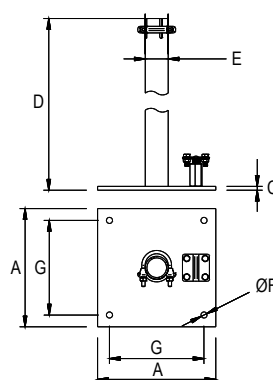
Interception mast base

For masts fixing e.g 62005009. Permanent fixing using screws or anchors. Fixing to construction surface or sub-construction derived above roof surface.

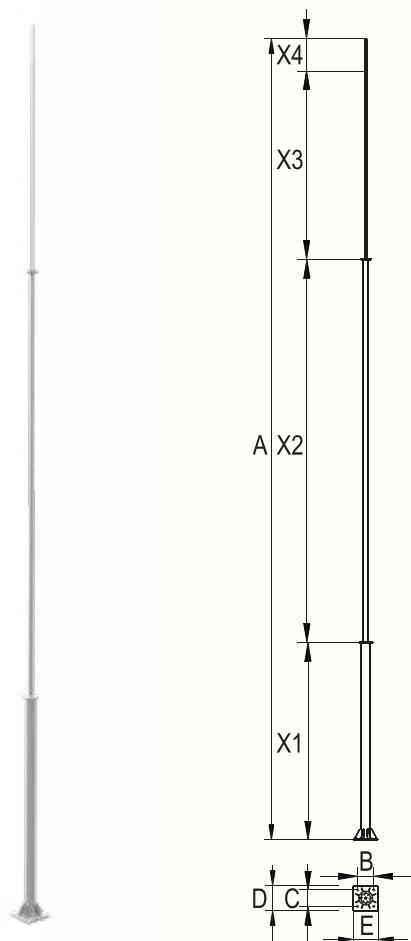
CAT. NUM.	TYPE	A	C	D	E	F	G	BOLT
94309002	43.9	250	8	900	Ø48	Ø13	200	4xM8x20

To order a specific material option, replace last two digits into material equivalent from Material Options specification.

St/tZn 02 StSt (V2A) 05



Air terminal 6, 9, 12, 15 m

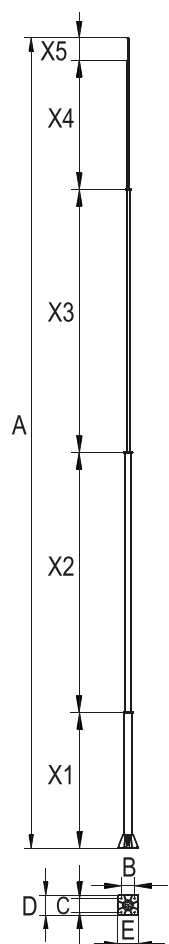


Made of hot galvanised steel. Lightning protection air terminal is used to protect certain devices and objects. Allows creation of extensive protection zones at facilities requiring high class protection (for example: objects with a high risk of explosion or important for region). Air terminal can provide a large separation distance and protection for a group of high objects. Concrete foundation is ordered separately.

CAT. NUM.	TYPE	A	B	C	D	E	X1	X2	X3	X4	WEIGHT
16206002	-	6000	250	250	380	380	3000	-	3000	500	~60 kg
16209002	-	9000	250	250	380	380	6000	-	6000	500	~80 kg
16212002	-	12000	250	250	380	380	3000	3000	6000	500	~160 kg
16215002	-	15000	250	400	380	380	6000	6000	6000	500	~220 kg

St/tZn

Air terminal 18, 21 m



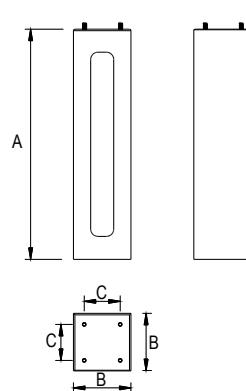
Made of hot galvanised steel. Lightning protection air terminal is used to protect certain devices and objects. Allows creation of extensive protection zones at facilities requiring high class protection (for example: objects with a high risk of explosion or important for region). Air terminal can provide a large separation distance and protection for a group of high objects. Concrete foundation is ordered separately.

CAT. NUM.	TYPE	A	B	C	D	E	X1	X2	X3	X4	X5	WEIGHT
16218002	-	18000	300	300	450	450	3000	6000	6000	3000	500	~360 kg
16221002	-	21000	300	300	450	450	6000	6000	6000	3000	500	~550 kg

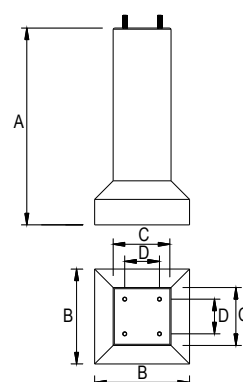
St/tZn

Air terminal concrete foundation

Concrete foundation 16290299 applied with 6 m (cat.num. 16206002), 9 m (cat.num. 16209002), 12 m (cat.num. 16212002) and 15 m (cat.num. 16215002) air terminals. Concrete foundation 16290199 applied with 18 m (cat.num. 16218002) and 21 m (cat.num. 16221002) air terminals.



16290299

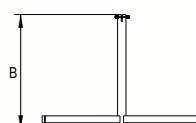
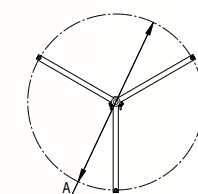


16290199

CAT. NUM.	TYPE	A	B	C	D	BOLT	WEIGHT
16290299	–	1600	400	250	–	M24	400 kg
16290199	–	1700	820	500	300	M33	1150 kg

Mast tripod frame

To mount free standing air termination rod to concrete bases. Concrete bases to be ordered separately, following assembly instruction.

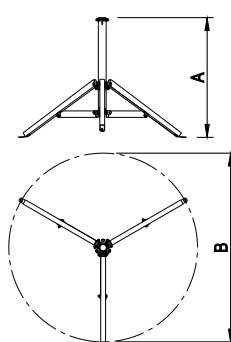


CAT. NUM.	TYPE	A	B
66410005	–	Ø1017	660

StSt (V2A) 05

Composed tripod frame

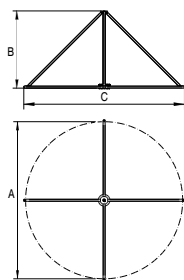
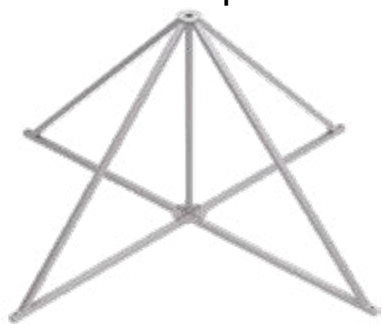
To mount free standing air termination rod to concrete bases. Composed construction to ease and reduce logistic processes. Concrete bases to be ordered separately, following assembly instruction.



CAT. NUM.	TYPE	A	B
66420005	–	Ø1017	750

StSt (V2A) 05

Mast fourpod frame

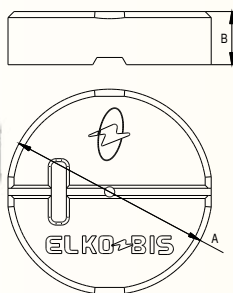


To mount free standing air terminal together with concrete bases. For masts 2 - 4 meters use smaller frame (66450002), higher above use bigger frame (66460002). Durable construction made of hot deep galvanized steel or stainless steel. Concrete bases to be ordered separately, following instruction.

CAT. NUM.	TYPE	A	B	C
66460002	–	2980	1465	3048
66450002	–	1480	1040	1548

St/tZn

Concrete mast base

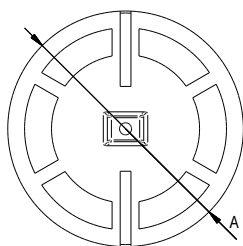


To give loading of lightning protection masts. Appropriate quantity according to mast assembly instruction. Made of vibrated concrete. For additional protection of roof surface, it is recommended to use pads underneath 94308221 or 94308222.

CAT. NUM.	TYPE	A	B	WEIGHT	COLOUR
44311111	43.111	Ø340	88	~16 kg	black
44311211	43.112	Ø340	88	~16 kg	gray

CONCRETE 11

Concrete base underneath pad

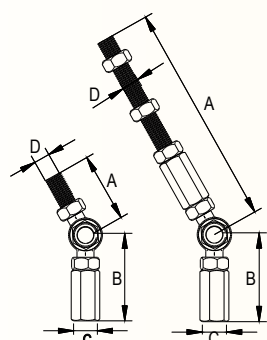


For additional protection of roof surface. To be placed directly underneath concrete base 44311111. Additionally it is recommended to cover roof with a layer of membrane.

CAT. NUM.	TYPE	A	B
44408208	–	Ø350	23

PVC

Mast regulating set



For vertical-lining of masts including roof slope. It is recommended to use regulation sets above 5% slope. Set 66598005 dedicated to vertical-lining of tripod masts up to 15% roof slope.

CAT. NUM.	TYPE	A	B	C	D	NOTES
66598005	–	208	83	M16	M16	three-element for tripod masts
66599005	–	175	83	M16	M16	single-element for one base masts

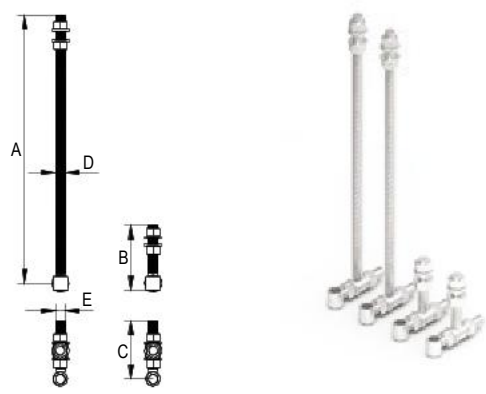
StSt (V2A)

Fourpod masts regulating set

Used to adjust the verticality of the fourpod lightning protection masts, depending on the roof slope range from 0 to 10° slope. Must be used when the roof slope is above 5°. The 66596005 option is intended for the vertical alignment of 5 meter masts and higher, and 66597005 used for 4 meter masts and lower.

CAT. NUM.	TYPE	A	B	C	D	E	NOTES
66596005	-	460	90	90	M16	M16	for masts 5-6m
66597005	-	380	90	90	M16	M16	for masts 4 and lower

StSt (V2A)



Connection set for concrete mast bases

To mount concrete bases for lightning protection masts on a tripod or on a single base.

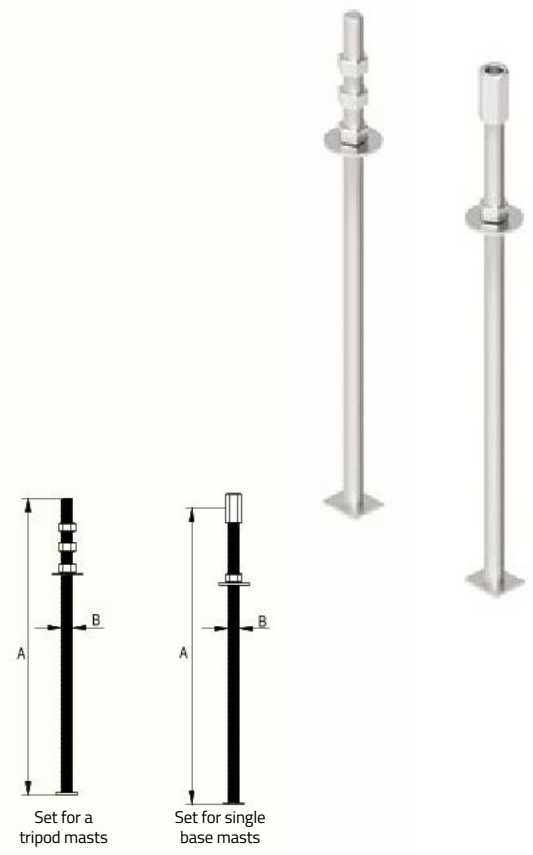
Set for a tripod masts

CAT. NUM.	TYPE	NUMBER OF CONCRETE BASES	A	B	NOTES
46400105	-	1	205	M16	The set consists of 3 connecting elements
46400205	-	2	290	M16	The set consists of 3 connecting elements
46400305	-	3	380	M16	The set consists of 3 connecting elements
46400405	-	4	460	M16	The set consists of 3 connecting elements
46400505	-	5	550	M16	The set consists of 3 connecting elements

Set for single base masts

CAT. NUM.	TYPE	NUMBER OF CONCRETE BASES	A	B	NOTES
44400105	-	1	120	M16	The set consists of 1 connecting element
44400205	-	2	205	M16	The set consists of 1 connecting element
44400305	-	3	290	M16	The set consists of 1 connecting element
44400405	-	4	380	M16	The set consists of 1 connecting element

StSt (V2A) 05

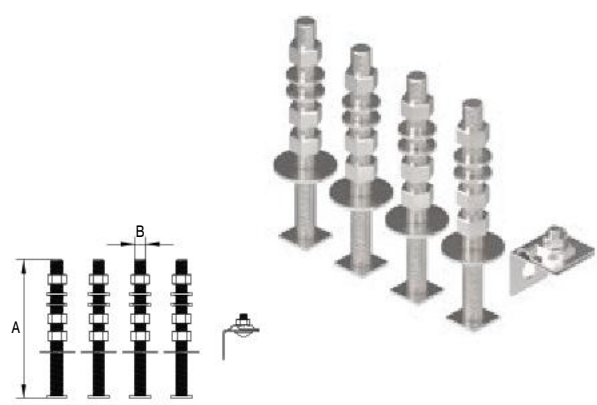


Fourpod assembly set

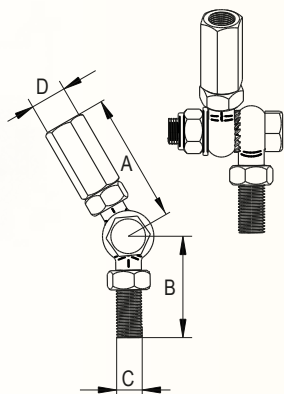
Used to mount concrete bases to the lightning mast fourpod frame, vertical range of 0° - 2°. Appropriate set selection depends on the number of concrete bases per leg. Wire conductor connector comes in the set.

CAT. NUM.	TYPE	A	B	NUMBER OF CONCRETE BASES
46440505	46440505	550	M16	20x16 kg
46440405	46440405	460	M16	16x16 kg
46440305	46440305	380	M16	12x16 kg
46440205	46440205	290	M16	8x16 kg

StSt (V2A)



Mast regulation set

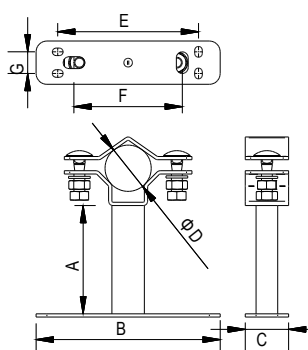


For vertical-lining of masts including roof slope. It is recommended to use regulation sets above 3% slope. Set dedicated to vertical-lining of Steel Roofs Spire (e.g. 97121009) and Steel Base Interception Mast (e.g. 94384009)

CAT. NUM.	TYPE	A	B	C	D
96540001	65.R.1	65	83	M16	M16

St/Zn

Mast holder



To mount interception air rods and spires to walls and other constructions. Minimum 2 holders to be used for one air rod. Recommended distance between holders minimum 0,8 m.

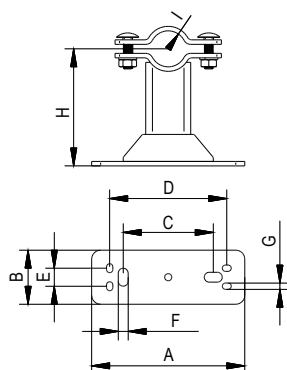
ATTENTION: Non standard made to order holders can be also provide. To inquire and quote contact: export@elkobis.com.pl

NOTE: This Mast holder should not be used with Mast air terminal for high air termination. In this case, use the Mast holder for high horizontal air termination 66000105.

CAT. NUM.	TYPE	A	B	C	ØD	E	F	G
66000205	-	100	170	40	Ø40 - Ø50	140	100	20

StSt (V2A)

Mast holder for high horizontal air termination



To mount Ø40 air terminal to walls or constructions. Durable construction dedicated mainly for high air termination masts in a mesh setups. Use minimum 2 holders for 1 air terminal. Recommended distance between holders 0,8 m.

CAT. NUM.	TYPE	A	B	C	D	E	F	G	H	I	BOLT
66000105	-	170	60	100	130	20	11	7	130	40	2xM10x35

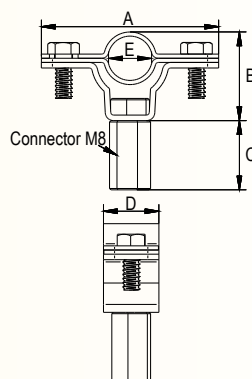
StSt (V2A)

Lightning spire holder

To fix Ø16 Air terminal onto facade, separation bars or different types of steel structures. 2 types with and without connector to direct flat surface fixing.

CAT. NUM.	TYPE	A	B	C	D	E	BOLT	NOTES
12700105	127.1	64	30,5	–	20	16	2×M6×16	without connector
12701105	127.1.1	64	30,5	25	20	16	2×M6×16	with connector

StSt (V2A)

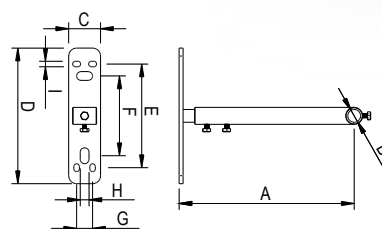


Regulated lightning spire holder

To wall and chimney spire fixing. Regulated distance off the wall. Use at least 2 holders for 1 spire.

CAT. NUM.	TYPE	A	B	C	D	E	F	G	H	I	BOLT
96000005	60.0	200-320	Ø16	40	170	130	100	20	11	7	3×M6×8

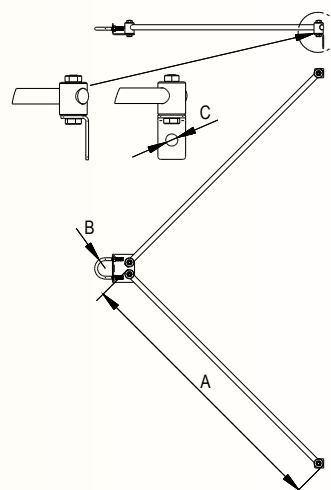
StSt (V2A)



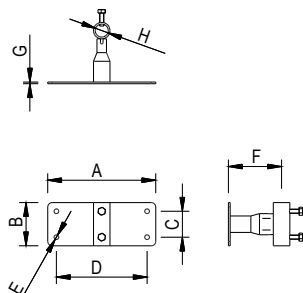
Supportive air rod bars

For additional stiffening of air termination rods, to exceed wind speed resistance. Made out of non conductive material, allowing direct mounting to devices, constructions or walls.

CAT. NUM.	TYPE	A	B	C
67900211	–	500	Ø40	Ø11
67900311	–	750	Ø40	Ø11
67900411	–	1000	Ø40	Ø11
67910211	–	500	Ø16-20	Ø11
67910311	–	750	Ø16-20	Ø11
67910411	–	1000	Ø16-20	Ø11



Interception air rod holder



For wall and construction mounting of mast and spires. Use minimum 2 holders for one mast. Recommended distance between holders is 0,8 m.

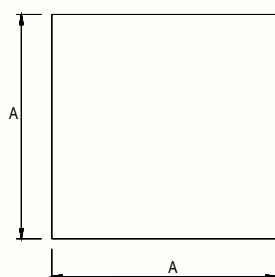
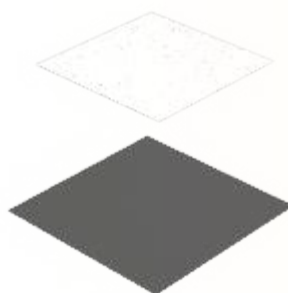
NOTICE: We can supply non typical custom made holders according to the requirement. For additional information please contact: export@elkobis.com.pl.

CAT. NUM.	TYPE	A	B	C	D	E	F	G	H	BOLT
96000102	60.1	250	100	60	210	Ø11	123	4	Ø31	2xM10x30
96000202	60.2	250	200	160	210	Ø11	130	4	Ø42	2xM10x30

To order a specific material option, replace last two digits into material equivalent from Material Options specification.

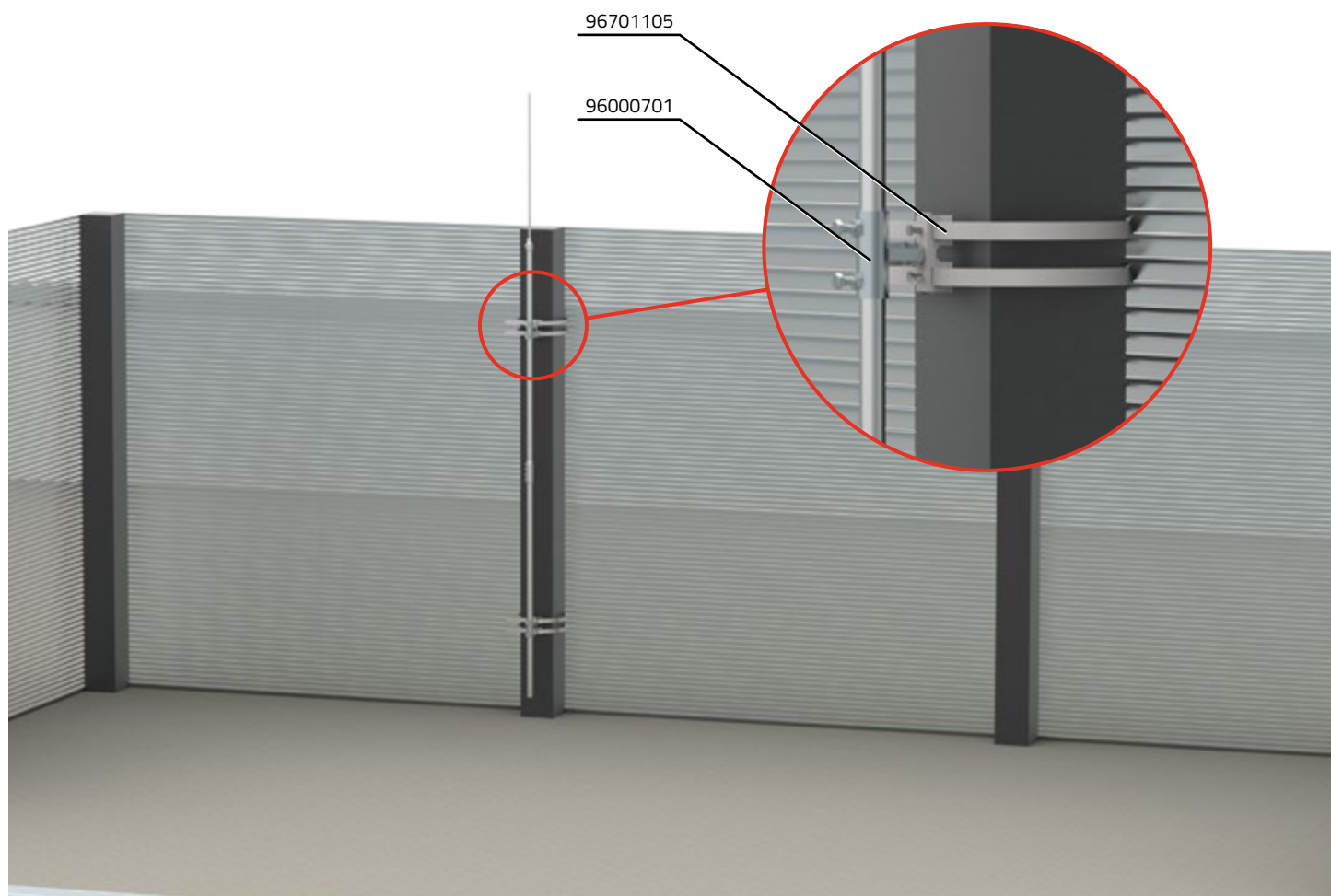
St/tZn	02	RAL	16	StSt (V2A)	05
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Concrete base pad



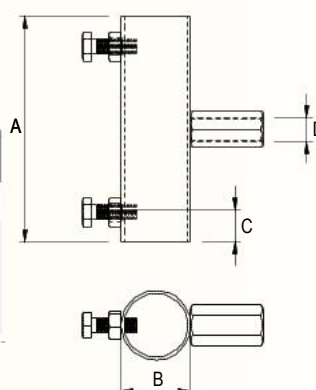
For mechanical damage protection of roof surface. To use under concrete base of mast. Depending on roof covering type use appropriate pad: tar board or membrane.

CAT. NUM.	TYPE	VERSION	A
94308022	43.80/P	to roof	400
94308021	43.80/F	to membrane	400



Interception air rod holder for clamp 96701105

For mast and spires mounting. Threaded holder element, thread M16 e.g double clamp 96701105. Use minimum 2 holders for one mast. Recommended distance between holders is 0,8 m.



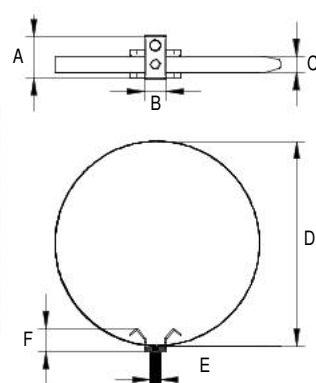
CAT. NUM.	TYPE	APPLICATION FOR MASTS	A	B	C	D	BOLT
96000701	60.7/M16	-	100	30	22	M16	2×M10×30
		62004009 Page 77					
96000801	60.8/M16	62005009 Page 77	150	42	22	M16	2×M10×30
		62006009 Page 77					

To order a specific material option, replace last two digits into material equivalent from Material Options specification.

St/Zn 01 RAL 16

Single universal piping clamp

For insulated bar or high voltage cable mounting to pipe constructions. Flexible stainless tape conductor adjust to different shapes, allowing assemble of lightning protection at different shape constructions. Clamp should be directly fastened with insulation bar e.g 97900729 or high voltage cable e.g 30400101.

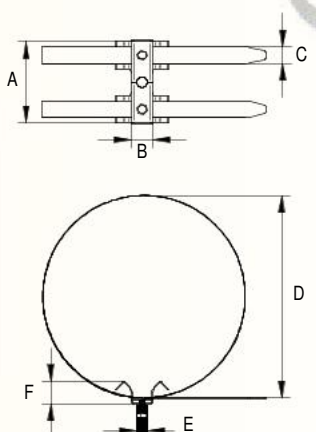


CAT. NUM.	TYPE	A	B	C	D	E	F	BOLT
97701105	77.1/M16	60	30	24x0,25	150-300	M16x50	30	M8x20
97700105	77.1/M8	60	30	24x0,25	150-300	M8x25	30	M8x20
97701205	77.2/M16	60	30	24x0,25	≤150	M16x50	30	M8x20
97700205	77.2/M8	60	30	24x0,25	≤150	M8x25	30	M8x20
97701305	77.3/M16	60	30	24x0,25	300-500	M16x50	30	M8x20
97700305	77.3/M8	60	30	24x0,25	300-500	M8x25	30	M8x20

StSt (V2A)

Double universal piping clamp

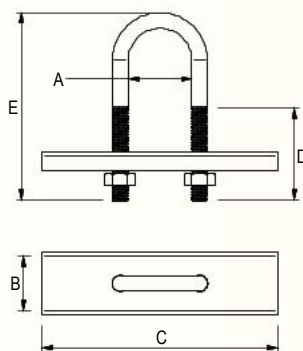
For insulated bar, interception rod or high voltage cable mounting to pipe constructions. Flexible stainless tape conductor adjust to different shapes, allowing assemble of lightning protection at different shape constructions. Clamp should be directly fastened with insulation bar e.g 97900729 or high voltage cable e.g 30400101. or interception air rod 96000701.



CAT. NUM.	TYPE	A	B	C	D	E	F	BOLT
96701105	67.1/M16	120	30	24x0,25	150-300	M16x50	30	2×M8x20
96700105	67.1/M8	120	30	24x0,25	150-300	M8x25	30	2×M8x20
96701205	67.2/M16	120	30	24x0,25	≤150	M16x50	30	2×M8x20
96700205	67.2/M8	120	30	24x0,25	≤150	M8x25	30	2×M8x20
96701305	67.3/M16	120	30	24x0,25	300-500	M16x50	30	2×M8x20
96700305	67.3/M8	120	30	24x0,25	300-500	M8x25	30	2×M8x20

StSt (V2A)

U-screw clamp holder

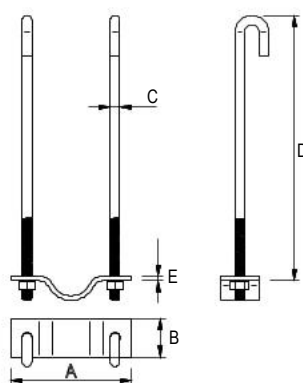


For pipes and railing, mast mounting. Use 2 holders for one mast. Recommended distance between holders is 0,8 m.

CAT. NUM.	TYPE	A	B	C	D	E	BOLT
96000401	60.4	40,5	40	150	60	110	M10

St/Zn

Special mast holder

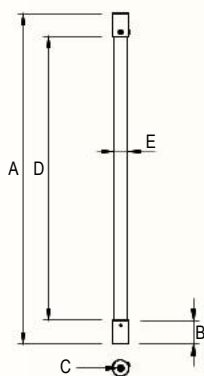


For non typical mast mounting e.g T-profiles or double T-profiles.

CAT. NUM.	TYPE	A	B	C	D	E
96000601	60.6	125	40	Ø10	300	5

St/Zn

Separation bar



To get insulation distance from protected device. Bar can be fixed to device cover, blinds, masts, pipes or steel chimneys using dedicated holder or clamp. Guarantee electric insulation.

CAT. NUM.	TYPE	A	B	C	D	E
97900729	79.075 M8/M8	750	51	M8/M8	638	Ø32
97900029	79.100 M8/M8	1000	51	M8/M8	888	Ø32
97901529	79.150 M8/M8	1500	51	M8/M8	1388	Ø32
97920029	79.200 M8/M8	2000	51	M8/M8	1888	Ø32
97910729	79.075 M8/M16	750	51	M8/M16	638	Ø32
97911029	79.100 M8/M16	1000	51	M8/M16	888	Ø32
97911529	79.150 M8/M16	1500	51	M8/M16	1388	Ø32
97912029	79.200 M8/M16	2000	51	M8/M16	1888	Ø32
97920729	79.075 M16/M16	750	51	M16/M16	638	Ø32
97921029	79.100 M16/M16	1000	51	M16/M16	888	Ø32
97921529	79.150 M16/M16	1500	51	M16/M16	1388	Ø32
97922029	79.200 M16/M16	2000	51	M16/M16	1888	Ø32

PVC

M16 threaded Separation Bars are available on request

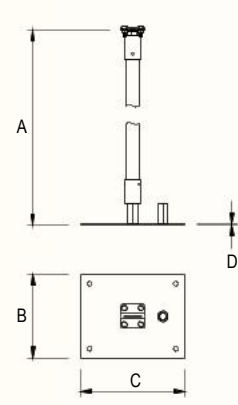
Insulated support bracket for vertical air termination

For leading Aldrey rope or wire conductor, using device covers or steel constructions. Insulation Bar gives demanded insulation distance. Distance between brackets should not exceed 4 meters.

CAT. NUM.	TYPE	A	B	C	D
98010002	80.100	1000	200	250	4

St/tZn

Other dimensions on customer's order.



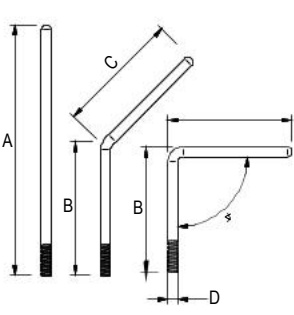
NEW

Separation bar end tip

For fixing Insulated Bar to construction. 3 types of end tip with different bending angle, allowing demanded angle of bar assembly.

CAT. NUM.	TYPE	A	B	C	D	α
98000101	80.1	200	100	100	M8	—
98000201	80.2	200	100	100	M8	45°
98000301	80.3	200	100	100	M8	90°

St/Zn



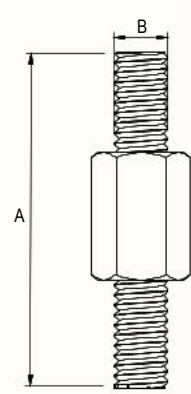
Straight connector

Perpendicular connections of insulation bar to flash holder.

CAT. NUM.	TYPE	A	B
98100101	81.1	50	M8

To order a specific material option, replace last two digits into material equivalent from Material Options specification.

St/Zn 01 StSt (V2A) 05

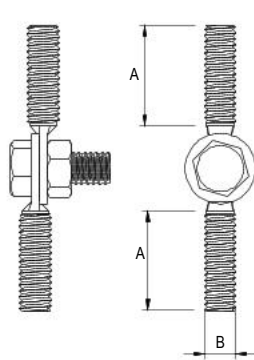


Swivel connector

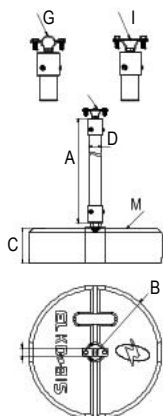
Connections of insulation bar to flash holder 98400101. Swivel allows bar connection at any angle.

CAT. NUM.	TYPE	A	B	BOLT
98200101	82.1	25	M8	M8×20

St/Zn



Bar holder fixed to the concrete base



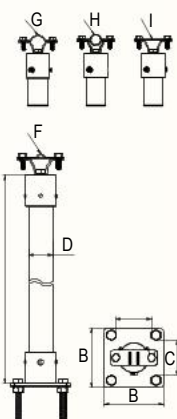
Used to lead tape, wire conductors or high voltage insulated cable on flat roofs. Insulating bar provides the required insulating distance. The distance between holders should not exceed 4 m.

NEW

CAT. NUM.	TYPE	A	B	C	D	E	F	G	I	M	NOTES
13100505	131.0.050	500	Ø340	88	Ø32,5	20	-	-	max 40x5mm	1x16 kg	Tape Conductor
13100705	131.0.075	750	Ø340	176	Ø32,5	20	-	-	max 40x5mm	2x16 kg	Tape Conductor
13101005	131.0.100	1000	Ø340	176	Ø32,5	20	-	-	max 40x5mm	2x16 kg	Tape Conductor
13110505	131.1.050	500	Ø340	88	Ø32,5	20	Ø8-10	-	-	1x16 kg	wire Ø8-10
13110705	131.1.075	750	Ø340	176	Ø32,5	20	Ø8-10	-	-	2x16 kg	wire Ø8-10
13111005	131.1.100	1000	Ø340	176	Ø32,5	20	Ø8-10	-	-	2x16 kg	wire Ø8-10
13130505	131.3.050	500	Ø340	88	Ø32,5	20	-	Ø23	-	1x16 kg	Insulated High Voltage Cable
13130705	131.3.075	750	Ø340	176	Ø32,5	20	-	Ø23	-	2x16 kg	Insulated High Voltage Cable
13131005	131.3.100	1000	Ø340	176	Ø32,5	20	-	Ø23	-	2x16 kg	Insulated High Voltage Cable

StSt (V2A)

Bar holder fixed to the structure



Used to lead tape, wire conductors or high voltage insulated cable on device casings or metal structures. It also allows mounting to the structure of Ø16 lightning protection masts. Insulating bar provides the required insulating distance. The distance between holders should not exceed 4 m.

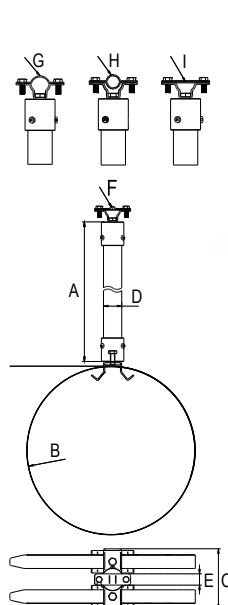
NEW

CAT. NUM.	TYPE	A	B	C	D	F	G	H	I	BOLT	NOTES
13000505	130.0.050	500	80	51	Ø32,5	-	-	-	max 40x5mm	4xM10x40	Tape Conductor
13000705	130.0.075	750	80	51	Ø32,5	-	-	-	max 40x5mm	4xM10x40	Tape Conductor
13001005	130.0.100	1000	80	51	Ø32,5	-	-	-	max 40x5mm	4xM10x40	Tape Conductor
13010505	130.1.050	500	80	51	Ø32,5	Ø8-10	-	-	-	4xM10x40	wire Ø8-10
13010705	130.1.075	750	80	51	Ø32,5	Ø8-10	-	-	-	4xM10x40	wire Ø8-10
13011005	130.1.100	1000	80	51	Ø32,5	Ø8-10	-	-	-	4xM10x40	wire Ø8-10
13020505	130.2.050	500	80	51	Ø32,5	-	-	Ø16	-	4xM10x40	mast Ø16
13020705	130.2.075	750	80	51	Ø32,5	-	-	Ø16	-	4xM10x40	mast Ø16
13021005	130.2.100	1000	80	51	Ø32,5	-	-	Ø16	-	4xM10x40	mast Ø16
13030505	130.3.050	500	80	51	Ø32,5	-	Ø23	-	-	4xM10x40	Insulated High Voltage Cable
13030705	130.3.075	750	80	51	Ø32,5	-	Ø23	-	-	4xM10x40	Insulated High Voltage Cable
13031005	130.3.100	1000	80	51	Ø32,5	-	Ø23	-	-	4xM10x40	Insulated High Voltage Cable

StSt (V2A)

Bar holder fixed to the clamp

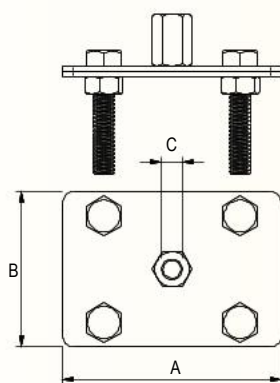
Used to lead tape, wire conductors or high voltage insulated cable on a pipe structures. It also allows mounting to the structure of Ø16 lightning protection masts. Insulating bar provides the required insulating distance. The distance between holders should not exceed 4 m.



NEW

CAT. NUM.	TYPE	A	B	C	D	E	F	G	H	I	NOTES
13200505	132.0.050	500	Ø≤150	120	Ø32,5	20	-	-	-	max 40x5mm	Tape Conductor
13200705	132.0.075	750	Ø≤150	120	Ø32,5	20	-	-	-	max 40x5mm	Tape Conductor
13201005	132.0.100	1000	Ø≤150	120	Ø32,5	20	-	-	-	max 40x5mm	Tape Conductor
13210505	132.1.050	500	Ø≤150	120	Ø32,5	20	Ø8-10	-	-	-	wire Ø8-10
13210705	132.1.075	750	Ø≤150	120	Ø32,5	20	Ø8-10	-	-	-	wire Ø8-10
13211005	132.1.100	1000	Ø≤150	120	Ø32,5	20	Ø8-10	-	-	-	wire Ø8-10
13220505	132.2.050	500	Ø≤150	120	Ø32,5	20	-	-	Ø16	-	mast Ø16
13220705	132.2.075	750	Ø≤150	120	Ø32,5	20	-	-	Ø16	-	mast Ø16
13221005	132.2.100	1000	Ø≤150	120	Ø32,5	20	-	-	Ø16	-	mast Ø16
13230505	132.3.050	500	Ø≤150	120	Ø32,5	20	-	Ø23	-	-	Insulated High Voltage Cable
13230705	132.3.075	750	Ø≤150	120	Ø32,5	20	-	Ø23	-	-	Insulated High Voltage Cable
13231005	132.3.100	1000	Ø≤150	120	Ø32,5	20	-	Ø23	-	-	Insulated High Voltage Cable
13300505	133.0.050	500	Ø150-300	120	Ø32,5	20	-	-	-	max 40x5mm	Tape Conductor
13300705	133.0.075	750	Ø150-300	120	Ø32,5	20	-	-	-	max 40x5mm	Tape Conductor
13301005	133.0.100	1000	Ø150-300	120	Ø32,5	20	-	-	-	max 40x5mm	Tape Conductor
13310505	133.1.050	500	Ø150-300	120	Ø32,5	20	Ø8-10	-	-	-	wire Ø8-10
13310705	133.1.075	750	Ø150-300	120	Ø32,5	20	Ø8-10	-	-	-	wire Ø8-10
13311005	133.1.100	1000	Ø150-300	120	Ø32,5	20	Ø8-10	-	-	-	wire Ø8-10
13320505	133.2.050	500	Ø150-300	120	Ø32,5	20	-	-	Ø16	-	mast Ø16
13320705	133.2.075	750	Ø150-300	120	Ø32,5	20	-	-	Ø16	-	mast Ø16
13321005	133.2.100	1000	Ø150-300	120	Ø32,5	20	-	-	Ø16	-	mast Ø16
13330505	133.3.050	500	Ø150-300	120	Ø32,5	20	-	Ø23	-	-	Insulated High Voltage Cable
13330705	133.3.075	750	Ø150-300	120	Ø32,5	20	-	Ø23	-	-	Insulated High Voltage Cable
13331005	133.3.100	1000	Ø150-300	120	Ø32,5	20	-	Ø23	-	-	Insulated High Voltage Cable
13400505	134.0.050	500	Ø300-500	120	Ø32,5	20	-	-	-	max 40x5mm	Tape Conductor
13400705	134.0.075	750	Ø300-500	120	Ø32,5	20	-	-	-	max 40x5mm	Tape Conductor
13401005	134.0.100	1000	Ø300-500	120	Ø32,5	20	-	-	-	max 40x5mm	Tape Conductor
13410505	134.1.050	500	Ø300-500	120	Ø32,5	20	Ø8-10	-	-	-	wire Ø8-10
13410705	134.1.075	750	Ø300-500	120	Ø32,5	20	Ø8-10	-	-	-	wire Ø8-10
13411005	134.1.100	1000	Ø300-500	120	Ø32,5	20	Ø8-10	-	-	-	wire Ø8-10
13420505	134.2.050	500	Ø300-500	120	Ø32,5	20	-	-	Ø16	-	mast Ø16
13420705	134.2.075	750	Ø300-500	120	Ø32,5	20	-	-	Ø16	-	mast Ø16
13421005	134.2.100	1000	Ø300-500	120	Ø32,5	20	-	-	Ø16	-	mast Ø16
13430505	134.3.050	500	Ø300-500	120	Ø32,5	20	-	Ø23	-	-	Insulated High Voltage Cable
13430705	134.3.075	750	Ø300-500	120	Ø32,5	20	-	Ø23	-	-	Insulated High Voltage Cable
13431005	134.3.100	1000	Ø300-500	120	Ø32,5	20	-	Ø23	-	-	Insulated High Voltage Cable

Flash bar holder

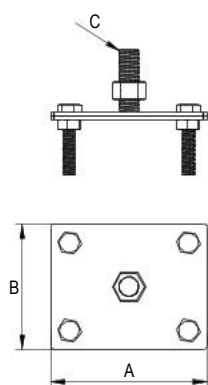


For insulated bar mounting to metal construction or wall mounting. For bar connection use straight connector 98100101 or swivel connector 98200101.

CAT. NUM.	TYPE	A	B	C	BOLT
98400101	84.1	80	57	M8	4×M8×40

St/Zn

Large flash bar holder

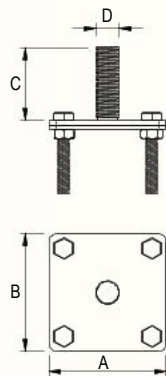


For insulated bar mounting to metal construction or wall mounting. Bar should be directly fastened to holder.

CAT. NUM.	TYPE	A	B	C	BOLT
98400301	84.3	125	100	M16×50	4×M10×50

St/Zn

Stainless steel bar holder

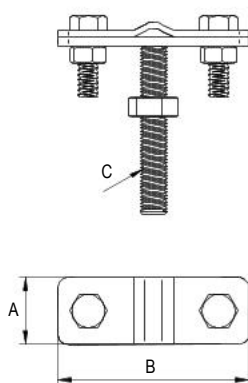


Used to fastened insulating bar to metal construction on the roof or wall. Bar to be directly mounted to holder.

CAT. NUM.	TYPE	A	B	C	D	BOLT
98400405	84.4 Ni V2A	80	80	50	M16	4×M8×50

StSt (V2A)

Wire conductor holder



For insulated bars wire conductors Ø8-10 mm leading. Insulated bars should be firstly mounted to steel construction, device cover or interception air rods. Using 98401201 it is possible to mount for up to 16 mm rods.

CAT. NUM.	TYPE	A	B	C	BOLT
98400201	84.2	20	57	M8×50	2×M6×16
98401201	84.2.1	20	57	M8×50	2×M6×30

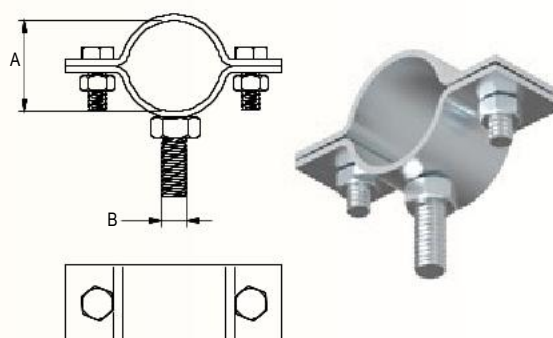
St/Zn

Round bar holder

For insulated bar mounting to interception rods or piping Ø32 or 40 mm. Bar should be directly fastened to holder. For different diameters inquiries please contact: export@elkobis.com.pl.

CAT. NUM.	TYPE	A	B	BOLT
98300401	83.4	32	M8	2×M6×16
98300601	83.6	40	M8	2×M6×16

St/Zn

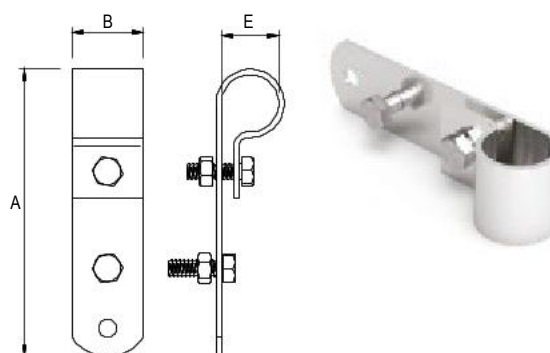


Fastening clamp

For insulated bar mounting to metal construction or device cover. Such bars fastening, allows to lead Aldrey rope as a horizontal air termination above protected device.

CAT. NUM.	TYPE	A	B	E	BOLT
96000505	60.5	110	26	32	2×M6×20

StSt (V2A)

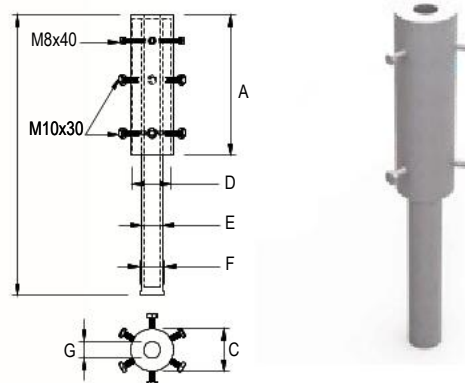


Masts lighting column adapter

For adopting mast on lighting column/poles. Dedicated for mast diameter of Ø16 and Ø25 e.g 94302009.

CAT. NUM.	TYPE	A	B	C	D	E	F	G	WEIGHT
96600102	66.1	250	500	Ø76	Ø69	Ø38	Ø45	Ø30	~3800g

St/tZn

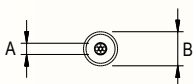


GROUP VI

High Voltage Insulated Air Termination



Insulated high voltage cable



NEW



To discharge strike electric stream. Use at places where appropriate insulation distance from protected elements can not be kept or close to communication strings. Cable construction guarantee insulation distance 75cm with copper conductor and 95 cm with aluminium conductor. Can be directly lead on electric devices. Resistant to weather conditions copper wire.

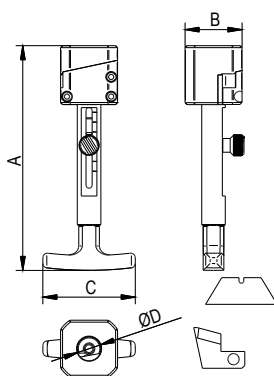
Projects support on: export@elkobis.com.pl

Detailed technical features: www.elkobis.com

CAT. NUM.	TYPE	A	B	WIRE CORE MATERIAL	AIR SEPARATION DISTANCE
30000199	300.1	35 mm ²	24,4 mm	copper	75 cm
30000299	300.2	50 mm ²	25 mm	aluminium	95 cm

Product sizes can be changed

Stripping tool



To peel off insulation layers from end of insulated high voltage cable - 30000199. Adjustable insulation removal length from 30 to 90 mm. Removal of 30 mm enables cable end tip assembly or connection to high voltage mast. Product in a set with comfortable and durable case and additional exchanging blades (31710001; 31720001).

CAT. NUM.	TYPE	A	B	C	D
31700109	317.1	230	58	94	Ø24

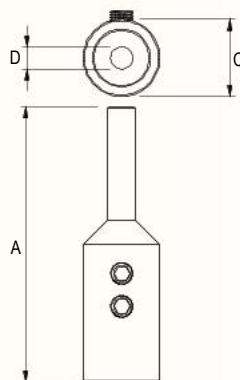
High voltage cable end tip

For insulated high voltage cable connections with horizontal conductor or directly with earthing electrode. Brass tip allows connection to copper or steel construction, being resistance to weather conditions. In a set with screw protection glue and heat shrink tubing.
NOTE: End tip assembly according to instruction.

CAT. NUM.	TYPE	A	C	D	SOCKET SCREWS
30100105	301.1 NI	115	28	10	2xM8x12
NEW 30100109	301.1 AL	115	28	9	2xM8x12

StSt (V2A) 05 Al 09

Product sizes can be changed



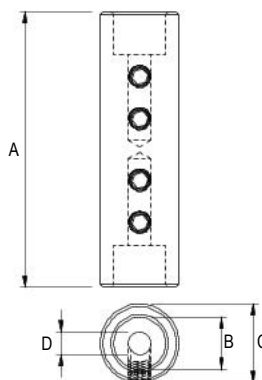
High voltage cable connector

For insulated high voltage cables connections. Brass made guarantee excellent resistance for wheater conditions. In a set with screw protection glue and heat shrink tubing.
NOTE: End tip assembly according to instruction. Consider connection point as non-insulated instalation, keeping demanded separation distance.

CAT. NUM.	TYPE	A	B	C	D	SOCKET SCREWS
31100105	311.1	98	20	28	9	4xM8x12

StSt (V2A) 55 Al 09

Product sizes can be changed

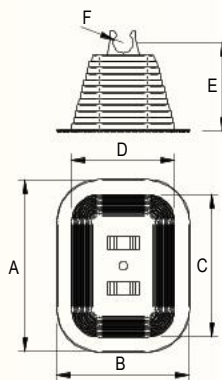


High voltage cable - PVC coated concrete holder

To lead insulated high voltage cable conductor over the flat roofs. Fixed to surface using ELKO-FIX adhesive 99300199 or membrane glue 11000599. Use only with high voltage conductor 30000199. Assembly details on www.elkobis.com

CAT. NUM.	TYPE	A	B	C	D	E	F	WEIGHT
31000111	-	208	160	165	125	106	Ø24	~1,2 kg

PVC

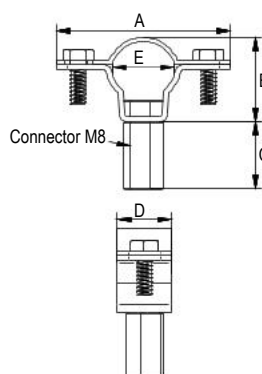


High voltage cable holder

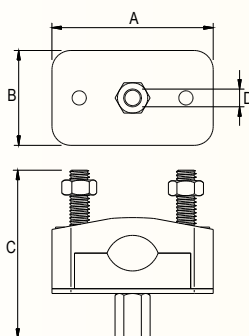
To lead insulated high voltage cable conductor over walls and steel constructions. 2 types with and without connector to direct flat surface fixing.

CAT. NUM.	TYPE	A	B	C	D	E	BOLT	NOTES
31600105	316.1	64	32	-	20	23	2xM6x16	without connector
31600205	316.2	64	32	25	20	23	2xM6x16	with connector

StSt (V2A)



High voltage cable holder with connector

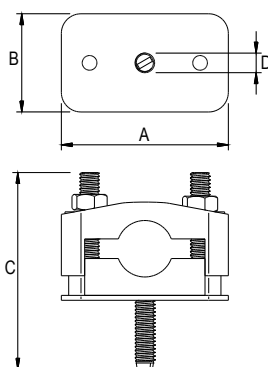


For insulated high voltage cable mounting $\varnothing 24-26$ mm. Used with other ELKO-BIS products, assembly on different type constructions e.g 31100110, 97701105, 96701105. Holder resistance to weather conditions and UV radiation.

CAT. NUM.	TYPE	A	B	C	D
30400101	304.1	70	40	70	M8
30400201	304.2	70	40	94	M16

St/Zn

M8 thread - high voltage cable holder

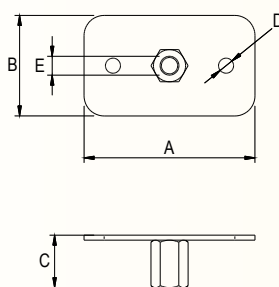


For insulated high voltage cable mounting $\varnothing 24-26$ mm. Used with other ELKO-BIS products, assembly on different type constructions e.g 31100110, 97701105, 96701105. Holder resistance to weather conditions and UV radiation.

CAT. NUM.	TYPE	A	B	C	D
30500101	305.1	70	40	72	M8

St/Zn

High voltage cable holder

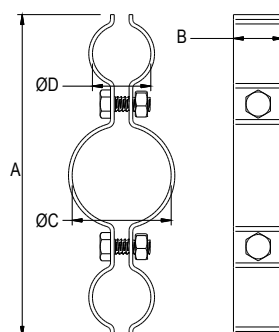


To fix insulated high voltage cable holder 30500101 using 2 anchors or self-drilling screws for steel sheets or facades.

CAT. NUM.	TYPE	A	B	C	D	E
30600101	306.1	70	40	26	$\varnothing 6$	M8

St/Zn

High voltage interception air rod holder



For leading 2 insulated high voltage cables on the outer side of Interception Rod e.g 96575005. Distance between holders should not exceed 1 meter. Stainless steel holder.

CAT. NUM.	TYPE	A	B	C	D	BOLT
30900105	—	130	20	$\varnothing 40$	$\varnothing 23,6$	2×M6×16

StSt (V2A)

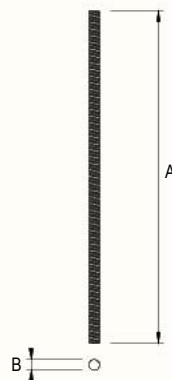
Product sizes can be changed

Threaded rod

For holders 30500101 and 30400201 fixing to construction. Sold in 1 meter piece. Self cutting to demanded measures.

CAT. NUM.	TYPE	A	B
30800101	308.1	1000	M8
30800201	308.2	1000	M10
30800301	308.3	1000	M12
30800401	308.4	1000	M16

St/Zn

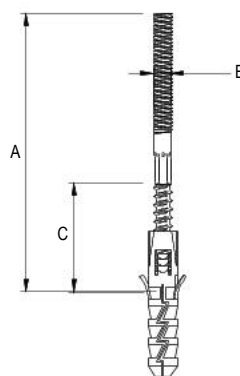


Double-threaded screw

For insulated high voltage cable holders 30400101 wall mounting, using fixing plug which comes in a set.

CAT. NUM.	TYPE	A	B	C
31208001	312.1	80	M8	Ø12×60
31212001	312.2	120	M8	Ø12×60
31220001	312.3	200	M8	Ø12×60

St/Zn

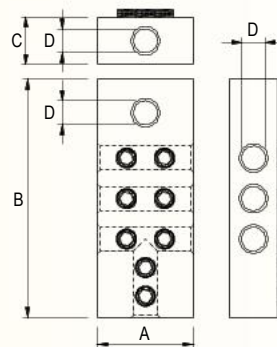


High voltage cables connector

For insulated high voltage cables connections. Connector arrangement allows 3-4 cable connection at the same time together with air termination installation. Consider connection point as non-insulated installation, keeping demanded separation distance.

CAT. NUM.	TYPE	A	B	C	D	SOCKET SCREW
31300105	313.1	40	100	20	Ø10,5	8×M8×12

StSt (V2A)

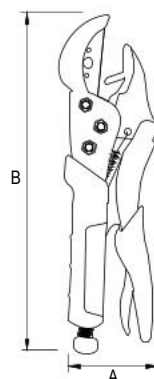


High voltage cable scissors

To remove insulation bit out of insulated high voltage cable, enabling end tip fixing 30100105.

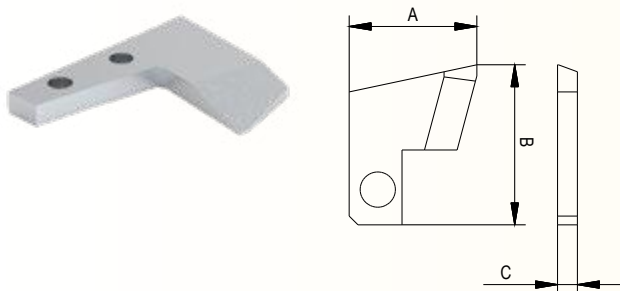
CAT. NUM.	TYPE	A	B
31400101	314.1	60	245

St/Zn



Stripping tool blade

Exchangeable stripping tool blade, for insulated high voltage conductor (31700109).

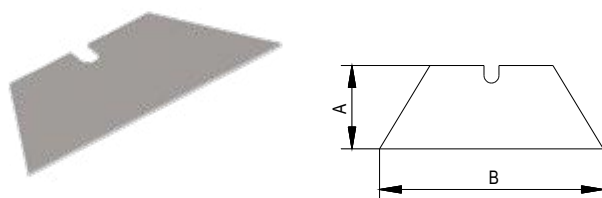


CAT. NUM.	TYPE	A	B	C
31710001	317.1 E	29	37	4,5

St/Zn

Trapezoidal blade

Exchangeable trapezoidal blade for insulated high voltage conductor (31700109).

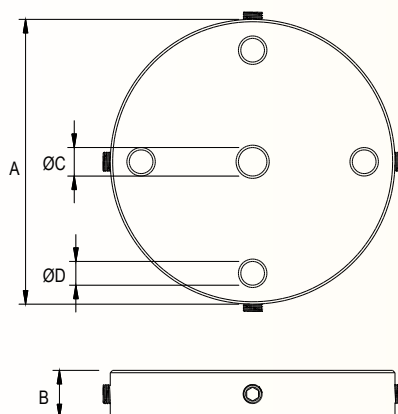


CAT. NUM.	TYPE	A	B
31720001	317.1 F	19	51

St/Zn

High voltage cable connection ring

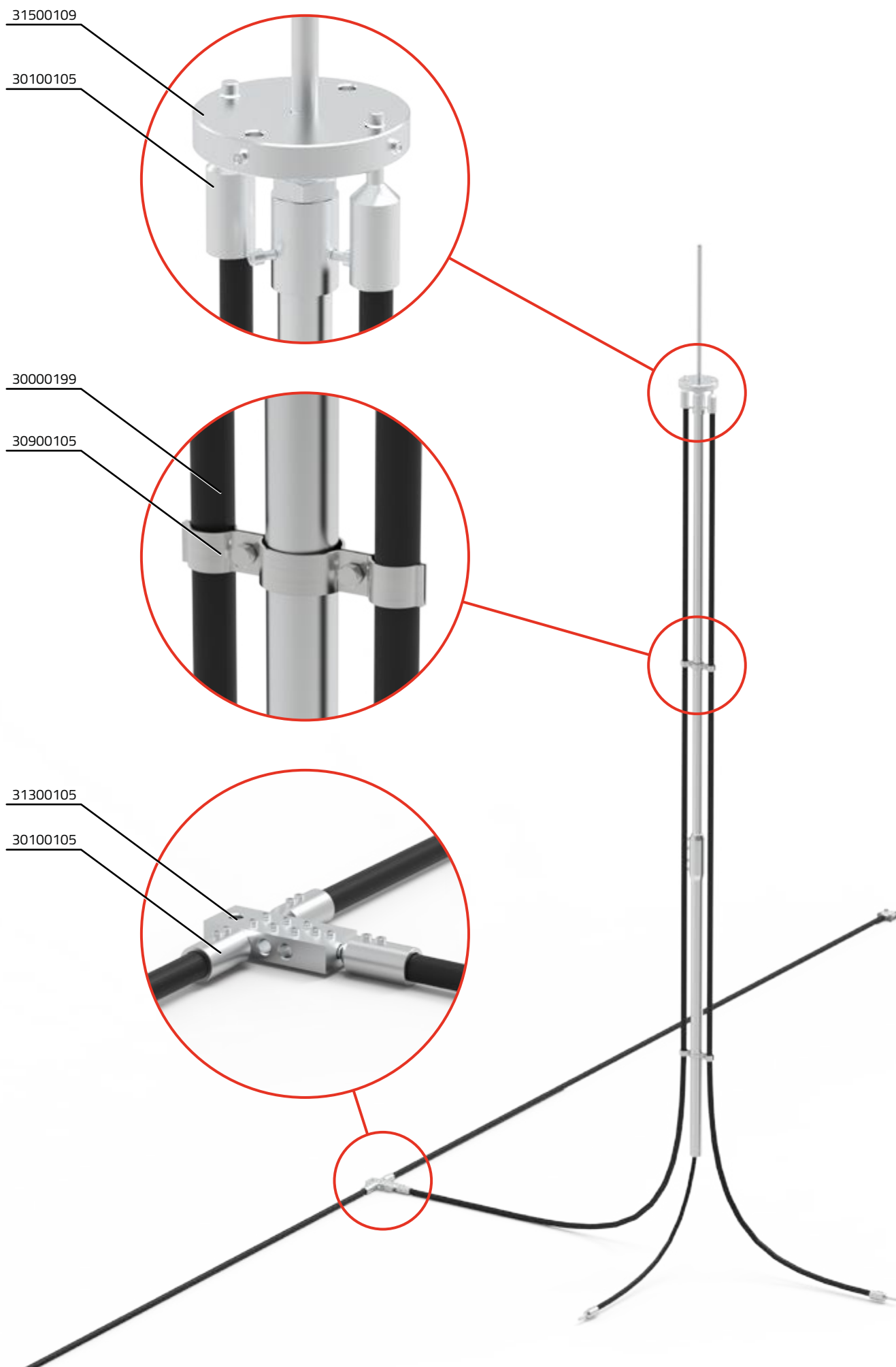
For insulated high voltage cable connection to Interception air rod WVM. Ring allows simultaneous 4 cable connection to one interception rod e.g 96575005. Ring assembled to interception rod spire, using socket screw M10x35. Insulated high voltage cable should be connected with firstly applied end tip 30100105.

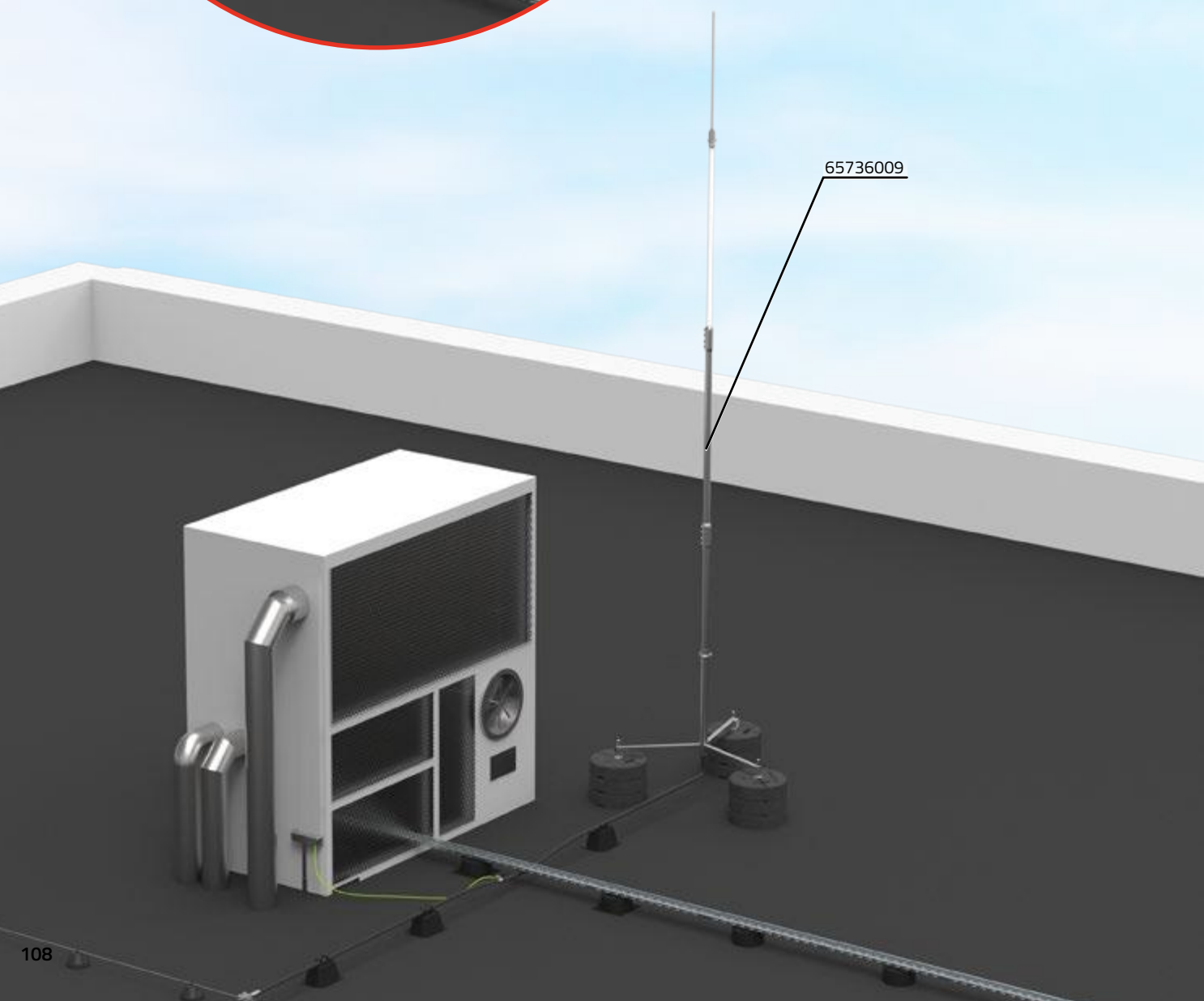
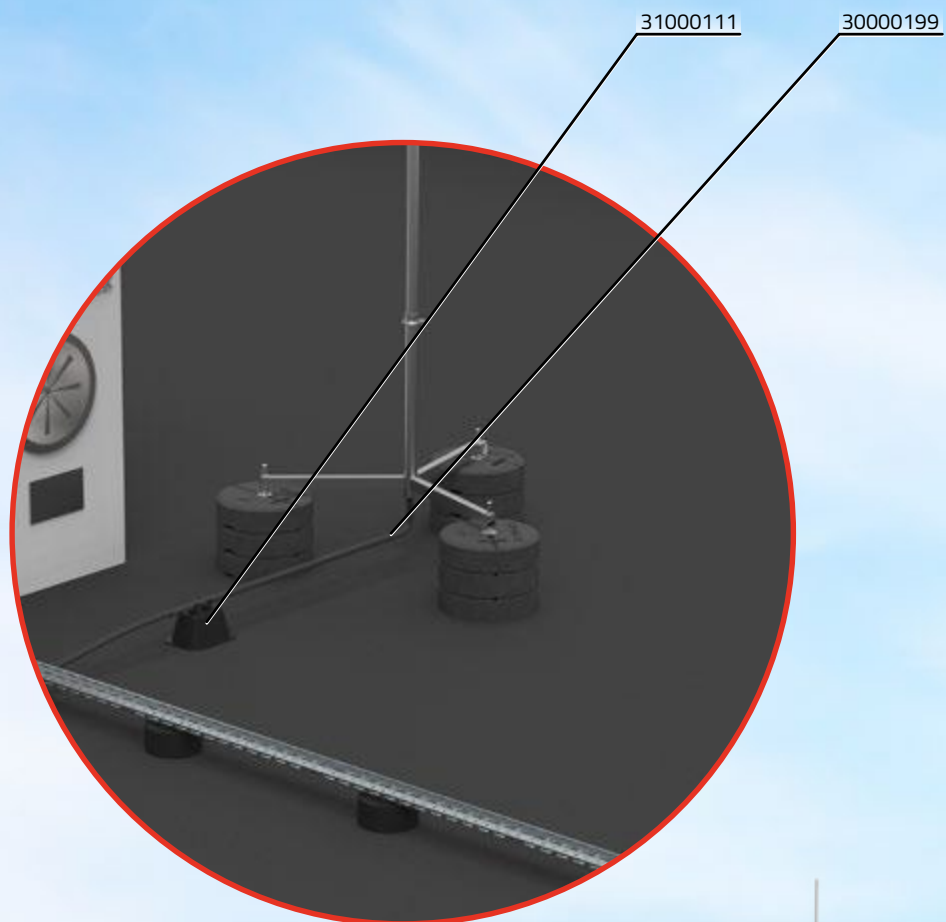


CAT. NUM.	TYPE	A	B	C	D	SOCKET SCREW
31500109	—	120	20	16	10	4×M8×12

Al

▶ Example of steel high voltage interception air rod with accessories.





SELECTION OF INTERCEPTION AIR RODS

For non-experienced person, selection of appropriate lightning protection masts for given object can be difficult issue. Apart of choosing the right height and location of masts, we also need to determine their type and loading to ensure adequate wind resistance.

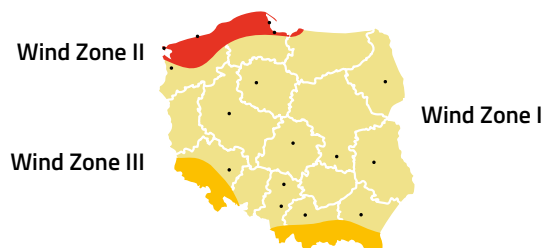
Wind speed depends on 3 factors: wind zone (location), terrain category (roughness), and mast height above the ground.

There are four steps to determine wind speed:

1. Determination of wind zone.

To determine the wind zone of the facility's location, please use the wind zone map appropriate for that location.

An example of wind zones map.



2. Determination of terrain category.

The shape of terrain environment affects the wind speed. The more area around the object is flat and free from other building structures or trees, the value of wind speed may be higher.

The terrain category is determined according to the following classification.



TERRAIN CATEGORY I

Lakes or areas with a negligible small amount of vegetation plants with no other obstacles.



TERRAIN CATEGORY 0

Sea, sea shore opened for sea.



TERRAIN CATEGORY II

Areas with low vegetation plants such as grass, and single obstacles (trees, buildings distant from each other not less than 20 times of their height).



TERRAIN CATEGORY III

Areas regularly covered with vegetation plants either buildings or with single obstacles spaced apart on distanced not more than 20 times of their height (like villages, suburban areas, forests).

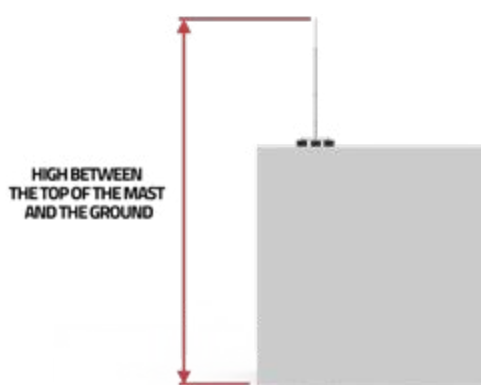


TERRAIN CATEGORY IV

Areas where at least 15% is covered by medium-sized buildings exceeding 15 m high.

3. Determination of height to the ground.

It is the height between the top of the mast and the ground.

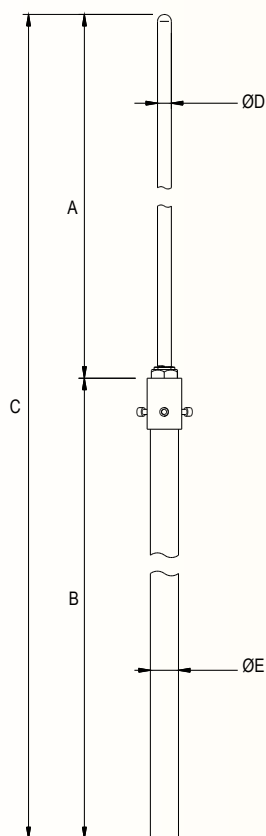


4. Determination of wind speed.

After the wind zone, terrain category and height are determined we can read the maximum wind speed that can occur for our building object. **Full instructions with a proper table on the beginning of Group V.**

Zone 1 and 3 (0 to 300 m.a.s.l.)		TERRAIN CATEGORY				
		0	I	II	III	IV
Mast height above ground level (m)	0	97	90	70	58	40
	5	120	114	101	94	73
	10	127	122	109	99	86
	15	131	126	114	103	89
	20	134	130	118	107	93
	25	137	133	122	109	95
	30	139	135	125	112	98
	40	143	139	129	116	102
	50	145	143	133	119	105
	300	151	149	141	125	113

High voltage interception air rod



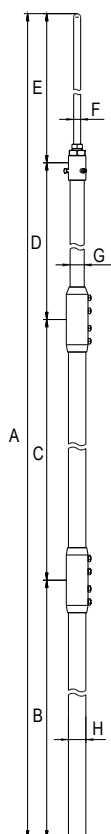
For lightning protection of steel roof elements and devices (skylights, air conditioners, air handling units, air handling channels). Choose correct mast holders depending on assembly place e.g mast holder 96000201 for wall mounting. To be use at places with no possibility of keeping separation distance from protected equipment. Composed of insulation bar with 1 meter aluminium spire connected using special brass connector with high voltage cable.

NOTICE: Insulated high voltage cable ordered separately.

CAT. NUM.	TYPE	A	B	C	D	E
96212505	62.25 WVP	500	2000	2500	Ø16	Ø40
96213005	62.3 WVP	1000	2000	3000	Ø16	Ø40
96214005	62.4 WVP	1000	3000	4000	Ø16	Ø40

PVC

Steel high voltage interception air rod



For lightning protection of steel roof elements and devices (skylights, air conditioners, air handling units, air handling channels). Choose correct mast holders depending on assembly place e.g. mast holder 96000201 for wall mounting. To be use at places with non-possibility of keeping separation distance from protected equipment. Made of stainless steel, insulation bar with 1 meter aluminium spire.

NOTICE: Insulated high voltage cable ordered separately.

CAT. NUM.	TYPE	WIND RESISTANCE	A	B	C	D	E	F	G	H
62027009	62.7 AL WVM	133 km/h	7000	3000	2000	1500	500	Ø16	Ø32	Ø40
62026009	62.6 AL WVM	157 km/h	6000	2000	2000	1500	500	Ø16	Ø32	Ø40
62025009	62.5 AL WVM	175 km/h	5000	3000	-	1500	500	Ø16	Ø32	Ø40
62024009	62.4 AL WVM	190 km/h	4000	2000	-	1500	500	Ø16	Ø32	Ø40
62023009	62.3 AL WVM	190 km/h	3000	1000	-	1500	500	Ø16	Ø32	Ø40

Al

Tripod high voltage interception mast

For lightning protection of steel roof elements and devices (skylights, air conditioners, air handling units, air handling channels). Choose correct mast holders depending on assembly place e.g. mast holder 96000201 for wall mounting. To be use at places with non-possibility of keeping separation distance from protected equipment. Made of stainless steel, insulation bar with 1 meter aluminium spire. Tripod concrete base gives appropriate wind resistance. Free standing mast with total weight up to 142 kg. It is recommended to use pads under concrete base. Option 94308222 for tar board roofs and option 94308221 for membrane roofs.

NOTICE: Insulated high voltage cable ordered separately.

Composed construction to ease and reduce logistic processes.

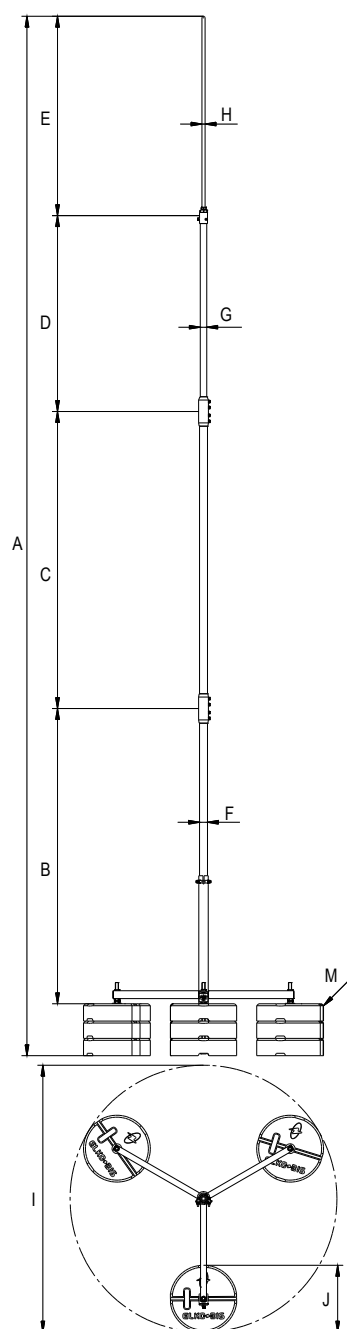


NOTE!

To order mast with foldable tripod frame construction, change second digit in the catalog number.

65745009 - Interception Air Rod 5m with standard tripod frame

67745009 - Interception Air Rod 5m with foldable tripod frame

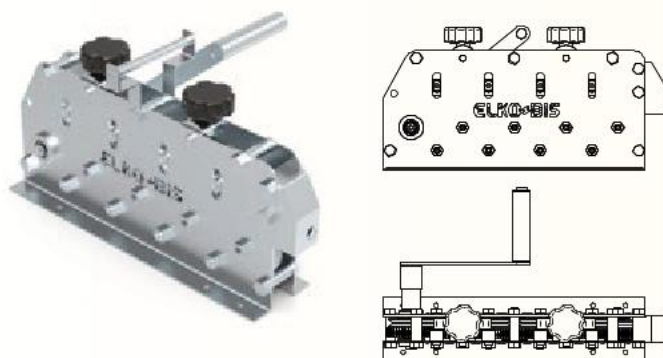


CAT. NUM.	TYPE	HEIGHT	WIND RESISTANCE	A	B	C	D	E	F	G	H	I	J	M
65747009	65.7 4p cz WVM	7	133 km/h	7340	3000	2000	1500	500	40	32	16	Ø1350	Ø340	12x16 kg
65737009	65.7 3p cz WVM		116 km/h	7255	3000	2000	1500	500	40	32	16	Ø1350	Ø340	9x16 kg
65727009	65.7 2p cz WVM		96 km/h	7170	3000	2000	1500	500	40	32	16	Ø1350	Ø340	6x16 kg
65746009	65.6 4p cz WVM	6	157 km/h	6340	2000	2000	1500	500	40	32	16	Ø1350	Ø340	12x16 kg
65736009	65.6 3p cz WVM		137 km/h	6255	2000	2000	1500	500	40	32	16	Ø1350	Ø340	9x16 kg
65726009	65.6 2p cz WVM		113 km/h	6170	2000	2000	1500	500	40	32	16	Ø1350	Ø340	6x16 kg
65745009	65.5 4p cz WVM	5	191 km/h	5340	3000	----	1500	500	40	32	16	Ø1350	Ø340	12x16 kg
65735009	65.5 3p cz WVM		166 km/h	5255	3000	----	1500	500	40	32	16	Ø1350	Ø340	9x16 kg
65725009	65.5 2p cz WVM		138 km/h	5170	3000	----	1500	500	40	32	16	Ø1350	Ø340	6x16 kg
65724009	65.4 2p cz WVM	4	175 km/h	4170	2000	----	1500	500	40	32	16	Ø1350	Ø340	6x16 kg
65714009	65.4 1p cz WVM		128 km/h	4085	2000	----	1500	500	40	32	16	Ø1350	Ø340	3x16 kg
65713009	65.3 1p cz WVM	3	175 km/h	3085	1000	----	1500	500	40	32	16	Ø1350	Ø340	3x16 kg

GROUP VII Accessories



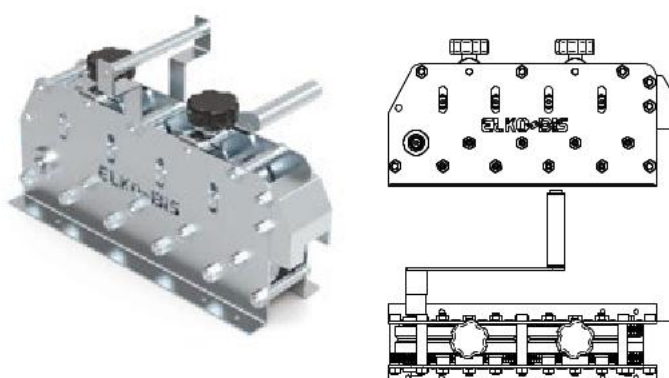
Mechanical wire straightening tool - 9 rolls



For mechanical wire conductor straightening with manual drive. Can be used with Ø6-8 mm wires. It is recommended to use supportive straightening tool (98600101 - see Page 70). Renting option available. More info at: www.elkobis.com

CAT. NUM.	TYPE	WEIGHT
10000199	100.1	14 kg

Mechanical tape&wire straightening tool

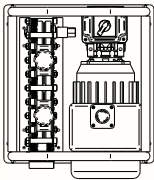
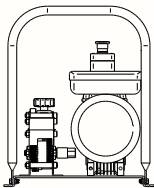


For mechanical tape and wire conductor straightening. Light and mobile with manual drive. Apply tape max 40x4 and wire Ø6-8 mm. Option with electric drive also available. It is recommended to use supportive straightening tool (98600101 - see Page 70). More info at: www.elkobis.com

CAT. NUM.	TYPE	WEIGHT
10002199	100.3	20 kg

Electric drive straightening tools

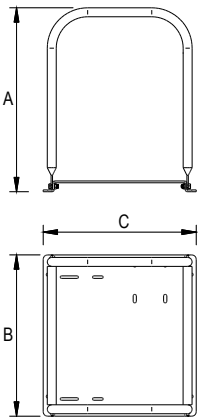
For mechanical tape or wire conductor straightening with electric engine drive. After removal of electric drive can be used as a manual straightening device.



CAT. NUM.	TYPE	VERSION	PARAMETERS
10000299	100.1 EL	wire	Power supply: 230 V Rotations: 46/min Power consumption: 7 A Nominal power: 1,1 kW Weight: 48 kg
10002299	100.3 EL	wire and tape	

Electric straightener holder

For easy and comfortable handling of electric straightener tool, directly mounted to steel base, compatible with all electric straighteners.

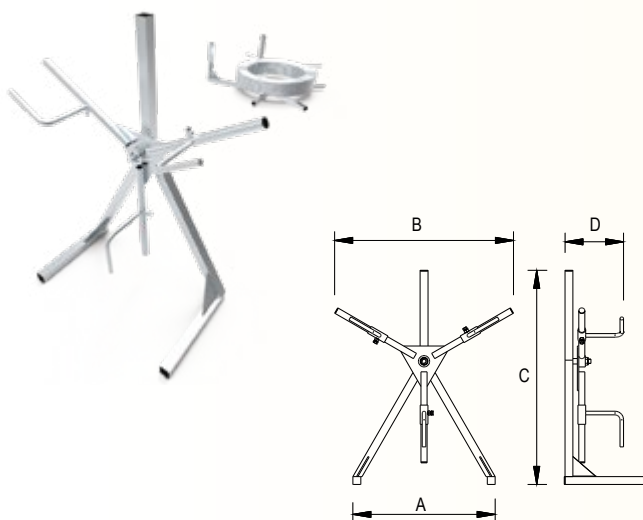


CAT. NUM.	TYPE	A	B	C
10010001	-	513	450	427

St/Zn

Tape & wire pulley tool

To roll off wire and tape conductors into straightener tool. Light and easy construction allows safe work.

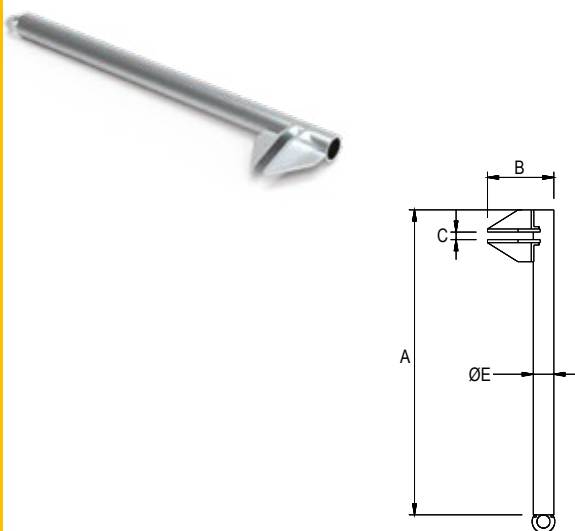


CAT. NUM.	TYPE	A	B	C	D
10000099	100.0	630	774	946	300

St/Zn

Wire straightening tool

For manual wire conductor straightening and forming. ELKO-BIS offer includes tape and wire conductors straightening devices with mechanical and electric drive (see pages 72-73).

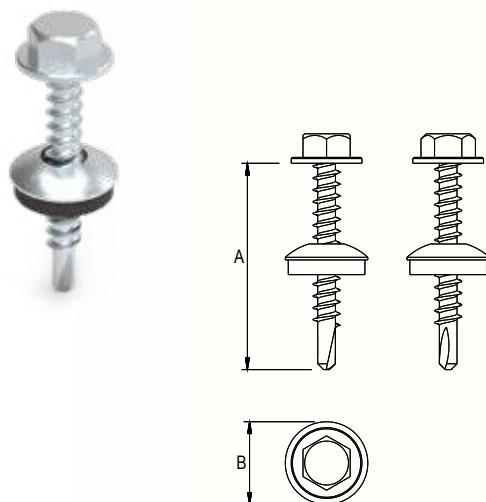


CAT. NUM.	TYPE	A	B	C	E
98600101	86.1	400	60	10	Ø27

St/tZn

Washer self-drilling screw

Fixing of roof air termination holders.



CAT. NUM.	TYPE	VERSION	APPLICATION	A	B	BOLT
99900101	99.1	screw with washer	wood	35	14	4,8
99910101	99.1/B	screw with washer	steel sheet	35	14	4,8
99900201	99.2	screw with washer	wood	63	14	5,5
99800101	98.1	additional washer	universal	—	14	—

To order a specific material option, replace last two digits into material equivalent from Material Options specification.

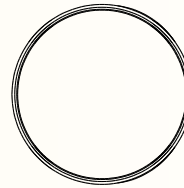
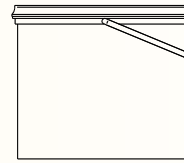
St/Zn 01 RAL 16

Adhesive mass

For roof holders bonding at roofs with bituminal cover. Do not apply to other/different roof covers.

Bonding details see: www.elkobis.com

CAT. NUM.	TYPE	HOLDER TYPE APPLICATION		WEIGHT
99401099	94.10	92900105	Page 58	10 kg
		92910101	Page 60	
		93000111	Page 59	
		93001111	Page 58	

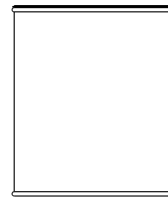


PVC membrane adhesive

For roof holders bonding at flash membrane roofs. Follow use instruction on packaging and manufacturer recommendations.

Bonding details see: www.elkobis.com

CAT. NUM.	TYPE	HOLDER TYPE APPLICATION		WEIGHT
11000599	110.5	93000211	Page 58	5 kg
		93050211	Page 59	
		93090211	Page 60	
		93000311	Page 62	

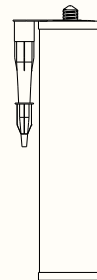


ELKO-FIX assembly adhesive

Universal and flexible glue. Can be used with different materials and surfaces (concrete, steel, plastics, etc., excluding PE, PP, silicone and teflon) Recommended to fix/bond: concrete base holders (e.g 93000211) plate roof holders (e.g 91500101) flash roofs covered in steel sheets. Follow instructions on the packaging. Endurance test recommended.

It is absolutely necessary to follow the method of use indicated on the package. We recommend performing a strength test before use, check the expiration date on the package.

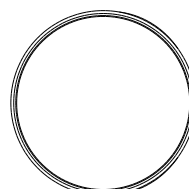
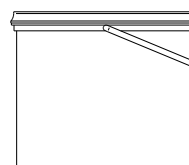
CAT. NUM.	TYPE	FEATURES	CAPACITY
99300199	93.1	flexible after hardening, sealant	290 ml



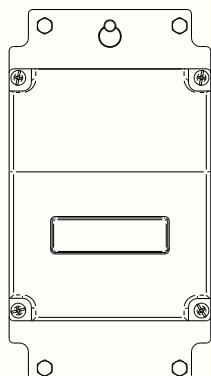
Technical vaseline

To protect screw connections. Apply to all connections and screws using paintbrush for example. Use of technical vaseline is essential to keep products warranty.

CAT. NUM.	TYPE	WEIGHT
99500199	95.1	0,5 kg



Lightning current counter

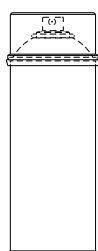


For digital acquisition of impulse currents caused by lightning effects. Capture date and time of discharge with estimation of discharge amplitude.

CAT. NUM.	TYPE	VERSION
96100899	61.8	PLW-03a

StSt (V2A)

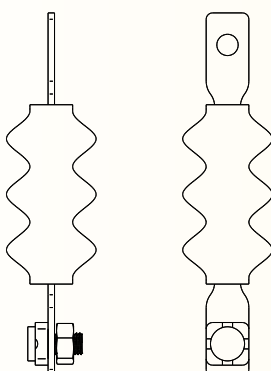
Zinc spray



For anti-corrosion protection of constructions and elements. Fast-drying aluminium-zinc spray. Dedicated to machined zinc plated surfaces as for direct application on steel surfaces.

CAT. NUM.	TYPE	CAPACITY
10200199	102.1	400 ml

Protective spark gap



Closed Spark Gap. For bridging / indirect connection of a roof support bracket of overhead lines with the external LPS - Lightning Protection System.

CAT. NUM.	TYPE	PARAMETERS
10600199	106.1	Voltage Protection Level: Up < 10 kV Response Time: tA < 100 ns Response Voltage: UAS 10 kV

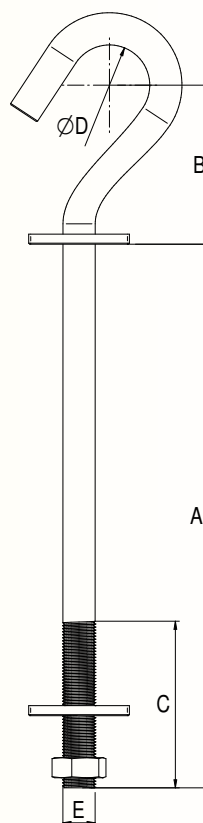
Hook screw

For overhead line insulated tensioning.



CAT. NUM.	TYPE	A	B	C	D	E
97500101	75.1	110	80	80	40	M16
97500201	75.2	150	80	80	40	M16
97500301	75.3	215	80	80	40	M16
97500501	75.4	255	80	80	40	M16
97500601	75.5	300	80	80	40	M16
97500701	75.6	360	80	80	40	M16
97500801	75.7	420	80	80	40	M16
97500901	75.8	500	80	80	40	M16
97501001	75.9	550	80	80	40	M16
97501101	75.10	600	80	80	40	M16
97511101	75.11	120	80	80	40	M20
97511201	75.12	160	80	80	40	M20
97511301	75.13	220	80	80	40	M20
97511401	75.14	250	80	80	40	M20
97511501	75.15	320	80	80	40	M20
97511601	75.16	340	80	80	40	M20
97511701	75.17	370	80	80	40	M20
97511801	75.18	510	80	80	40	M20

St/Zn



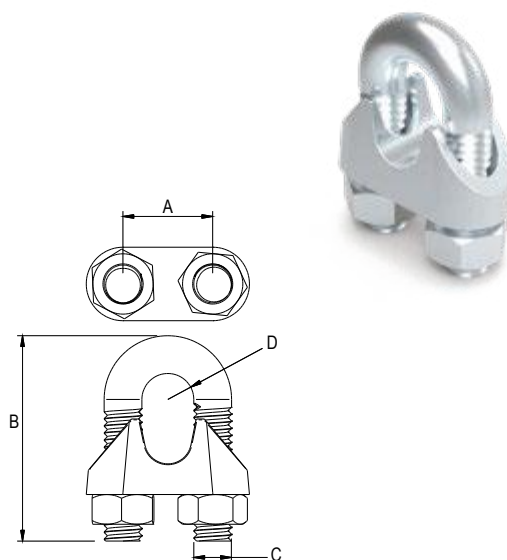
Rope clamping ring

For steel ropes and wire conductors looping.

CAT. NUM.	TYPE	A	B	C	D*
93600101	36.1	9	20	M4	3
93600201	36.2	11	24	M5	5
93600301	36.3	13	28	M5	6
93600401	36.4	16	34	M6	8
93600501	36.5	19	42	M8	10
93600601	36.6	20	44	M8	11
93600701	36.7	24	55	M10	12
93600801	36.8	25	57	M10	14
93600901	36.9	29	63	M12	16

St/Zn

*Nominal dimension.



LPS materials and conditions of use ^a						
MATERIAL	USE			CORROSION		
	In open air	In earth	In concrete	Resistance	Increased by	May be destroyed by galvanic coupling with
Copper	Solid Stranded	Solid Stranded As coating	Solid Stranded As coating	Good in many environments	Sulphur compounds	-
Hot galvanized steel ^{c, d, e}	Solid Stranded ^b	Solid	Solid Stranded ^b	Acceptable in air, in concrete and in benign soil	High chlorides content	Copper
Steel with electrodeposited copper	Solid	Solid	Solid	Good in many environments	Sulphur compounds	
Stainless steel	Solid Stranded	Solid Stranded	Solid Stranded	Good in many environments	High chlorides content	-
Aluminium	Lite Stranded	Unsuitable	Unsuitable	Good in atmospheres containing low concentrations of sulphur and chloride	Alkaline solutions	Copper
Lead ^f	Solid As coating	Solid As coating	Unsuitable	Good in atmosphere with high concentration of sulphates	Acid soils	Copper Stainless steel

^a This table gives general guidance only. In special circumstances more careful corrosion immunity considerations are required (see Annex E).

^b Stranded conductors are more vulnerable to corrosion than solid conductors. Stranded conductors are also vulnerable where they enter or exit earth/concrete positions. This is the reason why stranded galvanized steel is not recommended in earth.

^c Galvanized steel may be corroded in clay soil or moist soil.

^d Galvanized steel in concrete should not extend into the soil due to possible corrosion of the steel just outside the concrete.

^e Galvanized steel in contact with reinforcement steel in concrete should not be used in coastal areas where there may be salt in the ground water.

^f Use of lead in the earth is often banned or restricted due to environmental concerns.

TECHNICAL INFORMATION

DO YOU KNOW THAT...

For centuries lightning strikes were attributed to magical background?

It was only eighteenth century when hypothesis on electrical nature of lightning strikes had been put forward, and in 1752. Benjamin Franklin proved the electrical nature of lightning. He is also the inventor of lightning rod. His most famous experiment was to release the kite during a thunderstorm, allowing him

to discover that effective protection against lightning strikes is earthing.

In Poland Lightning Rods appeared thanks to initiative of King Stanislaw August Poniatowski. In 1783 Town Hall in Rawicz, and soon after Royal Castle in Warsaw were equipped with lightning rods.

HOW LIGHTNING STRIKES ARISE?

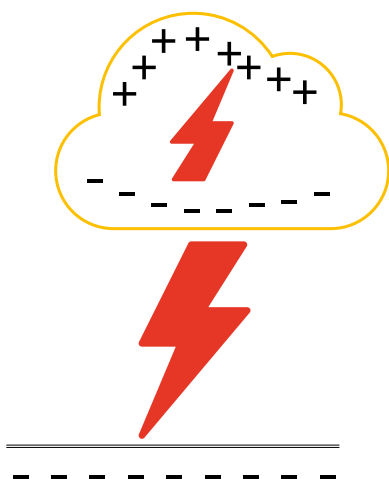
The storm cloud creates a spatial electric charge, which is separated. Positive charge accumulates in the upper parts of the cloud, the negative charge - in the lower parts. Between this charges aggregation, strong increasing electric field appears, due to the separation of successive charges.

When the value of created field exceeds the limit, non-conductive air becomes a conductor. Nature tends to balance, so equipotential bonding is through snap of huge energy. At this snapping point, appears electrical discharge - called lightning.



There are 4 types of lightning discharges

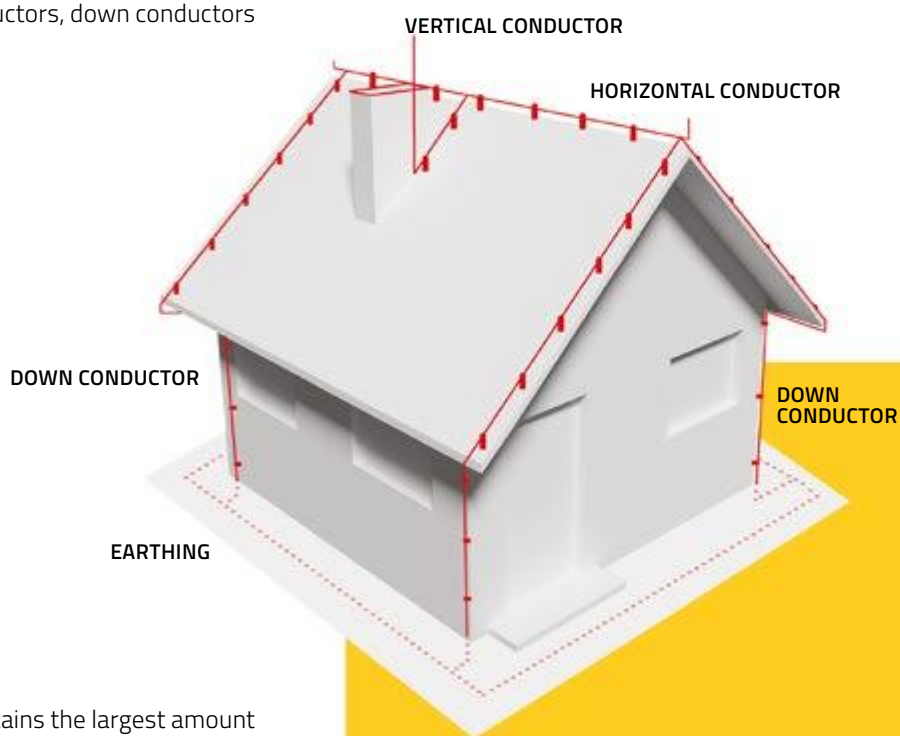
- ▶ **between clouds**
- ▶ **inside the clouds**
- ▶ **cloud – an air**
- ▶ **cloud – an earth**



The last one are the most dangerous for humans. Despite lasting less than a second, may cause extensive damages. Every year in Poland there has been 500 000 discharges, killing dozens off people, many being seriously injured and property damages are counted in millions.

HOW LIGHTNING PROTECTION SYSTEM WORKS?

Lightning Protection System has to adopt lightning current and bring it the shortest way to the earthing. Lightning Protection System can be divided into three zones: roof air termination/conductors, down conductors and earth electrodes.



Air Termination Zone – contains the largest amount of different mounting components, among others vertical and horizontal conductors for variety of roof types, walls and constructions.

Down Conductors Zone – includes equipment for wall mounting in different techniques: surface mounted, inside insulation surface, tensioning systems.

Earthing Zone – a group of so-called atrophic works, invisible for eyes, being sunk in the ground. Properly made earthing is crucial to functioning of Lightning Protection System. Standard norm EN 62305 defines two types of earthing.

Currently, terms and conditions of insurance contracts includes requirement for a building to be Lightning protected, extending its scope to surge installation. Also, Construction Law requires Lightning Protection System according to current standards.

Earthing type A contains horizontal and vertical conductors, externally assembled and connected to each down conductor.

Earthing type B external ring type earthing, at least 80% of its length stays in contact with ground, includes also foundation and lattice earthing. Grounding resistance for Lightning Protection Systems should not exceed 10Ω at each control joint. The earth resistance must be confirmed /comply with post- implementation electric measurements.

UP TO DATE LEGAL REGULATIONS DEFINING LIGHTNING PROTECTION

Regulation issued by Ministry of Infrastructure and Development dated 17 July 2015. Regarding technical conditions to be met by buildings and their location (Dz.U. No. 75 pos 690 with amendments) This is main legislation act concerning building equipping in the Lightning

Protection System where W53.2 says: It is obligatory to equipped building in LPS - Lightning Protection System. This obligation applies to buildings listed in polish norm / standards of LPS.

CURRENT POLISH LPS STANDARDS		
ISSUED BY REGULATION OF INFRASTRUCTURE AND DEVELOPMENT MINISTRY DATED 10 DECEMBER 2010.		
Number	Title	Scope
62305-1:2008	Lightning Protection - Part 1: General Principles	Lightning Protection of buildings including their content (humans and instalations) together with service devices attached to object. Recommendations do not include: ▪ railway devices ▪ vehicles, ships, aircrafts, offshore instalations ▪ high pressure underground pipelines ▪ pipelines, power and telecommunication lines not connected to object.
62305-2:2008	Lightning Protection - Part 2: Risk Management	Estimation of risk caused by lightning discharges in buildings and service devices. Choice of LPS protection levels.
62305-3:2009	Lightning Protection - Part 3: Physical damage to structures and life hazard	Requirements for physical structure damage protection using LPS, together with protection of living beings against contact and stepper voltage electric shock nearby lightning device. ▪ Designing, implementation, control and maintaining of LPS at buildings of any hight ▪ Living beings protection against contact and stepper voltage shock.
62305-4:2009	Lightning Protection - Part 4: Electrical and electronic systems within structures	Designing, implementation, control and maintaining of LEMP protection measures systems for internal electric and electronic devices, due to permanent damage risk reduction caused by lightning electromagnetic impulse LEMP

Starting from designing, through implementation process up to object commissioning, lightning protection designer should coordinate work of all those persons, associated with design of other installations, which may significantly

affect layout of lightning protection system. Designer and the contractor has a duty to select appropriate elements.

QUALITY STANDARDS

Risk assesed with direct lightning flash to an element of lightning protection system (thermal erosion, cabels over-heating, dynamic actions) together with market appearance of low quality components,led to introduction of quality standards. Requirements to be met by lightning protection elements were included in the multi-sheet European Standard EN 50164, being

recalled in EN 62305-3: 2009 / A11 norm regulated by Infrastructure Ministry.

Current, but not translated into Polish and do not recalled by Infrastructure Ministry, are series of European Standards EN 62561 2011 - 2012. Elko-Bis products are regularly tested according to their requirements.

EN 50164 STANDARDS LIST	
Standard Number*	Standard Title
EN 50164-1:2010	Lightning Protection Components (LPC)- Part 1: Requirements for connection components
EN 50164-2:2010	Lightning Protection Components (LPC)- Part 2: Requirements for conductors and earth electrodes
EN 50164-3:2010	Lightning Protection Components (LPC)- Part 3: Requirements for isolating spark gaps
EN 50164-4:2010	Lightning Protection Components (LPC)- Part 4: Requirements for conductor fasteners
EN 50164-5:2010	Lightning Protection Components (LPC)- Part 5: Requirements for earth electrode inspection housing and earth electrode seals
EN 50164-6:2010	Lightning Protection Components (LPC)- Part 6: Requirements for lightning strike counters
EN 50164-7:2010	Lightning Protection Components (LPC)- Part 7: Requirements for earthing enhancing compounds
* EN 50164 standards have been replaced by EN 62561 (however, they have not been translated into Polish and are not valid according to standardization act, also are not recalled in the regulation Annex of Infrastructure Minister (Journal of Laws No. 239 of 2010. Item. 1597).	

TESTS

Harmonisation of standards obligate manufacturers of lightning protection systems to carry out compliance tests described in BS EN 50164-1: 2010 Standard. At Elko-Bis we attach great importance to tests, knowing that their results are crucial to health and property protection of our customers. As a result, they receive highest quality products, they can rely on.

LIGHTNING CURRENT PULSE PARAMETERS CONSIDERED FOR STUDIES				
Connection load capacity	I_{imp} ± 10% [kA]	W/R ± 35% [kJ/Ω]	T ₋₁ [μs]	T _{-d} [ms]
H connection for considerable current capacity	100	2500	≤50	≤2
N connection for regular current capacity	50	630	≤50	≤2
Note: The parameters specified in the table can be achieved when using bi-exponential current with time T2 equaling 350 μs in accordance with EN 62305-1.				

CONNECTION CLAMPS



Intension of Lightning Connector is to connect two or more conductors, so the transfer of lightning current charge, is held without excessive damage to air terminals or installations. Connectors should be solid, durable and safe for people and nearby devices. Elko-Bis in pursuance of EN 60068-2-52: 1996 standard, at first place subject connectors to ageing process in the salt chamber, being

influenced by salt mist, sulfur humid atmosphere and ammonia. Another step is electric testing. **Each sample is subjected to triple current pulse loading. Manufacturer declares connection load capacity (H or N).**

AIR TERMINATION AND EARTHING



These are the most important elements of Lightning Protection System. Case studies of lightning occurrence and problem of temperature increase as a result of material resistance, have established the minimum cross-section of lightning conductors, which is 50 mm², and 90 mm² in case of tape earthing conductors (option - galvanized steel). Standard also specifies metal

types, that can be used for air termination and earthing elements. Basic requirements, air termination and earth electrodes test methods are specified in EN 50164-2. The most important standard aspects for air termination and earthing are: their minimum cross-section, anti-corrosive protection and mechanical resistance as well as material resistivity.

LIGHTNING PROTECTION SYSTEM DESIGNERS GUIDEBOOK

Who can design, implement and control Lightning Protection Systems?

Lightning Protection investment involvement, require professional training to perform independent technical functions in the construction industry. Rules of getting construction license are specified in the Act from 7th July 1994. published in Journal of Laws 1994 no. 98 item. 414 and the subsequent amendment of this Act. In Chapter 3, Art. 17. where participants taking and responsible for decisions in the construction process,

are listed. These include: the designer, contractor and investment supervisor. Each of them must hold construction license, determining appropriate permission to undertaken work. In addition, persons carrying out construction projects are required to associate in the Chamber of Civil Engineers.

LIGHTNING PROTECTION CLASS CHOOSING PROCEDURES

Risk assesment

The first stage of designing lightning protection systems is risk analysis. The calculation method has been included in the volume no. 2 of EN 62305-4.

Calculation method

The risk calculation consider factors inside and outside the facility related to direct lightning strikes in the facility, out of the facility and in power lines and telecommunications lines connected to the facility. The risk calculation algorithm considers over a hundred factors related to dimensions and building equipment, type of utilities, loss of life of living beings, loss of goods and services, as well as other parameters.

Many designers perceive the calculation method as a controversial issue.

Computer software

To assist in this respect, the market offers computer software. We should remember however that many of them e.g. the program attached to PN-EN62305 IEC Risk Calculator impose a set of substantial restrictions and cannot be used with regard to complex facilities. At present, when assessing risk, we cannot use algorithms and computer programs developed on the basis of previously applicable standards, e.g. lightning hazard factor in accordance with PN-86-E-05003/01.

PROPOSAL FOR LIGHTNING PROTECTION PRESENTED BY POLISH COMMITTEE FOR LIGHTNING PROTECTION

LP.	DESCRIPTION OF FACILITY		PROTECTION CLASS/LEVEL		
	GENERAL FEATURE	VERSION OR PURPOSE ^{b)}	I	II	III–IV
1.1	Public facilities in conditions of normal hazard ^{a)}	Administration buildings			x
1.2		Cinemas, theaters, schools, kindergartens			x
1.3		Churches with a tower of up to 20m			x
1.4		Museums and historic buildings and buildings of cultural value			x
1.5		Covered markets, entertainment arenas, etc...			x
1.6		Market places			x
1.7		Close sports facilities			x
1.8		Swimming pools			x
1.9		Garages (medium-sized and large)			x
2.1	Industrial facilities and craft workshops in conditions of normal hazard	Office			x
2.2		Production, warehouse ^{a)}			x
2.3		Food-related			x
3.1	Accommodation	Hotels, inns, guesthouses			x
3.2		Large hotels		x	
3.3		Hostels, night shelters		x	
4.1	Railway facilities	Shipment facilities (railway stations, platforms) ^{a)}			x
4.2		Administration buildings			x
4.3		Warehouses			x
5.1	Air facilities	Building sections with explosion zones	x		
5.2		Airline supervision and handling centers	x		
5.3		Other air supervision center		x	
5.4		Check-in buildings ^{a)}			x
5.5		Administration buildings			x
5.6		Hangars, warehouses			x
6.1	Health and care facilities	Intensive care facilities	x		
6.2		Nursing homes and residential homes		x	
6.3		Hospital pavilions			x
6.4		Administration buildings			x
7.1	Large-format facilities	Buildings higher than 30 m		x	
7.2		Churches with a tower of more than 20 m		x	
8.1	Residential buildings	Single-family houses			x
8.2		Multi-family houses			x
9.1	Agricultural facilities	Farm buildings			x
10.1	Facilities with explosion or fire hazard	Explosives manufacturing and storing units	x		
10.2		Ammunition depots	x		
10.3		Pyrotechnic facilities	x		
10.4		Building sections with ex zones	x		
10.5		Sewage treatment plants	x		
10.6		Gas/combustible liquid systems	x		
10.7		Pyrotechnic facilities		x	
10.8		Inflammable buildings		x	
11.1	Technical service facilities	Power engineering facilities		x	
11.2		Telecommunications facilities		x	
11.3		IT facilities		x	
11.4		Technical supervision center		x	

a) in the conditions of increased hazard (facilities situated on hills or containing multi-person rooms, structures or materials which are not resistant to heat, etc), it is necessary to increase the protection level to class II, and in the case of facilities sections which contain ex zones or devices sensitive to electromagnetic impact – to class I.
b) It is necessary to pay special attention to effectiveness of internal protection means (protection of electric devices and electronics against overvoltage).

NOTES

NOTES

NOTES

TECHNICAL INFORMATION

ELKO-BIS CALCULATION SHEET AND TABLES

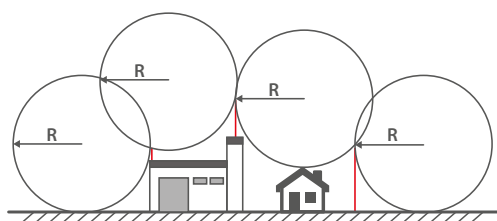
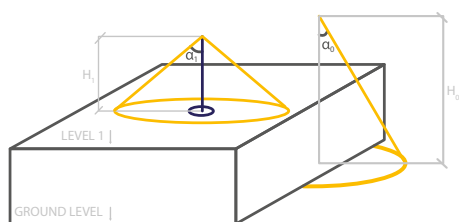
H [m]	LPS I		LPS II		LPS III		LPS IV	
	SHIELDING ANGLE A	PROTECTIVE RADIUS A [m]	SHIELDING ANGLE A	PROTECTIVE RADIUS A [m]	SHIELDING ANGLE A	PROTECTIVE RADIUS A [m]	SHIELDING ANGLE A	PROTECTIVE RADIUS A [m]
1	70	2,75	73	3,27	76	4,01	79	5,14
2	70	5,49	73	6,54	76	8,02	79	10,29
3	66	6,74	71	8,71	74	10,46	76	12,03
4	62	7,52	68	9,90	72	12,31	74	13,95
5	59	8,32	65	10,72	70	13,74	72	15,39
6	56	8,90	62	11,28	68	14,85	71	17,43
7	53	9,29	60	12,12	66	15,72	69	18,24
8	50	9,53	58	12,80	64	16,40	68	19,80
9	48	10,00	56	13,34	62	16,93	66	20,21
10	45	10,00	54	13,76	61	18,04	65	21,45

DESIGNING METHODES OF LIGHTNING PROTECTION SYSTEMS

Methods of dimensioning the protection zones have remained unchanged in terms of their name for many years. Applicable since 2008, EN 62305 standard introduced essential changes concerning dimensioning methods.

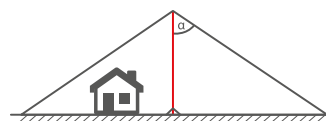
Flash roofs

With regard to flat roof surfaces, the loop method in the form of nets of horizontal air terminals having the dimensions specified in the standard for each LPS class is applied. This method is applied for simple facilities devoid of elements elevated above them.



Sloping roofs and others

When it comes to protection of roof slopes of various height with diverse facilities and systems on the surface of the roof, two methods are applied, that is a rolling sphere and protective angle. Both methods are equivalent in terms of reference plane height (H) specified in EN 62305 standard.



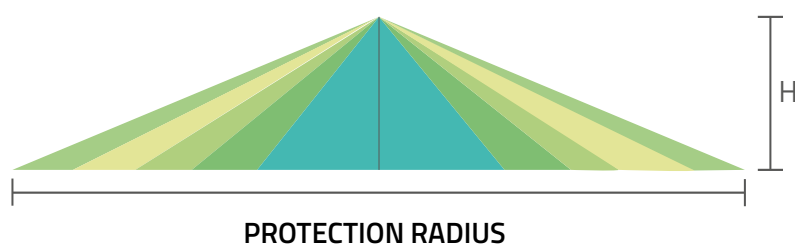
Protective angle method

For LPS IV class, the method of protective angle (shielding angle) can be used for the reference plane height up to 60 m. Most frequently the reference plane height is the height of the mast which protects the facility when the mast and the facility are at the same level. When the lightning mast and the facility are protected at various levels, the reference plane height is the total of mast height and level difference. The table above shows protection angle and radiuses for the method of shielding angle in LPS class and series of masts manufactured by Elko-Bis.

Method of rolling sphere

The method of rolling sphere is an all-purpose method relevant to all types of civil structure. It is concerned with creating protection zones by basing the ball with a radius specified by the standard (in accordance with LPS class) on one or many peak points of lightning masts. The volume under the zone of this ball under the mast or between masts may be considered a lightning protection zone (subject to facilities with ex zone – then the zones must be dimensioned in a way that the distance between them is not lower than 1 m).

PN 86/E LPS 1 LPS 2 LPS 3 LPS 4

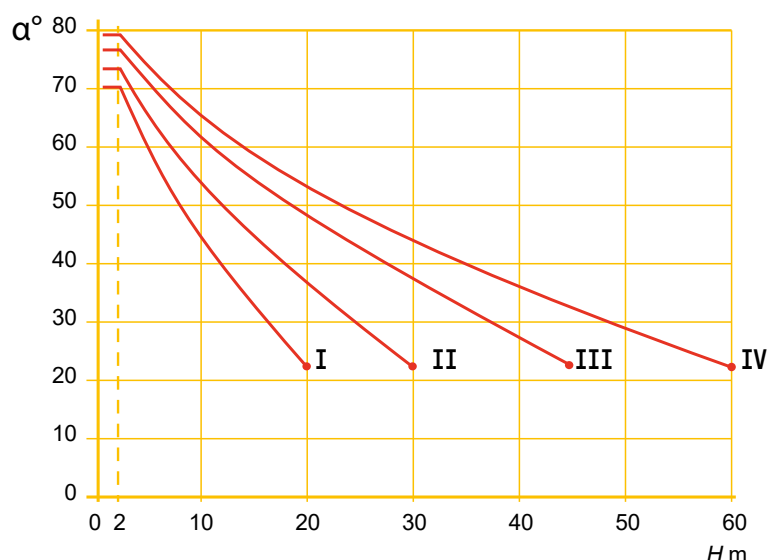
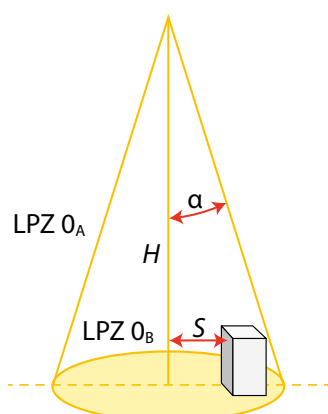


Example of protection zone for 6m interception mast.

LIGHTNING PROTECTION SYSTEM PARAMETERS ACCORDING TO LPS CLASSES

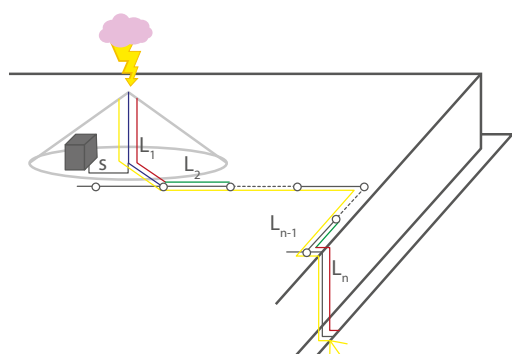
Parameter	LPS CLASSES (LEVEL LPL)			
	I	II	III	IV
Protection efficiency according to earlier standards editions	98%	95%	90%	80%
Rolling sphere radius r (m)	20	30	45	60
Grid size formed by horizontal air termination in (m)	5 x 5	10 x 10	15 x 15	20 x 20
Distance between down conductors (m)	10	10	15	20

Cover angle α° (as a function of height relative to the reference plane)



SEPARATION DISTANCE IN LIGHTNING PROTECTION

Separation Distance distance to be kept in order to avoid spark snap.



Designing or manufacturing the external lightning protection device, we should pay special attention to protection of devices on roofs against effects of direct lightning discharge and a jump of charge from lightning protection system to protected device. Multisheet EN 62305 standards explicitly state that: "All roof devices made of insulating or conductive material which include electric equipment and/or equipment serving to convert information, should be located in the protected space of air terminals".

Separation distance step by step:

Using one of the methods (rolling ball or shielding angle), it is necessary to arrange air terminals and/ or devices in a way that all elements of the protected device are "hidden" in designated protected zones. This way we can protect the device against direct discharge, and by

calculating a required insulating clearance for the given place, that is the distance we need to assure to avoid the spark-over, we protect the device not only on the roof but also internal systems against overvoltage caused by the flow of lightning current through the system.

▶ **The separation distance S in the simplest case can be calculated from the formula below:**

$$S \geq k_i \frac{k_c}{k_m}$$

k_i – is fixed and depends on lightning protection class the system use.

k_c – accepts numerical values ranging from 1 to 1/n depending on certain condition compliance, where n is the number of down conductors.

k_m – accepts numerical value 1 for air calculation and 0,5 for brick or concrete. For our production Separation Bars 79.075÷200 (Page 59) 0,7 numerical value to be taken.

▶ **In case of expanded external lightning protection systems, below formula shall apply:**

$$S \geq \frac{k_i}{k_m} (k_{c1} I_1 + k_{c2} I_2 + \dots + k_{cn} I_n)$$

COEFFICIENTS VALUES TO CALCULATE SEPARATION DISTANCES

k_i		k_c		k_m	
LPS class III-IV	0,04	n = 1*	1	air	1
LPS class II	0,06	n = 2	0,66	concrete, bricks, wood	0,5
LPS class I	0,08	n > 2	0,44		

* Applies to separated LPS and vertical air terminals; n - number of down conductors

Elko Bis Calculation Sheet

On website there is calculation sheet called „Separation distance calculation“ calculating separation distance based on above mathematical formulas.

Emergencies

When the calculated separation distance for air is lower than 75 cm, the standard solutions do not let us keep such a clearance, be it for structural or aesthetic reasons, our company provides an insulated highvoltage system (catalogue Page 102) based on the insulated highvoltage cable 300.1 and a wide range of holders, fittings and interception masts which we are constantly expanding.

IS THERE A PROBLEM? WE WILL HANDLE IT!

When the calculated separation distance is higher than 75 cm, the representative of our helpdesk will help you find the solution! Please do not hesitate to contact our specialists. Their contact data can be found on

www.elkobis.com in the section designing-manufacturing-assembly or just send an e-mail message to export@elkobis.com.pl

BE AWARE!

Lightning protection is an important part of any newly built building, so do not leave it to last stage. Doing so, it may appear that costs of its implementation, are overestimated. You may then find that you are required expensive items, that purchase could have been avoided if they were properly coordinated at all phases of construction project. We invite you to

contact our technical department export@elkobis.com.pl We provide professional assistance at every stage of the investment, as well as the optimization of already finished projects. In case of difficult installations we provide free on-site verification in order to choose the best solution.

DESIGN USING ELKO-BIS CAD APPLICATION

To meet designers needs, we have created an innovative tool to help you design and cost estimate lightning protection systems: The **ELKO-BIS CAD**.

ELKO-BIS CAD application is the first polish software to design lightning protection systems within environment of graphics applications. It was created through cooperation of experienced ELKO-BIS designers and IT specialists.

WHY ELKO-BIS CAD APPLICATION IS SO SPECIAL?

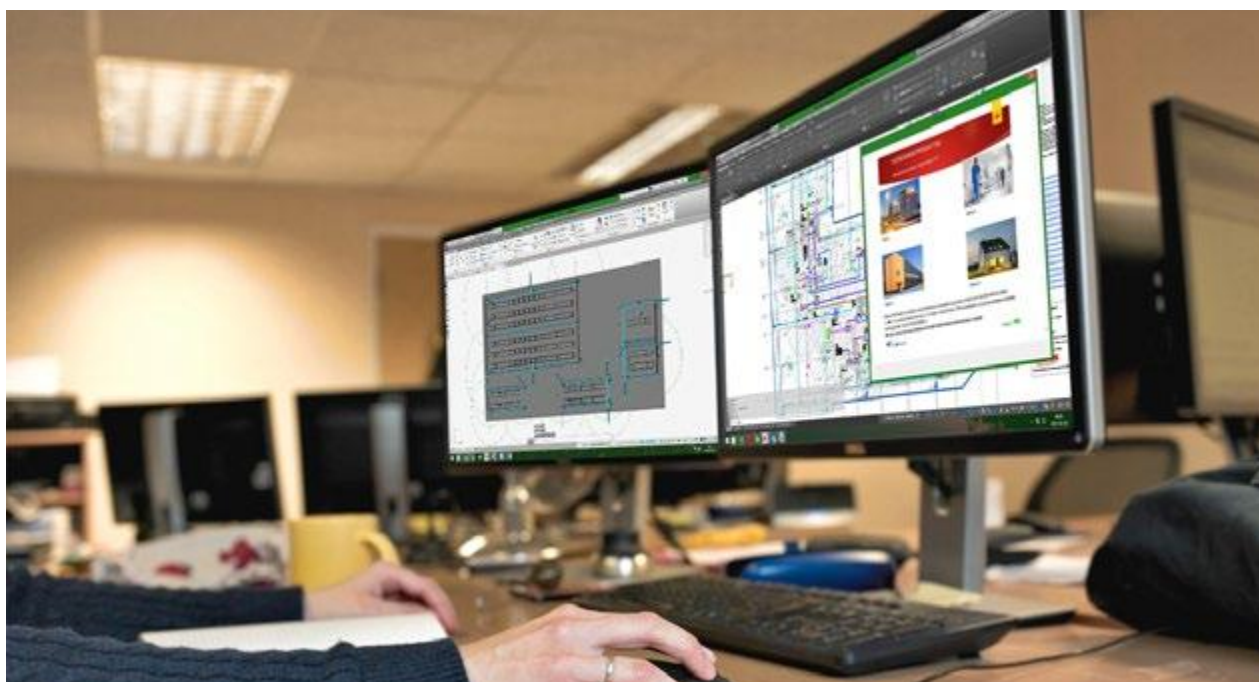
- ▶ It is the first polish CAD software plug-in dedicated to designing lightning protection systems.
- ▶ It is free and its users receive the lifetime license.
- ▶ Is recommended by Polish Lightning Protection Committee.
- ▶ It has been awarded the prestigious Golden Volt prize of International ENERGETAB Fairs.
- ▶ It was created through cooperation of experienced ELKO-BIS designers and IT specialists.
- ▶ It is written in C ++ and works with many well-known market CAD applications including: AutoCAD, BricsCAD, ZWCAD, 4M CAD progeCAD, CADopia, StarCAD, GstarCAD, Intersoft IntelliCAD, BitCAD, Arcadia, IntelliPlus, JetCAD, ARES.
- ▶ Contains a built-in lightning tutorial based on existing standards.
- ▶ Contains a built-in products library and PDF catalogue is a user-friendly.



The INNOVATION Diploma
at International Power Industry
fair EXPOPOWER



The Golden Volt Statuette
for the Best Electrotechnical Product
of ENERGETAB Fair



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▶ Str 13	 Connecting Sleeve	 2 - Elements Universal Clamp	 3 - Elements Universal Clamp	 Ground Connector
▶ Str 14	 Universal Connection Clamp - Wire / Tape Conductor	 Universal Connection Clamp - Tape / Tape Conductor	 Universal Connection Clamp - Earthing Rod / Tape Conductor	 Universal Connection Clamp - Earthing Rod / Wire Conductor
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▶ Str 16	 Universal Connection Clamp - Earth Rod Ø16/Earth Rod Ø16	 Universal Connection Clamp - Wire/Earth Rod Ø16	 T-TYPE Connection Clamp	 Single Screw Cross Connection Clamp
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Flash Bar Holder



Large Flash Bar Holder



Stainless Steel Bar Holder



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Fastening Clamp



Masts lighting column adapter

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Insulated High Voltage Cable



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High Voltage Cable Connector



High Voltage Cable - PVC Coated Concrete Holder



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High Voltage Cable Holder with Connector



M8 Thread - High Voltage Cable Holder



High Voltage Cable Holder



High Voltage Interception Air Rod Holder

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Threaded Rod



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High Voltage Cables Connector



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Stripping tool blade



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High Voltage Interception Air Rod



Steel High Voltage Interception Air Rod

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ELKO-BIS

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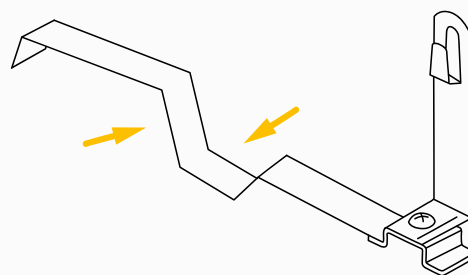
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96.0	996001XX	Seam Wire Holder	53	B40*5	840050XX	Tape Conductor	28	DR 8	800008XX	Wire Conductor	37
96.0/M	996031XX	Universal Seam Wire Holder - Small	53	B40*5	840050XX	Tape Conductor	28	DR 8	800008XX	Wire Conductor	37
96.0/P	996101XX	PCV Seam Wire Holder	53	B50*4	85004002	Tape Conductor	28	DR 8 AL/PVC	801008XX	PVC Insulated Wire Conductor	38
96.1	996002XX	Seam Wire Holder	53	DR 10	800010XX	Wire Conductor	37	DR 8 NI V2A	800008XX	Wire Conductor	37
96.2	996003XX	Seam Wire Holder	54	DR 10	800010XX	Wire Conductor	37	DR 8 NI V4A	800008XX	Wire Conductor	37
96.3	99603205	KALZIP TYPE Wire Holder	54	DR 10	800010XX	Wire Conductor	37	DR 8/10KG	80010809	Wire Conductor	37
98.1	998001XX	Washer Self-Drilling Screw	114	DR 10 OC/ PVC	80101001	PVC Insulated Wire Conductor	38	DR 8/20KG	80020809	Wire Conductor	37
99.1	999001XX	Washer Self-Drilling Screw	114	DR 6	80000603	Wire Conductor	37	DR 8/20KG	80020809	Wire Conductor	37

TILE CLIP FIT CHART

Clip 1x.5	Clip fits	Producer	Clip 1x.5	Clip fits	Producer	Clip 1x.5	Clip fits	Producer
Braas	Topas 11 V	Braas	Creaton	Magnum	Creaton	Creaton Simpla	Simpla	Creaton
Braas	Granat 11V	Braas	Creaton	Balance	Creaton	Domino	Actua 10	Koramic/ Wienerberger
Braas	Granat 13 V	Braas	Creaton	Futura	Creaton	Domino	Domino	Creaton
Braas	Rubin 9V	Braas	Creaton	Harmonica	Creaton	Domino	Figaro	Tondach
Braas	Rubin 13V	Braas	Creaton	Premion	Creaton	Koramic I-15	Rebensowsa L-15	Koramic/ Wienerberger
Braas	Monza Plus	Roben	Creaton	Nibra F15	Nelskamp	Marsylka	Marsylka	Creaton
Braas	Bornholm	Roben	Creaton	Nibra F14	Nelskamp	Nibra	Nibra G10	Nelskamp
Braas	Nibra H14	Nelskamp	Creaton	Nibra F13 Classic	Nelskamp	Optima	Optima/ Terraoptima	Creaton
Braas	Nibra H10	Nelskamp	Creaton	Nibra R13 S reformowana	Nelskamp	Orea	Orea	Koramic/ Wienerberger
Braas	Alegria 12	Koramic/ Wienerberger	Creaton	Nibra F7	Nelskamp	Piano	Bergamo	Roben
Braas	Madura	Koramic/ Wienerberger	Creaton	Nibra F10	Nelskamp	Piano	Piano	Meyer-Holsen
Braas	Cavus 14	Koramic/ Wienerberger	Creaton	Uniwerso 10	Koramic/ Wienerberger	Plano	Plano 11	Bogener
Braas	OVH	Koramic/ Wienerberger	Creaton	Rebensowsa E-32	Koramic/ Wienerberger	Roben	Piemont	Roben
Braas	Ravensberger	Meyer-Holsen	Creaton	Reńska Cosmo 11	Koramic/ Wienerberger	Sinfonie	Sinfonie	Creaton
Braas	Innovo 12	Bogener	Creaton	Reńska Cosmo 12	Koramic/ Wienerberger	Sirius/ Rupp Ceramica	Sirius 13	Monier/Braas/Rupp Ceramica
			Creaton	Reńska Cosmo 15	Koramic/ Wienerberger	Titania	Titania	Creaton
			Creaton	Romańska Kathago 14	Koramic/ Wienerberger			
			Creaton	Holenderka 11	Tondach			
			Creaton	Romańska 12	Tondach			
			Creaton	Tandem/Tandem Junior	Meyer-Holsen			
			Creaton	Vario/Altstadt Vario	Meyer-Holsen			
			Creaton	Zwilling/Zwilling Junior	Meyer-Holsen			
			Creaton	TG 10	ABC Klinkergruppe			
			Creaton	Innovo 10	Bogener			
			Creaton	Reform 11	Bogener			

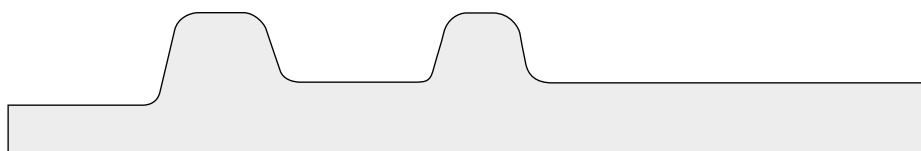
See also tape
universal roof tile
holders– Page 52



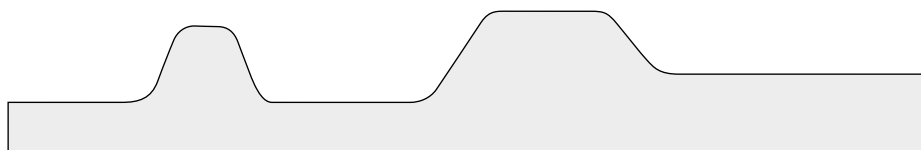
TILE TEMPLATES



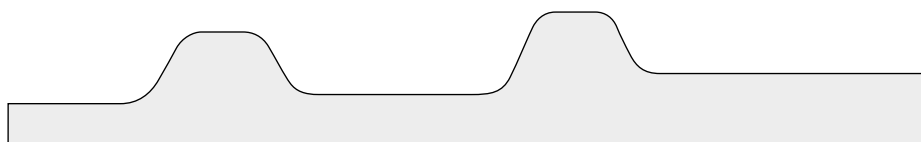
1
Röben



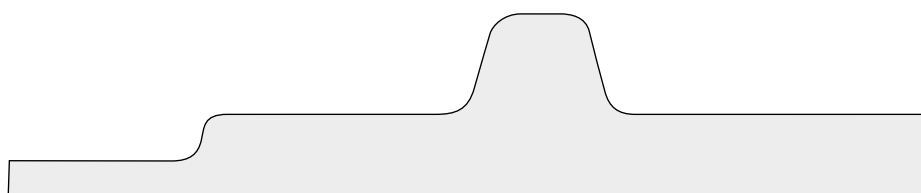
2
Rupp Ceramika



3
Koramic L-15



4
Koramic L25



5
Koramic Z185

Types of holders

When ordering selected holder type, pay attention to the **type** of the product.



Crimped holder.
Height: 150 mm

TYPE
10. 5



Crimped holder.
Height: 100 mm

TYPE
10. 5.1



Screwed holder.
Height: 150 mm

TYPE
10. 5/S



Screwed holder.
Height: 100 mm

TYPE
10. 5.1/S



Twisted crimped holder.
Height: 150 mm

TYPE
11.5



Twisted crimped holder.
Height: 100 mm

TYPE
11.5.1



Twisted, screwed holder.
Height: 150 mm

TYPE
11.5/S



Twisted, screwed holder.
Height: 100 mm

TYPE
11.5.1/S

Selection of material option

Changing last two catalog number digits will allow change of material option of.

St/tZn	02	hot galvanized steel
Cu	03	copper
StSt (V2A)	05	stainless steel V2A

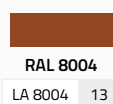
Colour selection of the lacquered version

Changing last two catalog number digits in the varnished version will allow to choose a specific colour. Below available colour variants* along with their corresponding catalog number endings.



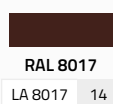
RAL 3011

LA 3011 12



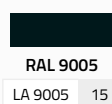
RAL 8004

LA 8004 13



RAL 8017

LA 8017 14



RAL 9005

LA 9005 15



RAL 7016

LA 7016 17

*actual colours may differ slightly from the presented samples.

Please note!

Changing of the last two catalog number digits, will allow change of material option.

91005102 Hot galvanized steel holder.

91005112 RAL 3011 – varnished galvanized steel holder.

1 Röben

EXAMPLE	CAT. NUM.	TYPE	VERSION	TILE MODEL
	91005102	10. 5	clinched	ROBEN
	91008102	10. 5.1	clinched	ROBEN
	91006102	10. 5/S	screwed	ROBEN
	91009102	10. 5.1/S	screwed	ROBEN
	91105102	11.5	clinched	ROBEN
	91108102	11.5.1	clinched	ROBEN
	91106102	11.5/S	screwed	ROBEN
	91109102	11.5.1/S	screwed	ROBEN



2 Rupp Ceramika

EXAMPLE	CAT. NUM.	TYPE	VERSION	TILE MODEL
	91005202	10. 5	clinched	RUPP / SIRIUS
	91008202	10. 5.1	clinched	RUPP / SIRIUS
	91006202	10. 5/S	screwed	RUPP / SIRIUS
	91009202	10. 5.1/S	screwed	RUPP / SIRIUS
	91105202	11.5	clinched	RUPP / SIRIUS
	91108202	11.5.1	clinched	RUPP / SIRIUS
	91106202	11.5/S	screwed	RUPP / SIRIUS
	91109202	11.5.1/S	screwed	RUPP / SIRIUS



3 Koramic L-15

EXAMPLE	CAT. NUM.	TYPE	VERSION	TILE MODEL
	91005302	10. 5	clinched	KORAMIC L-15
	91008302	10. 5.1	clinched	KORAMIC L-15
	91006302	10. 5/S	screwed	KORAMIC L-15
	91009302	10. 5.1/S	screwed	KORAMIC L-15
	91105302	11.5	clinched	KORAMIC L-15
	91108302	11.5.1	clinched	KORAMIC L-15
	91106302	11.5/S	screwed	KORAMIC L-15
	91109302	11.5.1/S	screwed	KORAMIC L-15



4 Koramic L25

EXAMPLE	CAT. NUM.	TYPE	VERSION	TILE MODEL
	91005402	10. 5	clinched	KORAMIC L-25
	91008402	10. 5.1	clinched	KORAMIC L-25
	91006402	10. 5/S	screwed	KORAMIC L-25
	91009402	10. 5.1/S	screwed	KORAMIC L-25
	91105402	11.5	clinched	KORAMIC L-25
	91108402	11.5.1	clinched	KORAMIC L-25
	91106402	11.5/S	screwed	KORAMIC L-25
	91109402	11.5.1/S	screwed	KORAMIC L-25



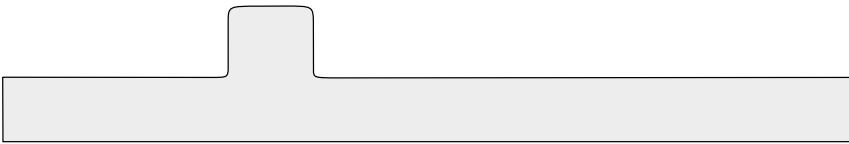
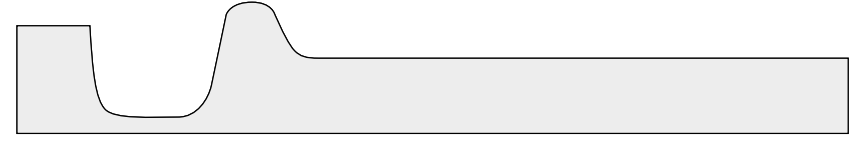
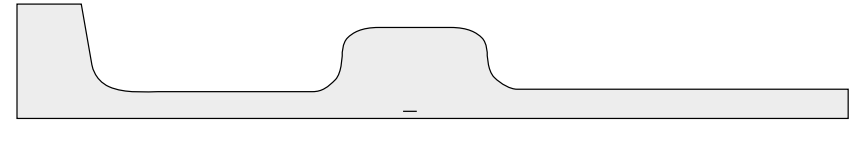
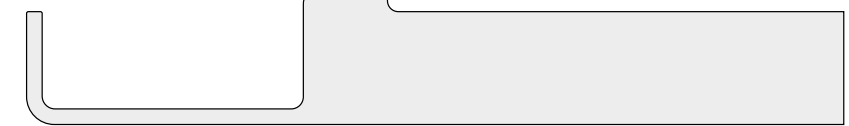
5 Koramic Z18S

EXAMPLE	CAT. NUM.	TYPE	VERSION	TILE MODEL
	91005502	10. 5	clinched	KORAMIC Z18S
	91008502	10. 5.1	clinched	KORAMIC Z18S
	91006502	10. 5/S	screwed	KORAMIC Z18S
	91009502	10. 5.1/S	screwed	KORAMIC Z18S
	91105502	11.5	clinched	KORAMIC Z18S
	91108502	11.5.1	clinched	KORAMIC Z18S
	91106502	11.5/S	screwed	KORAMIC Z18S
	91109502	11.5.1/S	screwed	KORAMIC Z18S



More templates on the next page.

TILE TEMPLATES

		6 Brass / Monza Plus
		7 Creaton
		8 Domino
		9 Nibra
		10 Marsylka
		11 Piano
		12 Orea
		13 Sinfonie
		14 Creaton Simpla

6 Brass / Monza Plus

EXAMPLE	CAT. NUM.	TYPE	VERSION	TILE MODEL
	91005602	10.5	clinched	BRASS
	91008602	10.5.1	clinched	BRASS
	91006602	10.5/S	screwed	BRASS
	91009602	10.5.1/S	screwed	BRASS
	91105602	11.5	clinched	BRASS
	91108602	11.5.1	clinched	BRASS
	91106602	11.5/S	screwed	BRASS
	91109602	11.5.1/S	screwed	BRASS

8 Domino

EXAMPLE	CAT. NUM.	TYPE	VERSION	TILE MODEL
	91005802	10.5	clinched	DOMINO
	91008802	10.5.1	clinched	DOMINO
	91006802	10.5/S	screwed	DOMINO
	91009802	10.5.1/S	screwed	DOMINO
	91105802	11.5	clinched	DOMINO
	91108802	11.5.1	clinched	DOMINO
	91106802	11.5/S	screwed	DOMINO
	91109802	11.5.1/S	screwed	DOMINO

10 Marsylka

EXAMPLE	CAT. NUM.	TYPE	VERSION	TILE MODEL
	91011802	10.5	clinched	MARSYLKA
	91012102	10.5.1	clinched	MARSYLKA
	91011902	10.5/S	screwed	MARSYLKA
	91013302	10.5.1/S	screwed	MARSYLKA
	91111802	11.5	clinched	MARSYLKA
	91112102	11.5.1	clinched	MARSYLKA
	91111902	11.5/S	screwed	MARSYLKA
	91113302	11.5.1/S	screwed	MARSYLKA

12 Orea

EXAMPLE	CAT. NUM.	TYPE	VERSION	TILE MODEL
	91010802	10.5	clinched	OREA
	91011102	10.5.1	clinched	OREA
	91010902	10.5/S	screwed	OREA
	91011202	10.5.1/S	screwed	OREA
	91110802	11.5	clinched	OREA
	91111102	11.5.1	clinched	OREA
	91110902	11.5/S	screwed	OREA
	91111202	11.5.1/S	screwed	OREA

14 Creton Simpla

EXAMPLE	CAT. NUM.	TYPE	VERSION	TILE MODEL
	91013402	10.5	clinched	CREATON SIMPLA
	91013502	10.5.1	clinched	CREATON SIMPLA
	91013702	10.5/S	screwed	CREATON SIMPLA
	91013802	10.5.1/S	screwed	CREATON SIMPLA
	91113402	11.5	clinched	CREATON SIMPLA
	91113502	11.5.1	clinched	CREATON SIMPLA
	91113702	11.5/S	screwed	CREATON SIMPLA
	91113802	11.5.1/S	screwed	CREATON SIMPLA

7 Creton

EXAMPLE	CAT. NUM.	TYPE	VERSION	TILE MODEL
	91005702	10.5	clinched	CREATON
	91008702	10.5.1	clinched	CREATON
	91006702	10.5/S	screwed	CREATON
	91009702	10.5.1/S	screwed	CREATON
	91105702	11.5	clinched	CREATON
	91108702	11.5.1	clinched	CREATON
	91106702	11.5/S	screwed	CREATON
	91109702	11.5.1/S	screwed	CREATON

9 Nibra

EXAMPLE	CAT. NUM.	TYPE	VERSION	TILE MODEL
	91005902	10.5	clinched	NIBRA
	91008902	10.5.1	clinched	NIBRA
	91006902	10.5/S	screwed	NIBRA
	91009902	10.5.1/S	screwed	NIBRA
	91105902	11.5	clinched	NIBRA
	91108902	11.5.1	clinched	NIBRA
	91106902	11.5/S	screwed	NIBRA
	91109902	11.5.1/S	screwed	NIBRA

11 Piano

EXAMPLE	CAT. NUM.	TYPE	Version	TILE MODEL
	91010302	10.5	clinched	PIANO
	91010602	10.5.1	clinched	PIANO
	91010402	10.5/S	screwed	PIANO
	91010702	10.5.1/S	screwed	PIANO
	91110302	11.5	clinched	PIANO
	91110602	11.5.1	clinched	PIANO
	91110402	11.5/S	screwed	PIANO
	91110702	11.5.1/S	screwed	PIANO

13 Sinfonie

EXAMPLE	CAT. NUM.	TYPE	VERSION	TILE MODEL
	91011302	10.5	clinched	SINFONIE
	91011602	10.5.1	clinched	SINFONIE
	91011402	10.5/S	screwed	SINFONIE
	91011702	10.5.1/S	screwed	SINFONIE
	91111302	11.5	clinched	SINFONIE
	91111602	11.5.1	clinched	SINFONIE
	91111402	11.5/S	screwed	SINFONIE
	91111702	11.5.1/S	screwed	SINFONIE

A detailed table of under tile holders applicability you will find at:

www.elkobis.com.pl/en/baza-wiedzy-elkobis

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