

A large, stylized lightning bolt graphic is centered vertically on the page, extending from the top edge down to the main title. It is rendered in a bright yellow and white color, contrasting with the background.

ELKO-BIS

SYSTEMY ODGROMOWE

CATALOG

Lightning Protection Systems

MEET POLISH MARKET LEADER OF LIGHTNING PROTECTION SYSTEMS!

ELKO-BIS. SIMPLY THE BEST.

Quality, highest production standards and friendly customer service, this is what we have been focusing on from the very beginning, since 1998 when the business was launched. We have built a team of excellent professionals, working with full commitment and understanding of customer needs and expectations. As a result ELKO-BIS lightning protection equipment is widely known at domestic and foreign markets, protecting many prestigious buildings and thousands of residential houses.



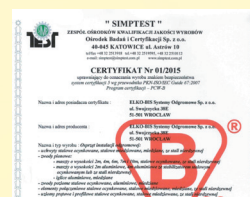
THIS IS AN OFFER!

ELKO-BIS complex offer includes Lightning Protection Components with accessories for all kind of buildings and facilities. Quick order procedures and even 5-year warranty protection. Readiness to provide non typical custom solutions - providing design services, appropriate choice and recommendation of LPS elements to specific projects. Technical advice and trainings on a daily bases.



QUALITY COMES FIRST!

ELKO-BIS products are not only completely tested and holds necessary certificates, there are also winners of numerous industry awards. Therefore, our customers can enjoy the highest quality of lightning protection.





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PROJECTS PORTFOLIO



HOUSING

Projects where Elko-Bis Lightning Protection Components being used:

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



COMMERCIAL BUILDINGS

Projects where Elko-Bis Lightning Protection Components being used:

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



OFFICE BUILDINGS

Projects where Elko-Bis Lightning Protection Components being used:

- Skanska Dominikański, Wrocław
- Enterprise Park, Kraków
- Green Wings, Warszawa
- Opolska Business Park, Kraków
- Kaufland, Wrocław
- Amber Tower, Gdańsk
- Alma Tower, Kraków





POWER ENGINEERING / ENERGY SECTOR

Projects where Elko-Bis Lightning Protection Components being used:

- Kozenice Power Plant
- Power Plant Gorzów Wlkp.
- Power Plant Opole
- LNG Świnoujście
- Bio-Gas Power Plant Gdansk
- Water Power Plant Dolna Odra Szczecin
- Wind Power Plants



INDUSTRIAL BUILDINGS

Projects where Elko-Bis Lightning Protection Components being used:

- 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



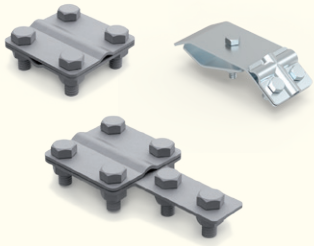
PUBLIC BUILDINGS

Projects where Elko-Bis Lightning Protection Components being used:

- Warsaw Underground
- Stadiums – m.in. Warsaw National Stadium, Łuźniki Moscow,
- National Forum of Music, Wrocław
- Warsaw Medical University
- MSWiA Hospital, Warsaw
- Zespolony County Hospital, Białystok
- Parliament Building, Warsaw

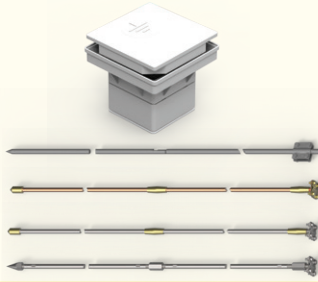


CONNECTING COMPONENTS



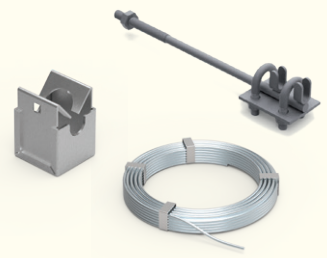
GROUP I page 9

EARTHING & EQUIPOTENTIAL BONDING

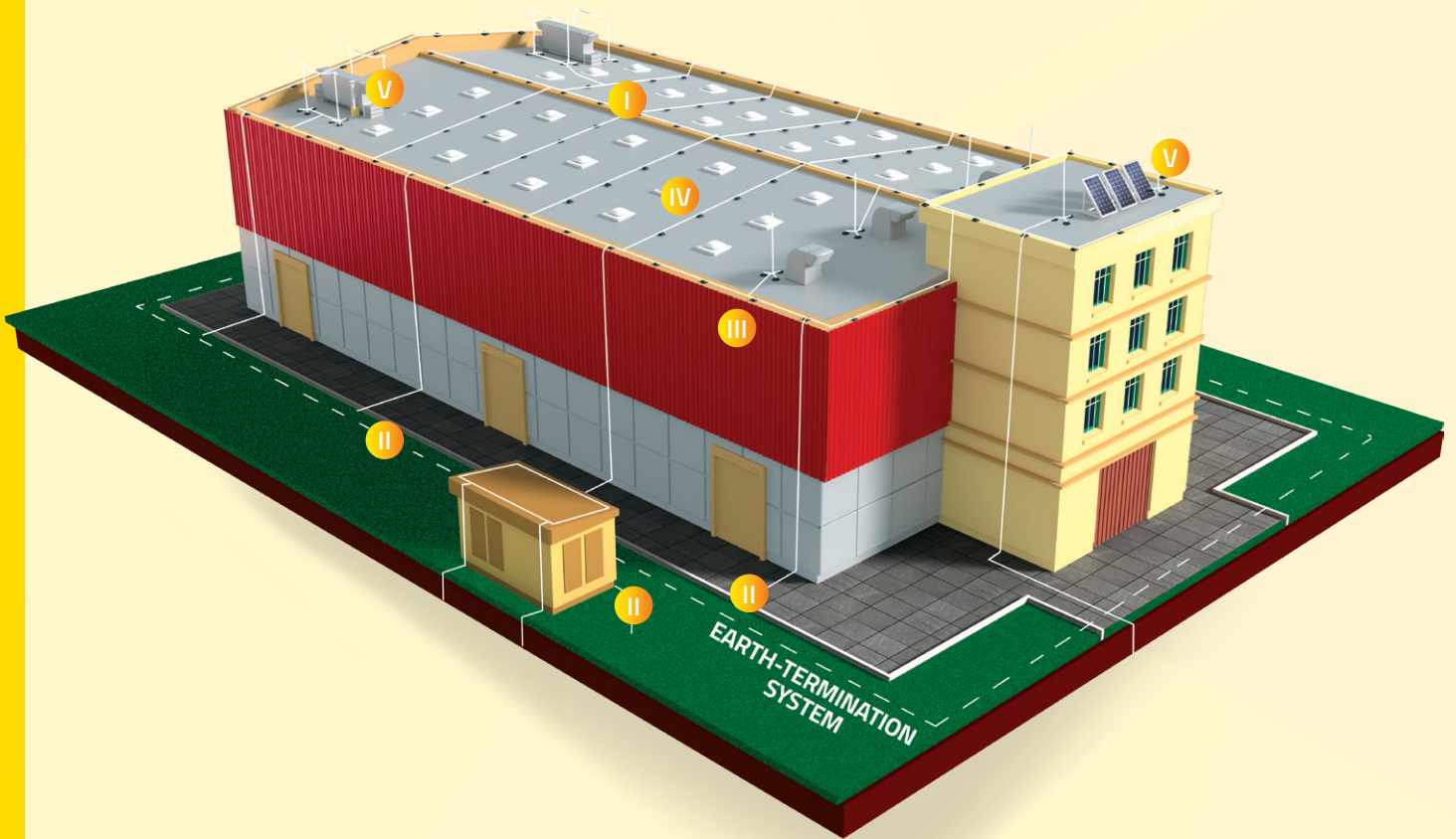


GROUP II page 15

DOWN CONDUCTORS



GROUP III page 25

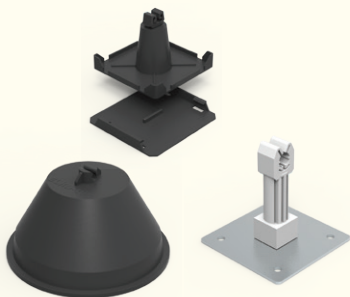


GROUP IV page 33

GROUP V page 48

GROUP VI page 65

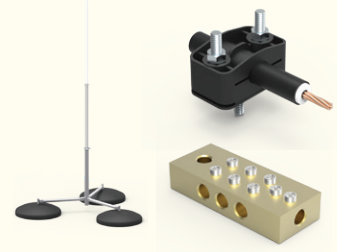
AIR TERMINATION



AIR TERMINATION: Interception Masts, Spires

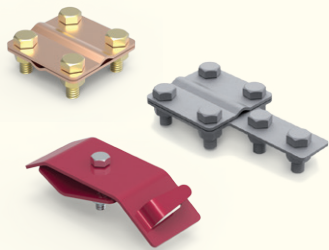


HIGH VOLTAGE AIR TERMINATION



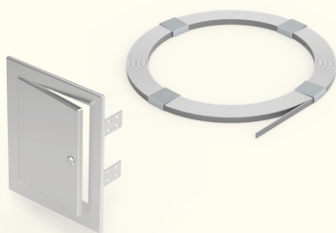


CONNECTING COMPONENTS



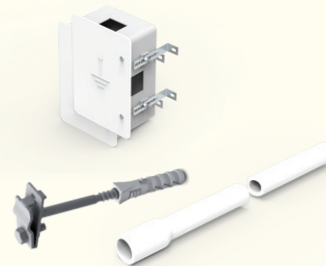
GROUP I page 9

EARTHING & EQUIPOTENTIAL BONDING

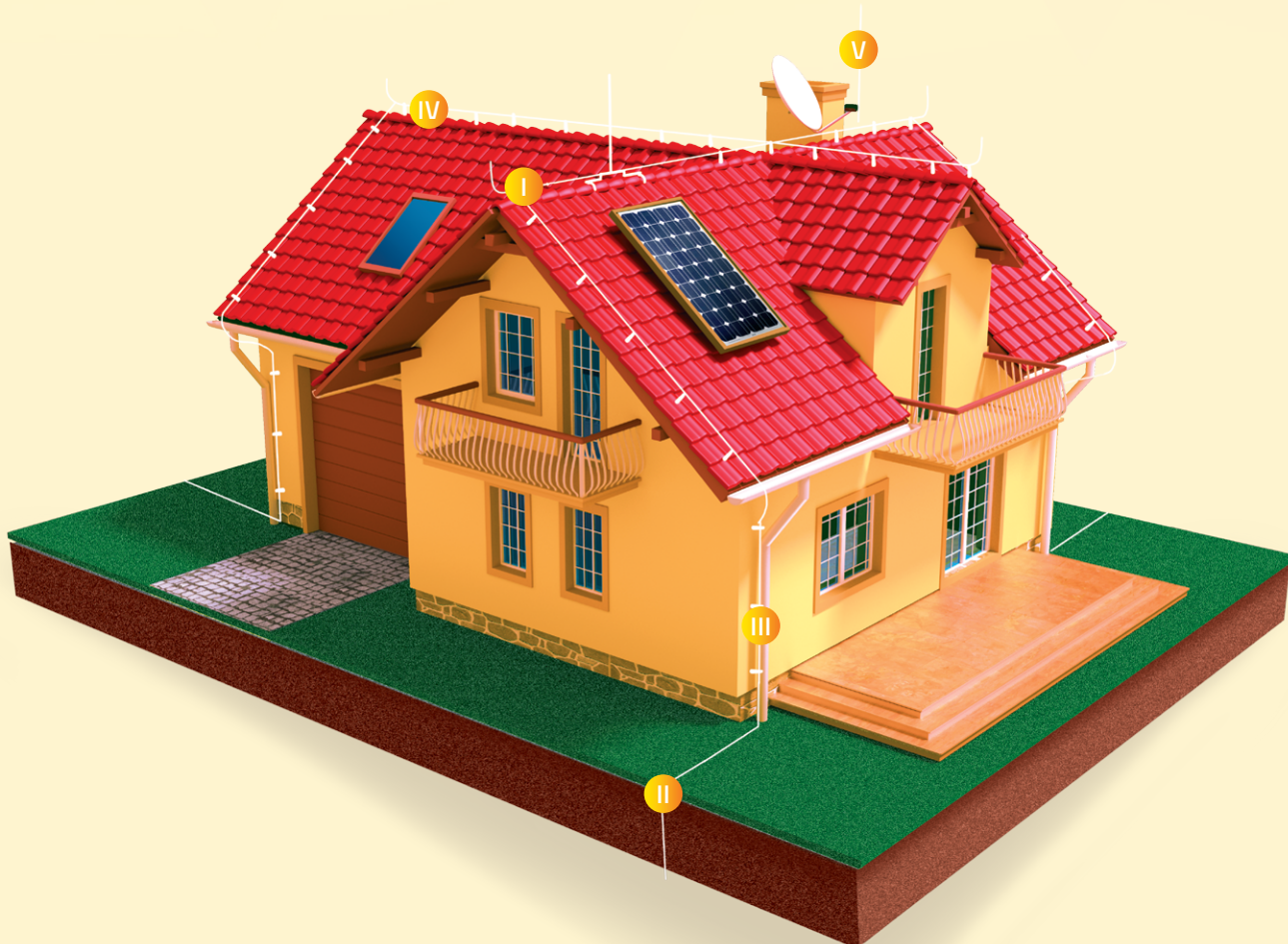


GROUP II page 15

DOWN CONDUCTORS



GROUP III page 25

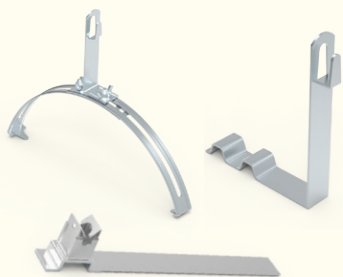


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GROUP V page 48

GROUP VII page 70

AIR TERMINATION



AIR TERMINATION: Interception Masts, Spires



ACCESSORIES



Index summary on page 91



HOW TO READ CATALOG INDEXES?

NEW INDEX STRUCTURE*



HOW TO ESTABLISH NEW INDEX (EXAMPLE)

To order **universal copper screwed roofing tile holder**:

1. Choose screwed product option index **91010101**.
2. Two last index digits to be changed into equivalent of copper option CU.
3. Your number is **91010103**.

CAT. NUM.	TYPE	VERSION
91010001	10.06	clinched
91010101	10.06/5	screwed








MATERIAL OPTIONS – NUMERICAL DESCRIPTION

OC 01 galvanized steel	NI 05 stainless steel	AL 09 aluminum
OG 02 hot galvanized steel	CU/OC 06 brass spacer	MS 10 brass
CU 03 copper	OC/CU 07 brass spacer	LA 16 varnished galvanized steel
MI 04 copper-bonded steel	PCV 08 PCV	

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

COLOUR OPTIONS

There are five basic colour coating options. More specific options available on paid request.

				
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

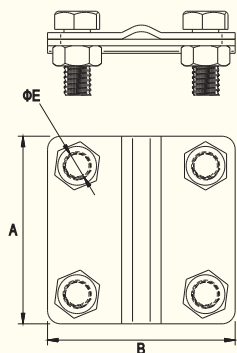
Real colours may slightly differ from presented samples.

*Presentation explaining how to create new indexes available on website www.elkobis.com.pl/download

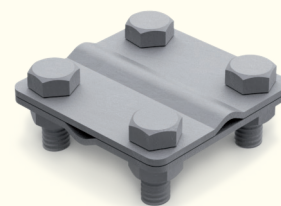
GROUP I Connecting Components



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 up to ϕ 8mm, as option 90100201 suitable to connect wires up to ϕ 10mm.

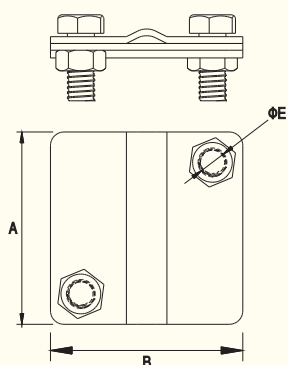


CAT. NUM.	TYPE	A	B	E	SCREW
90100101	1.1	57	57	9	4x M8x20
90100201	1.2	57	57	9	4x M8x30

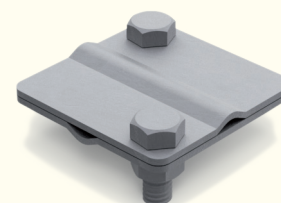
Alternative material options – change last two catalog number digits.

OC 01 OG 02 CU 03 CU/OC 06 OC/CU 07 MS 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 up to ϕ 8mm, as option 90200201 suitable to connect wires up to ϕ 10mm.



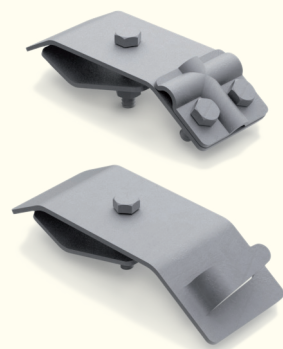
CAT. NUM.	TYPE	A	B	E	SCREW
90200101	2.1	57	57	9	2x M8x20
90200201	2.2	57	57	9	2x M8x30

Alternative material options – change last two catalog number digits.

OC 01 OG 02 CU 03 MS 10



Gutter Wire Holder

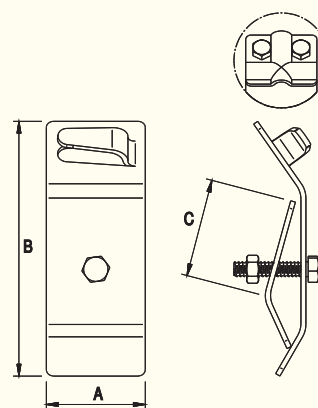


To connect wire with all types of gutters. Two parts 2mm thick, assembled with M6 screw. Option 90300201 allows to place wire along the gutter.

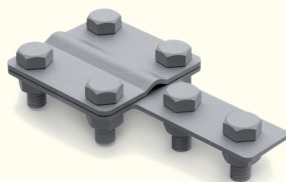
CAT. NUM.	TYPE	VERSION	A	B	C	SCREW
90300101	3.1	clinched	40	103	40	M6x30
90300201	3.1/S	screwed	40	103	40	M6x30

Alternative material options – change last two catalog number digits.

OC	01	OG	02	CU	03	NI	05	MS	10	LA	16
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4 Screws Control Clamp

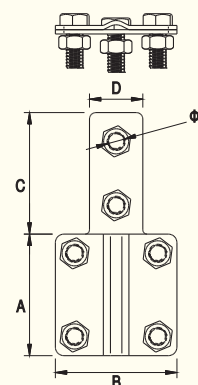


Control - down conductors / earthing connection clamp. Two parts 2mm thick, assembled with 6 screws M8. Option 90400106 with additional brass spacer used to cooper wire /tape conductor connections, as option 90400107 steel rod/ copper tape connection.

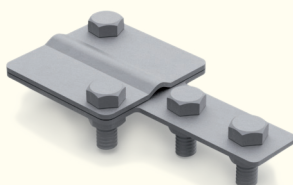
CAT. NUM.	TYPE	A	B	C	D	E	SCREW
90400101	4.1	57	57	57	25	9	6x M8x16

Alternative material options – change last two catalog number digits.

OC	01	OG	02	CU	03	CU/OC	06	OC/CU	07
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2 Screws Control Clamp

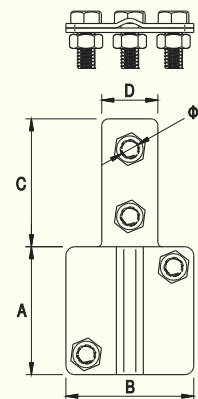


Control - down conductors / earthing connection clamp. Two parts 2mm thick, assembled with 4 screws M8. Option 90500106 with additional brass spacer used to cooper wire / tape conductor connections, as option 90500107 steel wire/ copper tape connection.

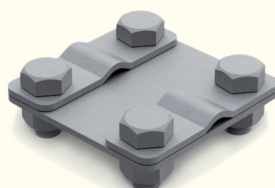
CAT. NUM.	TYPE	A	B	C	D	E	SCREW
90500101	5.1	57	57	57	25	9	4x M8x16

Alternative material options – change last two catalog number digits.

OC	01	OG	02	CU	03	CU/OC	06	OC/CU	07
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Wire-Wire Control Clamp

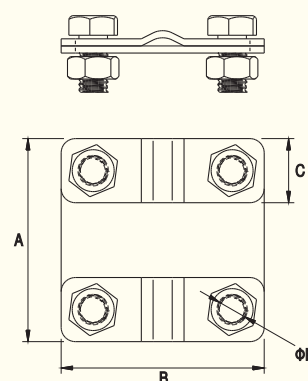


Control connection of wires. 3 parts 2mm thick, assembled with 4 screws M8. Connection scale: ϕ 8-10mm rods.

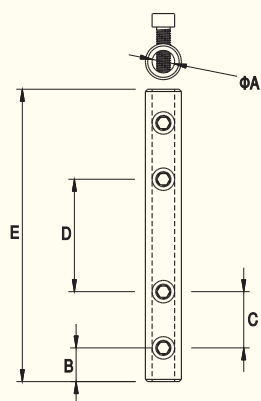
CAT. NUM.	TYPE	A	B	C	E	SCREW
90600101	6.1	57	57	20	9	4x M8x16

Alternative material options – change last two catalog number digits.

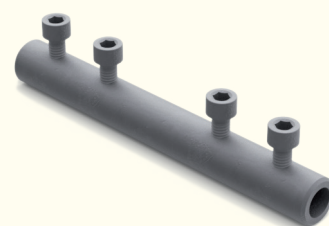
OC	01	OG	02	CU	03
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Connecting Sleeve



Connection of air termination wires to greater lengths. Assembled with 4 imbus type screws. Use brass option 90710110 to connect cooper with steel wire.

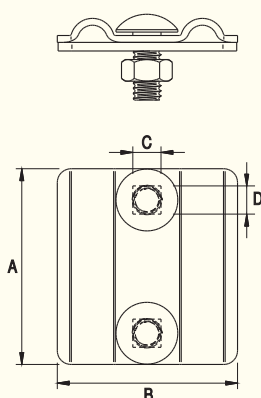


CAT. NUM.	TYPE	A	B	C	D	E	SCREW
90710101	7.1 R	10	15	25	50	130	M6x20
90710201	7.2 R	16	25	26	51	150	M6x20

Alternative material options – change last two catalog number digits.

OC	01	OG	02	MI	04	MS	10
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2 - Elements Universal Clamp



Connection of air termination wires to greater lengths. 2 parts 2mm thick, assembled with 2 screws M8. Use brass option 90700110 to connect cooper with steel wires.

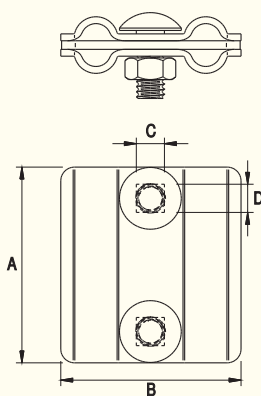


CAT. NUM.	TYPE	A	B	C	D	SCREW
90700101	7.1	57	50	8,5	8,5	2x M8x20

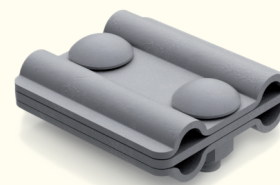
Alternative material options – change last two catalog number digits.

OC	01	OG	02	CU	03	NI	05	MS	10
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3 - Elements Universal Clamp



Connection of air termination wires to greater lengths. 3 parts 2mm thick, assembled with 2 screws M8. Connection up to 4 conductors. Use brass option 90700210 to connect cooper with steel wire.

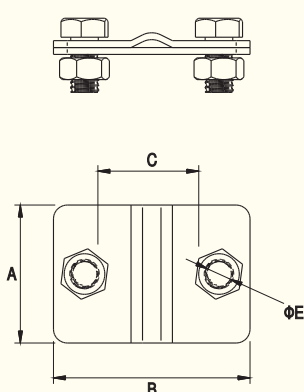


CAT. NUM.	TYPE	A	B	C	D	SCREW
90800101	8.1	57	50	8,5	8,5	2x M8x30

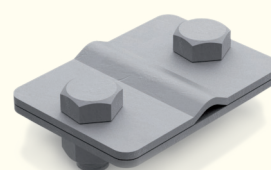
Alternative material options – change last two catalog number digits.

OC	01	OG	02	CU	03	NI	05	MS	10
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Ground Connector



Conductor wire with tape conductor connections or tape to tape connections. 2 parts 3mm thick, assembled with 2 screws M8.



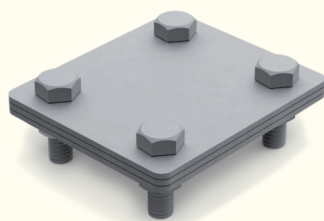
CAT. NUM.	TYPE	A	B	C	E	SCREW
90900101	9.1	40	57	30	9	2x M8x16
90900201	9.2	40	70	40	9	2x M8x16

Alternative material options – change last two catalog number digits.

OC	01	OG	02	CU	03
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Universal Cross Unit Clamp

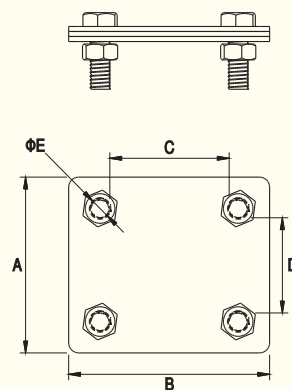


Connection of tape conductor in cross arrangements. 3 parts 2mm thick, assembled with 4 screws. Options with end digits 06 and 07 used for copper tape with tape conductor connection.

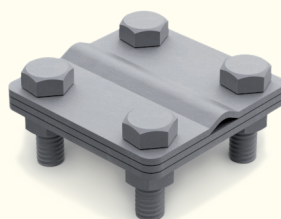
CAT. NUM.	TYPE	A	B	C	D	E	SCREW
91400301	14.3	70	80	50	45	10,5	4x M8x25
91400401	14.4	100	100	67	67	11	4x M10x30

Alternative material options – change last two catalog number digits.

OC	01	OG	02	CU	03	CU/OC	06	OC/CU	07
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Creased Universal Cross Unit Clamp

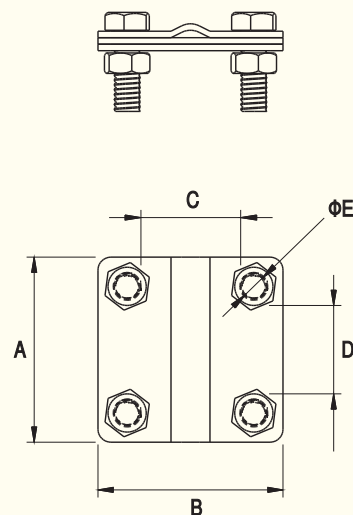


Connection of wires or rods with tape conductor. 3 parts 2 mm thick, assembled with 4 screws M8. Option 91400106 use to copper wire with tape conductor connection, as option 91400107 steel wire with copper tape connection. Clamp 91400501 suitable to use with \varnothing 16 earthing electrode.

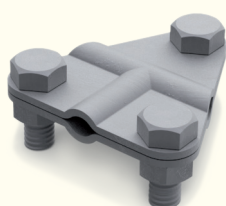
CAT. NUM.	TYPE	A	B	C	D	E	SCREW
91400101	14.1	57	57	30	30	9	4x M8x25
91400201	14.2	57	80	50	30	9	4x M8x25
91400501	14.5	57	57	30	30	9	4x M8x40
91400601	–	57	80	50	30	9	4x M8x40
91401302	–	70	80	55	45	9	4x M8x40

Alternative material options – change last two catalog number digits.

OC	01	OG	02	CU	03	CU/OC	06	OC/CU	07
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T-Type Connection Clamp

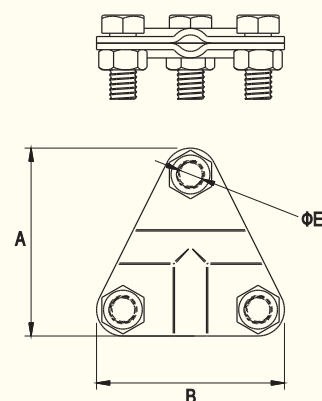


Connecting wire in T arrangements. 2 parts 2mm thick, assembled with 3 screws M8.

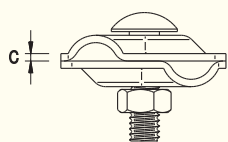
CAT. NUM.	TYPE	A	B	E	SCREW
95400101	54.1	52	45	9	M8x20

Alternative material options – change last two catalog number digits.

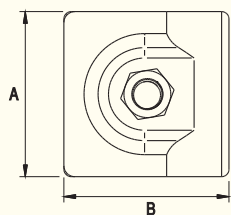
OC	01	OG	02	CU	03
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Single Screw Cross Connection Clamp



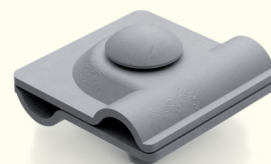
Cross connections of wires or wire connection with metal roof elements. 2 parts 2 mm thick, assembled with single M8 screw. Option 95500201 is 2,5mm thick, assembled with single M10 screw.



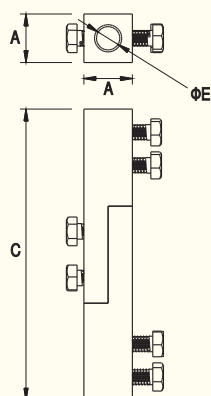
CAT. NUM.	TYPE	A	B	C	SCREW
95500101	55.1	45	45	2	M8x30
95500201	55.2	45	45	2,5	M10x35

Alternative material options – change last two catalog number digits.

OC	01	OG	02	CU	03	NI	05
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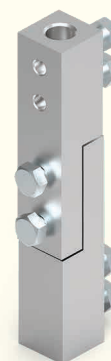
Aluminum Control Connection Clamp



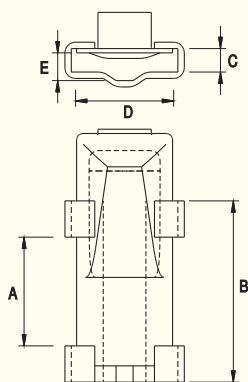
Control connection wire-wire or wire-tape. 2 aluminum parts, assembled with 6 screws M8.

CAT. NUM.	TYPE	A	C	E	SCREW
95600109	56.1	25	150	12	6x M8x16

AL



Wedge Connection Clamp

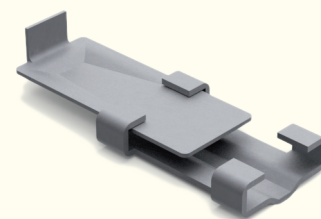


Non screw connection of tape-tape conductors or wire-tape conductors. 2 parts 2 mm thick. Connection by wedging elements inside connector.

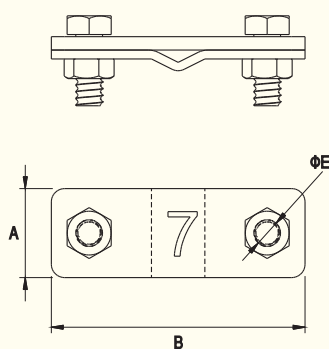
CAT. NUM.	TYPE	A	B	C	D	E
95700101	57.1	50	85	12	50	13

Alternative material options – change last two catalog number digits.

OC	01	OG	02
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Marking Connection Clamp

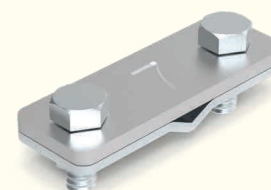


To mark control connection clamp. 2 parts 3mm thick, assembled with 2 screws M6. When placing order scope of numbers need to be provided.

CAT. NUM.	TYPE	A	B	E	SCREW
97200109	72.1	20	57	7	2x M6x16

Alternative material options – change last two catalog number digits.

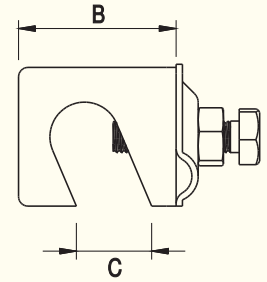
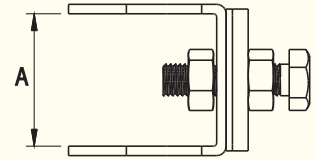
CU	03	AL	09
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Rod- Tape Conductor Connection Clamp

To connect tape conductor with $\varnothing 22$ reinforcement foundation bar. Can be also use to connect tape conductor with earthing rod. Maximum tape size - 40x5mm. Option with cap additionally allows to connect 8-10mm wire.

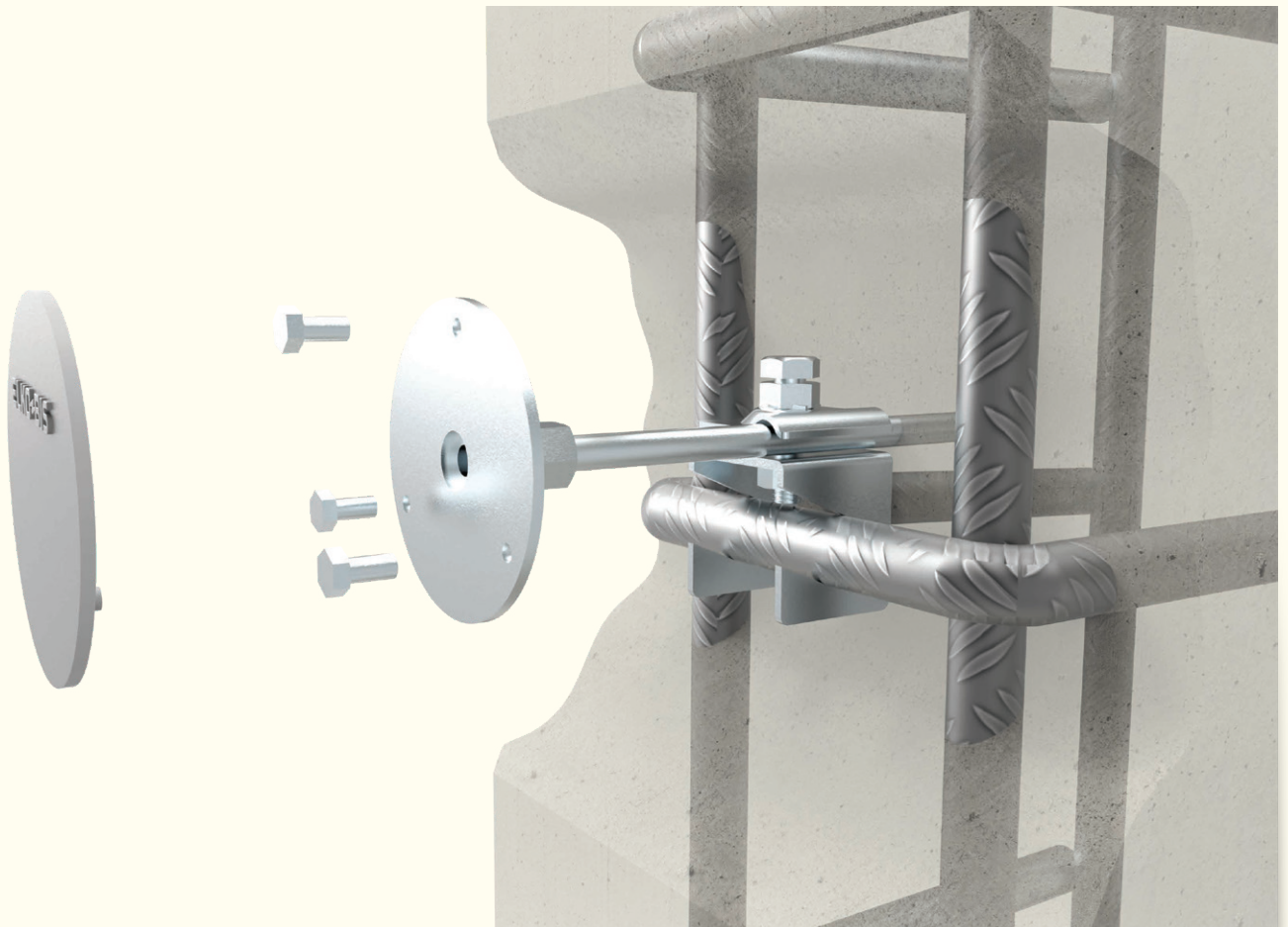


CAT. NUM.	TYPE	VERSION	A	B	C	SCREW
11700101	-	without cap	42	50	$\varnothing 22$	M10x40
11701101	-	with cap	42	50	$\varnothing 22$	M10x40

Alternative material options – change last two catalog number digits.

OC 01 OG 02

Example of using Rod-tape conductor Connection Clamp to get earthing connection

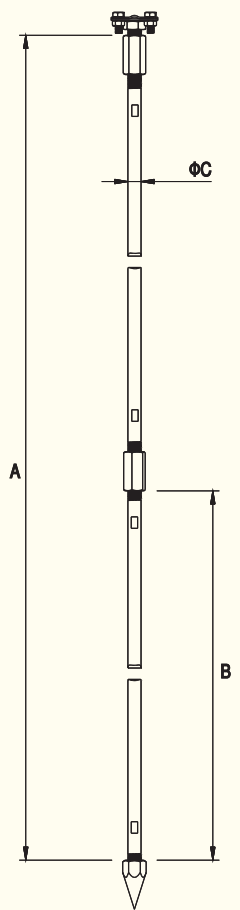




GROUP II Earthing & Equipotential Bonding



Threaded Earthing Electrode - 3 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 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	SCREW
94103001	41.1	3000	1000	16	4x M8x16
94123001	41.1.1	3000	1500	16	4x M8x16
94133001	41.10	3000	1000	20	4x M8x16
94113001	41.10.1	3000	1500	20	4x M8x16

Alternative material options – change last two catalog number digits.

OC 01 MI 04

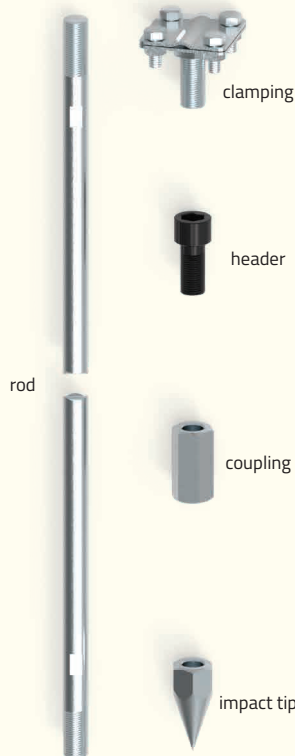
Hammer Insert recommended - page 74.





Threaded Earthing Electrode Elements

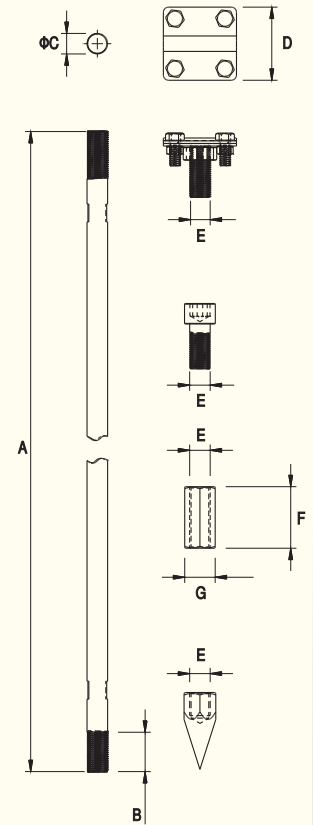
For vertical earthing. Mounted by successive rod installation $\varnothing 16$ or $\varnothing 20$ rods, reaching earthing resistance ≤ 10 Ohm (for lightning protection systems). Set comes with an impact tip and clamping, suitable to connect tape or earthing rod. Great to use in energy sector, rail infrastructure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



CAT. NUM.	TYPE	VERSION	A	B	C	D	E	F	G	SCREW
94200101	42.1	earthing rod	1000	22,5	16	-	-	-	-	-
94201101	42.1.1	earthing rod	1500	22,5	16	-	-	-	-	-
94200201	42.2	screwed clamping	-	-	-	57	M6	-	-	4x M8x20
94200301	42.3	header	-	-	-	-	M16	-	-	-
94200401	42.4	coupling	-	-	-	-	M16	48	24	-
94200501	42.5	impact tip	-	-	-	-	M16	-	-	-
94210101	42.10	earthing rod	1000	22,5	20	-	-	-	-	-
94211101	42.10.1	earthing rod	1500	22,5	20	-	-	-	-	-
94211201	42.2.1	screwed clamping	-	-	-	57	M20	-	-	4x M8x20
94211301	42.3.1	header	-	-	-	-	M20	-	-	-
94211401	42.4.1	coupling	-	-	-	-	M20	60	30	-
94211501	42.5.1	impact tip	-	-	-	-	M20	20	-	-

Alternative material options – change last two catalog number digits.

OC 01 MI 04



Hammer Insert recommended - page 74.

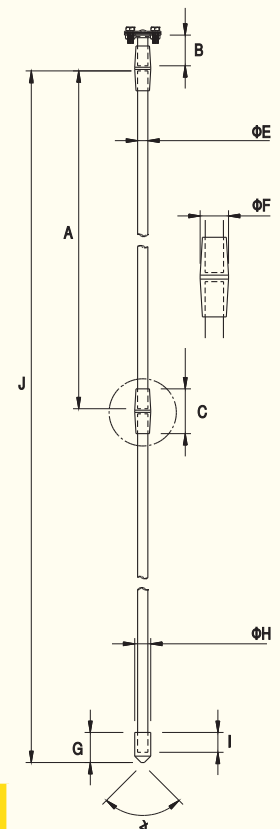
"Terra-grom®" Unthreaded Earthing Electrode

For vertical earthing. 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 anticorrosive coating above $100\mu\text{m}$. Rods connection by impact. Patent protection. Great to use in energy sector, rail infrastructure and building industry.



CAT. NUM.	TYPE	A	B	C	E	F	G	H	I	J	α	SCREW
94143002	41.1.1.T	1500	50	70	16	25	47	25	36	3000	87°	4x M8x20

OG



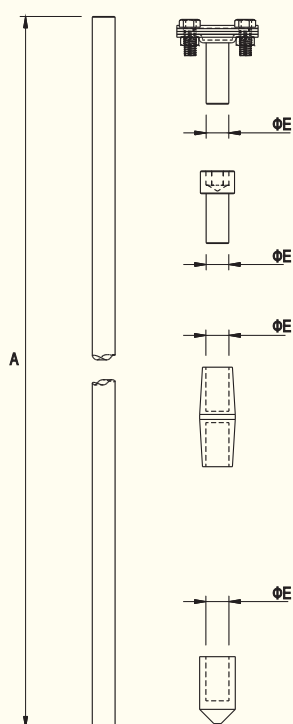
Hammer Insert recommended - page 74.



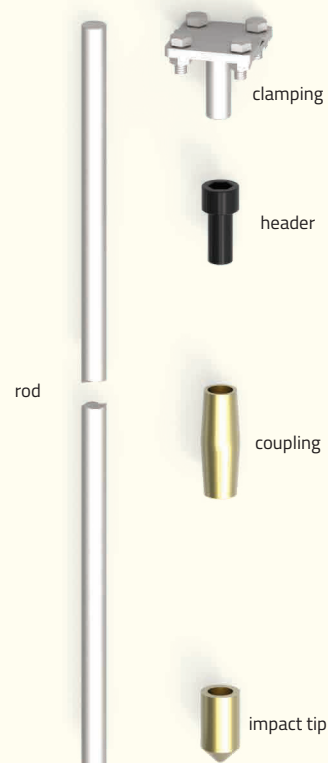


"Terra-grom"® Unthreaded Earthing Electrode Elements

For vertical earthing. Mounted by successive rod installation, reaching earthing resistance ≤ 10 Ohm (for lightning protection systems). Elements sold separately allows to get demanded lenght of earthing in order to reach lower resistance. Reached earthing resistance should be lower than 10 Ohm.



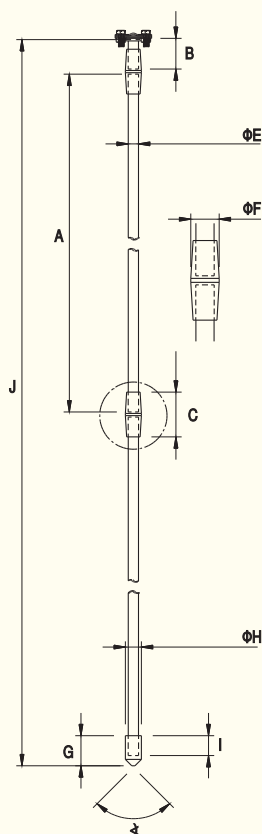
CAT. NUM.	TYPE	SCREW	A	E
94221102	42.1.1 T OG	rod	1500	16
94220202	42.2 T OG	clamping	-	16
94220301	42.3 T	header (to successive rod impact)	-	16
94220410	42.4 T MS	coupling	-	16
94220510	42.5 T MS	impact tip	-	16



Hammer Insert recommended - page 74.

"Terra-grom" Unthreaded Copper Bonded Earthing Electrode

For vertical earthing. Mounted by successive rod installation, reaching earthing resistance ≤ 10 Ohm (for lightning protection systems)Set comes with $\varnothing 16$ or $\varnothing 14,2$ rods , coupling connector, impact tip and clamping, suitable to connect tape or earthing rod.Unique corrosion coating (even above $500\mu\text{m}$). Rods connection by impact. Patent protection. Great to use in energy sector, rail infrastructure and building industry.



CAT. NUM.	TYPE	A	B	C	E	F	G	H	I	J	∠	SCREW
94143004	41.1.1 T MI	1500	50	70	16	25	47	25	36	3000	87°	4x M8x20
94163004	41.1.2 T MI	1500	50	70	14,2 (5/8")	25	47	25	36	3000	87°	4x M8x20

MI



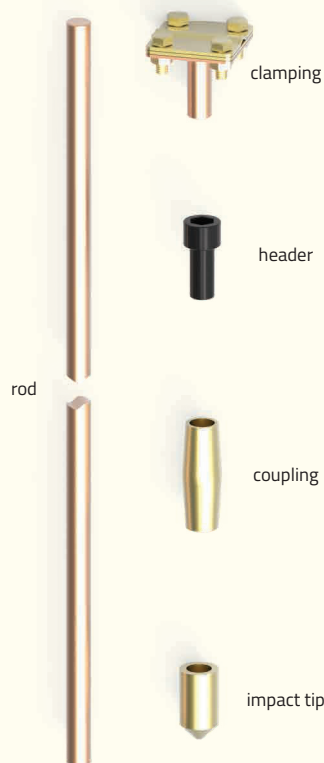
Hammer Insert recommended - page 74.



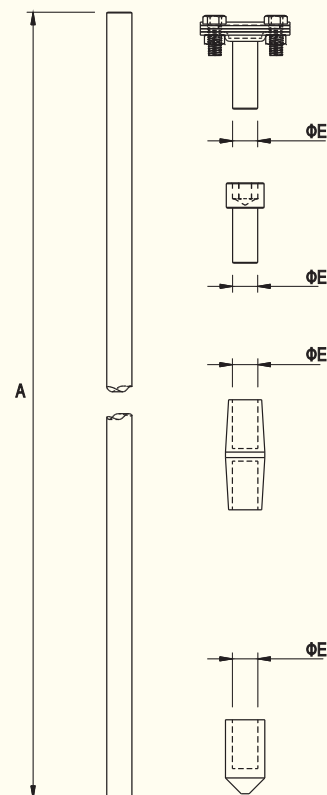


"Terra-grom ®" Unthreaded Copper Bonded Earthing Electrode Elements

For vertical earthing. Mounted by successive rod installation, reaching earthing resistance ≤ 10 Ohm (for lightning protection systems). Elements sold separately allows to get demanded length of earthing in order to reach lower resistance.



CAT. NUM.	TYPE	VERSION	A	E
94221104	42.1.1 TMI	rod	1500	16
94220203	42.2 T CU	clamping	-	16
94220301	42.3 T	header (to successive rod impact)	-	16
94220410	42.4 T MS	coupling	-	16
94220510	42.5 T MS	impact tip	-	16
94242104	42.1.2 TMI	rod	1500	14,2 (5/8")
94242203	42.2.2 T CU	clamping	-	14,2 (5/8")
94232301	42.3.2 T	header (to successive rod impact)	-	14,2 (5/8")
94232410	42.4.2 T MS	coupling	-	14,2 (5/8")
94232510	42.5.2 T MS	impact tip	-	14,2 (5/8")



Hammer Insert recommended - page 74.

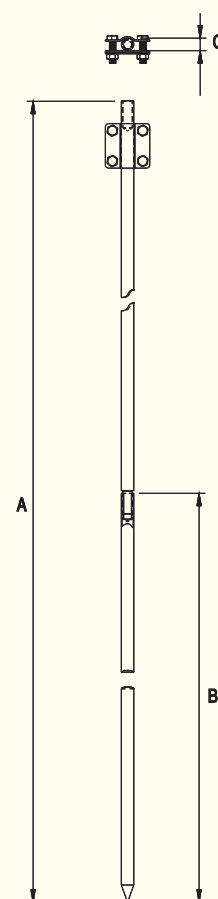
"Elkonomic" Unthreaded Earthing Electrode

For vertical earthing. Set include 1,5 meters rods, getting connection by wedging. 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 ≤ 10 Ohm (for lightning protection systems). Simple construction speeds up assembly. Hot galvanised up to 100 μ m. Product in accordance with norm PN-EN 62561-2:2012. Great to use in energy sector, rail infrastructure and building industry.



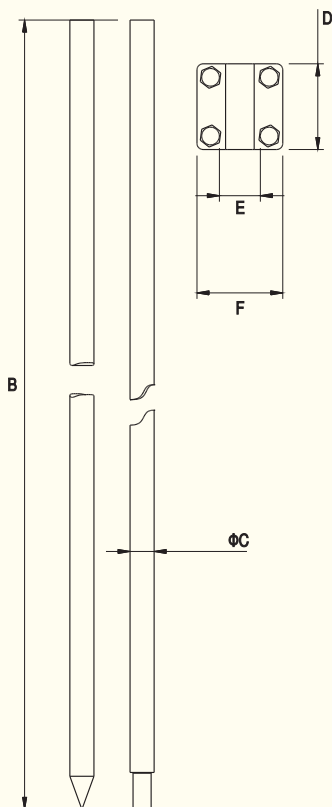
CAT. NUM.	TYPE	A	B	C
94173002	-	3000	1500	$\varnothing 16$
94183002	-	3000	1500	$\varnothing 20$

OG



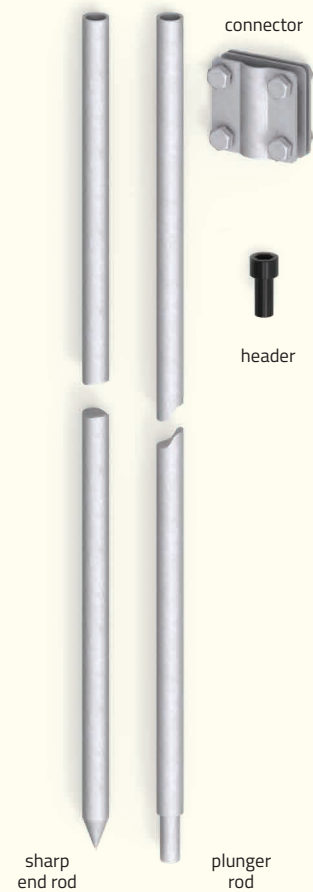
"Elkonomic" Unthreaded Earthing Electrode Elements

For vertical earthing. Mounted by successive rod installation, reaching earthing resistance ≤ 10 Ohm (for lightning protection systems). Elements sold separately allows to get demanded length of earthing in order to reach lower resistance.



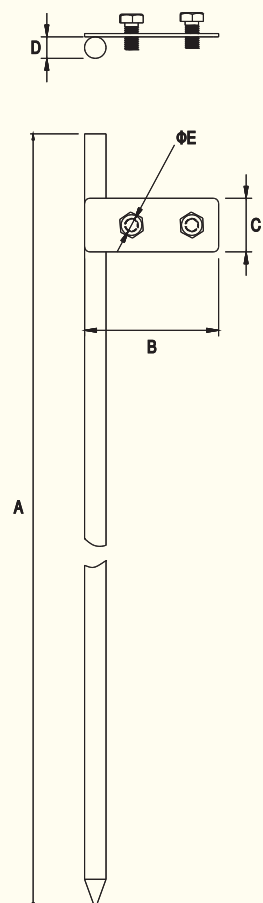
CAT. NUM.	TYPE	VERSION	B	C	D	E	F
94251102	-	sharp end rod	1500	16	-	-	-
94252102	-	plunger rod	1500	16	-	-	-
94261102	-	sharp end rod	1500	20	-	-	-
94262102	-	plunger rod	1500	20	-	-	-
94213301	-	header	-	M12	-	-	-
91400502	-	connector	-	-	57	30	57
91401302	-	connector	-	-	70	50	80

OG



Rod Earthing

For vertical earthing. Mounted by successive rod installation, reaching earthing resistance ≤ 10 Ohm (for lightning protection systems). Great to use in energy sector, rail infrastructure and building industry.



CAT. NUM.	TYPE	A	B	C	D	E	SCREW
94000102	40.1	2000	100	40	16	11	2x M10x20

OG

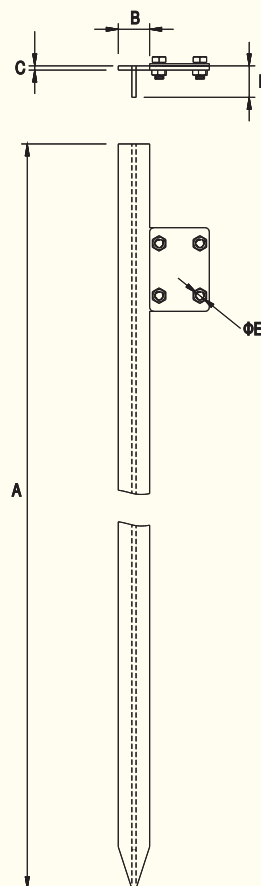




T Profile Earthing



For vertical earthing. Mounted by successive rod installation, reaching earthing resistance ≤ 10 Ohm (for lightning protection systems). Great to use in energy sector, rail infrastructure and building industry.

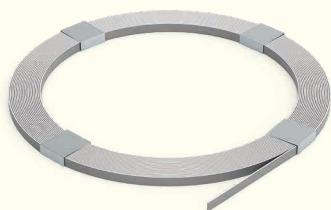


CAT. NUM.	TYPE	A	B	C	E	SCREW
94000302	40.3	2000	30	4	9	4x M8x20
94000402	40.4	3000	30	4	9	4x M8x20

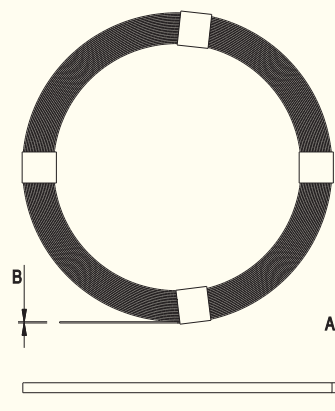
OG

Tape Conductor

Use for foundation earthing, lattice mats or ring earthing conductors and down conductors, equipotential installations. Zinc coating comply with norm. On offer 25 kg or 50 kg roller. Confectioned sale also available.



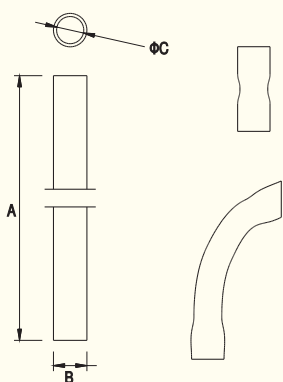
ZINC PLATED	CAT. NUM.	A	B	WEIGHT 1 l m. (kg)
25x3	82503002	25	3	0,600
25x4	82504002	25	4	0,800
30x4	83004002	30	4	0,961
40x4	84004002	40	4	1,185
50x4	85000402	50	4	1,601
COPPER	CAT. NUM.	A	B	WEIGHT 1 l m. (kg)
25x3	82503003	25	3	0,670
25x4	82504003	25	4	0,890
30x4	83004003	30	4	1,070
40x4	84004003	40	4	1,424
COPPER BONDED	CAT. NUM.	A	B	WEIGHT 1 l m. (kg)
25x4	82504004	25	4	0,820
30x4	83004004	30	4	0,980
STAINLESS	CAT. NUM.	A	B	WEIGHT 1 l m. (kg)
30x3,5	83003505	30	3,5	0,833



Before order check availability and leadtime.



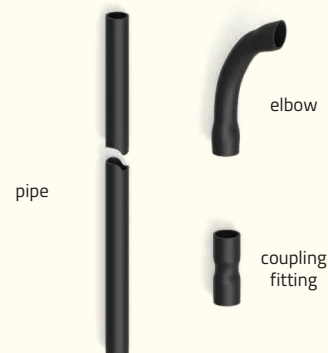
Tape Conductor Assembly Pipe



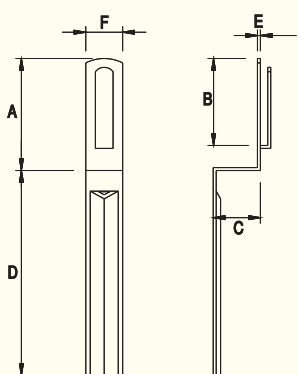
To lead tape under building elevation/facade. Material ensures sufficient stiffness and non flammability. Diameter allows to use maximum sectional dimension 30 x 4.

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

PVC



Tape Conductor Holder



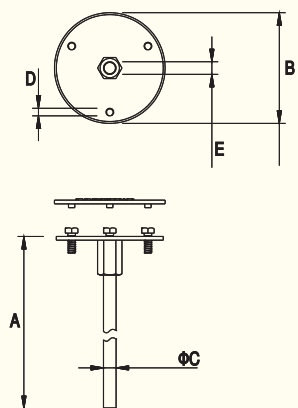
To fix tape conductor in foundation or ring type earthing. Keeping the distance of 1 meter between holders, ensures sufficient stiffness, whilst deeping the tape in foundation. Footer shape ensures accurate assembly in concrete, preventing corrosion. Maximum sectional fixing dimensions of tape 50x5mm.

CAT. NUM.	TYPE	A	B	C	D	E	F
97100101	71.1	75	55	30	140	2	25

OC 01 OG 02



Plate Type Earthing Connector



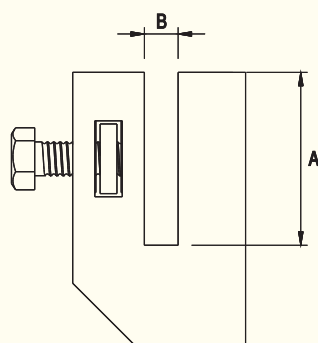
Used in LPS connections or equipotential installations. Plate with a clamp need to be extended outside the building. Before concrete filling, fix plate permanently to formwork and tight up the rod. Other side of rod permanently connected with reinforcement bars by welding or using universal unit clamps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

CAT. NUM.	TYPE	A	B	C	D	E
97300105	73.1	200	85	10	3x M6x16	M10
97300205	73.2	200	85	12	3x M6x16	M12
97300305	73.3	200	85	16	3x M6x16	M16

NI



Tape Conductor Holder with Tightening Screw

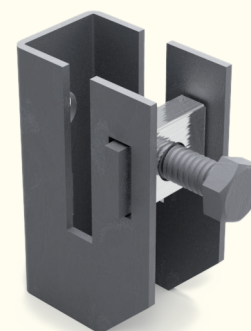


For wall tape mounting. Fastened with fixing extension plugs. Maximum sectional dimension of tape 50x5mm.

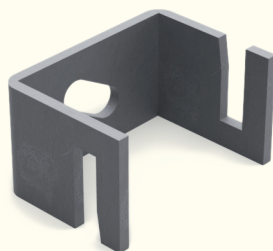
CAT. NUM.	TYPE	A	B	SCREW
97400101	74.1	40	9	M8x20

Alternative material options – change last two catalog number digits.

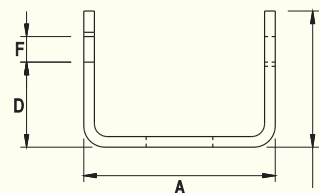
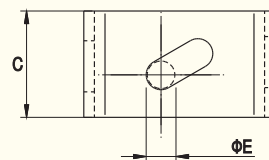
OC 01 OG 02 CU 03



Tape Conductor Holder



For wall and ceiling tape mounting. Fastened with fixing extension plugs. Option 97400201 - maximum sectional dimension of tape 30x4mm. Option 97401201 - maximum sectional dimension of tape 50x4mm.



CAT. NUM.	TYPE	A	B	C	D	E	F
97400201	74.2	45	32	25	20	7	6
97401201	74.2.1	70	35	44	19	8	6

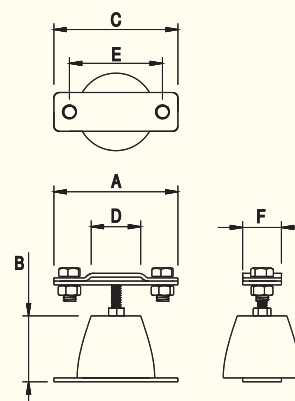
Alternative material options – change last two catalog number digits.

OC	01	OG	02	CU	03	LA	16
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Insulation Tape Conductor Holder



For wall and ceiling tape mounting. Can be also mounted on cable trays. Polyamide Insulator reinforced with fibreglass up to 1kV. Maximum sectional dimension of tape 40x5mm. Distance between holders should not exceed 1 meter.

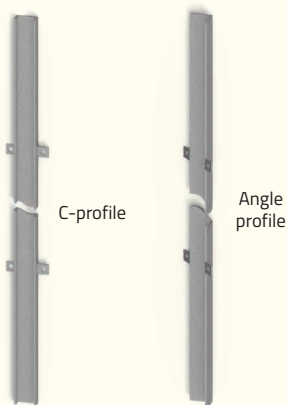


CAT. NUM.	TYPE	A	B	C	D	E	F
97400401	–	80	40	80	40	60	25

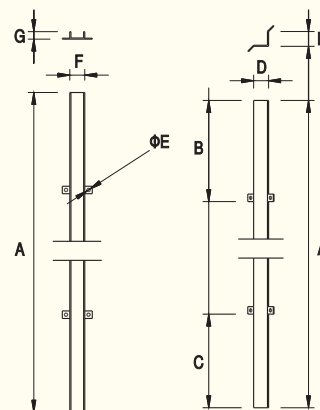
Alternative material options – change last two catalog number digits.

OC	01	OG	02
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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

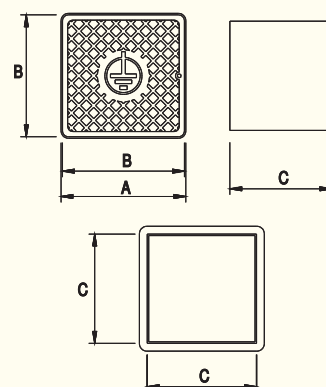
Alternative material options – change last two catalog number digits.

OG	02	LA	16
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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.



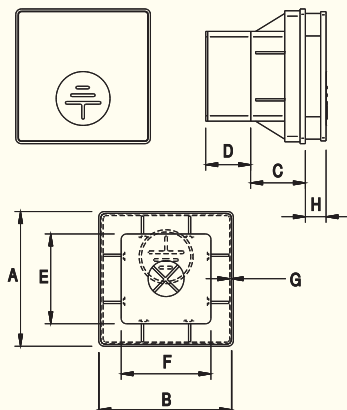
CAT. NUM.	TYPE	A	B	C
94900108	49.1	200	193	166

PVC

See also facade control pits - page 32.

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 PN-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.



Patented model.

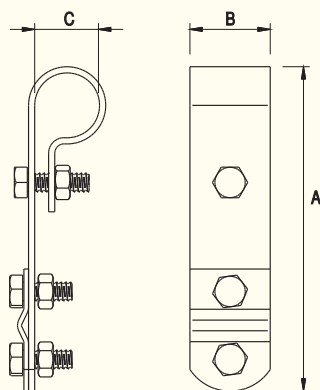


CAT. NUM.	TYPE	VERSION	A	B	C	D	E	F	G	H
95000108	50.1	set	300	300	120	93	200	200	5	33
95010108	50.A	lid	-	-	-	-	-	-	-	33
95020108	50.B	foundation	300	300	120	-	-	-	-	-
95030108	50.C	distance element	-	-	-	93	200	200	5	-
95040108	50.D	bottom	-	-	-	-	-	-	-	-

PVC

See also facade control pits - page 32.

Earthing Clamp

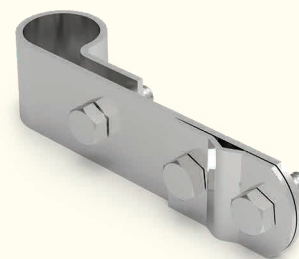


For equipotential connections at pipe constructions and installations.

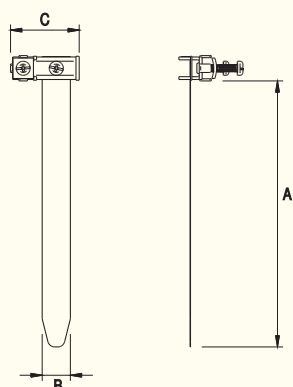
CAT. NUM.	TYPE	A	B	C	SCREW
96409005	64.1	105	26	∅ 21	2x M6x16 + 1x M6x20
96409105	64.2	120	26	∅ 28	2x M6x16 + 1x M6x20
96409205	64.3	123	26	∅ 34	2x M6x16 + 1x M6x20
96409305	64.4	126	26	∅ 44	2x M6x16 + 1x M6x20

Alternative material options – change last two catalog number digits.

CU 03 NI 05



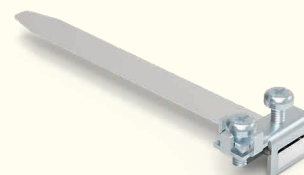
Earthing Tensioning Strap



For equipotential connections at pipe constructions and installations. 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.

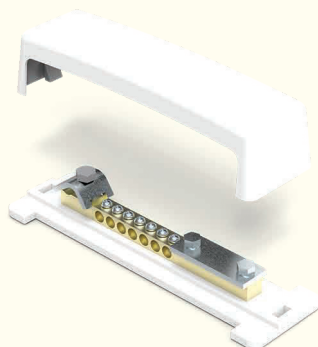
CAT. NUM.	TYPE	A	B	C	PIPE DIAMETER
96440101	-	125	14	32	< 36
96440201	-	190	20	48	< 54
96440301	-	410	20	48	< 124
96440401	-	585	20	48	< 180

NI



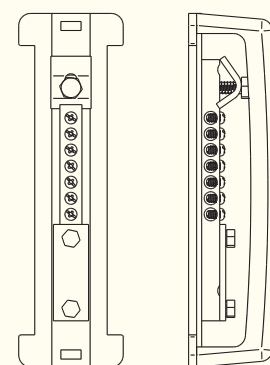


Equipotential Bar

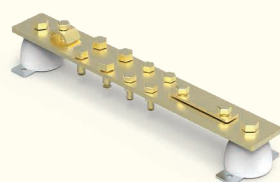


Used in surge protection and electric shock installation. Enables direct equipotential bonding between earthing and conducting parts such as piping, reinforcement bars, construction parts of building, covers of electrical devices. Equipotential bar is to get similar potential on conducting parts in the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

CAT. NUM.	TYPE	CONNECTION OPTIONS
99200199	92.1	7 x 16 mm ²
		1 x 50 mm ²
		1 x Tape Conductor max. 25x4 mm



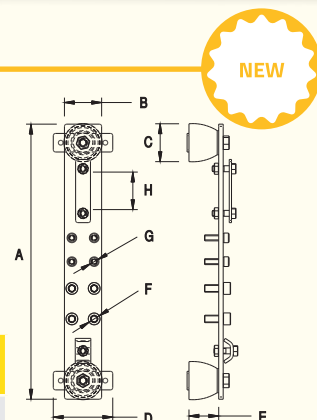
Main Earthing Equipotential Bar



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	SCREW	A	B	C	D	E	F	G	H
99200210	NEW	4xM8, 4xM10	370	50	50	80	40	M10	M8	51
MS	10									

Alternative material options – change last two catalog number digits.

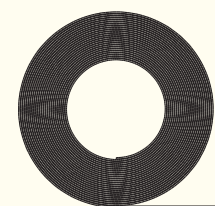
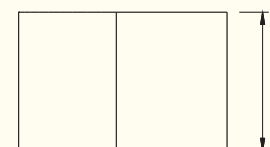


Denso Tape



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

CAT. NUM.	TYPE	A	LENGTH
11210099	112.100	100	10m
11220099	112.200	200	10m

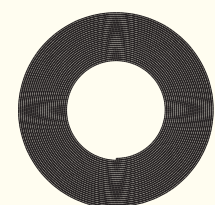
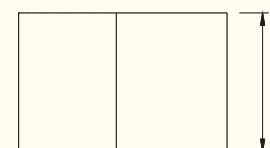


Anti-corrosive Tape for Earth Connections



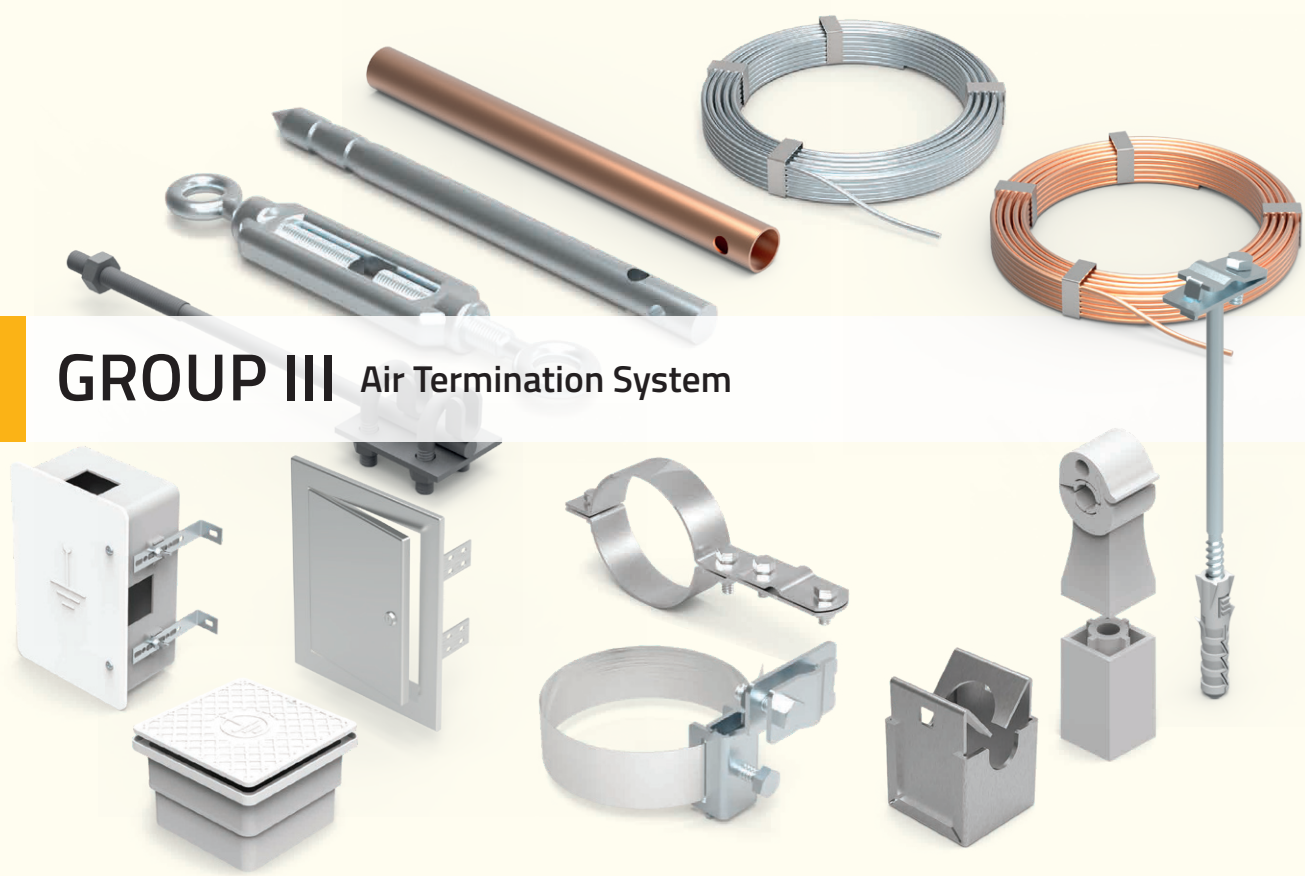
Anti corrosive, humidity protection of earth weldings and screws connection. Waterproofed with good electric resistance. Works with bituminous insulation and PE.

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



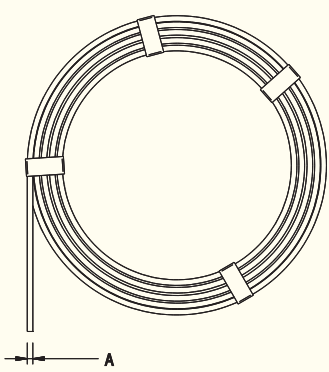


GROUP III Air Termination System



Wire Conductor

For earth-termination systems. Coating thickness comply with PN-EN 62561-2:2012 norm (zinc plated minimum 350g/m², copper bonded minimum 70 μm). On offer 50 kg rollers (steel wire) 20 kg (aluminum wire). Confectioned sale also available.



ZINC PLATED	CAT. NUM.	A	WEIGHT 1 l m. (kg)
DR6	80000602	6	0,220
DR8	80000802	8	0,395
DR10	80001002	10	0,620
COPPER	CAT. NUM.	A	WEIGHT 1 l m. (kg)
DR6	80000603	6	0,252
DR8	80000803	8	0,447
DR10	80001003	10	0,699
ALUMINUM	CAT. NUM.	A	WEIGHT 1 l m. (kg)
DR8	80000809	8	0,130
DR10	80001009	10	0,200
COPPER BONDED	CAT. NUM.	A	WEIGHT 1 l m. (kg)
DR8	80000804	8	0,410
STAINLESS	CAT. NUM.	A	WEIGHT 1 l m. (kg)
DR8	80000805	8	0,391



Before order check availability and leadtime.



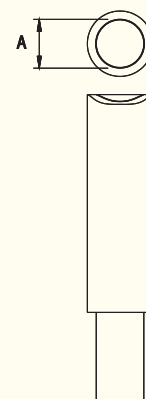


PVC Isolated Wire Conductor

For earth- termination systems. Used in places exposed for mechanical defects.



CAT. NUM.	TYPE	A	PVC COATING	WEIGHT 1 l m. (kg)
80101001	DR 10 OC/PVC	10	1,5	0,62



Fixing Wire Holder

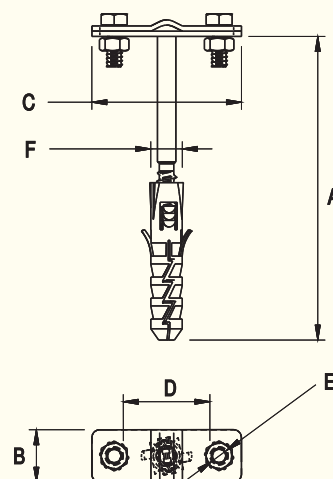
For wire conductor wall mounting. Fastened with fixing extension plug.



CAT. NUM.	TYPE	A*	B	C	D	E	F	SCREW
91200101	12.1	100	20	57	30	7	10	2x M6x16
91200201	12.2	120	20	57	30	7	12	2x M6x16
91200301	12.3	160	20	57	30	7	12	2x M6x16
91200401	12.4	250	20	57	30	7	12	2x M6x16
91200601	12.6	400	20	57	30	7	12	2x M6x16
91200801	12.8	160	25	80	50	7	12	2x M6x16
91280001	12.800	800	25	80	50	7	12	2x M6x16

Alternative material options – change last two catalog number digits.

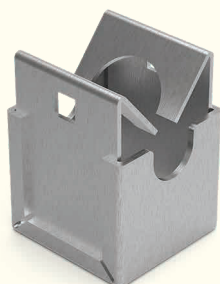
OC	01	OG	02	MI	04	NI	05	LA	16
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*Dimension might be changed.

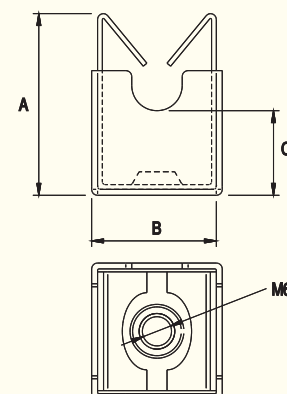
Low Profiled Wire Holder

Screwless support system with loose leading of $\varnothing 8$ mm wire. Used on roofs also for wall/facade mounting. Fastened to surface with self-drilling screws or fixing extension plugs (accessories ordered separately).



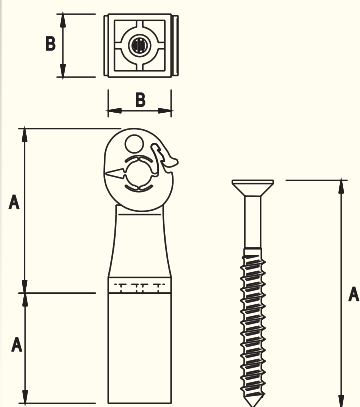
CAT. NUM.	TYPE	A	B	C
25902105	–	31	22	14

NI

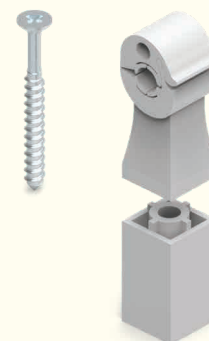




Plastic Clip Wire Holder

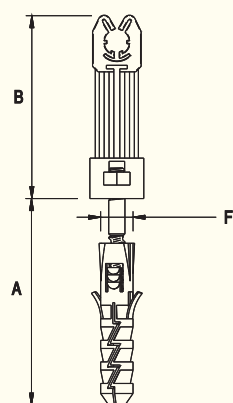


Screwless support system for wire conductor wall mounting. Fastened to surface with fixing extension plugs. Plastic colours available: grey, black, brick colour.



CAT. NUM.	TYPE	VERSION	A	B
12000108	120.1	holder	50	20
12000208	120.2	distance	35	20
12007001	120.70	screw	70	–
12012001	120.120	screw	120	–

Plastic Clip Wire Holder with Fixing Plug



Screwless support system for wire conductor wall mounting. Fastened to surface with fixing extension plugs. Plastic colours available: grey.

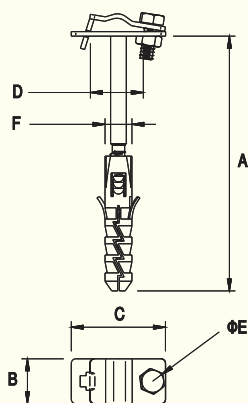


CAT. NUM.	TYPE	A	B	F
91220101	12.1/P	50	70	10
91220201	12.2/P	65	70	12
91220301	12.3/P	105	70	12
91220401	12.4/P	190	70	12

OC

Black and Brick Colour pre-order availability.

Wire Holder with Fixing Plug



For wire wall mounting. Fastened to surface with fixing extension plugs.



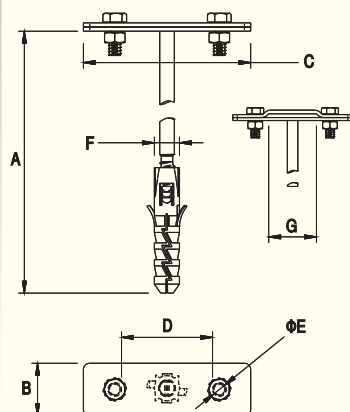
CAT. NUM.	TYPE	A*	B	C	D	E	F	SCREW
91210101	12.1.1	100	20	42	30	7	10	M6x16
91210201	12.2.1	120	20	42	30	7	12	M6x16
91210301	12.3.1	160	20	42	30	7	12	M6x16
91210901	12.4.1	250	20	42	30	7	12	M6x16

Alternative material options – change last two catalog number digits.

OC 01 OG 02 LA 16

*Size may be changed.

Tape Conductor Holder with Fixing Plug



For tape conductor wall mounting. Fastened to surface with fixing extension plugs.



CAT. NUM.	TYPE	VERSION	A*	B	C	D	E	F	G	SCREW
91230301	12.3/B	creased	160	25	80	50	7	12	40	2x M6x16
91230801	12.8/B	noncreased	160	25	80	50	7	12	–	2x M6x16

Alternative material options – change last two catalog number digits.

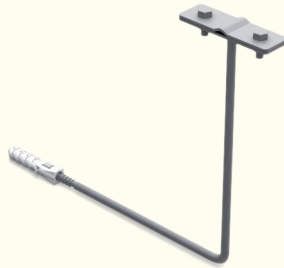
OC 01 OG 02 MI 04 NI 05 LA 16

*Size may be changed.



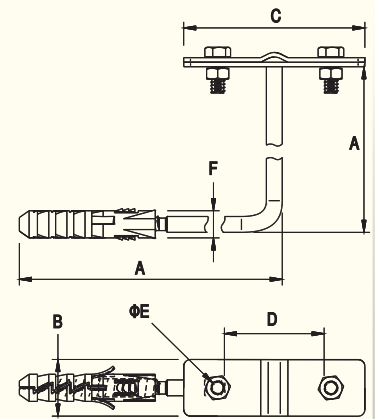


Angle Wire Holder with Fixing Plug

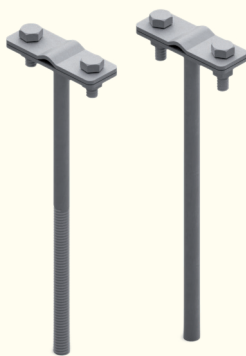


For wire wall mounting. Fastened to surface with fixing extension plugs.

CAT. NUM.	TYPE	A	B	C	D	E	F	SCREW
91240101	12.4 K	200	20	57	30	7	12	2x M6x16
Alternative material options – change last two catalog number digits.								
OC	01	OG	02	CU	03	LA	16	

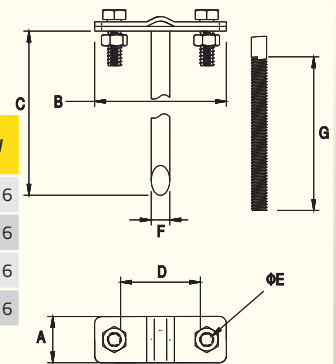


Distance Holder: Threaded or Hammer In



For wire and tape conductor wall mounting. Fastened to surface by self-drilling or hammering in.

CAT. NUM.	TYPE	VERSION	A	B	C	D	E	F	G	SCREW
92400101	24.1	hammer in	20	57	160	30	7	8	–	2x M6x16
92400201	24.2	hammer in	20	57	250	30	7	8	–	2x M6x16
92401101	24.1/GW	threaded	20	57	160	30	7	8	80	2x M6x16
92401201	24.2/GW	threaded	20	57	250	30	7	8	80	2x M6x16
Alternative material options – change last two catalog number digits.										
OC	01	OG	02	CU	03	LA	16			

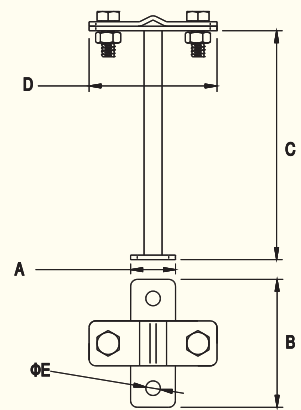


Screwed Distance Holder

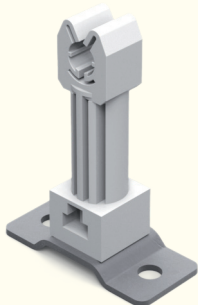


For wire and tape conductor wall mounting. Fastened to surface by screwing in.

CAT. NUM.	TYPE	A	B	C	D	E	SCREW
96300101	63.1	20	57	100	57	7	2x M6x16
96300201	63.2	20	57	50	57	7	2x M6x16
Alternative material options – change last two catalog number digits.							
OC	01	OG	02	CU	03		

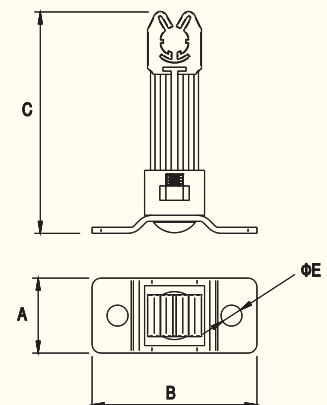


Screwed Plastic Clip Distance Holder



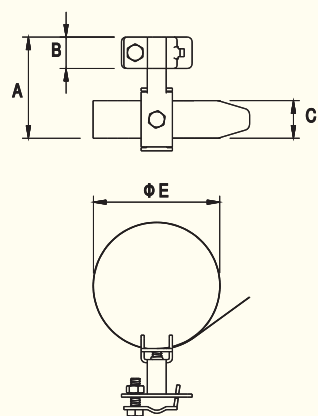
For wire and tape conductor wall mounting. Fastened to surface by screwing in.

CAT. NUM.	TYPE	A	B	C	E		
96304101	63.1/P	20	55	70	7		
Alternative material options – change last two catalog number digits.							
OC	01	OG	02	CU	03	LA	16





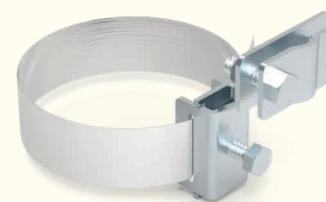
Non Corrosive Universal Clamp



For wire, drainage pipe mounting or other closed profile. $\varnothing 8$ and $\varnothing 10$ wire can be lead.

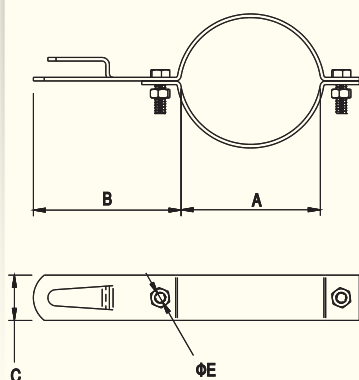
CAT. NUM.	TYPE	A	B	C	E*	SCREW
96432105	64.1/U Ni	75	21	24	do 80	2x M6x20
96432205	64.2/U Ni	75	21	24	80-160	2x M6x20

NI



*Other sizes on order.

Drainage Pipe Holder



For wire, drainage pipe mounting. For $\varnothing 10$ wire screwed options recommended. Holders for other pipe sizes available. Info at Sales Department or directly at Regional Sales Managers.

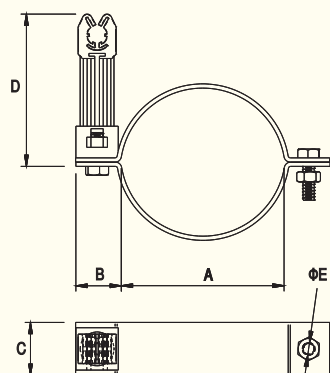
CAT. NUM.	TYPE	VERSION	A	B	C	E
96400805	64.08	clinched	80	80	26	7
96401005	64.10	clinched	100	80	26	7
96410805	64.08/S	screwed	80	80	26	7
96411005	64.10/S	screwed	100	80	26	7

Alternative material options – change last two catalog number digits.

CU 03 NI 05 LA 16



Drainage Pipe Plastic Clip Holder

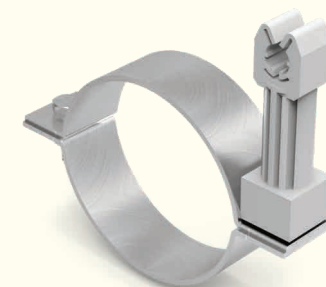


For wire, drainage pipe mounting.

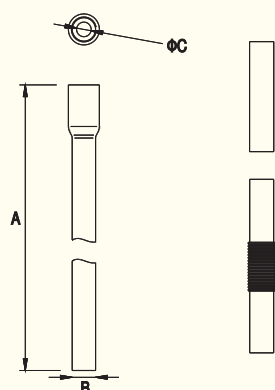
CAT. NUM.	TYPE	A	B	C	D	E
96420805	64.08/P	80	25	26	70	7
96421005	64.10/P	100	25	26	70	7

Alternative material options – change last two catalog number digits.

CU 03 NI 05 LA 16



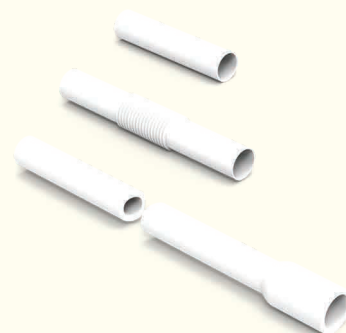
Wire Assembly Lightning Pipe



For wire mounting inside and outside the walls. 2 and 3 meter strips available. Use connectors to connect pipes. Fixing recommendation: holder UD or UJ (see page 79). Product tested with 100 kV voltage, comply with flammability rating V0, wg UL94, UV resistance.

CAT. NUM.	TYPE	VERSION	A	B	C
10400208	104.1/2	pipe	2000	20	12
10400308	104.1/3	pipe	3000	20	12
10500108	105.1	coupling fitting	–	–	–
10500208	105.2	flexible coupling	–	–	–

PVC



See tape conductor assembly pipe page 21.





Tensioning Holder

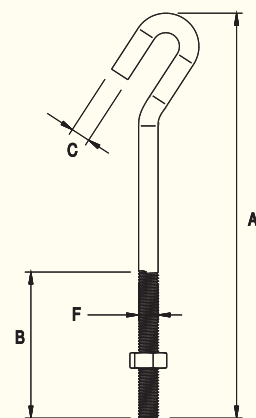
200 or 300 length holders recommended to use with a pipe or rod (cat. num. 92800xxx). Longer options 500, 700 used to strings at firewalls.



CAT. NUM.	TYPE	A	B	C	F
92600001	26.0	200	75	8,6	M10
92600101	26.1	300	75	8,6	M10
92600201	26.2	500	75	8,6	M10
92600301	26.3	700	75	8,6	M10

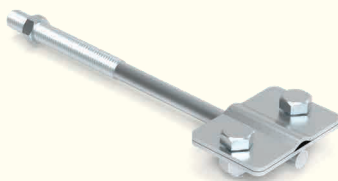
Alternative material options – change last two catalog number digits.

OC	01	MI	04
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Tensioning Control Connector

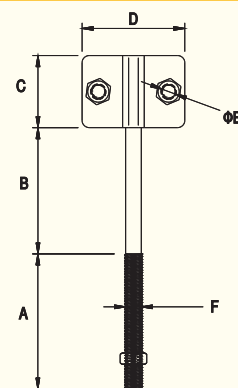
For wire tensioning. Recommended to use with a pipe or tension rod (cat. num. 92800xxx).



CAT. NUM.	TYPE	A	B	C	D	E	F	SCREW
91300101	13.1	75	70	40	57	9	M10	2x M8x16

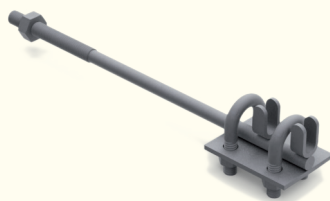
Alternative material options – change last two catalog number digits.

OC	01	MI	04
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Tensioning Clamp Holder

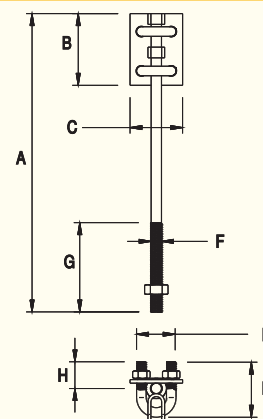
For wire tensioning. Recommended to use with a pipe or tension rod (cat. num. 92800xxx).



CAT. NUM.	TYPE	A	B	C	D	E	F	G	H
92700101	27.1	250	60	44	48	25	M10	75	22

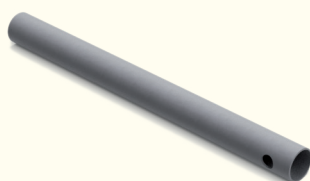
Alternative material options – change last two catalog number digits.

OC	01	OG	02	MI	04
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Tensioning Pipe

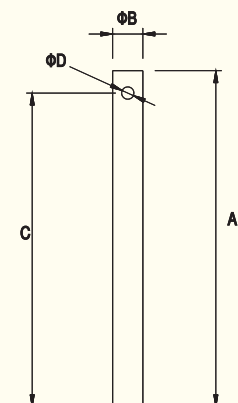
For wire tensioning. Fastened to surface by hammering in or using chemical anchors.



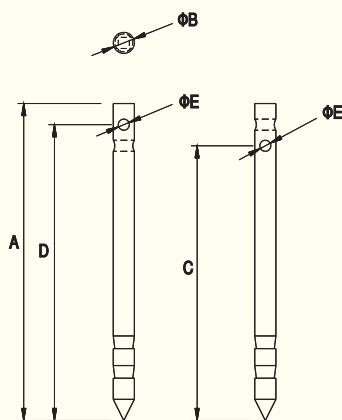
CAT. NUM.	TYPE	A	B	C	D
92800101	28.1	300	27	280	11
92800201	28.2	400	27	380	11

Alternative material options – change last two catalog number digits.

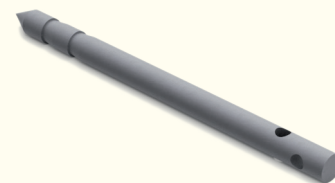
OC	01	OG	02	MI	04	LA	16
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Tensioning Rod



For wire tensioning. Fastened to surface by hammering in or using chemical anchors.

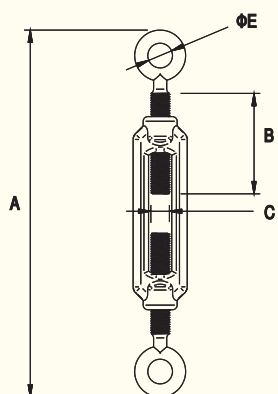


CAT. NUM.	TYPE	A	B	C	D	E
92800301	28.3	300	20	260	280	10,5
92800401	28.4	400	20	360	380	10,5

Alternative material options – change last two catalog number digits.

OC 01 OG 02 MI 04

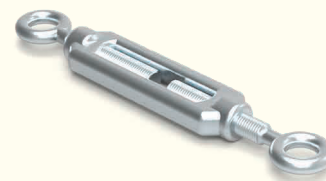
Turnbuckle screw "Eye-Eye"



For wire tensioning.

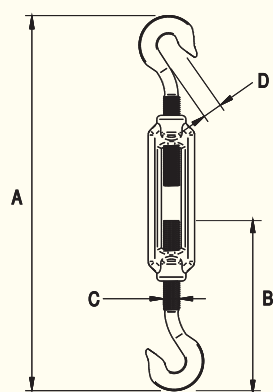
CAT. NUM.	TYPE	A	B	C	E
93200101	32.1	167-247	80	M6	9
93200201	32.2	179-254	84	M8	10
93200301	32.3	210-295	105	M10	14
93200401	32.4	230-310	115	M12	16
93200501	32.5	250-340	122	M14	18
93200601	32.6	330-440	165	M16	22

OC



Other sizes on order.

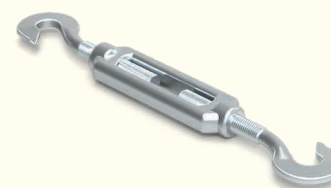
Turnbuckle screw "Hook-Hook"



For wire tensioning.

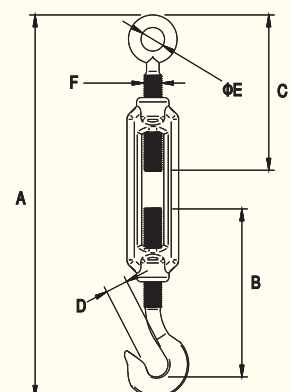
CAT. NUM.	TYPE	A	B	C	D
93400101	34.1	180-260	85	M6	8,5
93400201	34.2	195-270	85	M8	11
93400301	34.3	230-315	112	M10	13,5
93400401	34.4	250-330	117	M12	15,5
93400501	34.5	280-370	122	M14	8,5
93400601	34.6	320-430	138	M16	19

OC



Other sizes on order.

Turnbuckle screw "Hook-Eye"



For wire tensioning.

CAT. NUM.	TYPE	A	B	C	D	E	F
93500101	35.1	170-252	85	80	8,5	9	M6
93500201	35.2	182-257	85	84	11	10	M8
93500301	35.3	213-298	112	105	13,5	14	M10
93500401	35.4	238-318	117	115	15,5	16	M12
93500501	35.5	263-353	122	122	8,5	18	M14
93500601	35.6	320-430	138	165	19	22	M16

OC



Other sizes on order.



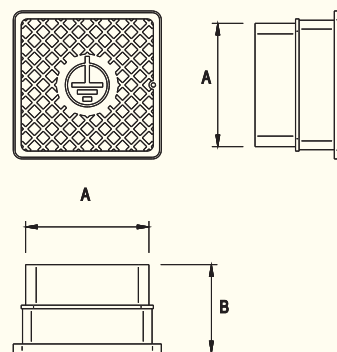
Facade Control Pit



For test joints lead under facade or in thermal insulation surface. Unique regulation system of assembly deepness. Self-drilling screws wall assembly. Made of plastic material, flammability class V0 wg UL94. Cover doors UV resistance.

CAT. NUM.	TYPE	COLOUR*	A	B	SCREW
96800108	68.1/B	white	140	60	2 x screws
96800208	68.2/B	white	140	100	2 x screws
96801108	68.1/SZ	grey	140	60	2 x screws
96801208	68.2/SZ	grey	140	100	2 x screws

PVC



*Colour may slightly differ from sample. See also ground control pits pages 22-23.

Inspection Doors

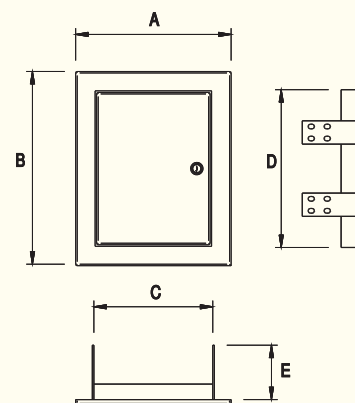


For under facade test joints. Stainless steel doors. Screwing assembly to the side walls of niches.

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

Alternative material options – change last two catalog number digits.

CU	03	NI	05	LA	16
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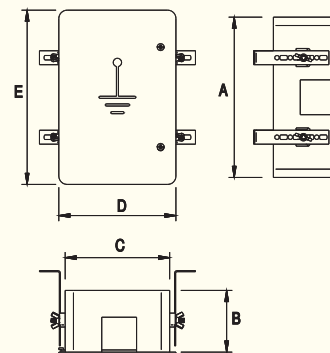
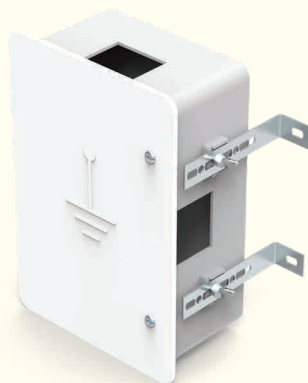


Facade Control Pit

For test joints lead under facade or in thermal insulation surface. Wall assembly on regulated holders. Made of plastic material, flammability class V0 wg UL94. Cover UV resistance.



Patented model.



CAT. NUM.	TYPE	COLOUR*	INSERTION DEPTH	A	B	C	D	E
96801408	68.4/B	white	85-142	230	85	150	168	250
96802408	68.4/SZ	grey	85-142	230	85	150	168	250
96803408	68.4/K	cream	85-142	230	85	150	168	250
96804408	68.4/BR	brown	85-142	230	85	150	168	250

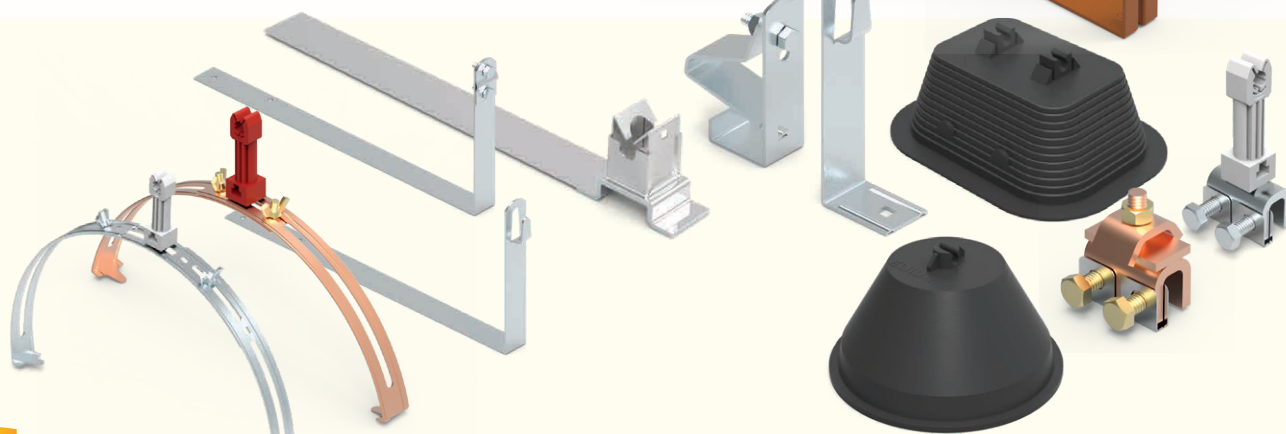
PVC

*Colour may slightly differ from sample. See also ground control pits pages 22-23.





GROUP IV Air Termination

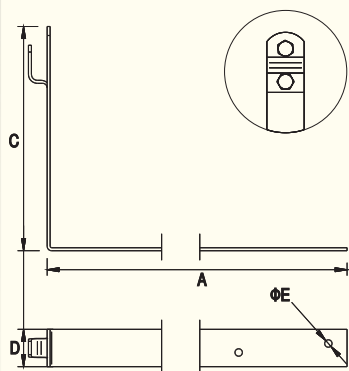


BE AWARE!

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

Under Tile Wire Holder

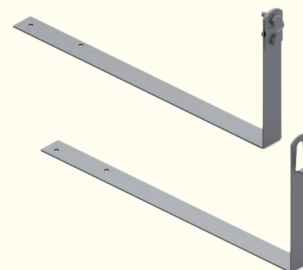
For fixing wire on the roof surface covered with flash tiles. Screwed or nailed. Use screwed type holders for Ø 10 wire. Holder allows to lead wire parallel to roof edge.



CAT. NUM.	TYPE	VERSION	A	C	D	E
91000201	10.2	clinched	330	150	25	5
91000301	10.3	clinched	415	150	25	5
91000801	10.2.1	clinched	330	100	25	5
91000901	10.3.1	clinched	415	100	25	5
91001201	10.2/S	screwed	330	150	25	5
91001301	10.3/S	screwed	415	150	25	5
91001701	10.2.1/S	screwed	330	100	25	5
91001801	10.3.1/S	screwed	415	100	25	5

Alternative material options – change last two catalog number digits.

OC	01	OG	02	CU	03	LA	16
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Twisted Under Tile Wire Holder

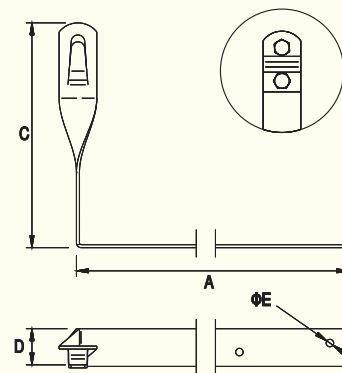
For fixing wire on the roof surface covered with flash tiles. Screwed or nailed. Use screwed type holders for $\varnothing 10$ wire. Holder allows to lead wire parallel to roof edge.



CAT. NUM.	TYPE	VERSION	A	C	D	E
91100201	11.2	clinched	330	150	25	5
91100301	11.3	clinched	415	150	25	5
91100801	11.2.1	clinched	330	100	25	5
91100901	11.3.1	clinched	415	100	25	5
91101201	11.2/S	screwed	330	150	25	5
91100301	11.3/S	screwed	415	150	25	5
91101701	11.2.1/S	screwed	330	100	25	5
91101801	11.3.1/S	screwed	415	100	25	5

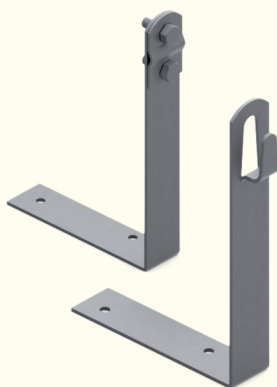
Alternative material options – change last two catalog number digits.

OC	01	OG	02	CU	03	LA	16
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Angle Wire Holder

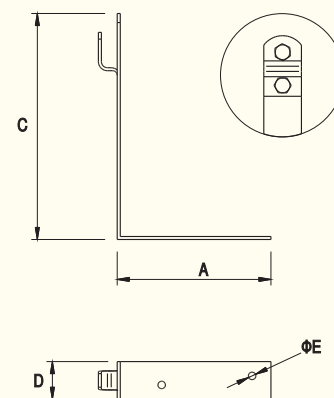
For fixing wire on the roof surface covered with bituminous and wooden shingle. Screwed or nailed. Use screwed type holders for $\varnothing 10$ wire. Holder allows to lead wire parallel to roof edge.



CAT. NUM.	TYPE	VERSION	A	C	D	E
91000101	10.1	clinched	100	150	25	5
91000701	10.1.1	clinched	100	100	25	5
91001101	10.1/S	screwed	100	150	25	5
91001601	10.1.1/S	screwed	100	100	25	5

Alternative material options – change last two catalog number digits.

OC	01	OG	02	CU	03	LA	16
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Twisted Angle Wire Holder

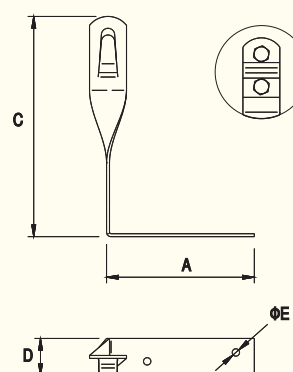
For fixing wire on the roof surface covered with bituminous and wooden shingle. Screwed or nailed. Use screwed type holders for $\varnothing 10$ wire. Holder allows to lead wire parallel to roof edge.



CAT. NUM.	TYPE	VERSION	A	C	D	E
91100101	11.1	clinched	100	150	25	5
91100701	11.1.1	clinched	100	100	25	5
91101101	11.1/S	screwed	100	150	25	5
91101601	11.1.1/S	screwed	100	100	25	5

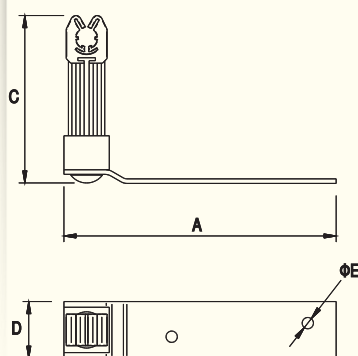
Alternative material options – change last two catalog number digits.

OC	01	OG	02	CU	03	LA	16
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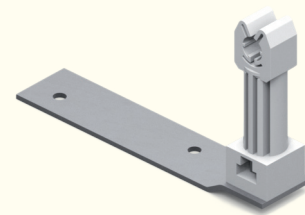




PVC Angle Wire Holder



For fixing wire on the roof surface covered with bituminous and wooden shingle. Screwed or nailed. Use only Ø 8 wire. Holder allows to lead wire parallel to roof edge.



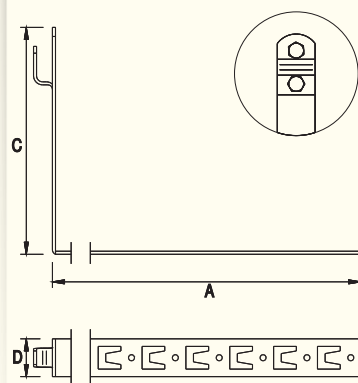
CAT. NUM.	TYPE	A	C	D	E
91002001	10.1/P	120	70	25	5

Alternative material options – change last two catalog number digits.

OC	01	OG	02	CU	03	LA	16
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Under Tile Wire Holder with Hook

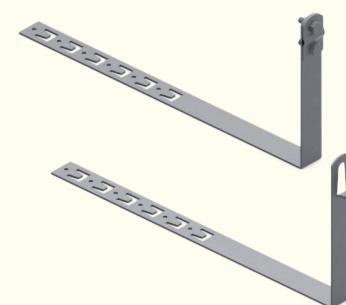
For fixing wire on the roof surface covered with flash tiles. Screwed, nailed or hooked to the tile, using embossed hook. Use screwed type holders for Ø 10 wire. Holder allows to lead wire parallel to roof edge.



CAT. NUM.	TYPE	VERSION	A	C	D
91002401	10.2/Z	clinched	330	150	25
91002501	10.3/Z	clinched	415	150	25
91002601	10.4/Z	clinched	450	150	25
91002701	10.2.1/Z	clinched	330	100	25
91002801	10.3.1/Z	clinched	415	100	25
91002901	10.4.1/Z	clinched	450	100	25
91003001	10.2/Z/S	screwed	330	150	25
91003101	10.3/Z/S	screwed	415	150	25
91003201	10.4/Z/S	screwed	450	150	25
91003301	10.2.1/Z/S	screwed	330	100	25
91003401	10.3.1/Z/S	screwed	415	100	25
91003501	10.4.1/Z/S	screwed	450	100	25

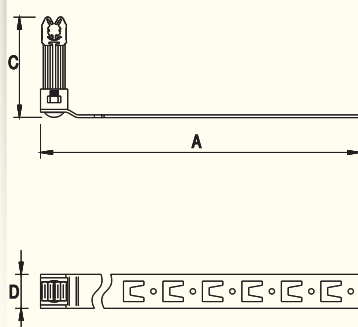
Alternative material options – change last two catalog number digits.

OC	01	OG	02	CU	03	LA	16
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PVC Under Tile Wire Holder with Hook

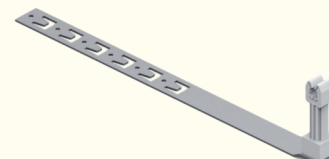
For fixing wire on the roof surface covered with flash tiles. Screwed, nailed or hooked to the tile, using embossed hook. Use only Ø 8 wire. Holder allows to lead wire parallel to roof edge.



CAT. NUM.	TYPE	A	C	D
91003701	10.2/Z/P	330	70	25
91003801	10.3/Z/P	415	70	25
91003901	10.4/Z/P	450	70	25

Alternative material options – change last two catalog number digits.

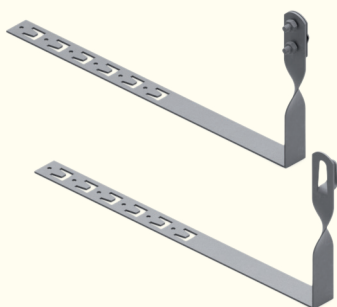
OC	01	OG	02	CU	03	LA	16
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Twisted Under Tile Wire Holder with Hook

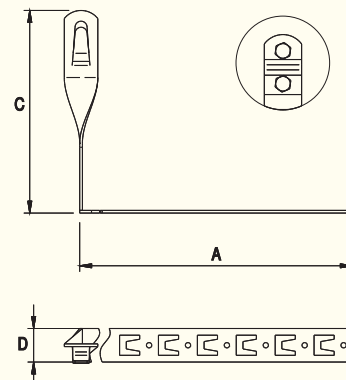
For fixing wire on the roof surface covered with flash tiles. Screwed, nailed or hitched to the tile, using embossed hitch. Use screwed type holders for \varnothing 10 wire. Holder allows to lead wire parallel to roof edge.



CAT. NUM.	TYPE	VERSION	A	C	D
91102401	11.2/Z	clinched	330	150	25
91102501	11.3/Z	clinched	415	150	25
91102601	11.4/Z	clinched	450	150	25
91102701	11.2.1/Z	clinched	330	100	25
91102801	11.3.1/Z	clinched	415	100	25
91102901	11.4.1/Z	clinched	450	100	25
91103001	11.2/Z/S	screwed	330	150	25
91103101	11.3/Z/S	screwed	415	150	25
91103201	11.4/Z/S	screwed	450	150	25
91103301	11.2.1/Z/S	screwed	330	100	25
91103401	11.3.1/Z/S	screwed	415	100	25
91103501	11.4.1/Z/S	screwed	450	100	25

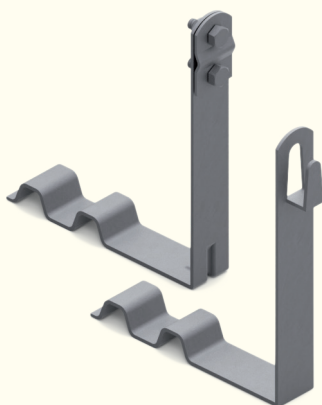
Alternative material options – change last two catalog number digits.

OC 01 OG 02 CU 03 LA 16



Under Tile Wire Holder with Lock

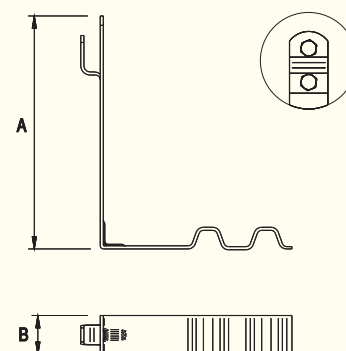
For fixing wire on the roof surface covered in ceramic roof tiles with lock. Applied to lock between roof tiles. Use screwed type holders for \varnothing 10 wire. Holder allows to lead wire parallel to roof edge.



CAT. NUM.	TYPE	VERSION	A	B
91005001	10.5	clinched	150	25
91008001	10.5.1	clinched	100	25
91006001	10.5/S	screwed	150	25
91009001	10.5.1/S	screwed	100	25

Alternative material options – change last two catalog number digits.

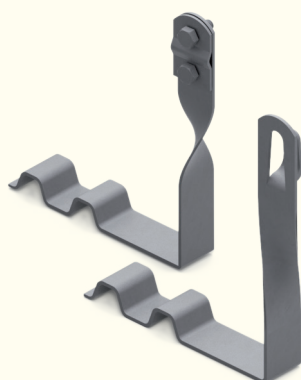
OC 01 OG 02 CU 03 NI 05 LA 16



Check tile profile and holders list page 108–111.

Twisted Under Tile Wire Holder with Lock

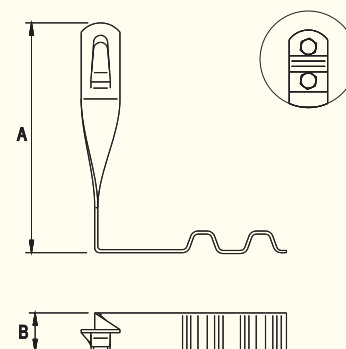
For fixing wire on the roof surface covered in ceramic roof tiles with lock. Applied to lock between roof tiles. Use screwed type holders for \varnothing 10 wire. Holder allows to lead wire parallel to roof edge.



CAT. NUM.	TYPE	VERSION	A	B
91105001	11.5	clinched	150	25
91108001	11.5.1	clinched	100	25
91106001	11.5/S	screwed	150	25
91109001	11.5.1/S	screwed	100	25

Alternative material options – change last two catalog number digits.

OC 01 OG 02 CU 03 NI 05 LA 16

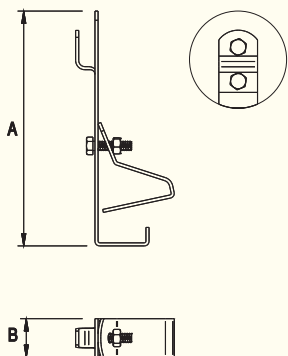


Check tile profile and holders list page 108–111.





Universal Wire Holder



For fixing wire on the roof surface covered in ceramic or concrete roof tiles. Clinched to tile front. Clinching makes holder usefull to all tile types. Use screwed type holders for \varnothing 10 wire. Holder allows to lead wire parallel to roof edge.

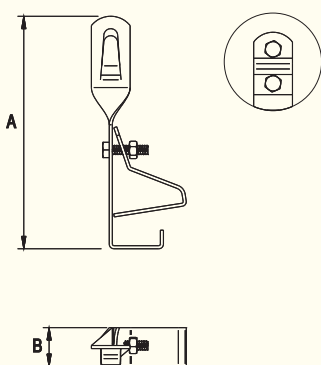
CAT. NUM.	TYPE	VERSION	A	B
91010001	10.6	clinched	150	25
91010101	10.6/S	screwed	150	25

Alternative material options – change last two catalog number digits.

OC	01	OG	02	CU	03	NI	05	LA	16
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Twisted Universal Wire Holder

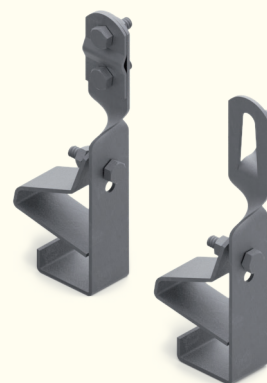


For fixing wire on the roof surface covered in ceramic or concrete roof tiles. Clinched to tile front. Clinching makes holder usefull to all tile types. Use screwed type holders for \varnothing 10 wire. Holder allows to lead wire parallel to roof edge.

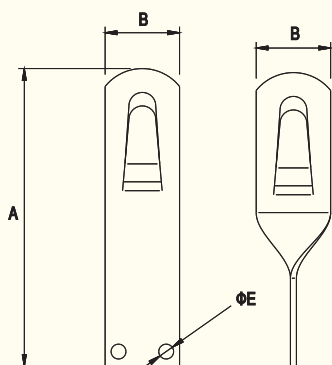
CAT. NUM.	TYPE	VERSION	A	B
91110001	11.6	clinched	150	25
91110101	11.6/S	screwed	150	25

Alternative material options – change last two catalog number digits.

OC	01	OG	02	CU	03	NI	05	LA	16
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GERARD Type Wire Holder



For fixing wire on the roof surface covered in GERARD type roof tile. Self-drilled to tile front using self-drilling screw 99900101. Use only \varnothing 8 wire. Option 91010201 allows wire lead parallel to roof edge as option 91110201 allows perpendicular lead.

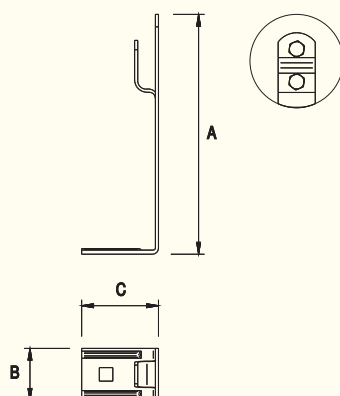
CAT. NUM.	TYPE	VERSION	A	B	E
91010201	10.7	straight	150	25	5
91110201	11.7	screwed	150	25	5

Alternative material options – change last two catalog number digits.

OC	01	OG	02	LA	16
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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 \varnothing 10 wire. Holder allows to lead wire parallel to roof edge.

CAT. NUM.	TYPE	VERSION	A	B	C
95902101	59.1B	clinched	115	26	35
95912101	59.1B/S	screwed	115	26	35

Alternative material options – change last two catalog number digits.

OC	01	OG	02	CU	03	LA	16
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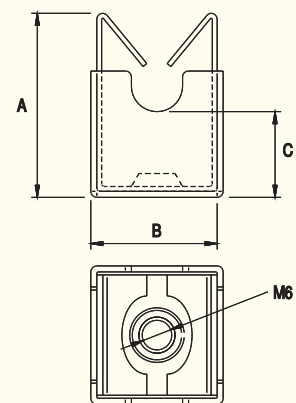
Low Profiled Wire Holder



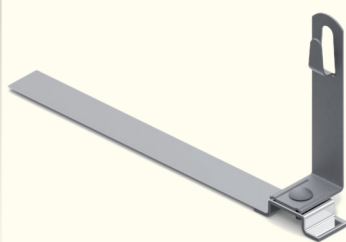
Screwless support system with loose leading of $\varnothing 8$ mm wire. Used on roofs covered in steel panel tiles or tar board shingle, also for wall/facade mounting. Fastened to surface with self-drilling screws or fixing extension plugs (ordered separately). Holder allows to lead wire parallel and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

CAT. NUM.	TYPE	A	B	C
25902105	-	31	22	14

NI



Tape Universal Under Tile Wire Holder

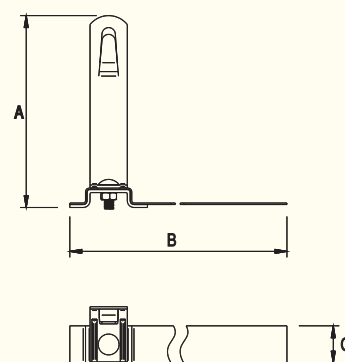


For fixing wire on the roof surface covered in roof tiles with lock. Tape is made of plastic aluminum, allowing easy adoption to each type of roof tile. Steel fixing element type OC, OG or LA. Holder allows to lead wire parallel and perpendicular to roof edge.

CAT. NUM.	TYPE	A	B	C
91004001	10.10	115	250	25

Alternative material options – change last two catalog number digits.

OC 01 OG 02 LA 16

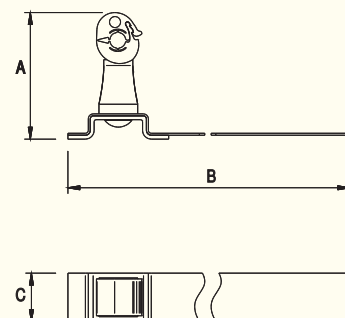


PVC Tape Universal Under Tile Wire Holder

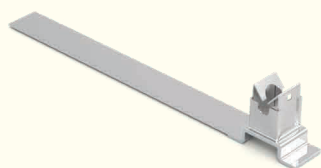


For fixing wire on the roof surface covered in roof tiles with lock. Tape is made of plastic aluminum, allowing easy adoption to each type of roof tile. Plastic clip holder. Holder allows to lead wire parallel and perpendicular to roof edge.

CAT. NUM.	TYPE	A	B	C
91004101	10.10/P	70	250	25



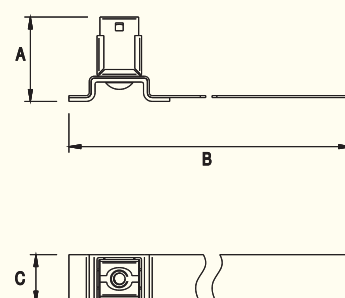
Low Profiled Tape Universal Under Tile Wire Holder



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

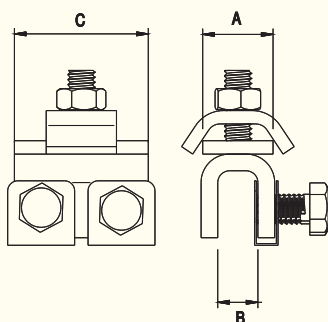
CAT. NUM.	TYPE	A	B	C
21004005	-	44	255	25

NI



Seam Wire Holder

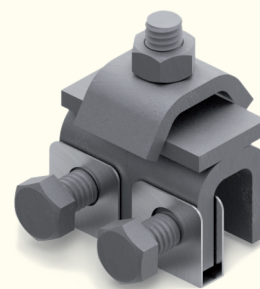
To lead wire through lap joints of steel covers.



CAT. NUM.	TYPE	A	B	C	SCREW
99600101	96.0	20	12	40	3x M8x25
99600201	96.1	20	25	40	2x M8x25 1x M10x25

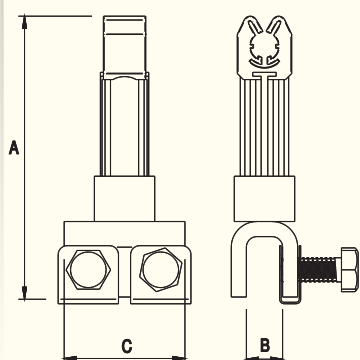
Alternative material options – change last two catalog number digits.

OC	01	OG	02	CU	03	NI	05
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PVC Seam Wire Holder

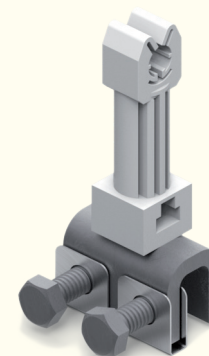
To lead wire through lap joints of steel covers. Plastic tip end gives distance and insulation. \varnothing 6-8 mm wire can be used. Quick and easy assembly. Rotating tip end.



CAT. NUM.	TYPE	A	B	C
99610101	96.0/P	90	12	40

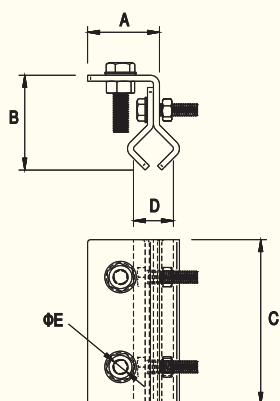
Alternative material options – change last two catalog number digits.

OC	01	OG	02	CU	03
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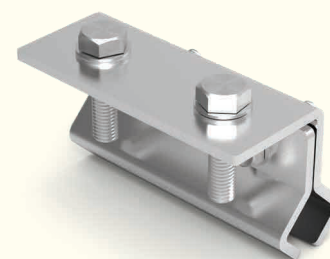
Universal Seam Wire Holder - Large

Used as a leading and supporting element in LPS installations. Fits with Kalzip steel sheets.



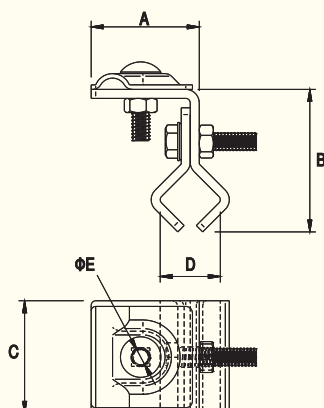
CAT. NUM.	TYPE	A	B	C	D	E	SCREW
99602109	96.0/D	45	70	110	\varnothing 16 + \varnothing 30	8,5	2x M8x40

AL



Universal Seam Wire Holder - Small

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



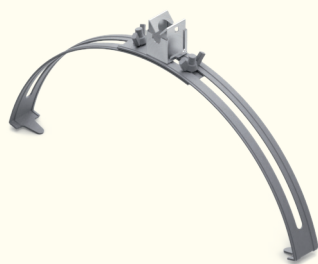
CAT. NUM.	TYPE	A	B	C	D	E	SCREW
99603109	96.0/M	45	70	55	\varnothing 16 + \varnothing 30	8,5	M8x30

AL





Universal Ridge Tile Wire Holder G5

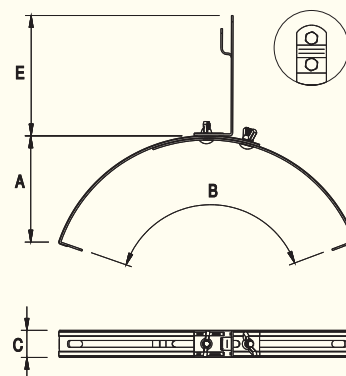


For fixing wire on the roof tops covered in roof tiles. Large adjustment/regulation scale, allows assembly to most of ridge tiles. Use screwed holders for \varnothing 10 mm wire.

CAT. NUM.	TYPE	VERSION	A	B	C	E	SCREW
95900101	59.1	clinched	65	200-390	26	115	2x M6x16
95910101	59.1/S	screwed	65	200-390	26	115	2x M6x16

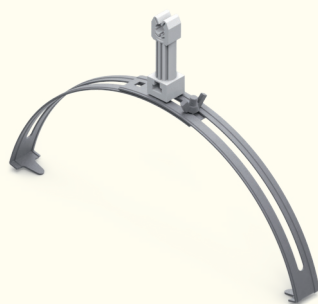
Alternative material options – change last two catalog number digits.

OC	01	OG	02	CU	03	NI	05	LA	16
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See also ridge tile spires page 56.

PVC Universal Ridge Tile Wire Holder G6

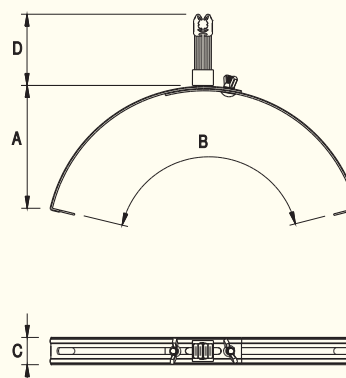


For fixing wire on the roof tops covered in roof tiles. Large adjustment/regulation scale, allows assembly to most of ridge tiles. Use only \varnothing 8 mm wire. Plastic made wire fixing element.

CAT. NUM.	TYPE	A	B	C	D	SCREW
95900201	59.2	65	200-390	26	70	M6x16

Alternative material options – change last two catalog number digits.

OC	01	OG	02	CU	03	NI	05	LA	16
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See also ridge tile spires page 56.

Low Profiled Ridge Tile Wire Holder

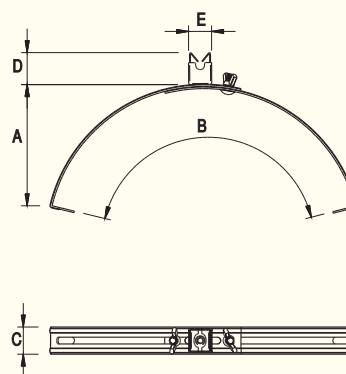


For fixing wire on the roof tops covered in roof tiles. Large adjustment/regulation scale, allows assembly to most of ridge tiles. Use only \varnothing 8 mm wire. Stainless steel fixing element. Wire can be lead on the side of ridge tile.

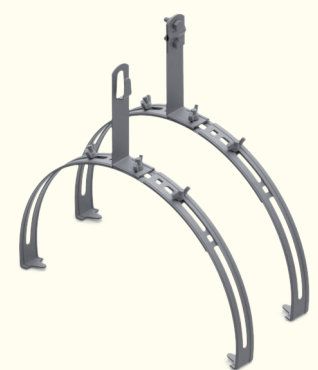
CAT. NUM.	TYPE	A	B	C	D	E
25900101	-	65	200-390	26	31	20

Alternative material options – change last two catalog number digits.

OC	01	OG	02	NI	05
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Universal Ridge Tile Wire Holder G5 MAX

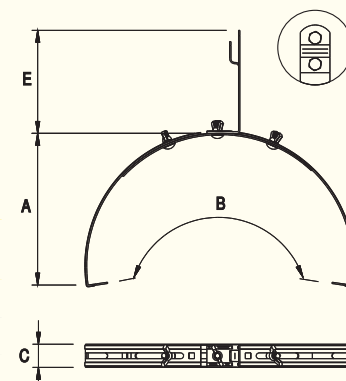


For fixing wire on the roof tops covered in roof tiles and sheet panel tiles. Large adjustment/regulation scale, allows assembly to most of ridge tiles. Use screwed holders for \varnothing 10 mm wire.

CAT. NUM.	TYPE	VERSION	A	B	C	E	SCREW
95901101	59.1 MAX	clinched	160	430-550	26	115	3x M6x16
95911101	59.1/S MAX	screwed	160	430-550	26	115	3x M6x16

Alternative material options – change last two catalog number digits.

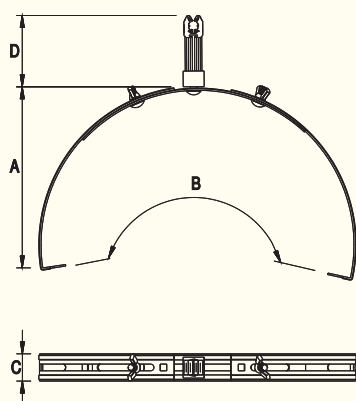
OC	01	OG	02	CU	03	NI	05	LA	16
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See also ridge tile spires page 56.



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. Use only \varnothing 8 mm wire. Plastic made wire fixing element.

CAT. NUM.	TYPE	A	B	C	D	SCREW
95901201	59.2 MAX	160	430-550	26	70	2x M6x16

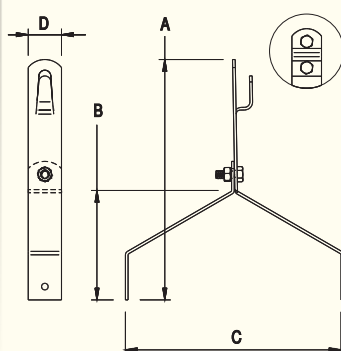
Alternative material options – change last two catalog number digits.

OC	01	OG	02	CU	03	NI	05	LA	16
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See also ridge tile spires page 56.

Ridge Tile Wire Holder Gerard Corona/Senator

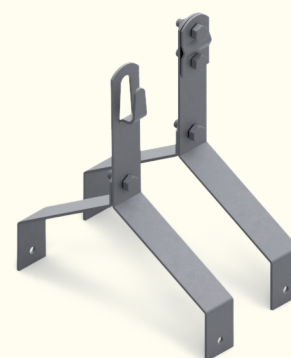


For fixing wire on the roof tops covered in roof tiles types: GERRARD Corona and Senator. Self-drilled to ridge tile using 99900101 self-drilling screws – ordered separately. Use screwed holders for \varnothing 10 mm wire.

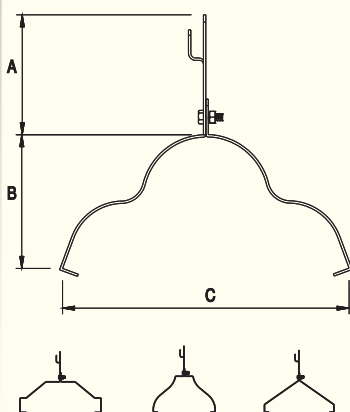
CAT. NUM.	TYPE	VERSION	A	B	C	D
95900301	59.3	clinched	180	80	160	25
95910301	59.3/5	screwed	180	80	160	25

Alternative material options – change last two catalog number digits.

OC	01	OG	02	CU	03	LA	16
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Ridge Tile Wire Holder

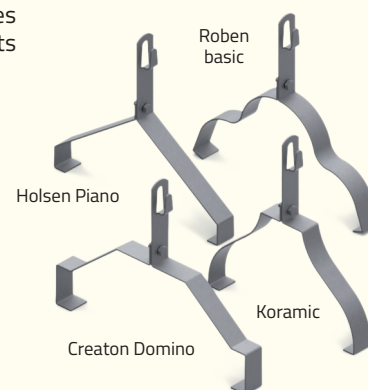


For fixing wire on the roof tops covered in particular roof tiles types: stated in a table sheet. Appropriate profile exactly fits on the ridge tile. Screw use assembly.

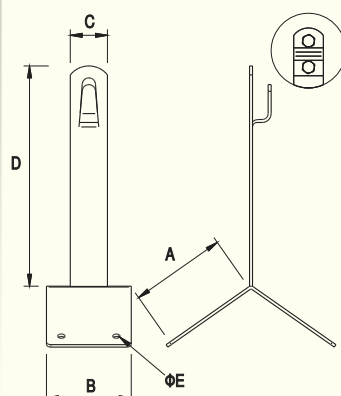
CAT. NUM.	TYPE	RIDGE TILE VERSION	A	B	C
95930101	–	Creaton Domino	100	100	275
95930201	–	Roben basic	100	110	248
95930301	–	Koramic Ridge Tile num. 2	100	118	208
95930401	–	Holsen Piano	100	103	235

Alternative material options – change last two catalog number digits.

OC	01	OG	02	CU	03	LA	16
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Roof Top Wire Holder



For fixing wire on the roof tops covered in steel sheets or tar board shingle. Screwed, nailed or glued. Use screwed holders for \varnothing 10mm wire. Glue assembly details, see: www.elkobis.com.pl/download.

CAT. NUM.	TYPE	VERSION	A	B	C	D	E
92000101	20.1	clinched	70	57	25	150	5
92000401	20.1.1	clinched	70	57	25	100	5
92000201	20.1/5	screwed	70	57	25	150	5
92000501	20.1.1/5	screwed	70	57	25	100	5

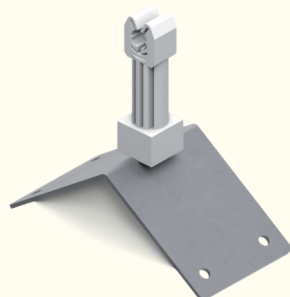
Alternative material options – change last two catalog number digits.

OC	01	OG	02	CU	03	LA	16
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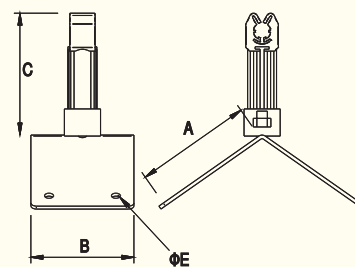




PVC Roof Top Wire Holder



For fixing wire on the roof tops covered in steel sheets or tar board shingle. Screwed, nailed or glued. Use only \varnothing 8mm wire. Glue assembly details, see: www.elkobis.com.pl/download.



CAT. NUM.	TYPE	A	B	C	E
92000301	20.1/P	70	57	70	5

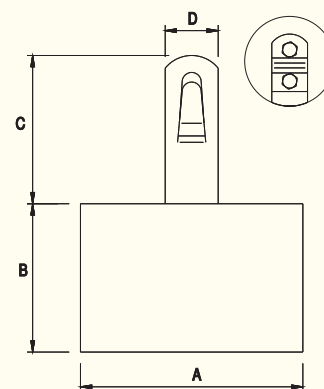
Alternative material options – change last two catalog number digits.

OC	01	OG	02	CU	03	LA	16
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Concrete Wire Holder



For fixing wire on the flash roofs. Can be glued to roof surface using glueing composition 99401099. Use screwed holders for \varnothing 10mm wire. Glue assembly details, see: www.elkobis.com.pl/download.



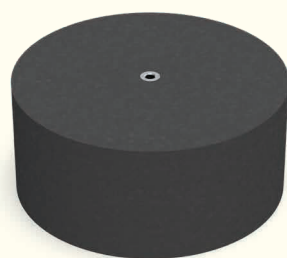
CAT. NUM.	TYPE	VERSION	A	B	C	D	WEIGHT
92900105	29.1	clinched	105	70	70	26	~1,3 kg
92900205	29.1/S	screwed	105	70	70	26	~1,3 kg

Alternative material options – change last two catalog number digits.

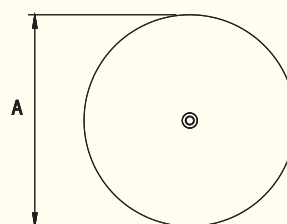
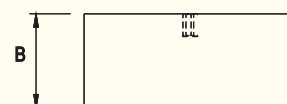
OG	02	CU	03	NI	05
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Use adhesive mass for glueing – page 71.

Concrete Holder for Cable Trays



Flash 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 atmospheric conditions. Glue assembly details, see: www.elkobis.com.pl/download.



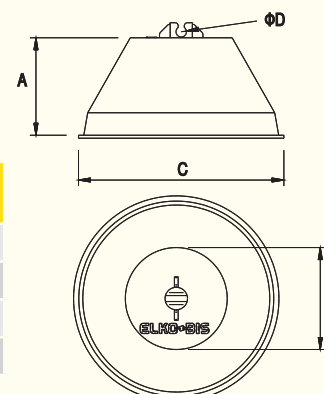
CAT. NUM.	TYPE	A	B	WEIGHT	THREAD
92910101	29.1K	180	80	~5 kg	M8

OC

PVC Coated Concrete Wire Holder



For fixing wire on the flash roofs. Can be glued to roof surface using glueing composition 99401099 (only option with concrete bottom). Glue assembly details, see: www.elkobis.com.pl/download.



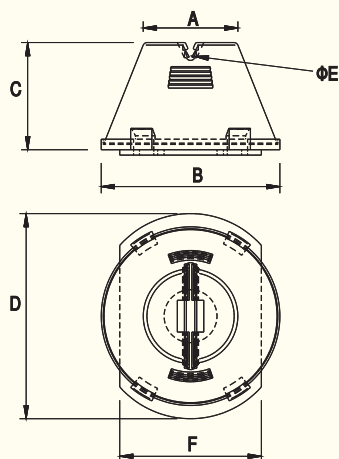
CAT. NUM.	TYPE	DESCRIPTION	A	B	C	D	WEIGHT
93000111	30.1	concrete bottom	75	70	130	6-8	~1,1 kg
93020111	30.1D PL	plastic bottom	75	70	138	6-8	~1,1 kg
93010111	–	concrete bottom	75	70	130	8-10	~1,1 kg
93030111	–	plastic bottom	75	70	138	8-10	~1,1 kg

PVC



PVC Coated Concrete Wire Holder

For fixing wire on the flash roofs. Can be glued to roof surface using glueing composition 99401099 (only option with concrete bottom). Glue assembly details, see: www.elkobis.com.pl/download.

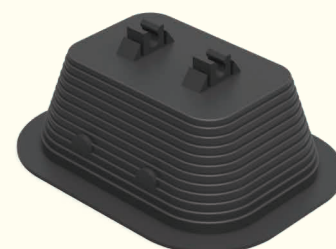
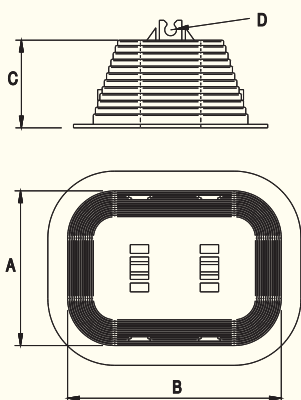


CAT. NUM.	TYPE	DESCRIPTION	A	B	C	D	E	F
93001111	30.1.1	concrete bottom	70	130	75	-	6-8	-
93002111	30.1.2	plastic bottom	70	135	75	-	6-8	-
93005111	-	concrete bottom	70	130	75	-	8-10	-
93006111	-	plastic bottom	70	135	75	-	8-10	-
93003111	30.1.3	cliped bottom	-	-	-	155	-	107

PVC

PVC Coated Concrete Wire Holder

For fixing wire on the flash roofs. Can be glued to roof surface using glueing composition ELKO-FIX 99300199 or membrane glue 11000599. Use only 8mm wire. Glue assembly details, see: www.elkobis.com.pl/download.

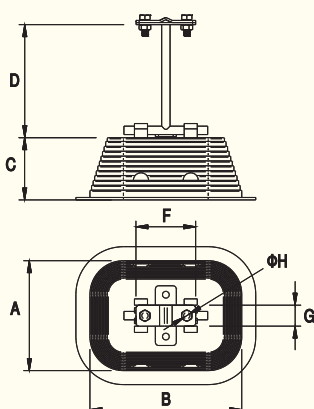


CAT. NUM.	TYPE	A	B	C	D	WEIGHT
93000211	30.2	105	145	60	6-8	~1,2 kg

PVC

High Profiled PVC Coated Concrete Wire Holder

For fixing wire on the flash roofs. For higher conductor lead. Can be glued to roof surface using glueing composition ELKO-FIX 99300199 or membrane glue 11000599. Use only 8mm wire. Glue assembly details, see: www.elkobis.com.pl/download.



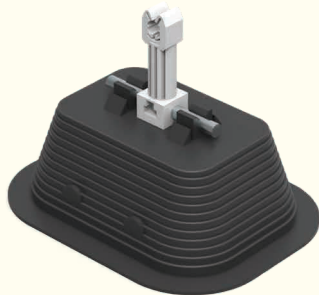
CAT. NUM.	TYPE	A	B	C	D	F	G	H	WEIGHT
93050211	30.2/W	105	145	60	100	57	20	7	~1,2 kg

PVC

Other sizes (D) on order.



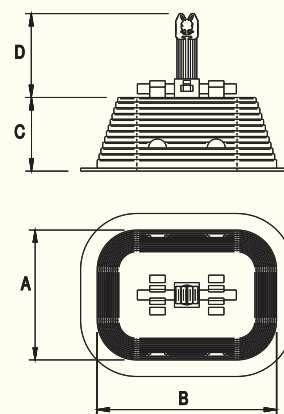
PVC Coated Concrete Wire Holder with Plastic Clip



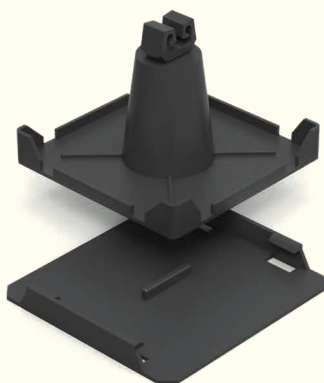
For fixing wire on the flash roofs. Can be glued to roof surface using glueing composition ELKO-FIX 99300199 or membrane glue 11000599. Use only 8mm wire. Glue assembly details, see: www.elkobis.com.pl/download.

CAT. NUM.	TYPE	A	B	C	D	WEIGHT
93090211	30.2/P	105	145	60	70	~1,2 kg

PVC



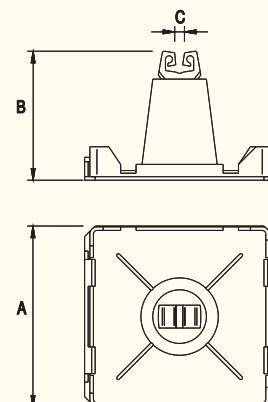
PVC Wire Holder



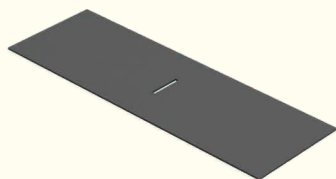
For fixing wire on the flash or sloping roofs. Fixed to surface using heat treatment (tar board roofs) or glue (membrane roofs) - ordered separately. Simple and light construction enables quick and easy assembly. Glue assembly details, see: www.elkobis.com.pl/download.

CAT. NUM.	TYPE	A	B	C
93000311	30.3	102	70	6-8

PVC

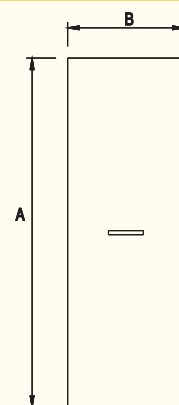


Fastening Strap

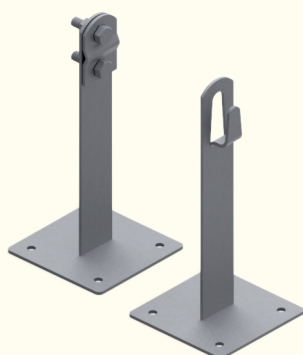


For fixing holder 93000311 on the flash or sloping roofs covered in tar board or membrane foil. Glue assembly details, see: www.elkobis.com.pl/download.

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

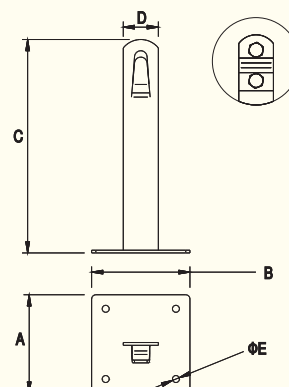


For fixing wire on the roofs covered in metal sheets. Screwed, nailed or glueing assembly. Use screwed holder for \varnothing 10 mm wire. Glue assembly details, see: www.elkobis.com.pl/download.

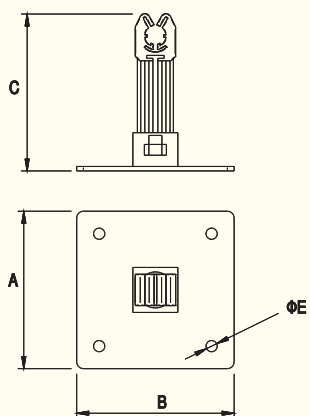
CAT. NUM.	TYPE	VERSION	A	B	C	D	E
91500101	15.1	clinched	70	70	150	25	5
91500401	15.1.1	clinched	70	70	100	25	5
91500201	15.1/S	screwed	70	70	150	25	5
91500501	15.1.1/S	screwed	70	70	100	25	5

Alternative material options – change last two catalog number digits.

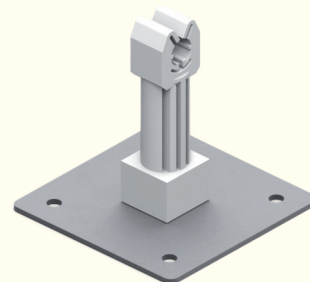
OC 01 OG 02 CU 03 LA 16



PVC Clip Flat Base Roof Wire Holder

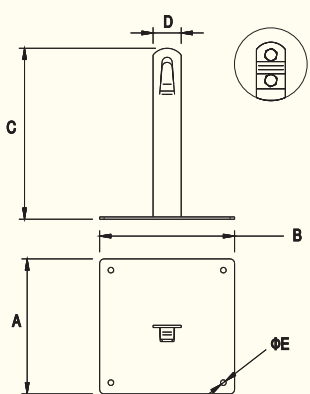


For fixing wire on the roofs covered in metal sheets. Screwed, nailed or glueing assembly. Use only Ø 8mm wire. Glue assembly details, see: www.elkobis.com.pl/download.

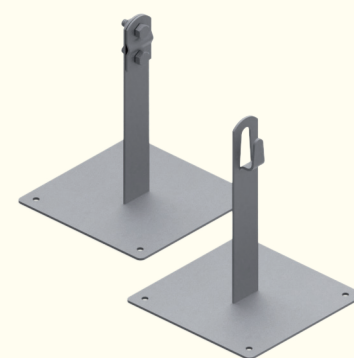


CAT. NUM.	TYPE	A	B	C	E		
91500301	15.1/P	70	70	70	5		
Alternative material options – change last two catalog number digits.							
OC	01	OG	02	CU	03	LA	16

Flat Base Roof Wire Holder - MAX

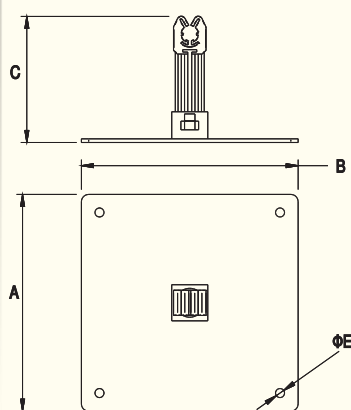


For fixing wire on the roofs covered in metal sheets. Screwed, nailed or glueing assembly. Use screwed holder for Ø 10 mm wire. Glue assembly details, see: www.elkobis.com.pl/download.

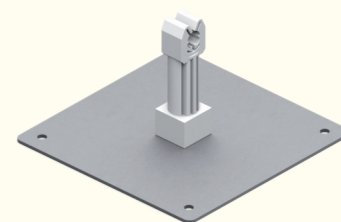


CAT. NUM.	TYPE	TYP	A	B	C	D	E
91600101	16.1	clinched	120	120	150	25	5
91600401	16.1.1	clinched	120	120	100	25	5
91600201	16.1/S	screwed	120	120	150	25	5
91600501	16.1.1/S	screwed	120	120	100	25	5
Alternative material options – change last two catalog number digits.							
OC	01	OG	02	CU	03	LA	16

PVC Clip Flat Base Roof Wire Holder - MAX

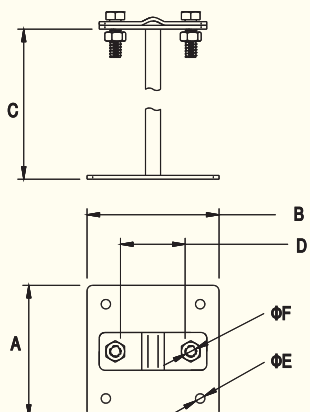


For fixing wires on the roofs covered in metal sheets. Screwed, nailed or glueing assembly. Use only Ø 8mm wire. Glue assembly details, see: www.elkobis.com.pl/download.



CAT. NUM.	TYPE	A	B	C	E		
91600301	16.1/P	120	120	70	5		
Alternative material options – change last two catalog number digits.							
OC	01	OG	02	CU	03	LA	16

Special Roof Wire Holder



For fixing wire on the roofs covered in metal sheets. Screwed, nailed or glueing assembly. Glue assembly details, see: www.elkobis.com.pl/download.



CAT. NUM.	TYPE	A	B	C	D	E	F	SCREW
91700101	17.1	70	70	135	30	5	7	2x M6x16
91700201	17.2	120	120	400	30	5	7	2x M6x16
91700301	17.3	120	120	600	30	5	7	2x M6x16
Alternative material options – change last two catalog number digits.								
OC	01	OG	02	CU	03	LA	16	



Flat Base Cross Unit Roof Wire Holder

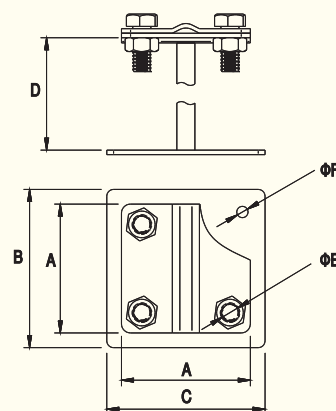


For cross wire fixing on the roofs covered in metal sheets. Screwed, nailed or glueing assembly. Glue assembly details, see: www.elkobis.com.pl/download.

CAT. NUM.	TYPE	A	B	C	D	E	F	SCREW
92200101	22.1	57	70	70	135	9	5	4x M8x20
92200401	22.1.1	57	70	70	75	9	5	4x M8x20

Alternative material options – change last two catalog number digits.

OC	01	OG	02	CU	03
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Side Tensioning Holder

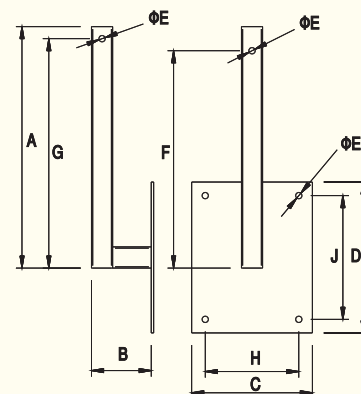


For horizontal tensioning of conductors. Anchor assembly to walls and attics. To tension the wire use Tensioning Clamp Holder 92700101.

CAT. NUM.	TYPE	A	B	C	D	E	F	G	H	J
98700101	87.1	400	100	200	250	11	360	380	155	205

Alternative material options – change last two catalog number digits.

OC	01	LA	16
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Straight Tensioning Holder

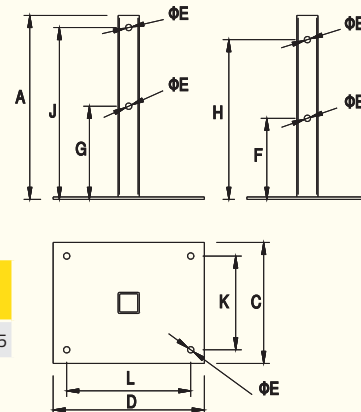


For horizontal tensioning of conductors. Anchor assembly to walls and attics. To tension the wire use Tensioning Clamp Holder 92700101.

CAT. NUM.	TYPE	A	C	D	E	F	G	H	J	K	L
98700201	87.2	300	200	250	11	130	150	260	280	155	205

Alternative material options – change last two catalog number digits.

OC	01	LA	16
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Horizontal Tensioning Holder

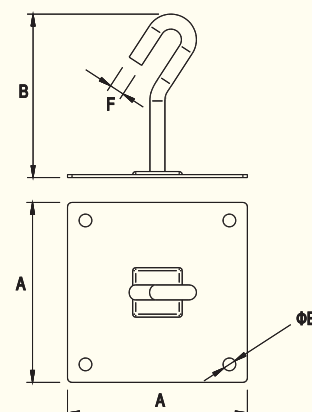


For horizontal tensioning of conductors. Anchor assembly to walls and attics. To tension the wire use Turnbuckles 93500401.

CAT. NUM.	TYPE	A	B	E	F
98800101	88.1	120	105	8	10

Alternative material options – change last two catalog number digits.

OC	01	LA	16
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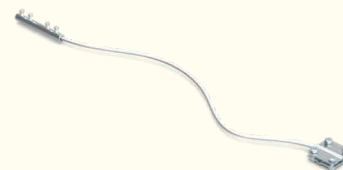
Compensation Connection Clamp



For flexible connections of wire and /or tape conductors. Connection made with use of aluminum string -equatorial diameter 50 mm². Recommended distance between connectors is 40 meters.

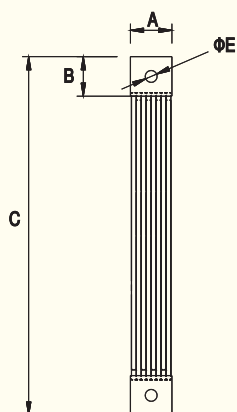
CAT. NUM.	TYPE	L	APPLICATION
10100301	101.1 DD	1m	wire/wire
10100201	101.1 DB	1m	wire/tape
10100101	101.1 BB	1m	tape/tape

AL



Connection clamps used: 90700101 - page 11, 91400101 - page 12.

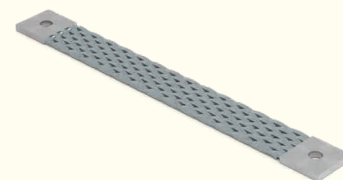
Flexible Tin-Plated Copper Bridging Braid

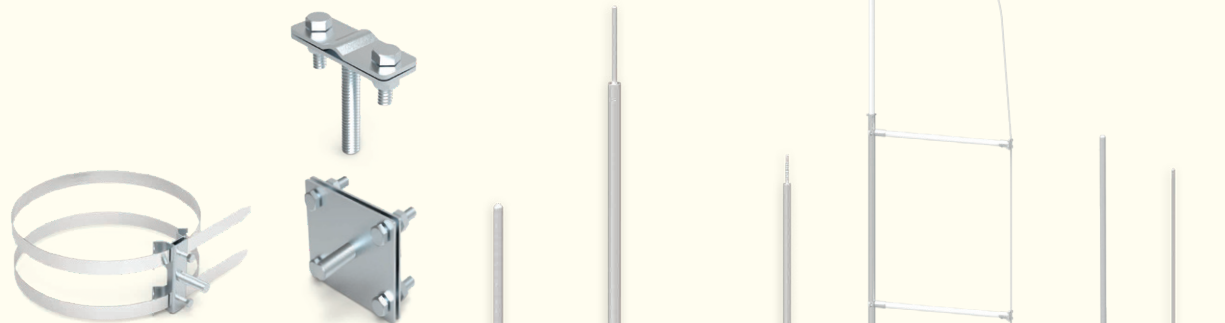


For flexible connections of wire and /or tape conductors.

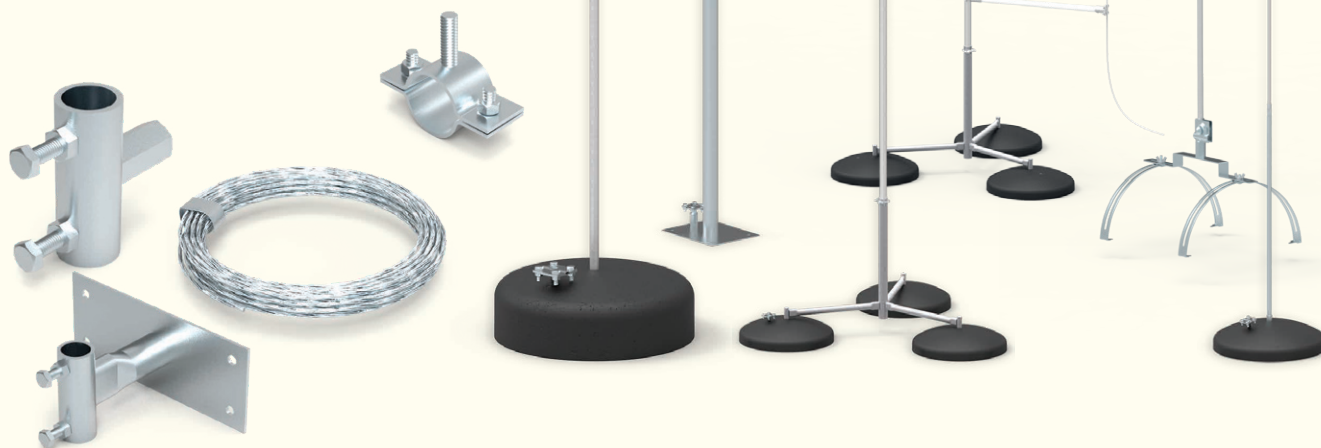
CAT. NUM.	TYPE	A	B	C	E
10100403	101.2 CU/30	40	40	300	12
10100503	101.2 CU/40	40	40	400	12

CU



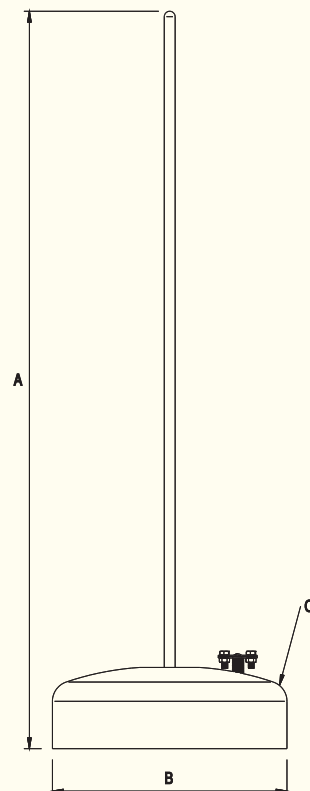
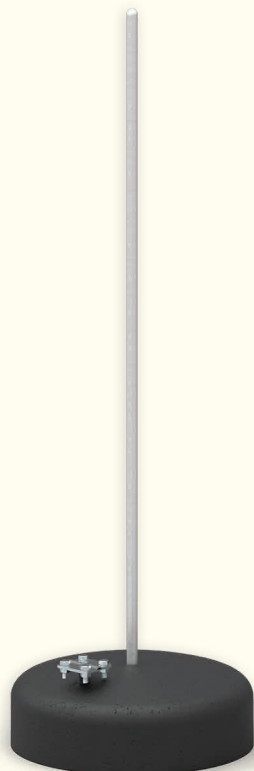


GROUP V Air Termination: Masts, Spires, Isolated Conductors



Concrete Base Interception Mast (up to 2 m)

For Lightning Protection of roof elements and devices (skylights, air conditioners, air handling units, air handling channels). Free standing mast with total weight up to 22kg. It is recommended to use pads under concrete base. Option 94308222 for tar board roofs and option 94308221 for membrane roofs.



CAT. NUM.	TYPE	A	B	C*	SCREW	WIND ZONE PN 77/B-0211
94341009	43.1	1000	345	19 kg	4x M8/20	I, II, III
94342009	43.2**	2000	345	19 kg	4x M8/20	I, II, III
94392003	43.2.1	2000	500	40 kg	4x M8/20	I, II, III

Alternative material options – change last two catalog number digits.

CU	03	AL	09
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* Base weight.

** Can be used in zone III (according to PN 77/B-0211) under condition of permanent fixing to roof surface (for example by gluing).





GROUP I
Connecting Components

GROUP II
Earthing & Equipotential Bonding

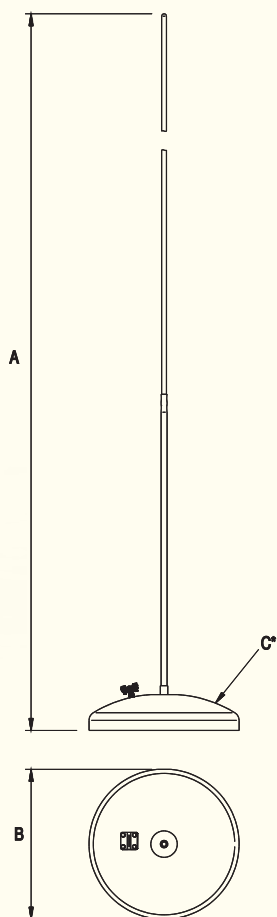
GROUP III
Air Termination System

GROUP IV
Air Termination

GROUP V
Air Termination: Masts, Spires, Isolated Conductors

Concrete Base Interception Mast (3–4 m)

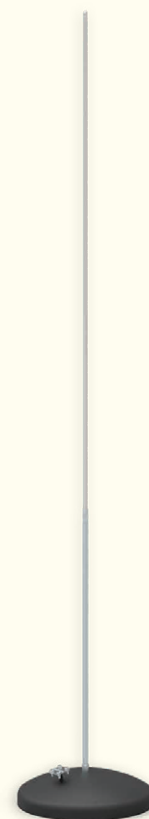
For Lightning Protection of roof elements and devices (skylights, air conditioners, air handling units, air handling channels). Free standing mast with total weight up to 42kg. It is recommended to use pads under concrete base. Option 94308222 for tar board roofs and option 94308221 for membrane roofs.



CAT. NUM.	TYPE	A	B	C*	SCREW	WIND ZONE PN 77/B-0211
94343009	43.3	3000	500	40 kg	4xM8/20	I, II, III
94344009	43.4	4000	500	40 kg	4xM8/20	I, II, III

Alternative material options – change last two catalog number digits.

CU 03 AL 09

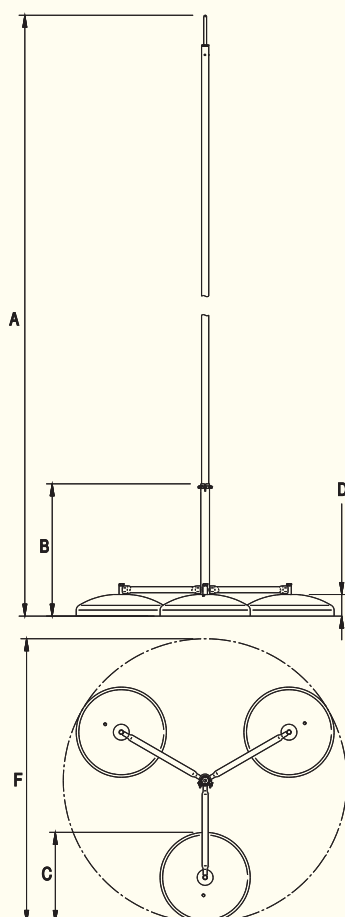


* Base weight.

** Can be used in zone III (according to PN 77/B-0211) under condition of permanent fixing to roof surface. (for example by glueing).

Tripod Concrete Base Interception 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 with total weight up to 135kg. It is recommended to use pads under concrete base. Option 94308222 for tar board roofs and option 94308221 for membrane roofs.



CAT. NUM.	TYPE	A	B	C	D	F
96504005	65.4	4000	640	500	120	1450
96505005	65.5	5000	640	500	120	1450
96506005	65.6	6000	640	500	120	1450
96507005	65.7	7000	640	500	120	1450

Alternative material options – change last two catalog number digits.

OC 01 NI 05



If classified to III wind zone (PN-77/B-0211) permanent fixing to surface is essential.

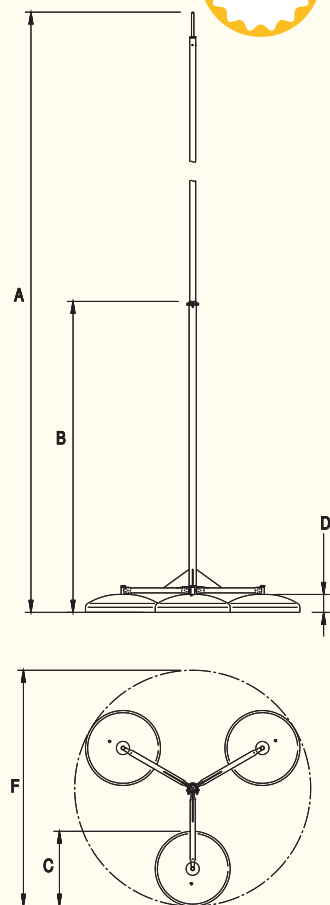




Tripod Concrete Base Interception Mast - 8m



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 with total weight up to 140kg. It is recommended to use pads under concrete base. Option 94308222 for tar board roofs and option 94308221 for membrane roofs.



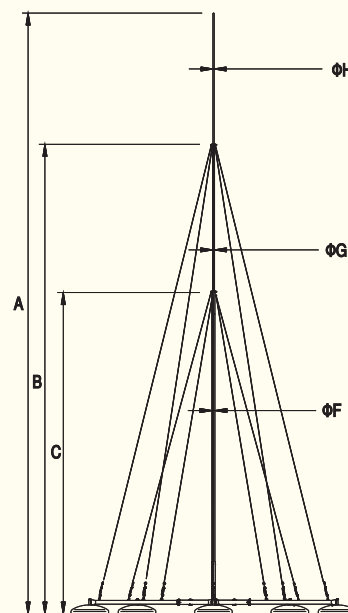
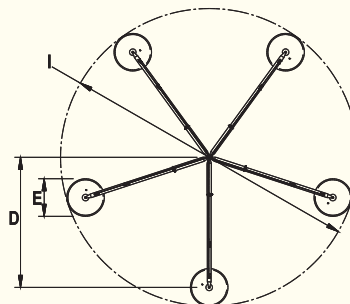
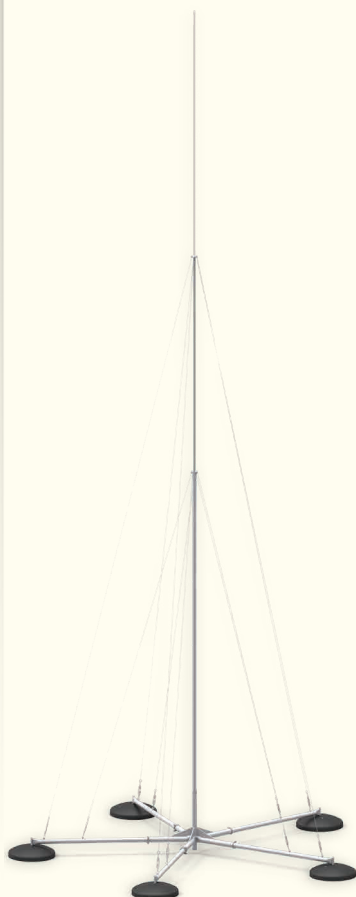
CAT. NUM.	TYPE	A	B	C	D	F
96538005	NEW	8000	6000	500	120	1450

Alternative material options – change last two catalog number digits.

NI 05

Five-pod Concrete Base Interception Mast

For Lightning Protection of roof elements and devices (skylights, air conditioners, air handling units, air handling channels). Fivepod concrete base gives appropriate wind resistance. Free standing mast with total weight up to 250kg. It is recommended to use pads under concrete base. Option 94308222 for tar board roofs and option 94308221 for membrane roofs. Set include all elements required to make wire tension.



** Can be used in zone III (according to PN 77/B-0211) under condition of permanent fixing to roof surface. (for example by gluing).

CAT. NUM.	TYPE	A	B	C	D	E	F	G	H	I
96508005	65.8	8000	6235	4280	1650	500	pipe 40x2	25	rod 16	3800
96509005	65.9	9000	6735	4280	1650	500	pipe 40x2	25	rod 16	3800
96531005	65.10	10000	7300	5000	1650	500	pipe 40x2	25	rod 16	3800

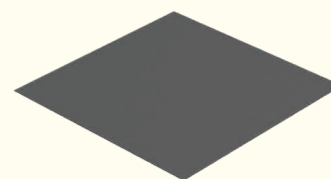
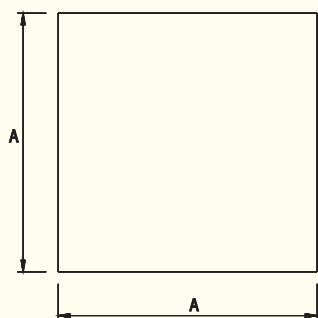
NI





Concrete Base Pad

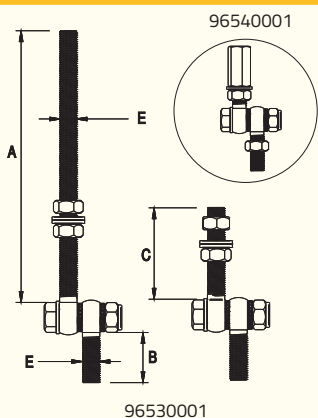
For mechanical damage protection of roof surface. To use under concrete base of mast. Depending on roof covering type use appropriate pad: tar board or membrane.



CAT. NUM.	TYPE	VERSION	A
94308222	43.82/P	tar board	500
94308221	43.82/M	membrane	500

Mast Regulating Set

For vertical-lining of masts including roof slope. It is recommended to use regulation sets above 3% slope. Set 96530001 dedicated to vertical-lining of tripod masts up to 25% roof slope.



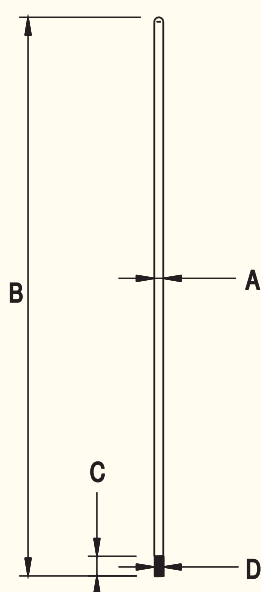
CAT. NUM.	TYPE	VERSION	A	B	C	E
96530001	65.R	three-element for tripod masts	250	40	80	M16
96540001	65.R.1	single-element for one base masts	80	40	-	M16

OC



Aluminum 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	16	1000	35	M16
94302009	43.020	16	2000	35	M16
94303009	43.030	16	3000	35	M16
94304009	43.040	16	4000	35	M16

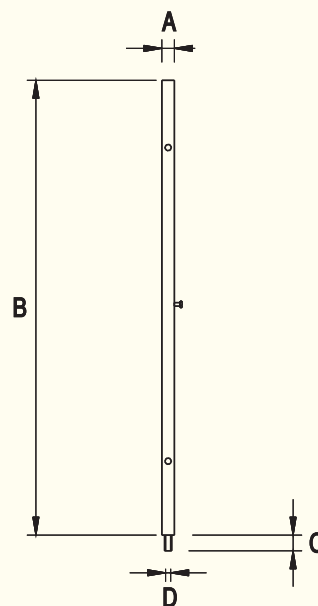
AL





Interception Air Rod Stabilizer

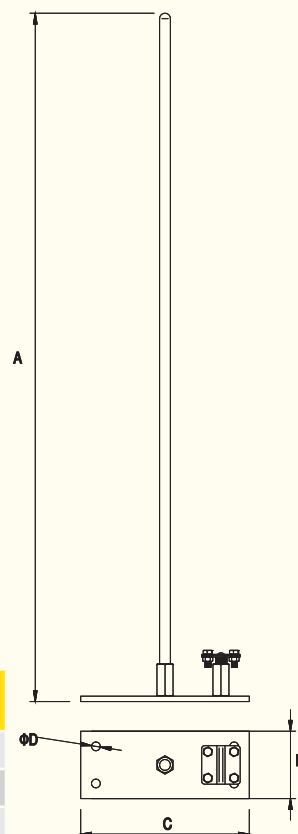
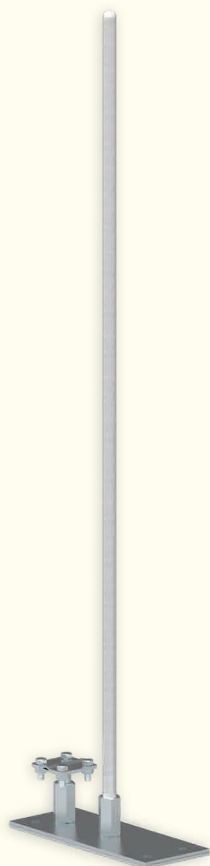
For 2,5 - 4 meters masts. Guarantee stability and wind mast resistance.



CAT. NUM.	TYPE	A	B	C	D	SCREW
94307001	43.70	28	1000	35	M16	3x M8
OC						

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 5kg.



CAT. NUM.	TYPE	A	B	C	D	SCREW	WIND ZONE PN 77/B-0211
94381009	43.1/M	1000	100	250	11	4x M8x20	I, II, III
94382009	43.2/M**	2000	100	250	11	4x M8x20	I, II, III
94383009	43.3/M	3000	200	250	11	4x M8x20	I, II, III
94384009	43.4/M	4000	200	250	11	4x M8x20	I, II, III

Alternative material options – change last two catalog number digits.

CU	03	AL	09
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** Can be used in zone III (according to PN 77/B-0211) under condition of permanent fixing to roof surface. (for example by gluing).





GROUP I
Connecting Components

GROUP II
Earthing & Equipotential Bonding

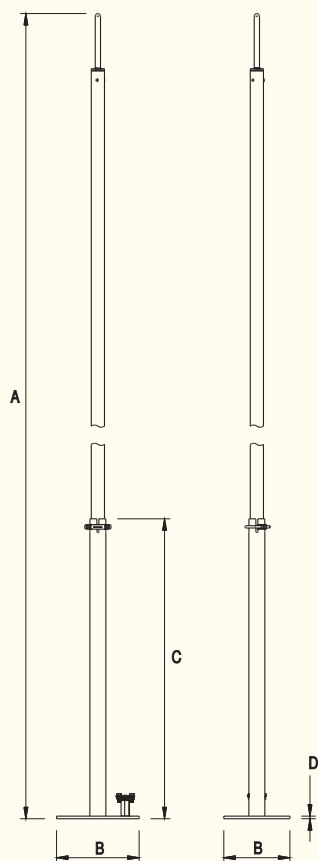
GROUP III
Air Termination System

GROUP IV
Air Termination

GROUP V
Air Termination: Masts, Spires, Isolated Conductors

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 20kg.



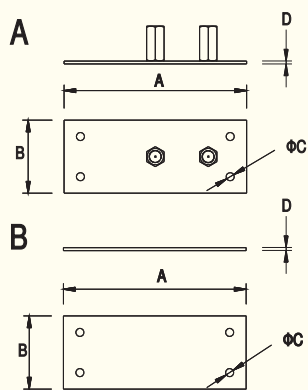
CAT. NUM.	TYPE	A	B	C	D	SCREW
96564005	65.4/M	4000	250	900	8	4x M8x20
96565005	65.5/M	5000	250	900	8	4x M8x20
96566005	65.6/M	6000	250	900	8	4x M8x20
96567005	65.7/M	7000	250	900	8	4x M8x20

NI



Small Steel Interception Mast Base

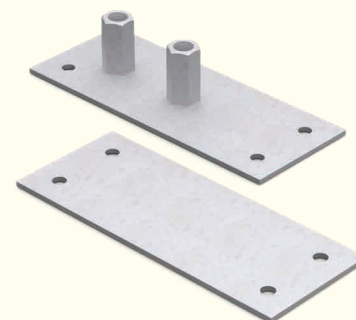
For masts fixing e.g 94383009. Permanent fixing using screws or anchors. Fixing to construction surface or sub-construction derived above roof surface.



CAT. NUM.	TYPE	A	B	C	D
94301302	43.13A	250	100	11	4
94301402	43.14A	250	200	11	4
94311302	43.13B	250	100	11	4
94311402	43.14B	250	200	11	4

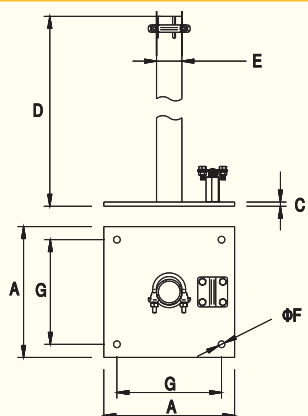
Alternative material options – change last two catalog number digits.

OG 02 NI 05



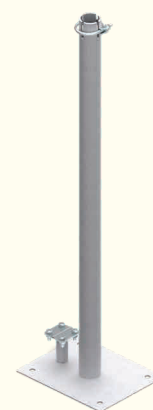
Interception Mast Steel Base

For masts fixing e.g 96205005. 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	SCREW
94309001	43.9	250	8	900	60	13	200	4x M8x20

OC 01 OG 02

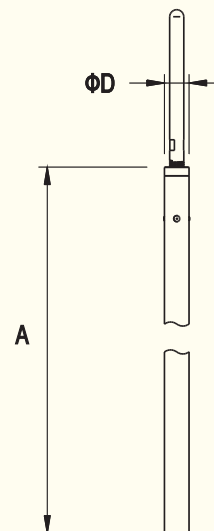




Interception Air Rod



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 96000201 for wall mounting.



CAT. NUM.	TYPE	A	D*
96201005	62.1	1000	25
96202005	62.2	2000	25
96203005	62.3	3000	25
96204005	62.4	4000	40
96205005	62.5	5000	40
96206005	62.6	6000	40

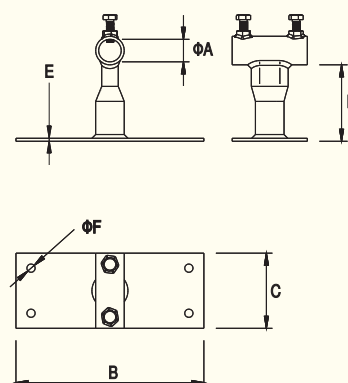
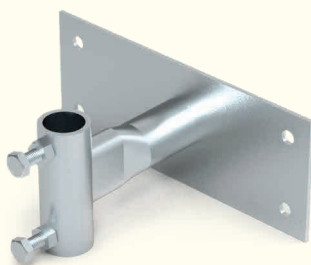
Alternative material options – change last two catalog number digits.

CU	03	NI	05
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*Pipes diameters may change.

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 0,8m. NOTICE: We supply non typical holders, adjusted to roof construction. For size and price quotation mail contact: export@elkobis.com.pl.



CAT. NUM.	TYPE	A	B	C	D	E	F	SCREW
96000101	60.1	31	250	100	100	4	11	2x M10x30
96000201	60.2	42	250	200	100	4	11	2x M10x30

Alternative material options – change last two catalog number digits.

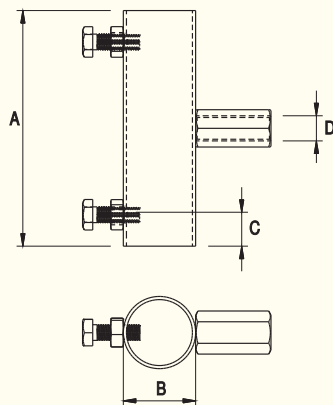
OC	01	OG	02	LA	16
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Clamp 96701105 Interception Rod Holder

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	MAST APPLICATION	A	B	C	D	SCREW
96000701	60.7/M16	94301009 str. 51	100	30	22	M16	2x M10x30
		94302009 str. 51					
		94303009 str. 51					
		94304009 str. 51					
		96201005 str. 54					
		96202005 str. 54					
96000801	60.8/M16	96203005 str. 54	150	42	22	M16	2x M10x30
		96204005 str. 54					
		96205005 str. 54					
		96206005 str. 54					

Alternative material options – change last two catalog number digits.

OC 01 LA 16

GROUP I
Connecting Components

GROUP II
Earthing & Equipotential Bonding

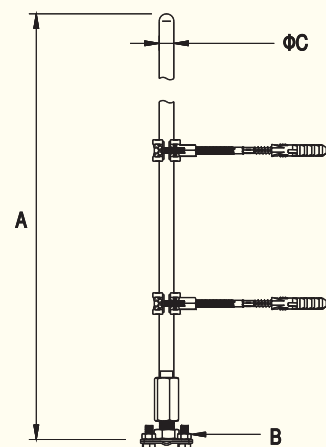
GROUP III
Air Termination System

GROUP IV
Air Termination

GROUP V
Air Termination: Masts, Spires, Isolated Conductors

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.



CAT. NUM.	TYPE	A	B	C
97001009	70.10	1000	4x M8x16	16
97001509	70.15	1500	4x M8x16	16
97002009	70.20	2000	4x M8x16	16
97003009	70.30	3000	4x M8x16	16

Alternative material options – change last two catalog number digits.

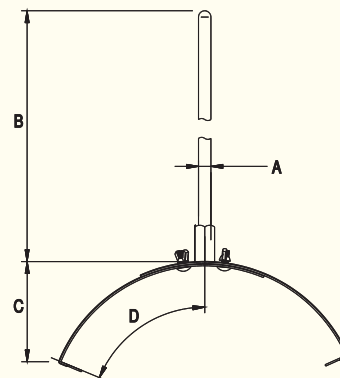
CU 03 AL 09





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 include horizontal wire connector.

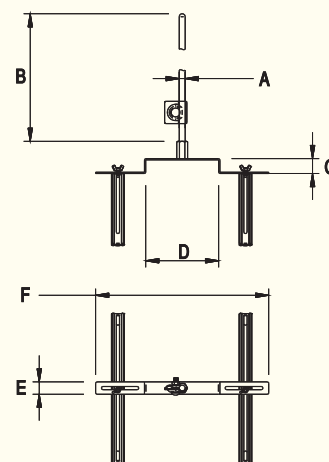
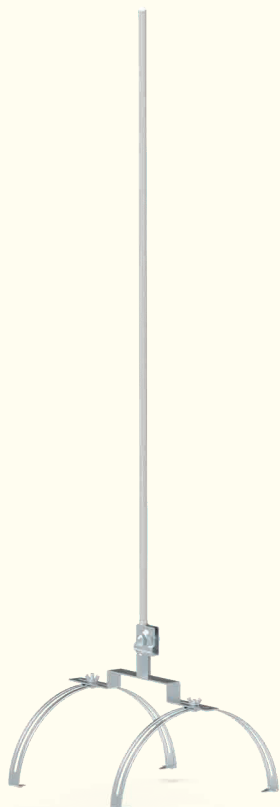


CAT. NUM.	TYPE	A	B	C	D
97111009	71.10/1	Ø 12	1000	65	125-205

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
97101009	71.10	Ø 12	1000	30	150	2,5	350
97101509	71.15	Ø 12	1500	30	150	2,5	350
97102009	71.20	Ø 12	2000	30	150	2,5	350

AL





GROUP I
Connecting Components

GROUP II
Earthing & Equipotential Bonding

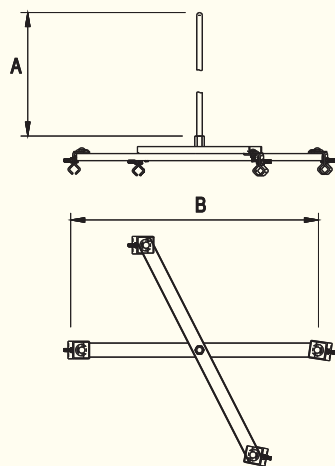
GROUP III
Air Termination System

GROUP IV
Air Termination

GROUP V
Air Termination: Masts, Spires, Isolated Conductors

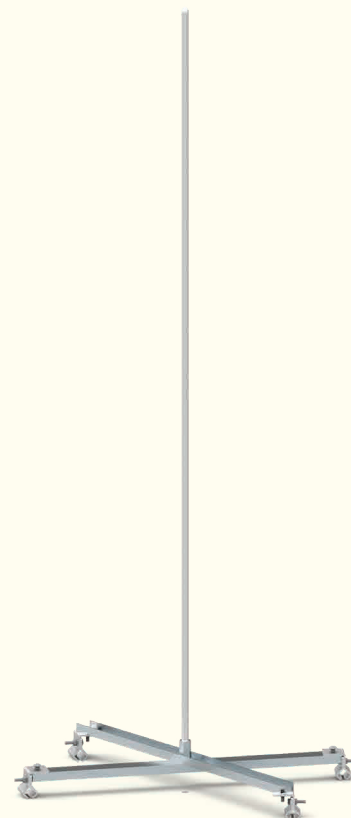
Steel Roofs Spire

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. aluminum made spire with zinc plated steel base. On the roofs with large slope angle, use regulation set 96540001 for vertical lining.



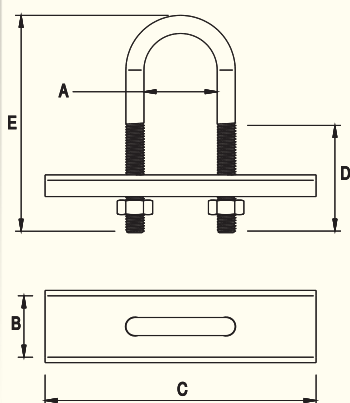
CAT. NUM.	TYPE	A	B
97121009	-	1000	700
97122009	-	2000	700

AL



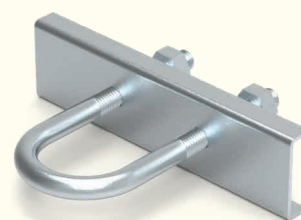
U-profile Clamp Holder

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



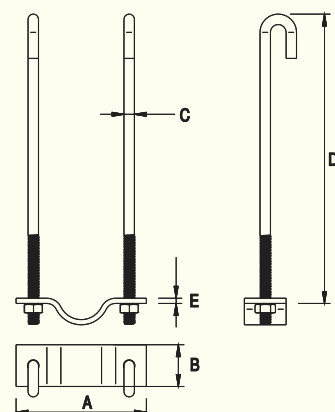
CAT. NUM.	TYPE	A	B	C	D	E	NUT
96000401	60.4	40,5	40	150	60	110	10

OC



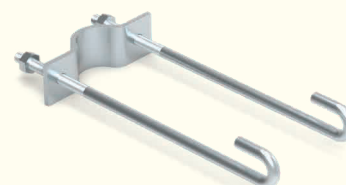
Special Mast Holder

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	10	300	5

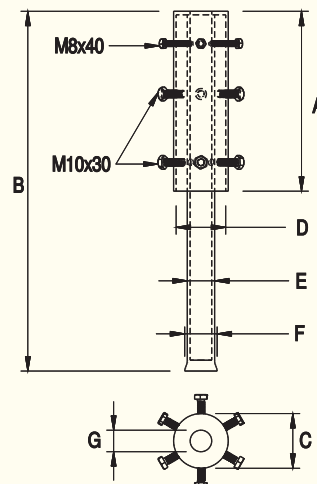
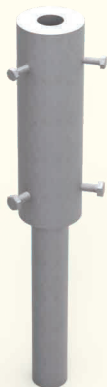
OC





Masts Lighting Column Adapter

For adopting mast on lighting column/poles. Dedicated for mast diameter of $\varnothing 16$ and $\varnothing 25$ e.g 94302009.

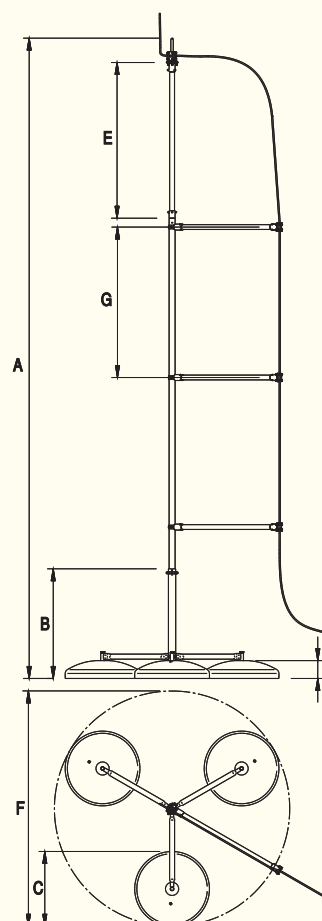
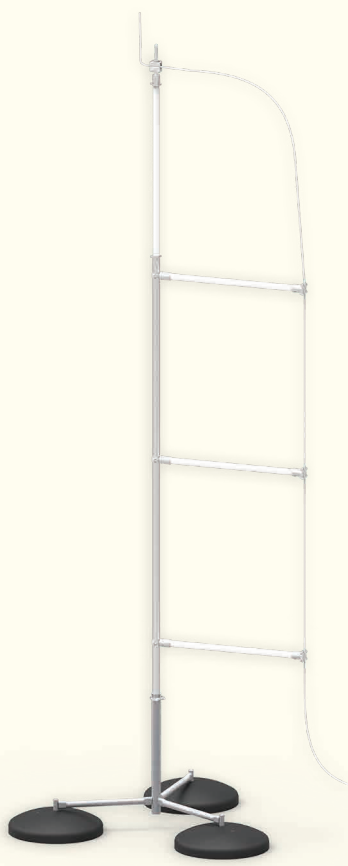


CAT. NUM.	TYPE	A	B	C	D	E	F	G	WEIGHT
96600102	66.1	250	500	$\varnothing 76$	$\varnothing 69$	$\varnothing 38$	$\varnothing 45$	$\varnothing 30$	~3800g

OG

Insulated Tripod Interception 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 with total weight up to 140kg. It is recommended to use pads under concrete base. Option 94308222 for tar board roofs and option 94308221 for membrane roofs. Placement next to protected devices in a required insulation distance.



CAT. NUM.	TYPE	A	B	C	D	E	F	G
96514005	65.4 Zi	4000	640	500	120	1000	1450	1000
96515005	65.5 Zi	5000	640	500	120	1000	1450	1000
96516005	65.6 Zi	6000	640	500	120	1000	1450	1000
96517005	65.7 Zi	7000	640	500	120	1000	1450	1000

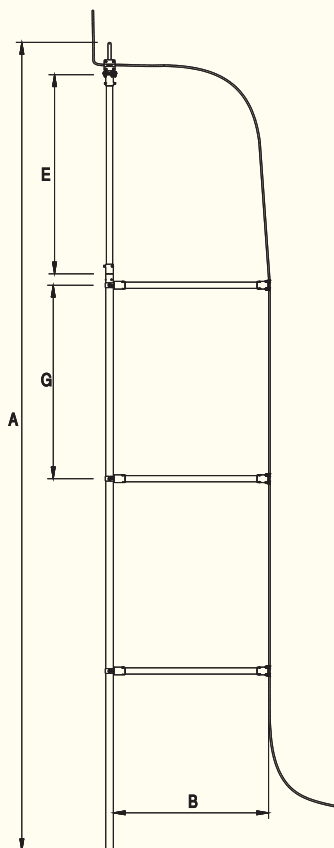
NI





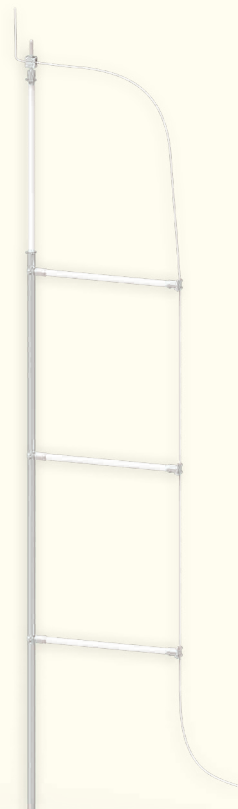
Insulated Interception Air Rod

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. Placement next to protected devices in a required insulation distance e.g steel blinds.



CAT. NUM.	TYPE	A	B	E	G
96544005	65.4.1 Zi	4000	750	1000	1000
96545005	65.5.1 Zi	5000	750	1000	1000
96546005	65.6.1 Zi	6000	750	1000	1000
96547005	65.7.1 Zi	7000	750	1000	1000

NI



GROUP I
Connecting Components

GROUP II
Earthing & Equipotential Bonding

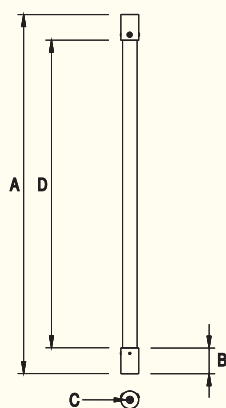
GROUP III
Air Termination System

GROUP IV
Air Termination

GROUP V
Air Termination: Masts, Spikes, Isolated Conductors

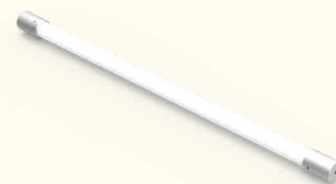
Separation Bar

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
97900729	79.075	750	51	M8	638
97900029	79.100	1000	51	M8	888
97901529	79.150	1500	51	M8	1388
97920029	79.200	2000	51	M8	1888

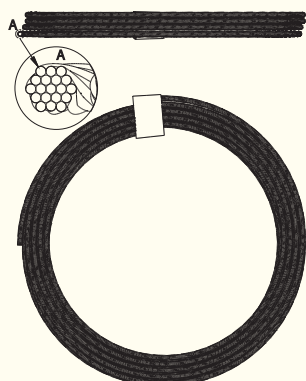
PVC



M16 Thread Separation Bars available on order.

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 1 l m.
80200809	ALDREY 50 mm ²	19 x \varnothing 1,8 mm	0,14 kg

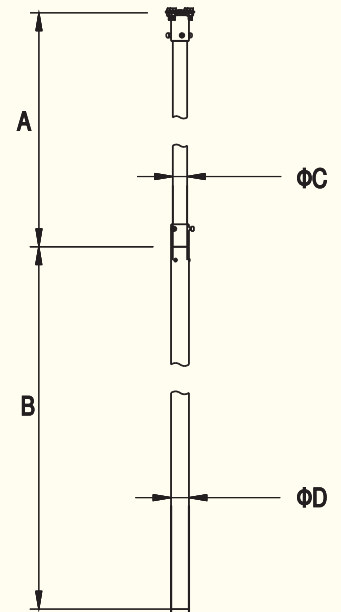
AL





Insulated Supportive Interception Air Rod

For Lightning Protection of steel roof elements and devices (skylights, air conditioners, air handling units, air handling channels). Supportive function for Aldrey rope grid between masts. Insulated End Bar of Mast, allows to place it next to devices in a less insulation distance, than is required. Choose correct mast holders depending on assembly place e.g mast holder 96000201 for wall mounting.

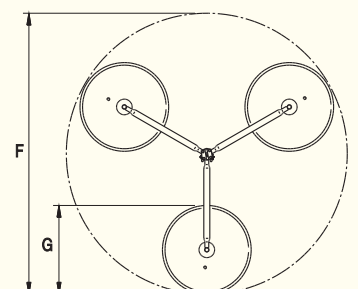
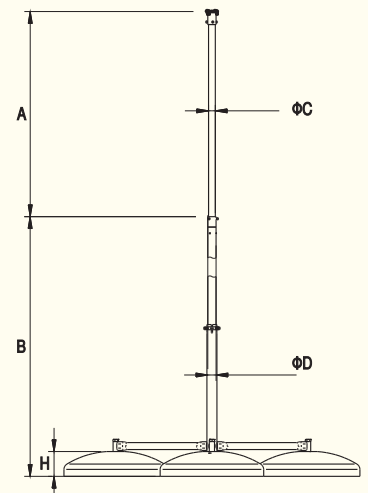
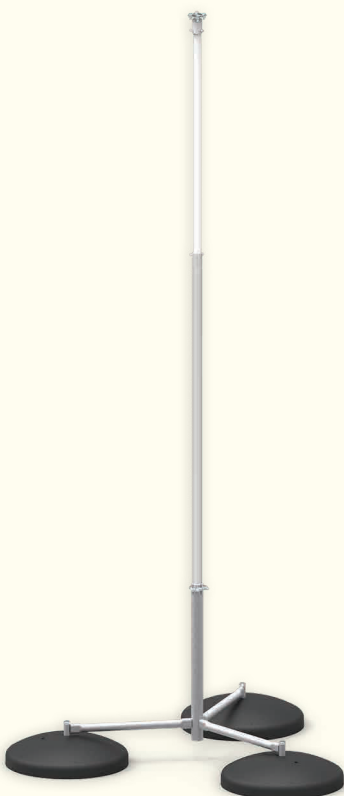


CAT. NUM.	TYPE	A	B	C	D
96233005	-	1000	2000	32	40
96234005	-	1000	3000	32	40
96235005	-	1000	4000	32	40
96236005	-	1000	5000	32	40
96237005	-	1000	6000	32	40

NI

Tripod Insulated Supportive Interception Mast

For Lightning Protection of steel roof elements and devices (skylights, air conditioners, air handling units, air handling channels). Tripod concrete base gives appropriate wind resistance. Free standing mast with total weight up to 138kg. It is recommended to use pads under concrete base. Option 94308222 for tar board roofs and option 94308221 for membrane roofs. Supportive function for Aldrey rope grid between masts. Insulated End Bar of Mast, allows to place it next to devices in a less insulation distance, than is required.



CAT. NUM.	TYPE	A	B	C	D	F	G	H
96553005	-	1000	2000	32	40	1450	500	120
96554005	-	1000	3000	32	40	1450	500	120
96555005	-	1000	4000	32	40	1450	500	120
96556005	-	1000	5000	32	40	1450	500	120
96557005	-	1000	6000	32	40	1450	500	120

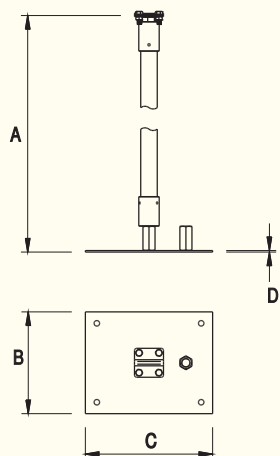
NI





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.



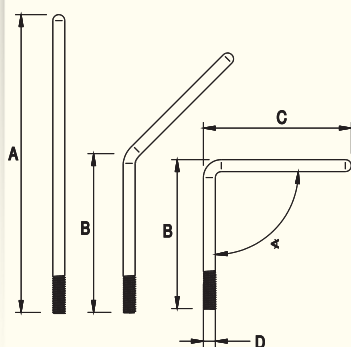
CAT. NUM.	TYPE	A	B	C	D
98010002	80.100	1000	200	250	4

OG

Other sizes available on customer order.

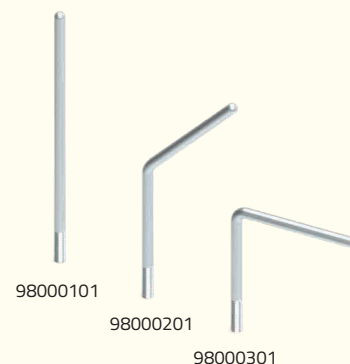
Insulated Bar End Tip

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



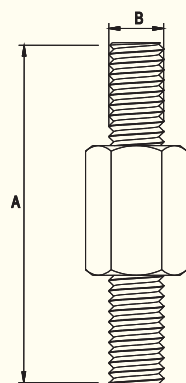
CAT. NUM.	TYPE	A	B	C	D	α
98000101	80.1	200	100	100	M8	-
98000201	80.2	200	100	100	M8	45°
98000301	80.3	200	100	100	M8	90°

OC



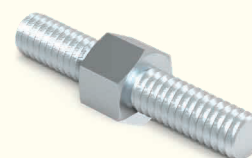
Straight Connector

Perpendicular connections of insulation bar to flash holder 98400101.



CAT. NUM.	TYPE	A	B
98100101	81.1	50	M8

OC





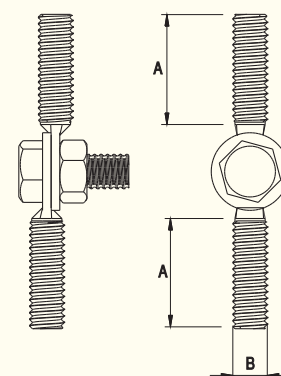
Swivel Connector

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



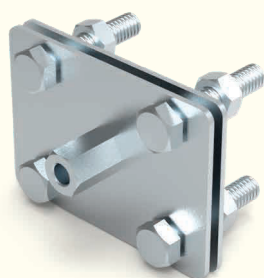
CAT. NUM.	TYPE	A	B	SCREW
98200101	82.1	25	M8	M8x20

OC



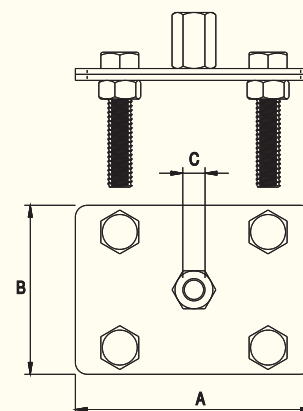
Flash Bar Holder

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



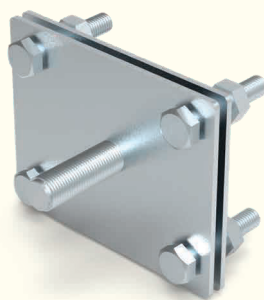
CAT. NUM.	TYPE	A	B	C	SCREW
98400101	84.1	80	57	M8	4x M8x40

OC



Large Flash Bar Holder

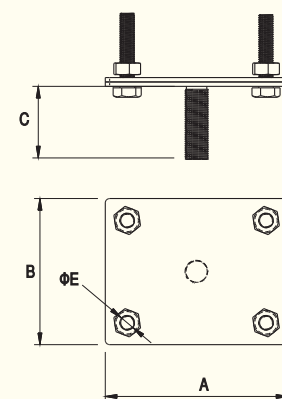
For insulated bar mounting to metal construction or wall mounting. Bar should be directly fastened to holder.



CAT. NUM.	TYPE	A	B	C	E	SCREW
98400301	84.3	125	100	M16x50	11	4x M10x50

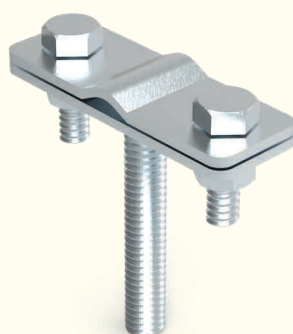
Alternative material options – change last two catalog number digits.

OC 01 MI 04 LA 16



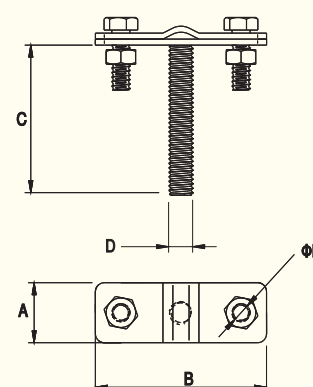
Wire Conductor Holder

For insulated bars wire conductors leading. Insulated bars should be firstly mounted to steel construction, device cover or interception air rods.

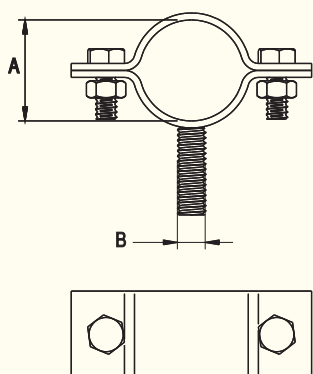


CAT. NUM.	TYPE	A	B	C	D	E	SCREW
98400201	84.2	20	57	M8x45	M8	7	2x M6x16

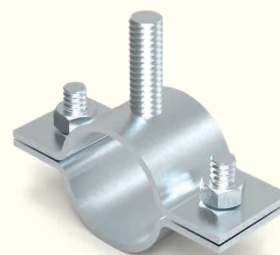
OC



Round Bar Holder



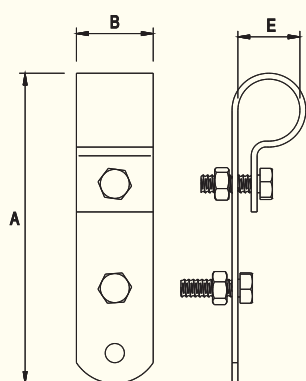
For insulated bar mounting to interception rods or piping \varnothing 32 lub 40 mm. Bar should be directly fastened to holder. Different diameters inquiries ask at: export@elkobis.com.pl.



CAT. NUM.	TYPE	A	B	SCREW
98300401	83.4	32	M8	2x M6x16
98300601	83.6	40	M8	2x M6x16

OC

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.

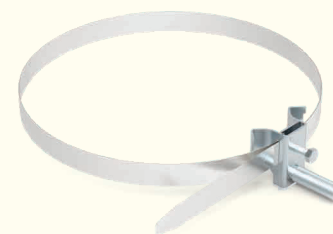
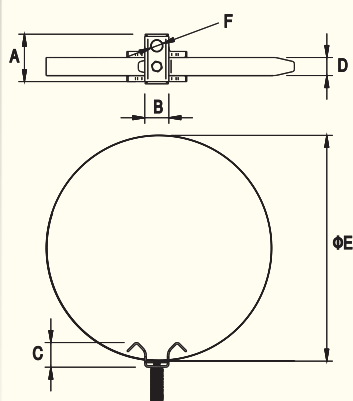


CAT. NUM.	TYPE	A	B	E	SCREW
96000505	60.5	110	26	32	2x M6x20

NI

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.



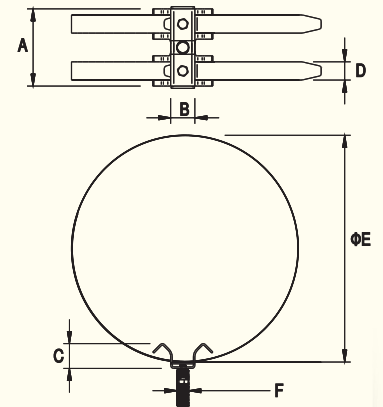
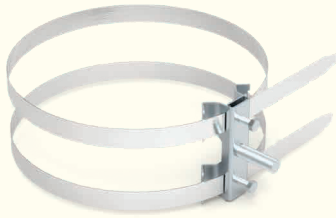
CAT. NUM.	TYPE	A	B	C	D	E	F	SCREW
97701105	77.1/M16	60	30	30	24x0,4	150-300	M16x50	M8x20
97700105	77.1/M8	60	30	30	24x0,4	150-300	M8x25	M8x20
97701205	77.2/M16	60	30	30	24x0,4	≤150	M16x50	M8x20
97700205	77.2/M8	60	30	30	24x0,4	≤150	M8x25	M8x20
97701305	77.3/M16	60	30	30	24x0,4	300-500	M16x50	M8x20
97700305	77.3/M8	60	30	30	24x0,4	300-500	M8x25	M8x20

NI



Double Universal Piping Clamp

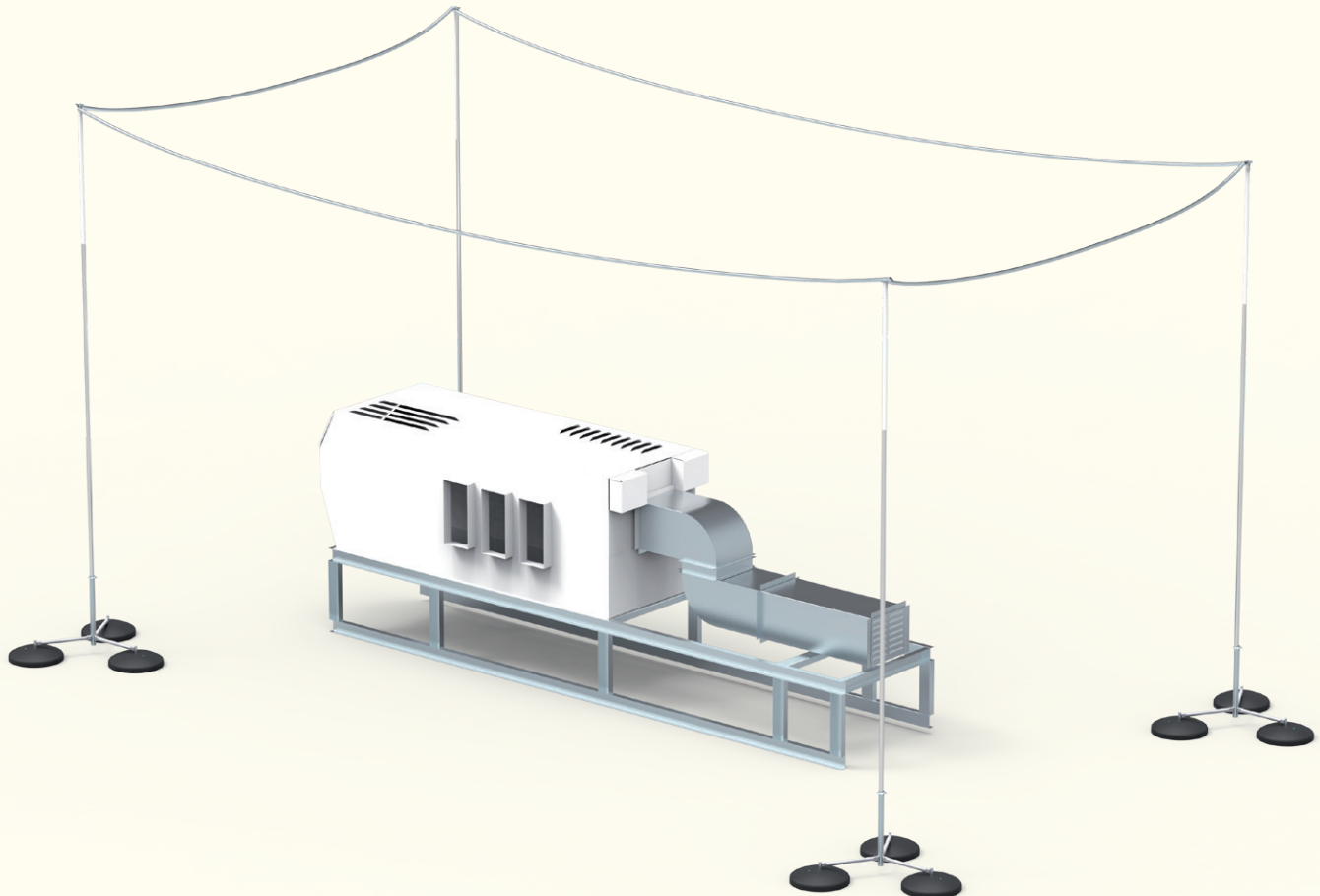
For insulated bar, interception rod or high voltage cable mounting to pipe constructions. Flexible stainless tape conductor adjust to different shapes, allowing assemble of lightning protection at different shape constructions. Clamp should be directly fastened with insulation bar e.g 97900729 or high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



CAT. NUM.	TYPE	A	B	C	D	E	F	SCREW
96701105	67.1/M16	120	30	30	24x0,4	150-300	M16x50	2x M8x20
96700105	67.1/M8	120	30	30	24x0,4	150-300	M8x25	2x M8x20
96701205	67.2/M16	120	30	30	24x0,4	≤150	M16x50	2x M8x20
96700205	67.2/M8	120	30	30	24x0,4	≤150	M8x25	2x M8x20
96701305	67.3/M16	120	30	30	24x0,4	300-500	M16x50	2x M8x20
96700305	67.3/M8	120	30	30	24x0,4	300-500	M8x25	2x M8x20

NI

Example of elevated air termination





GROUP I
Connecting Components

GROUP II
Earthing & Equipotential Bonding

GROUP III
Air Termination System

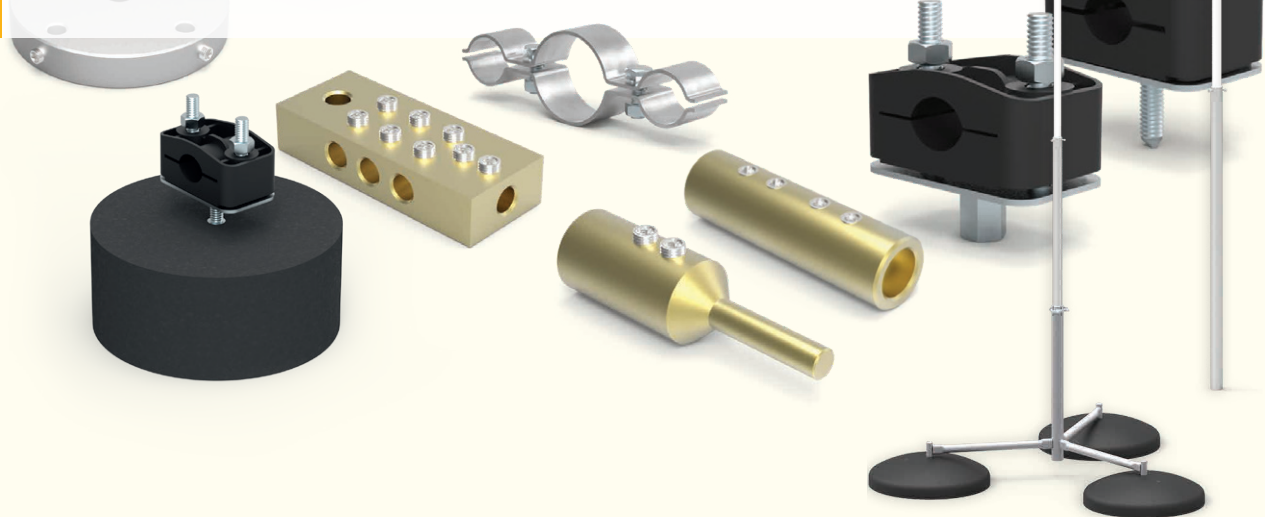
GROUP IV
Air Termination

GROUP V
Air Termination: Masts, Spires, Isolated Conductors

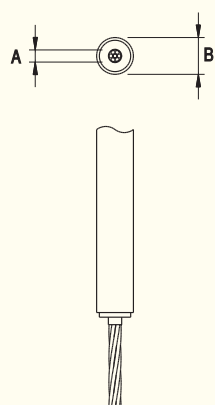
GROUP VI
High Voltage Insulated Air Termination



GROUP VI High Voltage Insulated Air Termination



Insulated High Voltage Cable



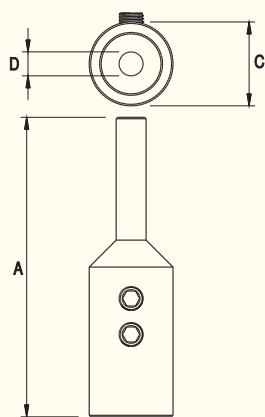
To discharge strike electric stream. Use at places where appropriate insulation distance from protected elements can not be kept or close to communication strings. Cable construction guarantee insulation distance of 75cm. Can be directly lead on electric devices. Resistant to weather conditions. Copper wire. Projects support on: export@elkobis.com.pl. Detailed technical features: www.elkobis.com.pl/high-voltage-cable.



Product sizes can be changed.

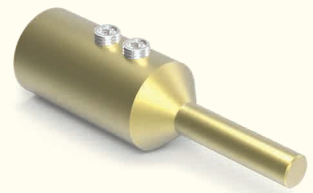
CAT. NUM.	TYPE	A	B
30000199	300.1	35 mm ²	23 mm

High Voltage Cable End Tip



For 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.



Product sizes can be changed.

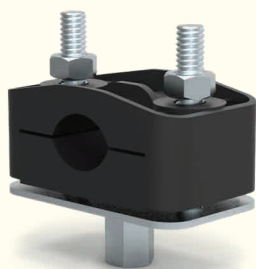
CAT. NUM.	TYPE	A	C	D	SOCKET SCREWS
30100105	301.1	100	28	10	2x M8x8

MS





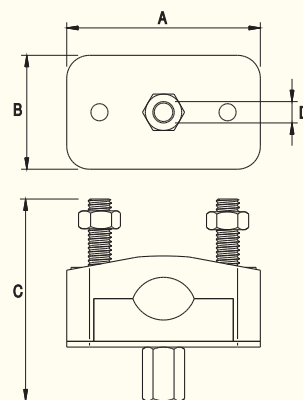
High Voltage Cable Holder with Connector



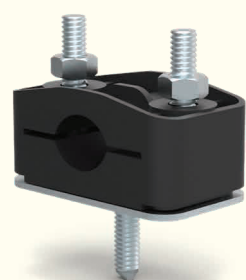
For High Voltage Cable mounting. Used with other ELKO-BIS products, assembly on different type constructions e.g 31100110, 97701105, 96701105. Holder resistance to weather conditions and UV radiation.

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

OC



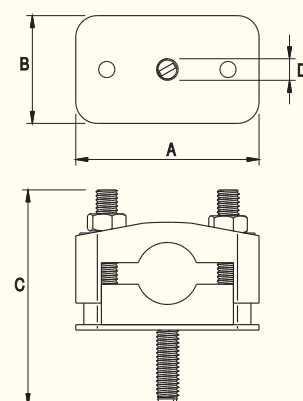
M8 Thread - High Voltage Cable Holder



For High Voltage Cable mounting. Holder to be used together with concrete bases 92910101 (order separately). To lead cable on flash roofs membrane or tar board covered. Can be also fastened to steel sheet roofs e.g obornicka steel sheet, using special footer 30600101.

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

OC



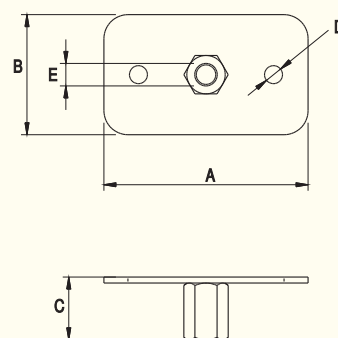
High Voltage Cable Holder



To fix High Voltage Cable holder 30500101 using 2 anchors or self-drilling screws for steel sheets or elevations.

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

OC



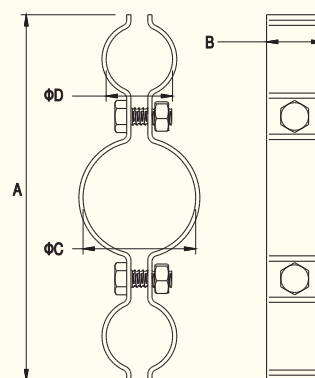
High Voltage Interception Air Rod Holder



For leading 2 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	SCREW
30900105	-	130	20	40	23,6	2x M6x16

NI



Product sizes can be changed.





GROUP I
Connecting Components

GROUP II
Earthing & Equipotential Bonding

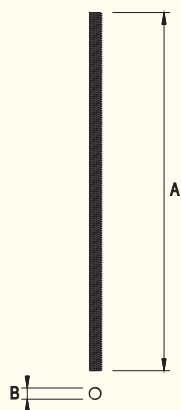
GROUP III
Air Termination System

GROUP IV
Air Termination

GROUP V
Air Termination: Masts, Spires, Isolated Conductors

GROUP VI
High Voltage Insulated Air Termination

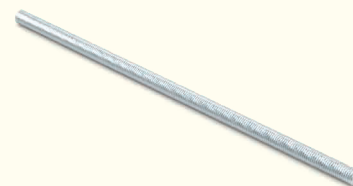
Threaded Rod



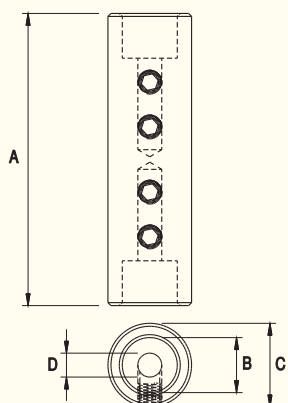
For holders 30500101 and 30400201 fixing to construction. Sold in 1 meter piece. Self cutting to demanded measures.

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

OC



High Voltage Cable Connector



For 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 isolated installation, keeping demanded isolation distance.

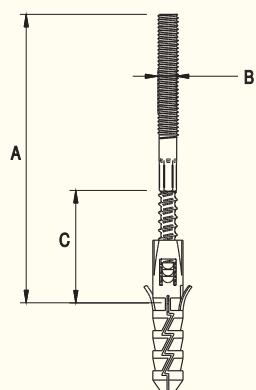
CAT. NUM.	TYPE	A	B	C	D	SOCKET SCREWS
31100110	311.1	98	25	28	10	4x M8x8

MS



Product sizes can be changed.

Double-Threaded Screw



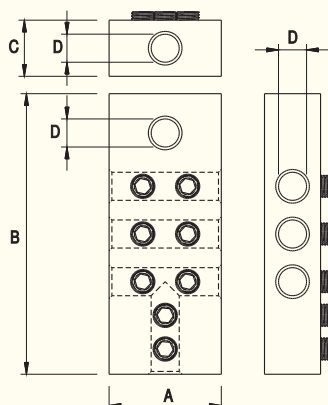
For High Voltage Cable holders 30400101 wall mounting, using fixing plug which comes in a set.

CAT. NUM.	TYPE	A	B	C
31208001	312.1	80	M8	∅ 12x60
31212001	312.2	120	M8	∅ 12x60
31220001	312.3	200	M8	∅ 12x60

OC



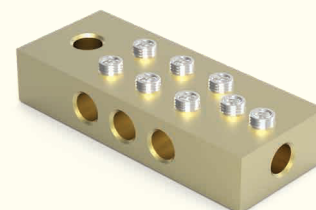
High Voltage Cables Connector



For 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 isolated installation, keeping demanded isolation distance.

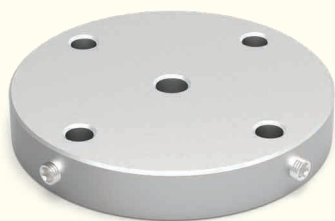
CAT. NUM.	TYPE	A	B	C	D	SOCKET SCREWS
31300101	313.1	40	100	20	10	8x M8x8

MS

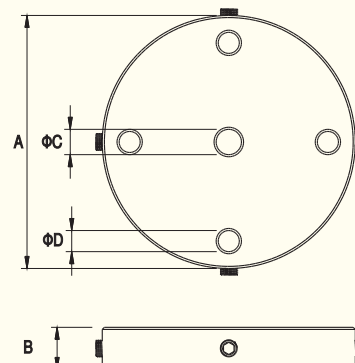




High Voltage Cable Connection Ring



For 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. High Voltage Cable should be connected with firstly applied end tip 30100105.

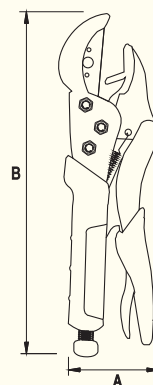


CAT. NUM.	TYPE	A	B	C	D	SOCKET SCREWS
31500109	-	120	20	12	10	4x M8x8

AL

High Voltage Cable Scissors

To remove insulation bit out of High Voltage Cable, enabling end tip fixing 30100105.



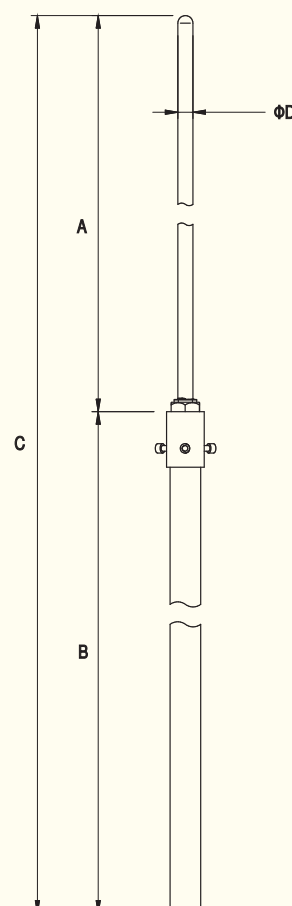
CAT. NUM.	TYPE	A	B
31400101	314.1	60	245

OC

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 isolation distance from protected equipment. Made of Insulation Bar with 1 meter aluminum spire connected using special brass connector with high voltage cable.

NOTICE: High Voltage Cable ordered separately



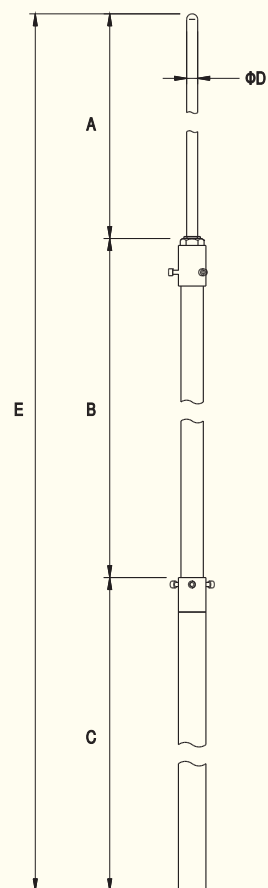
CAT. NUM.	TYPE	A	B	C	D
96213005	62.3 WVP	1000	2000	3000	16
96214005	62.4 WVP	1000	3000	4000	16

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 isolation distance from protected equipment. Made of stainless steel, insulation Bar with 1 meter aluminum spire.

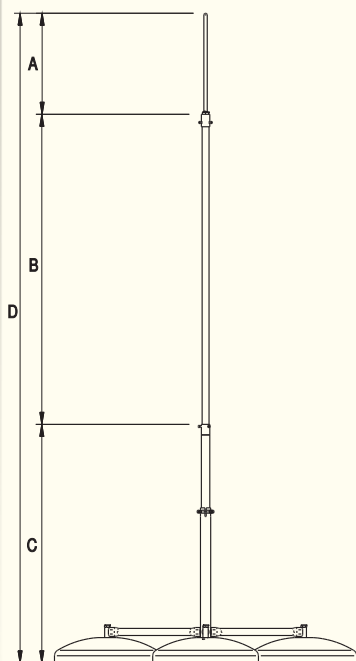
NOTICE: High Voltage Cable ordered separately

CAT. NUM.	TYPE	A	B	C	D	E
96223005	62.3 WVM	500	1500	1000	16	3000
96224005	62.4 WVM	1000	1500	1500	16	4000
96225005	62.5 WVM	1000	1500	2500	16	5000
96226005	62.6 WVM	1000	1500	3500	16	6000
96227005	62.7 WVM	1000	1500	4500	16	7000

NI



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 isolation distance from protected equipment. Made of stainless steel, insulation Bar with 1 meter aluminum spire.

NOTICE: High Voltage Cable ordered separately. Tripod concrete base gives appropriate wind resistance. Free standing mast with total weight up to 142kg. It is recommended to use pads under concrete base. Option 94308222 for tar board roofs and option 94308221 for membrane roofs.

CAT. NUM.	TYPE	A	B	C	D
96573005	65.3WVM	500	1500	1000	3000
96574005	65.4WVM	1000	1500	1500	4000
96575005	65.5WVM	1000	1500	2500	5000
96576005	65.6WVM	1000	1500	3500	6000
96577005	65.7WVM	1000	1500	4500	7000

NI



GROUP I
Connecting Components

GROUP II
Earthing & Equipotential Bonding

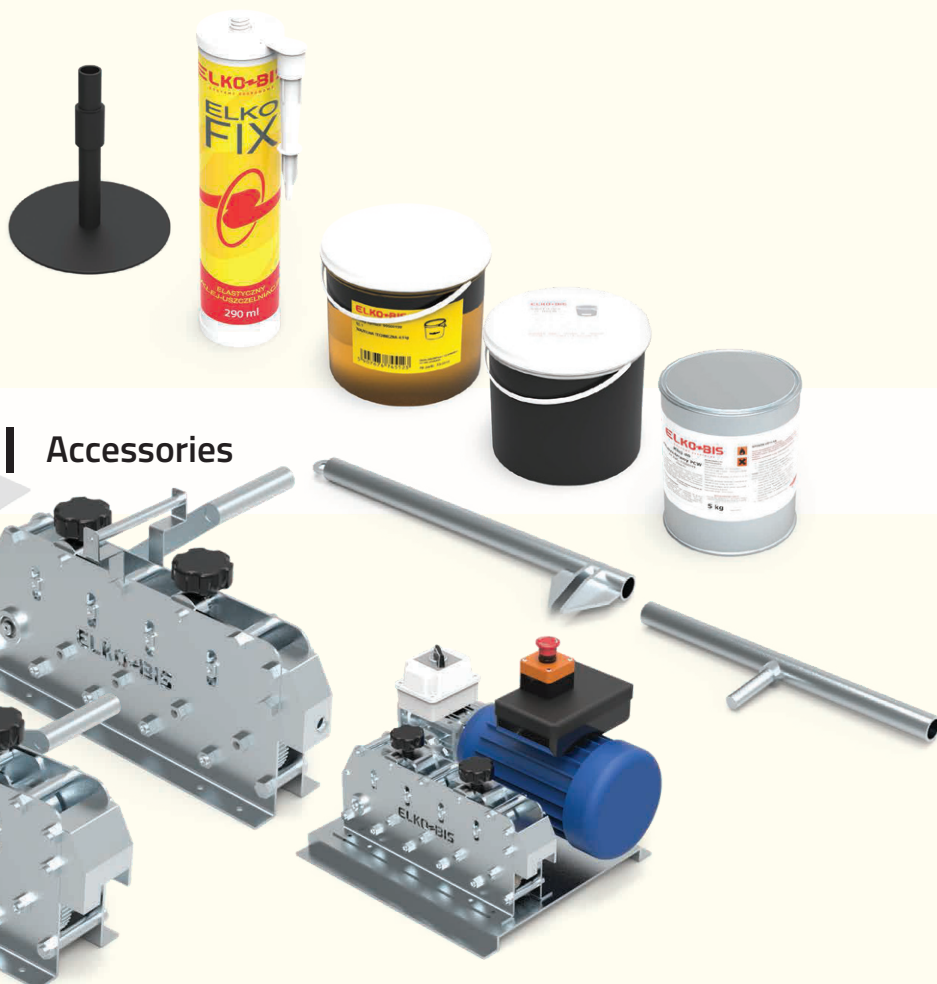
GROUP III
Air Termination System

GROUP IV
Air Termination

GROUP V
Air Termination: Masts, Spires, Isolated Conductors

GROUP VI
High Voltage Insulated Air Termination

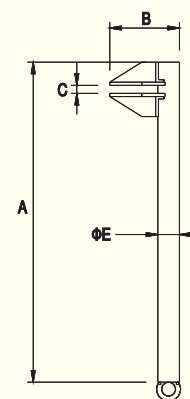




GROUP VII Accessories

Wire Straightening Tool

For manual wire conductor straightening and forming. ELKO-BIS offer include tape and wire conductors straightening devices with mechanical and electric drive (see pages 72-73).

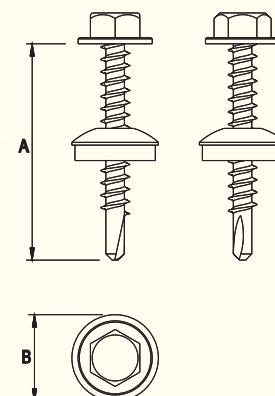


CAT. NUM.	TYPE	A	B	C	E
98600101	86.1	400	60	10	27

OC

Washer Self-Drilling Screw

Fixing of roof air termination holders.



CAT. NUM.	TYPE	VERSION	APPLICATION	A	B	SCREW
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	-

Alternative material options – change last two catalog number digits.

OC 01 LA 16





GROUP I
Connecting Components

GROUP II
Earthing & Equipotential Bonding

GROUP III
Air Termination System

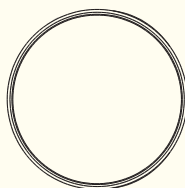
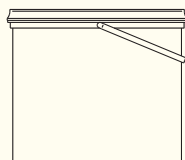
GROUP IV
Air Termination

GROUP V
Air Termination: Masts, Spires, Isolated Conductors

GROUP VI
High Voltage Insulated Air Termination

GROUP VII
Accessories

Adhesive Mass

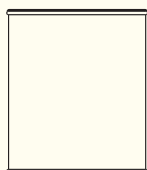


For roof holders bonding at roofs with bitumical cover. **Do not apply to other/different roof covers.** Bonding details see: www.elkobis.com.



CAT. NUM.	TYPE	HOLDER TYPE APPLICATION		WEIGHT
99401099	94.10	92900105	str. 42	10 kg
		92910101	str. 42	
		93000111	str. 42	
		93001111	str. 43	

PCW Membrane Adhesive

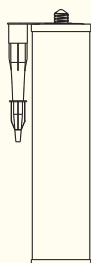


For roof holders bonding at flash membrane roofs. **Follow use instruction on packaging and manufacturer s recommendations.** Bonding details see: www.elkobis.com.



CAT. NUM.	TYPE	HOLDER TYPE APPLICATION		WEIGHT
11000599	110.5	93000211	str. 43	5 kg
		93050211	str. 43	
		93090211	str. 44	
		93000311	str. 44	

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.



CAT. NUM.	TYPE	FEATURES	CAPACITY
99300199	93.1	flexible after hardening, sealant	290 ml

Polyurethane Adhesive



For Tar Board bonding of concrete bases.



CAT. NUM.	TYPE	WEIGHT
99410199	-	0,8 kg

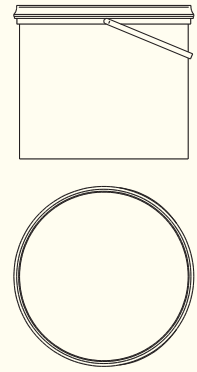




Technical Vaseline

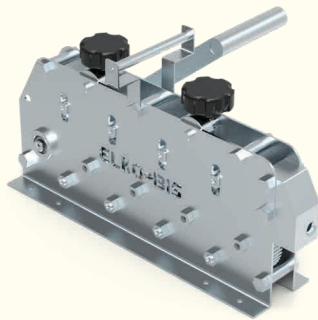


To protect screw connections. Apply to all connections and screws using paintbrush for example. Use of Technical Vaseline is essential to keep products warranty.

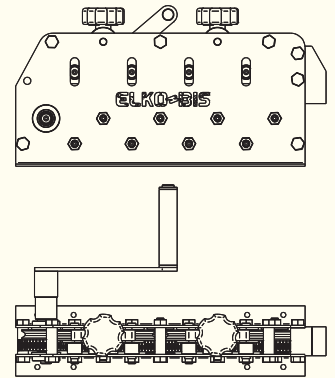


CAT. NUM.	TYPE	WEIGHT
99500199	95.1	0,5 kg

Mechanical Wire Straightening Tool - 9 rolls

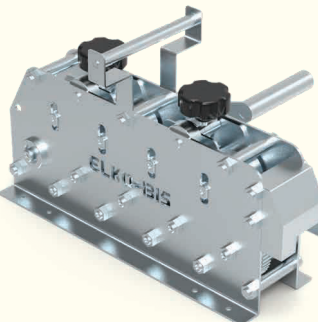


For mechanical wire conductor straightening with manual drive. Can be used with \varnothing 6-8 mm wires. It is recommended to use supportive straightening tool(98600101 - see page 70). Renting option available. More info at www.elkobis.com.

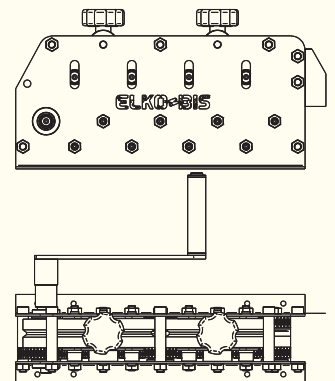


CAT. NUM.	TYPE	WEIGHT
10000199	100.1	14 kg

Mechanical Tape Conductor Straightening Tool

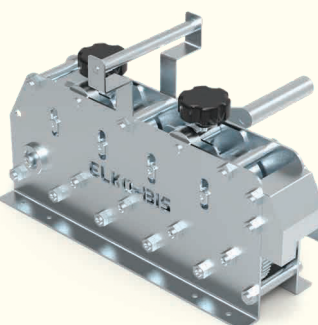


For mechanical tape conductor straightening. Can be used with 20-40 mm tapes, 4 mm thick. Renting option available. More info at www.elkobis.com.

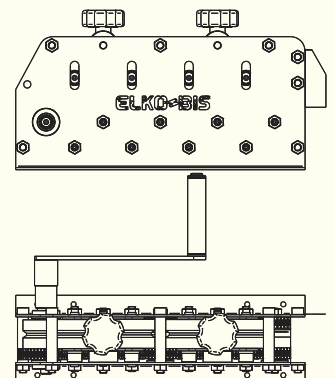


CAT. NUM.	TYPE	WEIGHT
10001199	100.2	20 kg

Mechanical Tape&Wire Straightening Tool



For mechanical tape and wire conductor straightening. Light and mobile with manual drive. Apply tape max 40x4 and wire \varnothing 6-8 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





GROUP I
Connecting Components

GROUP II
Earthing & Equipotential Bonding

GROUP III
Air Termination System

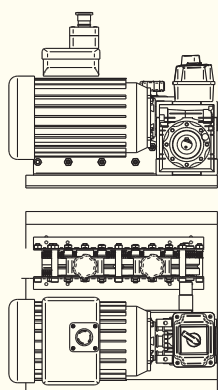
GROUP IV
Air Termination

GROUP V
Air Termination: Masts, Spires, Isolated Conductors

GROUP VI
High Voltage Insulated Air Termination

GROUP VII
Accessories

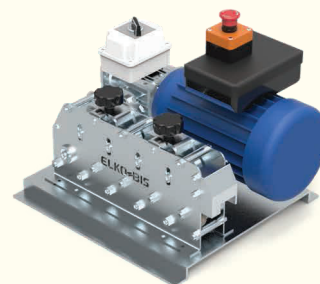
Electric Drive Straightening Tools



For mechanical tape or wire conductor straightening with electric engine drive. After removal of electric drive can be used as a manual straightening device.

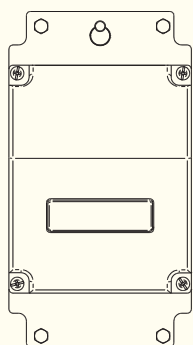


Patented



CAT. NUM.	TYPE	VERSION	PARAMETERS
10000299	100.1 EL	wire	Power supply: 230V Rotations: 46/min
10001299	100.2 EL	tape	Power consumption: 7A Nominal power: 1,1kW
10002299	100.3 EL	wire and tape	Weight: 48kg

Lightning Current Counter

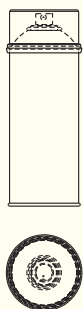


For digital acquisition of impulse currents caused by lightning effects. Capture date and time of discharge with estimation of discharge amplitude. Equipped with teletransmission outputs.



CAT. NUM.	TYPE	VERSION
96100899	61.8	PLW-03a

Zinc Spray

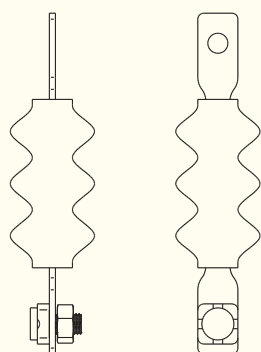


For anti-corrosion protection of constructions and elements. Fast-drying aluminum-zinc spray. Dedicated to machined zinc plated surfaces as for direct application on steel surfaces.

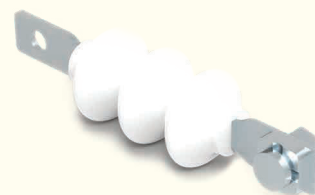


CAT. NUM.	TYPE	CAPACITY
10200199	102.1	400 ml

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 < 10kV Response Time: tA < 100ns Response Voltage: U _{AS} 10kV





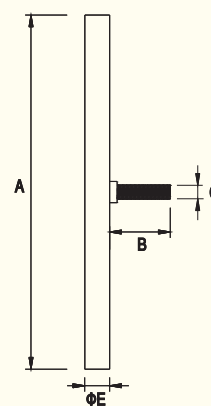
Concrete Base Holder

For safe handling of concrete bases.



CAT. NUM.	TYPE	A	B	C	E
98500101	85.1	400	60	M16	28

OC



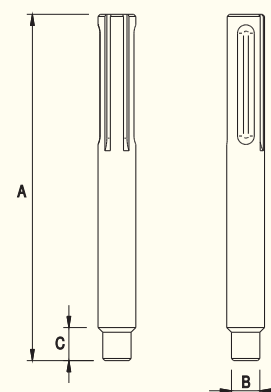
Hammer Insert

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



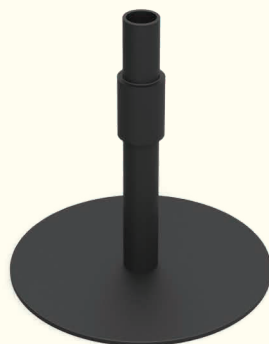
CAT. NUM.	TYPE	A	B	C
94209901	42.3 SDS	165	Ø 13,5	14

OC



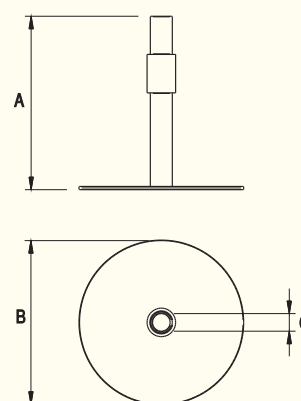
Wire Conductor Sealant

To seal wire conduits Ø 8-10 on tar board or membrane covered roofs. Bonding to surface using ELKO-FIX adhesive (see page 71). Heat shrink tubing attached.



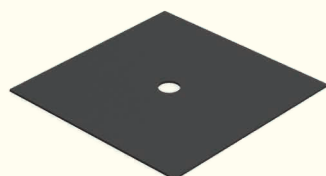
CAT. NUM.	TYPE	A	B	C
10900199	109.1/M	155	150	Ø 20
10910199	109.1/P	155	150	Ø 20

PVC



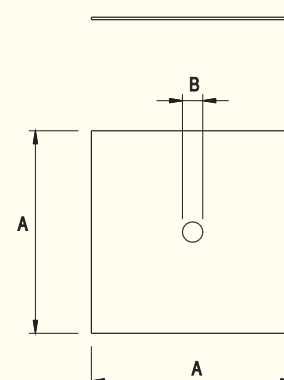
Flat Rubber Sealant

For sealing roof conduits. Ensures appropriate bonding to roof surface and moisture/humidity protection. Fix to membrane using glue/adhesive 11000599 - page 71, bonding to tar board by heat treatment or using ELKO-FIX adhesive (page 71).



CAT. NUM.	TYPE	A	B	VERSION
10900221	109.2/M	250	Ø 25	membrane
10900222	109.2/P	250	Ø 25	tar board

PVC





GROUP I
Connecting Components

GROUP II
Earthing & Equipotential Bonding

GROUP III
Air Termination System

GROUP IV
Air Termination

GROUP V
Air Termination: Masts, Spires, Isolated Conductors

GROUP VI
High Voltage Insulated Air Termination

GROUP VII
Accessories

GROUP VIII
Other Products

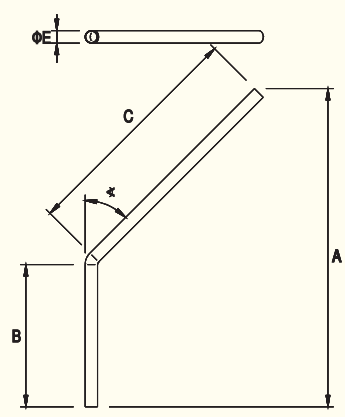


GROUP VIII Other Products



Boom Extension Arm Pipe

For street light fixing to concrete poles. It is recommended to use boom holders as a fixing element e.g 95800101.



CAT. NUM.	TYPE	A	B	C	E	α
94400101	44.1	1040	550	900	48	60°

OG

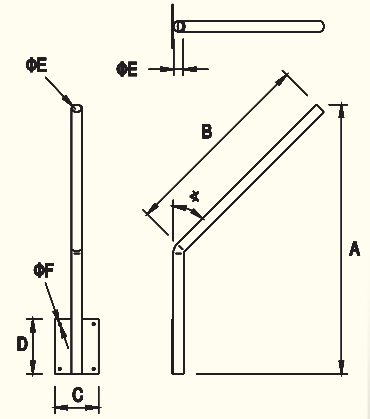
Different boom types available on pre- order.





Regular Boom

For street lights wall mounting.

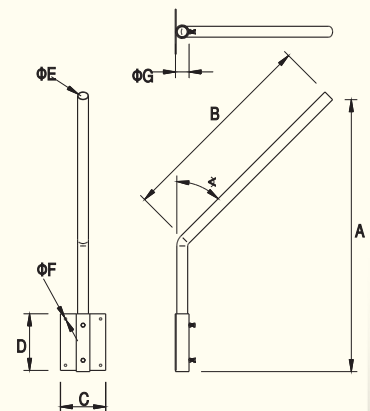


CAT. NUM.	TYPE	A	B	C	D	E	F	∠
94500101	45.1	1040	900	200	250	48	11	60°
OG								

Different boom types available on pre-order.

Rotary Boom

For street lights wall mounting. Rotary arm allows regulation of light stream and exchange of its source.



CAT. NUM.	TYPE	A	B	C	D	E	F	G	∠	SCREW
94600101	46.1	1040	900	200	250	48	11	54	60°	2x M10
OG										

Different boom types available on pre-order.





GROUP I
Connecting Components

GROUP II
Earthing & Equipotential Bonding

GROUP III
Air Termination System

GROUP IV
Air Termination

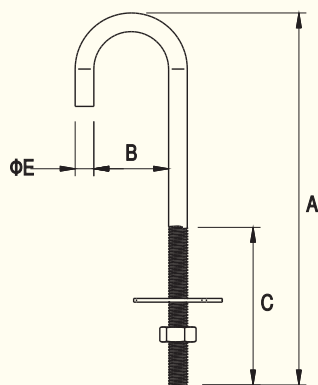
GROUP V
Air Termination: Masts, Spires, Isolated Conductors

GROUP VI
High Voltage Insulated Air Termination

GROUP VII
Accessories

GROUP VIII
Other Products

Boom Holder



For boom pipe mounting (94400101 page 75) and interception air rods mounting on concrete poles (96201005 page 54).

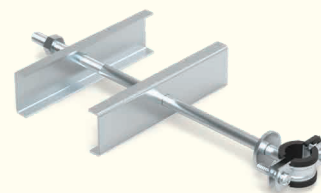
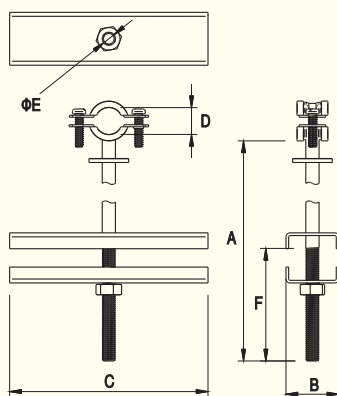


CAT. NUM.	TYPE	A	B	C	E
95800101	58.1	220	50	80	16
95800201	58.2	265	50	80	16

OC

Rubber Insert Distance Bracket

For cables or protective pipes mounting. Also to mount boom extension arm on concrete poles.



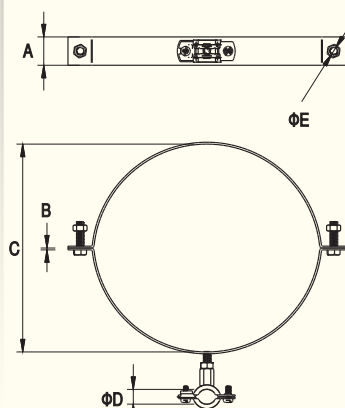
CAT. NUM.	TYPE	A	B	C	D	E	F	SCREW
93700101	37.1	250	40	150	∅ 15-19	10	75	2x M6x20
93700201	37.2	250	40	150	∅ 20-24	10	75	2x M6x20
93700301	37.3	250	40	150	∅ 25-30	10	75	2x M6x20
93700401	37.4	250	40	150	∅ 32-37	10	75	2x M6x20
93700501	37.5	250	40	150	∅ 48-53	10	75	2x M6x20
93700601	37.6	250	40	150	∅ 59-63	10	75	2x M6x20

OC

Different boom types available on pre-order.

Vortex Pole Distance Bracket

For round profiles mounting to vortex poles.



CAT. NUM.	TYPE	A	B	C	D	E	SCREW
10700101	107.1	30	4	240	32-37	9	2x M8x30

Alternative material options – change last two catalog number digits.

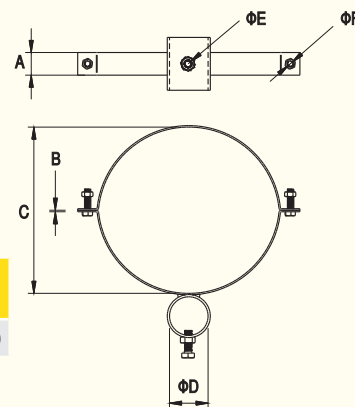
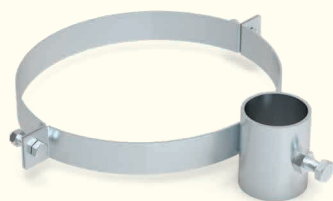
OC 01 MI 04 LA 16





Vortex Pole Extension Arm Clamp

For boom pipe mounting (94400101 page 75) and interception air rods mounting on vortex poles (96201005 page 54).



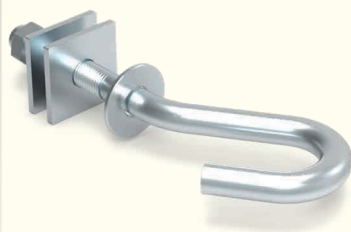
CAT. NUM.	TYPE	A	B	C	D	E	F	SCREW
10800101	108.1	30	4	240	51	M10	9	2x M8x30

Alternative material options – change last two catalog number digits.

OC	01	CU	03	LA	16
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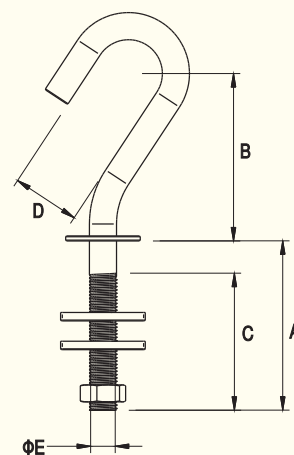
Hook Screw

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

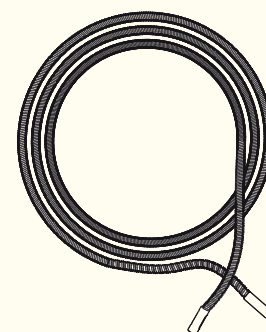
OC



Different boom types available on pre-order.

Installation Probe

For pulling electric cables through electro-installation pipes.



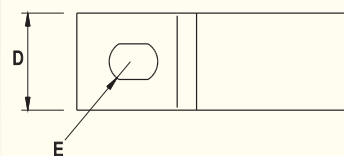
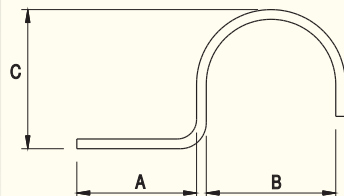
CAT. NUM.	TYPE	LENGHT
96900101	69.1	7,5 m
96900201	69.2	15 m





UJ Metal Holder

For various type pipe mounting: telecommunication, sanitary, electric installation, steel and PVC. Vast sizes range available. Galvanized or varnished at any colour.



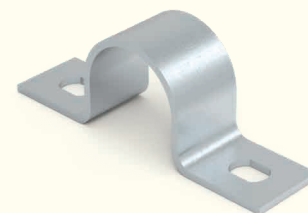
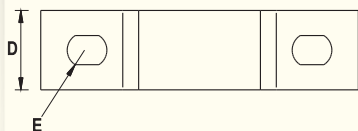
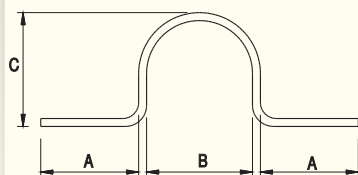
CAT. NUM.	TYPE	VERSION	A	B	C	D	E
94700101	47.1	UJ-16	15	16	14	15	5,5x8
94700201	47.2	UJ-18	15	18,6	16	15	5,5x8
94700301	47.3	UJ-20	15	20,4	18	15	5,5x8
94700401	47.4	UJ-22	15	22,5	20	15	5,5x8
94700501	47.5	UJ-28	15	28,3	26	16	5,5x8
94700601	47.6	UJ-32	15	32	30	20	5,5x8
94700701	47.7	UJ-37	15	37	35	20	5,5x8
94700801	47.8	UJ-47	15	47	45	20	5,5x8

Alternative material options – change last two catalog number digits.

OC 01 LA 16

UD Metal Holder

For various type pipe mounting: telecommunication, sanitary, electric installation, steel and PVC. Vast sizes range available. Galvanized or varnished at any colour.



CAT. NUM.	TYPE	VERSION	A	B	C	D	E
94800101	48.1	UD-16	15	16	14	16	5,5x8
94800201	48.2	UD-18	15	18,6	16	16	5,5x8
94800301	48.3	UD-20	15	20,4	18	16	5,5x8
94800401	48.4	UD-22	15	22,5	20	16	5,5x8
94800501	48.5	UD-28	15	28,3	26	16	5,5x8
94800601	48.6	UD-32	15	32	30	20	5,5x8
94800701	48.7	UD-37	15	37	35	20	5,5x8
94800801	48.8	UD-47	15	47	45	20	5,5x8
94800901	48.9	UD-40	15	40	42	20	5,5x8

Alternative material options – change last two catalog number digits.

OC 01 LA 16





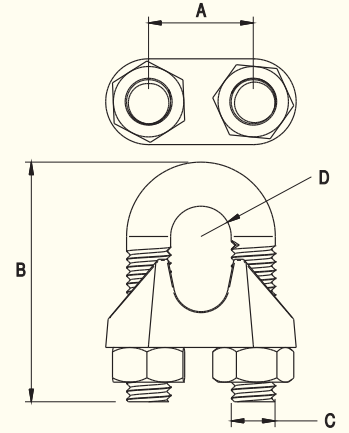
Rope Clamping Ring

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

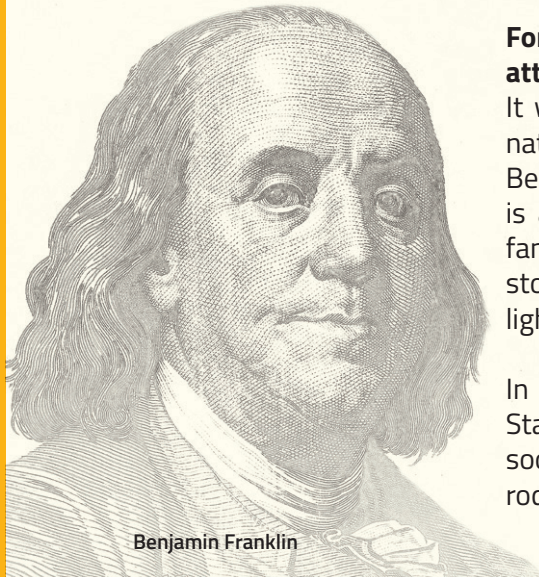
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*Nominal dimension



DO YOU KNOW, THAT...



Benjamin Franklin

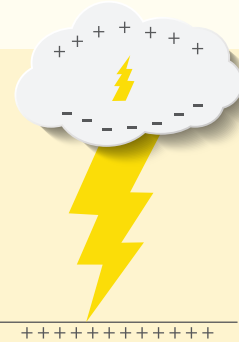
For centuries lightning strikes were attributed to magical background?

It was only eighteenth century when hypothesis on electrical nature of lightning strikes had been put forward, and in 1750. Benjamin Franklin proved the electrical nature of lightning. He is also considered as 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.



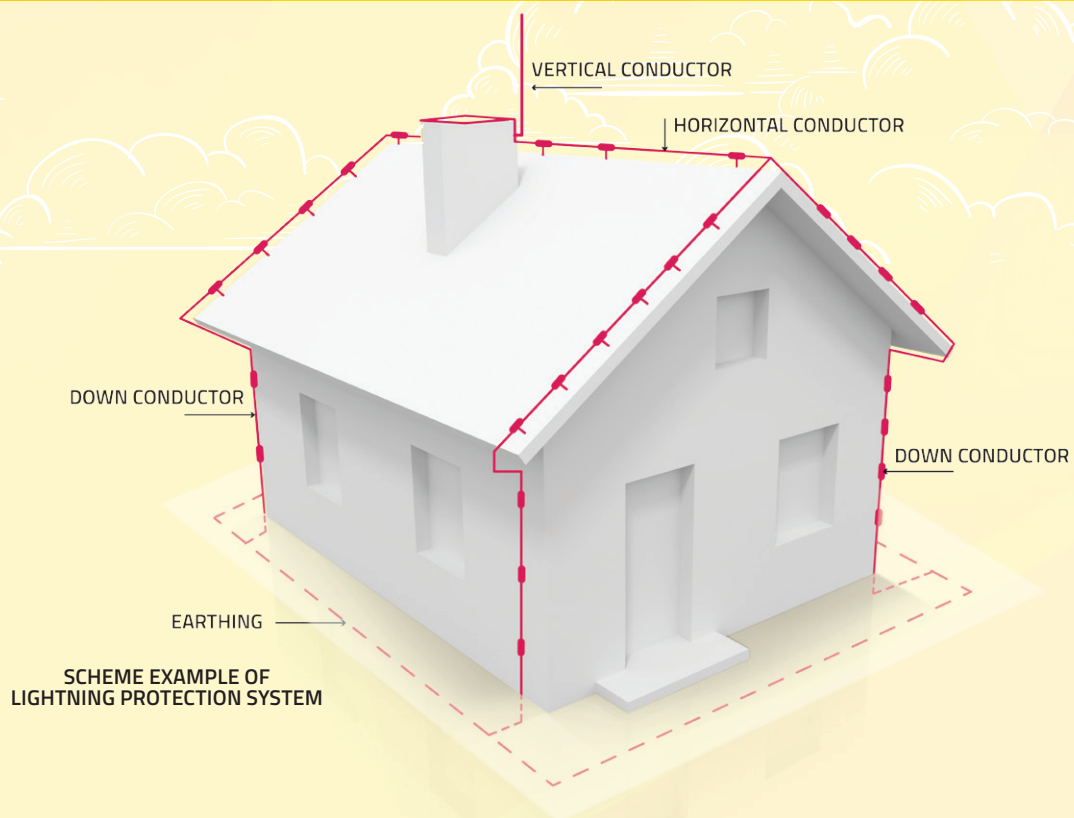
There are 4 types of Lightning Discharges:

- 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 of 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.

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 10 Ω at each control joint. The earth resistance must be confirmed /comply with post- implementation electric measurements.



ATTENTION!

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.



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 installations) together with service devices attached to object. Recommendations do not include: <ul style="list-style-type: none"> ▪ railway devices ▪ vehicles, ships, aircrafts, offshore installations ▪ 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. <ul style="list-style-type: none"> ▪ Designing, implementation, control and maintaining of LPS at buildings of any height. ▪ 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



REMEMBER!

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 assessed with direct lightning flash to an element of lightning protection system (thermal erosion, cables 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 PN-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.



PN-EN 50164 STANDARDS LIST

Standard Number*	Standard Title
PN-EN 50164-1:2010	Lightning Protection Components (LPC)- Part 1: Requirements for connection components
PN-EN 50164-2:2010	Lightning Protection Components (LPC)- Part 2: Requirements for conductors and earth electrodes
PN-EN 50164-3:2010	Lightning Protection Components (LPC)- Part 3: Requirements for isolating spark gaps
PN-EN 50164-4:2010	Lightning Protection Components (LPC)- Part 4: Requirements for conductor fasteners
PN-EN 50164-5:2010	Lightning Protection Components (LPC)- Part 5: Requirements for earth electrode inspection housing and earth electrode seals
PN-EN 50164-6:2010	Lightning Protection Components (LPC)- Part 6: Requirements for lightning strike counters
PN-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				
	$I_{imp} \pm 10\%$ [kA]	$W/R \pm 35\%$ [kJ/ Ω]	T_{-1} [μ s]	T_d [ms]
Connection load capacity				
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 μ s in accordance with PN-EN 62305-1.

CONNECTORS

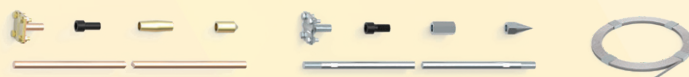


Intension of Lightning Connector is to connect two or more conductors, so the transfer of lightning current charge, is held without excessive damage to air terminals or installations. Connectors should be solid, durable and safe for people and nearby devices.

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 PN-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 PN-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.

BELOW TABLE SHEET PRESENTS PKOO PROPOSAL FOR PROTECTION LIGHTNING CLASS DETERMINATION

ITEM	DESCRIPTION OF FACILITY		PROTECTION CLASS/LEVEL		
	GENERAL FEATURE	TYPE OR INTENDED USE ^{a)}	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).



GROUP I
Connecting Components

GROUP II
Earthing & Equipotential Bonding

GROUP III
Air Termination System

GROUP IV
Air Termination

GROUP V
Air Termination: Masts, Spires, Isolated Conductors

GROUP VI
High Voltage Insulated Air Termination

GROUP VII
Accessories

GROUP VIII
Other Products

TECHNICAL INFORMATION



ELKO-BIS CALCULATION SHEET AND TABLES

We suggest using a trial version of Elko-Risk H1 to calculate risk for H1 case (cottage house) in accordance with PN-EN 62305 standard. To download the sheet, please visit www.elkobis.com. Designers expect simplified methods of specifying lightning protection class. Alternatively, following other European countries, it is possible to use the table which is PKOO's suggestion presented below.

H [M]	LPS I		LPS II		LPS II		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

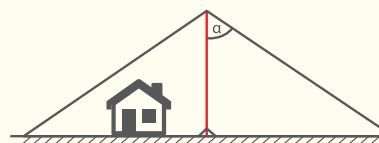
Methods of dimensioning the protection zones have remained unchanged in terms of their name for many years. Applicable since 2008, PN-EN 62305 standard introduced essential changes concerning dimensioning methods.

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.

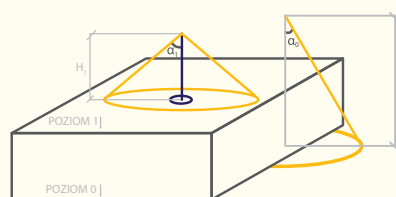
Sloping roofs and others

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 ball and protective angle. Both methods are equivalent in terms of reference plane height (H) specified in PN-EN 62305 standard.



Protective angle method

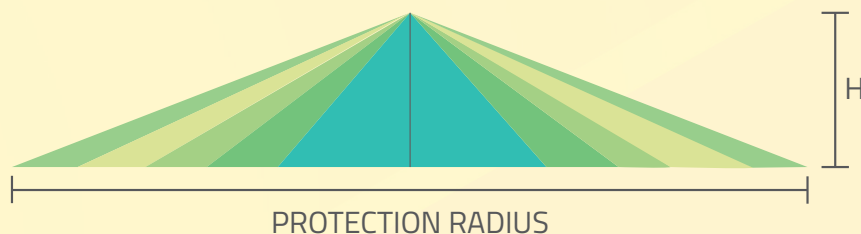
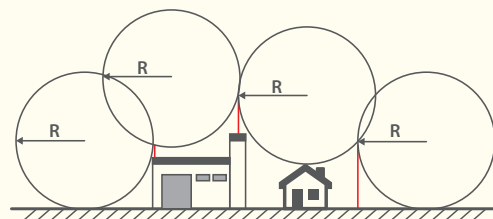
for LPS IV class, the method of protective angle (shielding angle) can be used for the reference plane height up to 60m. Most frequently the reference plane height is the height of the mast which protects the facility when the mast and the facility are at the same level. When the lightning mast and the facility are protected at various levels, the reference plane height is the total of mast height and level difference. The table below shows protection angle and radiuses for the method of shielding angle in LPS class and series of masts manufactured by Elko-Bis (see groups: air termination, interception masts, spires, insulated air terminals in the catalog from page 48).





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).

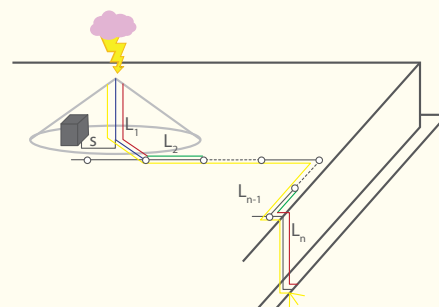


Example of protection zone for 6m interception mast.

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 PN-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 insulating clearance S in the simplest case can be calculated on the basis of the pattern below:

$$S \geq k_i \frac{k_c I}{k_m}$$

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 pattern shall apply:

$$S \geq \frac{k_i}{k_m} (k_{c1} I_1 + k_{c2} I_2 + \dots + k_{cn} I_n)$$

Elko Bis Calculation Sheet

On website there is calculation sheet called "Separation distance calculation" calculating separation distance based on above mathematical patterns.

Emergencies

When the calculated insulating clearance 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 insulating high-voltage system (catalog page 85) based on the high-voltage wire 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 insulating clearance is higher than 75cm, 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.pl/contact 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.





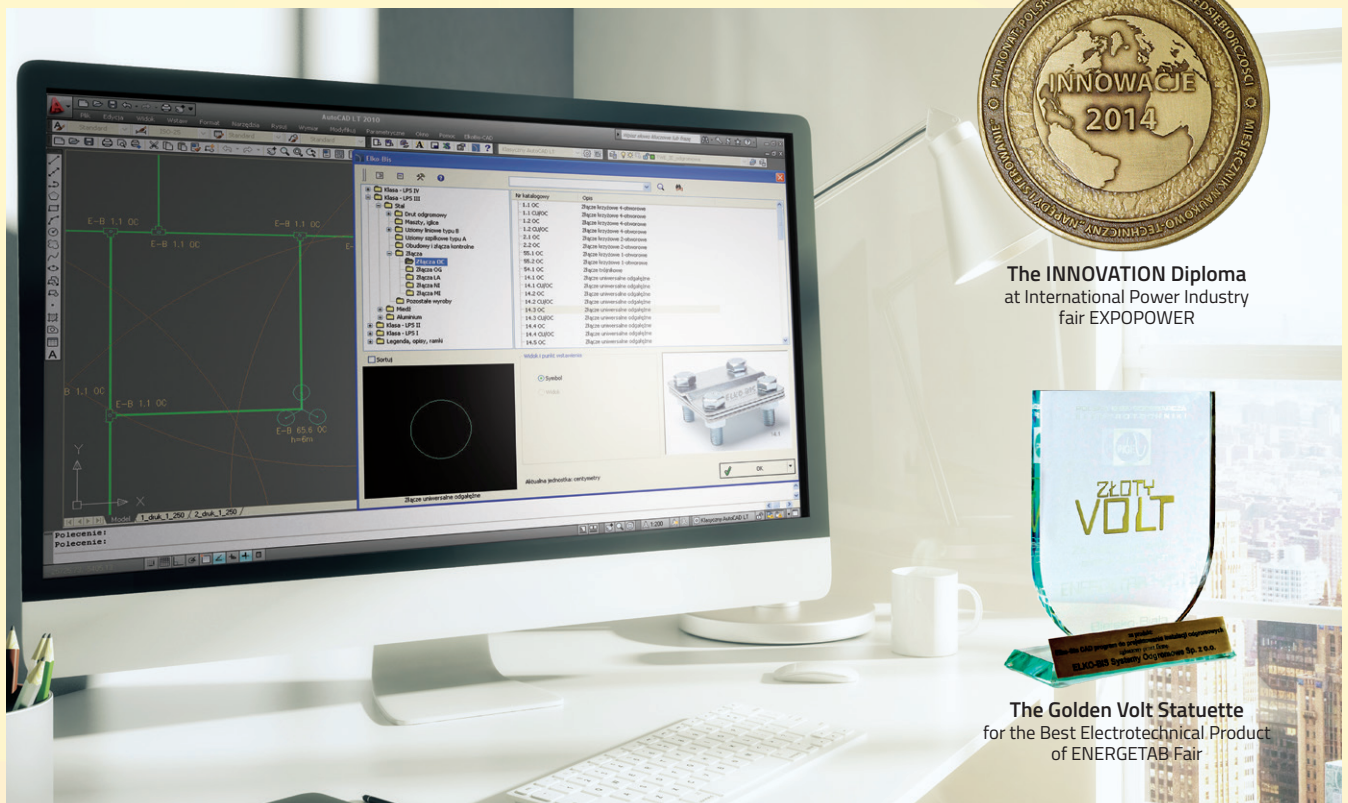
DESIGN USING ELKO-BIS CAD APPLICATION!

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, lightning protection systems author design overlay
- it is **free**, and user receives a lifetime license
- is recommended by Polish Lightning Protection Committee
- has been awarded the **prestigious Golden Volta** of International **ENERGETAB** Fairs
- It was created through cooperation of experienced ELKO-BIS designers and IT specialists
- 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 catalog
- is a user-friendly



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







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55.1	955001XX	Single Screw Cross Connection Clamp	13	64.08/S	964108XX	Drainage Pipe Holder	29	67.3/M16	96701305	Double Universal Piping Clamp	64
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56.1	95600109	Aluminum Control Connection Clamp	13	64.1/U NI	96432105	Non Corrosive Universal Clamp	29	68.1/SZ	96801108	Facade Control Pit	32
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59.1	959001XX	Universal Ridge Tile Wire Holder G5	40	64.4	964093XX	Earthing Clamp	23	68.4/B	96801408	Facade Control Pit	32
59.1B	959021XX	Universal Wire Holder	37	64.10	964010XX	Drainage Pipe Holder	29	68.4/BR	96804408	Facade Control Pit	32
59.1B/S	959121XX	Universal Wire Holder	37	64.10/P	964210XX	Drainage Pipe Plastic Clip Holder	29	68.4/K	96803408	Facade Control Pit	32
59.1 MAX	959011XX	Universal Ridge Tile Wire Holder G5 MAX	40	64.10/S	964110XX	Drainage Pipe Holder	29	68.4/SZ	96802408	Facade Control Pit	32
59.1/S	959101XX	Universal Ridge Tile Wire Holder G5	40	65.3WVM	96573005	Tripod High Voltage Interception Mast	69	69.1	96900101	Installation Probe	78
59.1/S MAX	959111XX	Universal Ridge Tile Wire Holder G5 MAX	40	65.4	965040XX	Tripod Concrete Base Interception Mast	49	69.2	96900201	Installation Probe	78
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59.2 MAX	959012XX	PVC Universal Ridge Tile Wire Holder G6 MAX	41	65.4WVM	96574005	Tripod High Voltage Interception Mast	69	70.15	970015XX	Chimney Spire	55
59.3	959003XX	Ridge Tile Wire Holder Gerard Corona/Senator	41	65.4Zi	96514005	Insulated Tripod Interception Mast	58	70.20	970020XX	Chimney Spire	55
59.3/S	959103XX	Ridge Tile Wire Holder Gerard Corona/Senator	41	65.4.1Zi	96544005	Insulated Interception Air Rod	59	70.30	970030XX	Chimney Spire	55
60.1	960001XX	Interception Air Rod Holder	54	65.5	965050XX	Tripod Concrete Base Interception Mast	49	71.1	971001XX	Tape Conductor Holder	21
60.2	960002XX	Interception Air Rod Holder	54	65.5/M	96565005	Steel Base Interception Mast	53	71.10	97101009	Double Ridge Tile Spire	56
60.4	96000401	U-screw Clamp Holder	57	65.5WVM	96575005	Tripod High Voltage Interception Mast	69	71.10/1	97111009	Single Ridge Tile Spire	56
60.5	96000505	Fastening Clamp	63	65.5Zi	96515005	Insulated Tripod Interception Mast	58	71.15	97101509	Double Ridge Tile Spire	56
60.6	96000601	Special Mast Holder	57	65.5.1Zi	96545005	Insulated Interception Air Rod	59	71.20	97102009	Double Ridge Tile Spire	56
60.7/M16	960007XX	Uchwyt masztu do obejm	55	65.6	965060XX	Tripod Concrete Base Interception Mast	49	72.1	972001XX	Marking Connection Clamp	13
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62.1	962010XX	Interception Air Rod	54	65.6Zi	96516005	Insulated Tripod Interception Mast	58	73.3	97300305	Plate Type Earthing Connector	21
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62.3	962030XX	Interception Air Rod	54	65.7	965070XX	Tripod Concrete Base Interception Mast	49	74.2	974002XX	Tape Conductor Holder	22
62.3 WVM	96223005	Steel High Voltage Interception Air Rod	69	65.7/M	96567005	Steel Base Interception Mast	53	74.2.1	974012XX	Tape Conductor Holder	22
62.3 WVP	96213005	High Voltage Interception Air Rod	68	65.7WVM	96577005	Tripod High Voltage Interception Mast	69	75.1	97500101	Hook screw	78
62.4	962040XX	Interception Air Rod	54	65.7Zi	96517005	Insulated Tripod Interception Mast	58	75.2	97500201	Hook screw	78
62.4WVM	96224005	Steel High Voltage Interception Air Rod	69	65.7.1Zi	96547005	Insulated Interception Air Rod	59	75.3	97500301	Hook screw	78
62.4WVP	96214005	High Voltage Interception Air Rod	68	65.8 NI	96508005	Five-pod Concrete Base Interception Mast	50	75.4	97500501	Hook screw	78
62.5	962050XX	Interception Air Rod	54	65.9 NI	96509005	Five-pod Concrete Base Interception Mast	50	75.5	97500601	Hook screw	78
62.5WVM	96225005	Steel High Voltage Interception Air Rod	69	65.10 NI	96531005	Five-pod Concrete Base Interception Mast	50	75.6	97500701	Hook screw	78
62.6	962060XX	Interception Air Rod	54	65.R	96530001	Mast Regulating Set	51	75.7	97500801	Hook screw	78
62.6WVM	96226005	Steel High Voltage Interception Air Rod	69	65.R.1	96540001	Mast Regulating Set	51	75.8	97500901	Hook screw	78
62.7WVM	96227005	Steel High Voltage Interception Air Rod	69	66.1	96600102	Masts Lighting Column Adapter	58	75.9	97501001	Hook screw	78
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75.15	97511501	Hook screw	78	99.1/B	999101XX	Metal sheet self drilling screw	70	308.2	30800201	Threaded Rod	67
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75.18	97511801	Hook screw	78	100.1EL	10000299	Electric Drive Wire Straightening Tool	73	311.1	31100110	Łącznik do przewodu wysokonapięciowego	67
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79.200	97920029	Separation Bar	59	102.1	10200199	Zinc spray	73	B 25X4 MI	82504004	Tape Conductor 25x4 MI	20
80.1	98000101	Separation Bar End Tip	61	104.1/2	10400208	Wire Assembly Lightning Pipe	29	B 25X4 OG	82504002	Tape Conductor 25x4 OG	20
80.2	98000201	Separation Bar End Tip	61	104.1/3	10400308	Wire Assembly Lightning Pipe	29	B 30X3,5 NI	83003505	Tape Conductor 30x3,5 NI	20
80.3	98000301	Separation Bar End Tip	61	105.1	10500108	coupling fitting	29	B 30X4 CU	83004003	Tape Conductor 30x4 CU	20
80.100	98010002	Insulated Support Bracket for Vertical Air Termination	61	105.2	10500208	Bent fitting	29	B 30X4 MI	83004004	Tape Conductor 30x4 MI	20
81.1	98100101	Straight Connector	61	106.1	10600199	Protective Spark Gap	73	B 30X4 OG	83004002	Tape Conductor 30x4 OG	20
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87.1	987001XX	Side Tensioning Holder	46	111.50	11105099	Anti-corrosive tape for earth connections	24	DR 6 OG	80000602	Wire Conductor 6 OG	25
87.2	987002XX	Straight Tensioning Holder	46	111.100	11110099	Anti-corrosive tape for earth connections	24	DR 8 AL	80000809	Wire Conductor 8 AL	25
88.1	988001XX	Horizontal Tensioning Holder	46	112.100	11210099	DENSO Tape	24	DR 8 CU	80000803	Wire Conductor 8 CU	25
92.1	99200199	Equipotential Bar	24	112.200	11220099	DENSO Tape	24	DR 8 MI	80000804	Wire Conductor 8 MI	25
-	99200210	Main Equipotential Bar	24	120.1	12000108	Plastic Clip Holder	27	DR 8 NI	80000805	Wire Conductor	25
93.1	99300199	ELKO-FIX Assembly Adhesive	71	120.2	12000208	Plastic Clip Holder distance bracket	27	DR 8 OG	80000802	Wire Conductor 8 OG	25
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95.1	99500199	Technical Vaseline	72	120.120	12012001	Screw	27				
96.0	996001XX	Seam Wire Holder	39	300.1	30000199	Insulated High Voltage Cable	65				
96.0/D AL	99602109	Universal large Seam Wire Holder	39	301.1	30100105	High Voltage Cable End Tip	65				
96.0/M AL	99603109	Universal small Seam Wire Holder	39	304.1	30400101	High Voltage Cable Holder	66				
96.0/P	996101XX	PVC Seam Wire Holder	39	304.2	30400201	High Voltage Cable Holder	66				
96.1	996002XX	Seam Wire Holder	39	305.1	30500101	High Voltage Cable Holder	66				
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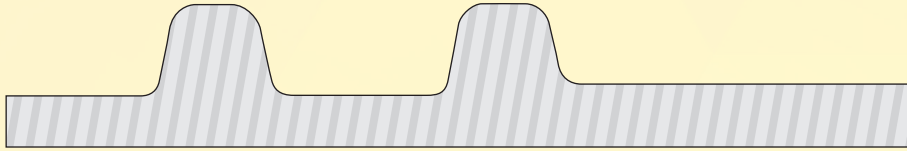
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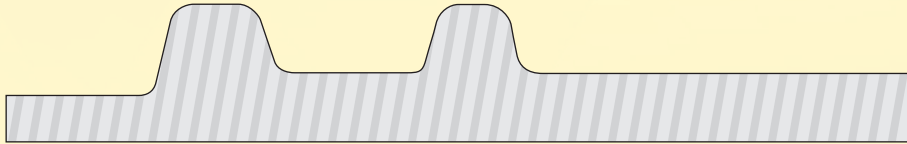
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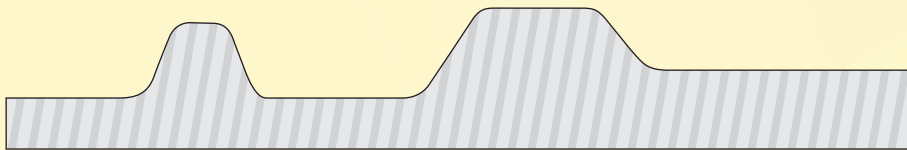
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Röben



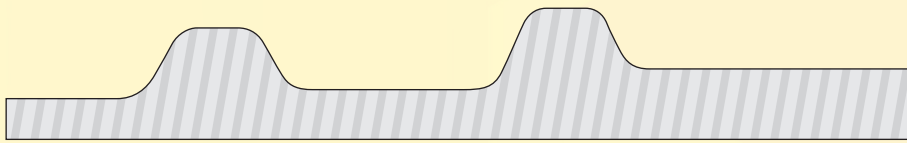
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Rupp Ceramika (Sirius)



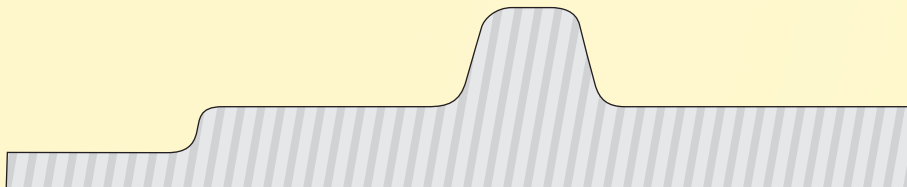
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Koramic L-15



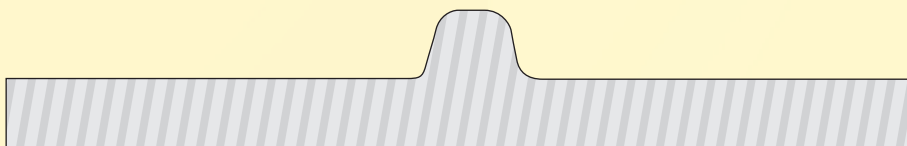
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Koramic L-25



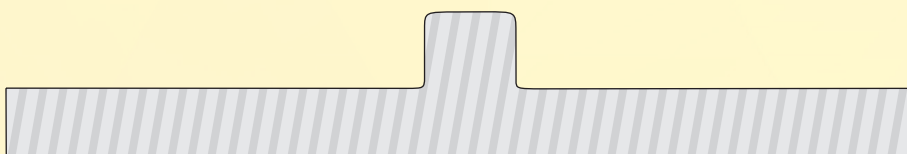
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Koramic Z185



6

Brass / Monza Plus




7

Creton





CATALOG NUMBERS


Product example	Cat. Num.	Type	Version	Roof Tile Type
	91005101	10.5	clinched	ROBEN
	91008101	10.5.1	clinched	ROBEN
	91006101	10.5/S	clinched	ROBEN
	91009101	10.5.1/S	clinched	ROBEN
	91105101	11.5	clinched	ROBEN
	91108101	11.5.1	clinched	ROBEN
	91106101	11.5/S	screwed	ROBEN
	91109101	11.5.1/S	screwed	ROBEN


Alternative material options – change last two catalog number digits.


OC	01	CU	03	NI	03	LA 3011	06
LA 3011	07	LA 9005	14	LA 8017	15	LA 3011	06


Product example	Cat. Num.	Type	Version	Roof Tile Type
	91005201	10.5	clinched	RUPP / SIRIUS
	91008201	10.5.1	clinched	RUPP / SIRIUS
	91006201	10.5/S	screwed	RUPP / SIRIUS
	91009201	10.5.1/S	screwed	RUPP / SIRIUS
	91105201	11.5	clinched	RUPP / SIRIUS
	91108201	11.5.1	clinched	RUPP / SIRIUS
	91106201	11.5/S	screwed	RUPP / SIRIUS
	91109201	11.5.1/S	screwed	RUPP / SIRIUS

Product example	Cat. Num.	Type	Version	Roof Tile Type
	91005301	10.5	clinched	KORAMIC L-15
	91008301	10.5.1	clinched	KORAMIC L-15
	91006301	10.5/S	screwed	KORAMIC L-15
	91009301	10.5.1/S	screwed	KORAMIC L-15
	91105301	11.5	clinched	KORAMIC L-15
	91108301	11.5.1	clinched	KORAMIC L-15
	91106301	11.5/S	screwed	KORAMIC L-15
	91109301	11.5.1/S	screwed	KORAMIC L-15

Product example	Cat. Num.	Type	Version	Roof Tile Type
	91005401	10.5	clinched	KORAMIC L-25
	91008401	10.5.1	clinched	KORAMIC L-25
	91006401	10.5/S	clinched	KORAMIC L-25
	91009401	10.5.1/S	screwed	KORAMIC L-25
	91105401	11.5	clinched	KORAMIC L-25
	91108401	11.5.1	clinched	KORAMIC L-25
	91106401	11.5/S	screwed	KORAMIC L-25
	91109401	11.5.1/S	screwed	KORAMIC L-25

Product example	Cat. Num.	Type	Version	Roof Tile Type
	91005501	10.5	clinched	KORAMIC Z18S
	91008501	10.5.1	clinched	KORAMIC Z18S
	91006501	10.5/S	screwed	KORAMIC Z18S
	91009501	10.5.1/S	screwed	KORAMIC Z18S
	91105501	11.5	clinched	KORAMIC Z18S
	91108501	11.5.1	clinched	KORAMIC Z18S
	91106501	11.5/S	screwed	KORAMIC Z18S
	91109501	11.5.1/S	screwed	KORAMIC Z18S

Product example	Cat. Num.	Type	Version	Roof Tile Type
	91005601	10.5	clinched	BRASS
	91008601	10.5.1	clinched	BRASS
	91006601	10.5/S	screwed	BRASS
	91009601	10.5.1/S	screwed	BRASS
	91105601	11.5	clinched	BRASS
	91108601	11.5.1	clinched	BRASS
	91106601	11.5/S	screwed	BRASS
	91109601	11.5.1/S	screwed	BRASS

Product example	Cat. Num.	Type	Version	Roof Tile Type
	91005701	10.5	clinched	CREATON
	91008701	10.5.1	clinched	CREATON
	91006701	10.5/S	screwed	CREATON
	91009701	10.5.1/S	screwed	CREATON
	91105701	11.5	clinched	CREATON
	91108701	11.5.1	clinched	CREATON
	91106701	11.5/S	screwed	CREATON
	91109701	11.5.1/S	screwed	CREATON

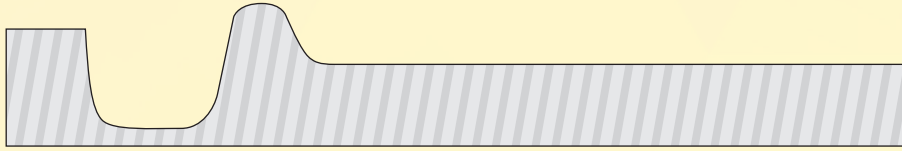
A detailed table of under tile holders applicability you will find at:

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More templates on the next page

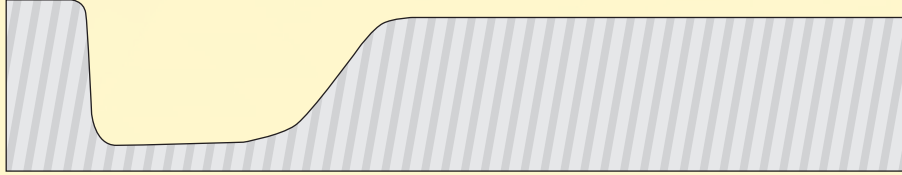


ROOF TILE TEMPLATE



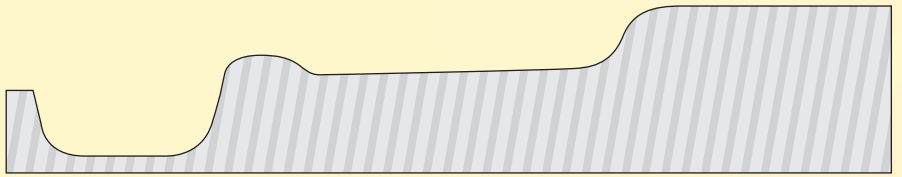
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Domino



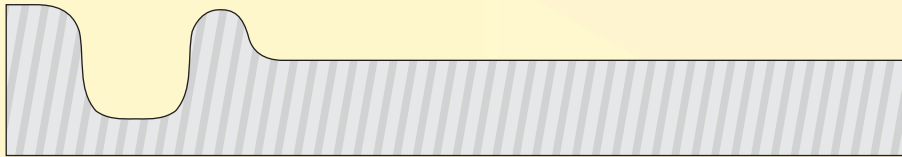
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Nibra



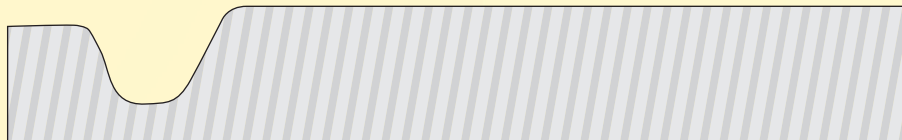
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Marsylka



11

Piano



12

Orea



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Sinfonie

**A detailed table of under tile holders applicability
you will find at:**

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Product example	Cat. Num.	Type	Version	Roof Tile Type
	91005801	10.5	clinched	DOMINO
	91008801	10.5.1	clinched	DOMINO
	91006801	10.5/S	clinched	DOMINO
	91009801	10.5.1/S	screwed	DOMINO
	91105801	11.5	clinched	DOMINO
	91108801	11.5.1	clinched	DOMINO
	91106801	11.5/S	screwed	DOMINO
	91109801	11.5.1/S	screwed	DOMINO


Alternative material options – change last two catalog number digits.


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LA 3011	07	LA 9005	14	LA 8017	15	LA 3011	06

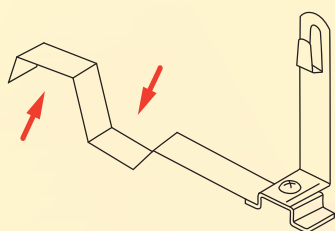
Product example	Cat. Num.	Type	Version	Roof Tile Type
	91005901	10.5	clinched	NIBRA
	91008901	10.5.1	clinched	NIBRA
	91006901	10.5/S	screwed	NIBRA
	91009901	10.5.1/S	screwed	NIBRA
	91105901	11.5	clinched	NIBRA
	91108901	11.5.1	clinched	NIBRA
	91106901	11.5/S	screwed	NIBRA
	91109901	11.5.1/S	screwed	NIBRA

Product example	Cat. Num.	Type	Version	Roof Tile Type
	91011801	10.5	clinched	MARSYLKA
	91012101	10.5.1	clinched	MARSYLKA
	91011901	10.5/S	screwed	MARSYLKA
	91012201	10.5.1/S	screwed	MARSYLKA
	91111801	11.5	clinched	MARSYLKA
	91112101	11.5.1	clinched	MARSYLKA
	91111901	11.5/S	screwed	MARSYLKA
	91112201	11.5.1/S	screwed	MARSYLKA

Product example	Cat. Num.	Type	Version	Roof Tile Type
	91010301	10.5	clinched	PIANO
	91010601	10.5.1	clinched	PIANO
	91010401	10.5/S	screwed	PIANO
	91010701	10.5.1/S	screwed	PIANO
	91110301	11.5	clinched	PIANO
	91110601	11.5.1	clinched	PIANO
	91110401	11.5/S	screwed	PIANO
	91110701	11.5.1/S	screwed	PIANO

Product example	Cat. Num.	Type	Version	Roof Tile Type
	91010801	10.5	clinched	OREA
	91011101	10.5.1	clinched	OREA
	91010901	10.5/S	screwed	OREA
	91011201	10.5.1/S	screwed	OREA
	91110801	11.5	clinched	OREA
	91111101	11.5.1	clinched	OREA
	91110901	11.5/S	screwed	OREA
	91111201	11.5.1/S	screwed	OREA

Product example	Cat. Num.	Type	Version	Roof Tile Type
	91011301	10.5	clinched	SINFONIE
	91011601	10.5.1	clinched	SINFONIE
	91011401	10.5/S	screwed	SINFONIE
	91011701	10.5.1/S	screwed	SINFONIE
	91111301	11.5	clinched	SINFONIE
	91111601	11.5.1	clinched	SINFONIE
	91111401	11.5/S	screwed	SINFONIE
	91111701	11.5.1/S	screwed	SINFONIE



See also **Tape Universal Under Tile Wire Holders** page 38

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