



Earthing protection

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# About CBM Technology company

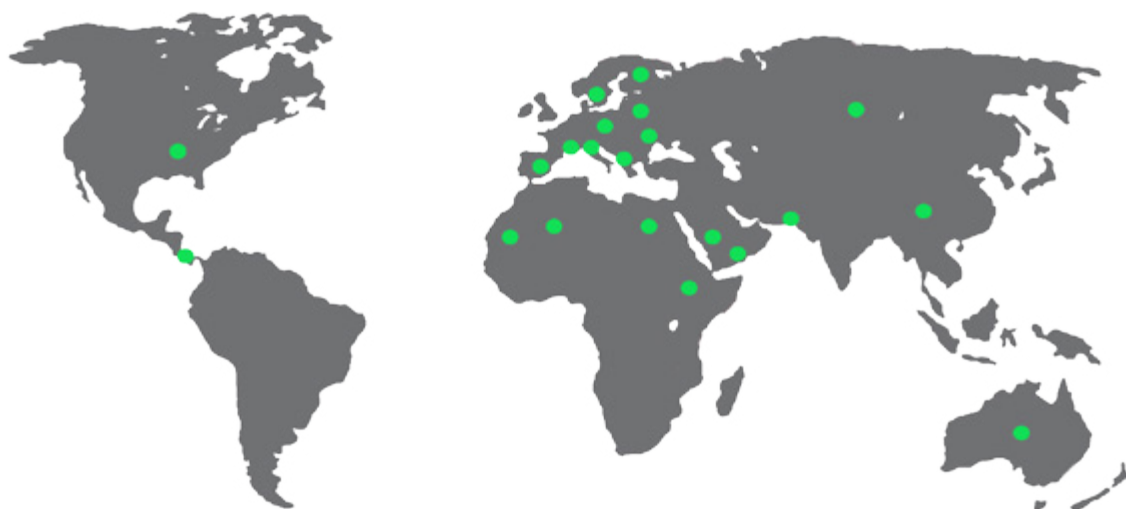
CBM Technology Sp. z o.o. is a manufacturer of earthing and lightning protection systems. Our main products are copper-bonded steel earthing rods, wires and tapes.

We have been developing our products for many years and therefore we can offer products which satisfy each and every need of our customers.

Copper-bonded steel earthing rods, wires and tapes have 30-year corrosion resistance and, in terms of quality and price, they can be placed between copper products and galvanised steel products.

Our products meet both European and International Standards such as IEC/EN 62305-3, IEC/EN 62561-1, IEC/EN 62561-2, HD 60364-5-54, EN 50522.

From its very beginning, the company's main aim was to improve quality of its products and provide its customers with wide technical support. This can be achieved thanks to the combination of long-standing experience and innovation introduced by young engineers.



## Products from CBM Technology compliant with the PN-EN 62561-2 standard

We are a manufacturer of copper-bonded steel rods, tape and wire with technical parameters accordance with the PN-EN 62561-2 Standard.

### **Steel copper-bonded tape and wire (St/Cu) and steel copper-bonded tinned tape and steel copper-bonded tinned wire (St/Cu/Sn)**

The min. 0.070 mm thick copper coating provides effective corrosion resistance for dozens of years, whereas the tinned coating makes it possible for our products to be used in slightly acid and acid soil, also maintaining the corrosion resistance for dozens of years.

### **Vertical copper-bonded forged rod with sealing-strengthening bush and threaded rod connected with a coupling**

The 0.250 mm thick copper coating is wear-resistant and it provides effective corrosion resistance for dozens of years.



### **The significance of the copper coating thickness**

The 0.250 mm thick copper coating on steel with a nickel sub-layer ensures the 30-year corrosion resistance in soil environment of copper-bonded earthing rods. The nickel sub-layer provides molecular connection of copper and steel and ensures the adherence and plasticity required under the PN-EN 62561-2 standard. The coating thickness plays the vital role in ensuring the 30-year corrosion resistance. During the process of driving the rod into the ground, the copper layer is exposed to the risk of scuffing but the excellent adherence to steel through the nickel sub-layer prevents the detachment of the coating from the steel core. The thickness of the copper coating, which is softer than nickel, may be reduced, however, the copper coating will always remain at least 0.150 mm thick.

Therefore, the industry standards provide for 0.250 mm copper coating in earthing rods and at least min. 0.070 mm in tapes and wires. Unlike earthing rods, tapes and wires are not exposed to mechanical damage during the installation in the ground. The 0.070 mm copper coating on the steel tape considerably decreases its resistivity, which makes it possible to use steel tapes of considerably smaller dimensions in facilities where earth fault currents occur. However, CBM Technology offers an additional tin coating (Sn) covering the copper coating so that our products can be used in acid soil and slightly acid soil.

## Earthing system

### Vertical rods

#### Vertical copper-bonded forged rod with sealing-strengthening bush

The 99.9% pure electrolytic copper bonded onto a drawn steel to a thickness of min 0.250 mm forms molecular and inseparable connection with the steel. The steel core has a high tensile strength of 600 N/mm<sup>2</sup>.

One end of the rod has decreased diameter by cold pressed this guarantees the same thickness of the copper layer on the whole length of the rod. The other end has a hole which enables the connection between the rods to increase the length.

The connection of the rods is protected by sealing bush made of stainless steel which provides additional mechanical strength to the connection. The rod pin is made by cold pressed this hardened the end of rod. Therefore there is no need to use the tip. Connection of the rods complies with the requirements of IEC/EN 62561-2 „Lightning protection components (LPSC). Requirements for conductors and earth electrodes“. To drive the rod into the ground, the driving stud and tup for mechanical driving or tup for hand driving must be used.

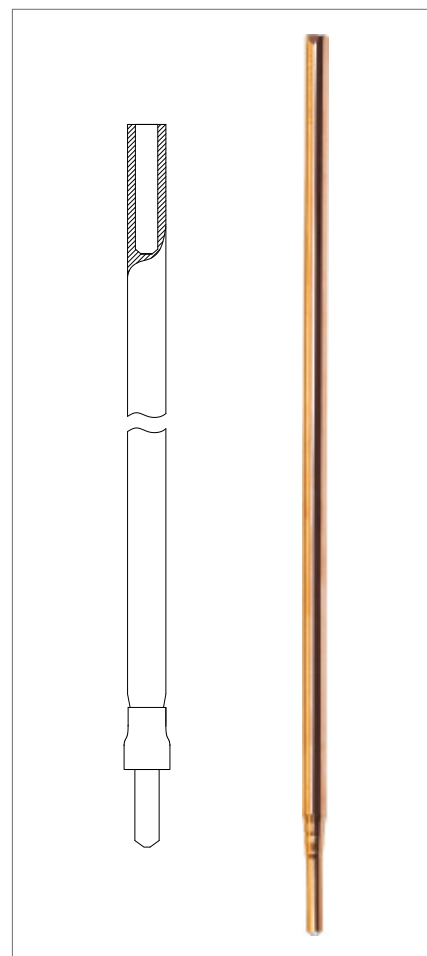
The sealing bush advantage:

- sealing the pin-feather key connection,
- strengthening the mechanical connection.

#### Vertical copper-bonded forged rod with sealing-strengthening bush

Cat. no.	Diameter of rod mm	Length* m	Material
C0000172	14.2	1.2	steel copper-bonded to thickness of 0.250 mm, sealing-strengthening steel bush
C0000175	14.2	1.5	
C0000195	16.0	1.5	
C0000185	17.2	1.5	

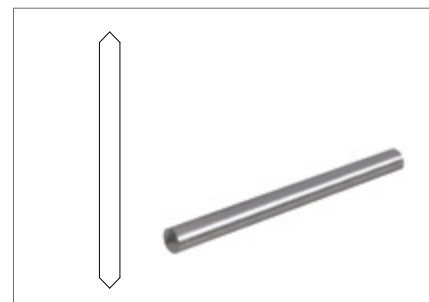
\* for special orders we supply different rod lengths up to 3 m



### Driving stud for forged rod

Driving stud is to transfer the vibrations from the tup to earth rod. It should be placed in the feather key of the rod and should be imbeded with the hammer

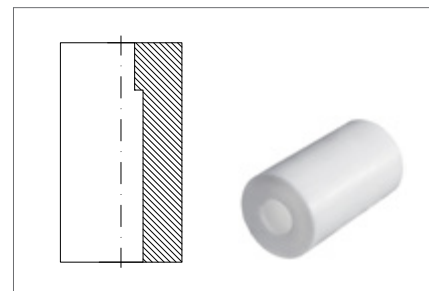
Cat. no.	Diameter of rod mm	Material
C1080375	14.2	steel
C1080395	16.0	
C1080385	17.2	



### The driving stud stabilizer to embed forged rods

The driving stud stabilizer makes it possible for the driving stud to be stroke centrally in the forged rod core when grounding

Cat. no.	Diameter of rod mm	Material
C1070375	14.2	teflon
C1070395	16.0	
C1070385	17.2	



### Tup for forged rod

Tup for forged rod transfers vibrations from the percussive hammer or hand hammer onto earth rod core through the driving stud placed in the feather key of the rod

Cat. no.	Diameter of rod mm	Application
C1090375	14.2; 16.0	for mechanical driving using hammers with SDS-Max fastening
C1090376		for hand driving
C1090377		for mechanical driving with Hilti TE 905 and TE 1000
C1090385	17.2	for mechanical driving using hammers with SDS-Max fastening
C1090386		for hand driving
C1090387		for mechanical driving with Hilti TE 905 and TE 1000



## Vertical copper-bonded earth rod/grounding rod

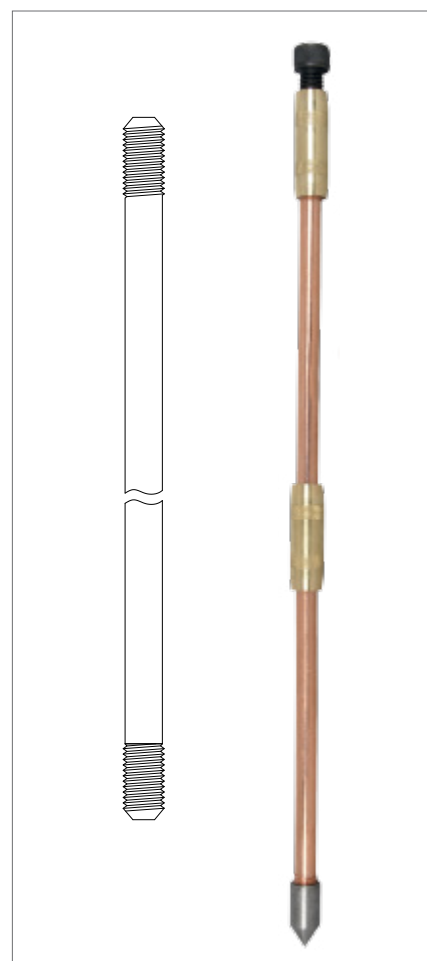
They are made of molecularly bonded 99.9% pure electrolytic copper onto a low carbon steel core. The steel core is a bar drawn to the required diameter. The rods are highly resistant to corrosion and because the steel used has a high tensile strength 600 N/mm<sup>2</sup>, they can be driven by vibrohammers to great depths. The copper jacket is **0.250 mm** thick at all points and it ensures a lifetime of more than 30 years.

The threads at the tips of a rod are rolled after copper bonding process, and both steel and copper are rolled into the thread, making it extremely strong. Connection of the rods using threaded coupling complies with the requirements of IEC/EN 62561-2 „Lightning protection components (LPSC). Requirements for conductors and earth electrodes”.

### Threaded earth rod dimensions

Cat. no.	Type of thread inch	Diameter of rod mm	Length of thread mm	Rod length*		Material
				feet	m	
C1000111	5/8 UNC	14.2	24	4	1.2	steel copper-bonded to thickness of 0.250 mm, sealing-streng- thening steel bush
C1000112				5	1.5	
C1000113				6	1.8	
C1000114				8	2.4	
C1000115				10	3	
C1000121	3/4 UNC	17.2	30	4	1.2	
C1000122				5	1.5	
C1000123				6	1.8	
C1000124				8	2.4	
C1000125				10	3	

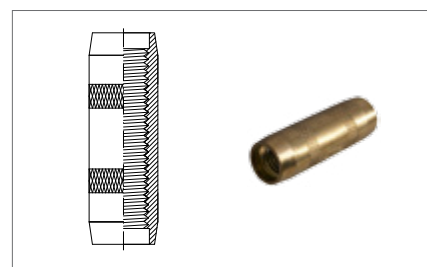
\* for special orders we supply different rod lengths up to 3 m



### Threaded coupling

Threaded coupling with counted bore for protecting the rod threads from damage

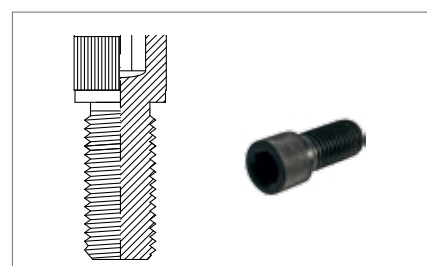
Cat. no.	Type of thread inch	Material
C1040302/60	5/8 UNC	brass
C1040303/72	3/4 UNC	



### Driving head

Suitable for both manual and power hammering. Can be re-used for many times

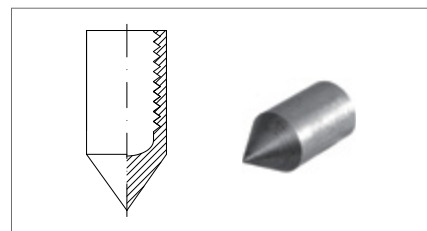
Cat. no.	Type of thread inch	Material
C1080302	5/8 UNC	steel
C1080303	3/4 UNC	



## Tip

Pointed hardened steel tip

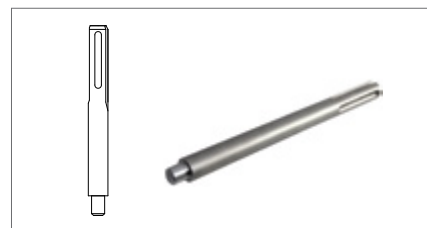
Cat. no.	Type of thread inch	Material
C1060302	5/8 UNC	steel
C1060303	3/4 UNC	



## Tup for threaded copper-bonded earth rod

Tup is to carry percussive hammer oscillations on driving head for threaded copper-bonded earth rod (for hammers with SDS-Max fitting only)

Cat. no.	Tup for driving head with thread type inch	Kind of driving head
C1090301	5/8; 3/4 UNC	with a hole



## Conductors

### Copper-bonded steel tape

Steel tape is molecularly bonded in electrolytic process with copper of thickness 0.070 mm. Copper coating protects against corrosion for the tens of years.

**Sale unit is kilogram, the tolerance of weight  $\pm 5\%$**

Cat. no.	X x Y mm	Length m	Material
C1100272(60M)	20 x 3	60	steel copper-bonded to thickness of Cu 0.070 mm
C1100273(40M)	25 x 3	40	
C1100274(30M)	25 x 4	30	
C1100279(40M)	30 x 3	40	
C1100275(30M)	30 x 4	30	
C1100281(20M)	40 x 4	20	
C1100283(20M)	40 x 5	20	





### Copper-bonded steel wire

Steel wire is molecularly bonded in electrolytic process with copper of thickness 0.070 mm. Copper coating protects against corrosion for the tens of years.

**Sale unit is kilogram, the tolerance of weight  $\pm 5\%$**

Cat. no.	Diameter mm	Length m	Material
C1110249	Ø 8	acc. to order	steel copper-bonded to thickness of 0.070 mm
C1110249(20M)	Ø 8	20	
C1110249(60M)	Ø 8	60	
C1110249(80M)	Ø 8	80	
C1110250	Ø 10	acc. to order	
C1110250(20M)	Ø 10	20	
C1110250(50M)	Ø 10	50	steel copper-bonded to thickness of 0.250 mm
C1110249C250	Ø 8	acc. to order	



### Tinned copper-bonded steel tape

Steel tape is molecularly bonded in electrolytic process with copper of thickness 0.070 mm and tin. Tin protective coating increases the corrosion resistance in every kind of aggressive soil and also protects against theft.

**Sale unit is kilogram, the tolerance of weight  $\pm 5\%$**

Cat. no.	X x Y mm	Length m	Material
C1100291(60M)	20 x 3	60	tinned copper-bonded steel, copper thickness min. 0.070 mm
C1100292(40M)	25 x 3	40	
C1100293(30M)	25 x 4	30	
C1100294(40M)	30 x 3	40	
C1100295(30M)	30 x 4	30	
C1100296(30M)	40 x 4	30	
C1100284(20M)	40 x 5	20	



### Tinned copper-bonded steel wire

Steel wire is molecularly bonded in electrolytic process with copper of thickness 0.070 mm and tin. Tin protective coating increases the corrosion resistance in every kind of aggressive soil and also protects against theft.

**Sale unit is kilogram, the tolerance of weight  $\pm 5\%$**

Cat. no.	Diameter mm	Length m	Material
C1110280	Ø 8	acc. to order	tinned copper-bonded steel, copper thickness min. 0.070 mm
C1110280(20M)	Ø 8	20	
C1110280(60M)	Ø 8	60	
C1110280(80M)	Ø 8	80	
C1110281	Ø 10	acc. to order	
C1110281(20M)	Ø 10	20	
C1110281(50M)	Ø 10	50	



## Foundation earthing system

### Copper-bonded steel tape

Steel tape is molecularly bonded in electrolytic process with copper of thickness 0.070 mm. Copper coating protects against corrosion for the tens of years.

**Sale unit is kilogram, the tolerance of weight  $\pm 5\%$**

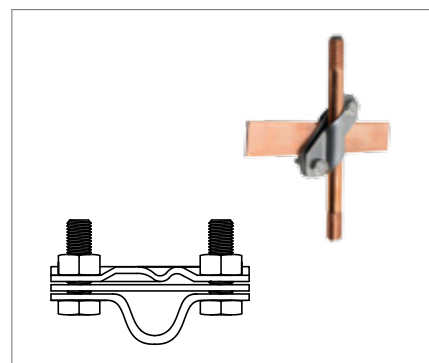
Cat. no.	X x Y mm	Length m	Material
C1100274(30M)	25 x 4	30	steel copper-bonded to thickness of 0.070 mm
C1100279(40M)	30 x 3	40	
C1100275(30M)	30 x 4	30	
C1100281(20M)	40 x 4	20	



### Skew clamps

Skew clamp universal, with stainless steel separator, to connect rod to tape or circular conductor (with stainless steel separator inside protecting from corrosion between copper and zinc when different metals are connected)

Cat. no.	Dimensions			Material
	rod St/Cu mm	tape parallel or squarely to rod mm	wire/cable parallel or squarely to rod mm <sup>2</sup>	
C1030428N	14.2; 16.0	$\leq 30$	28-78	stainless steel bolts M8
C1030429N	17.2	$\leq 30$	28-78	stainless steel 2 mm,

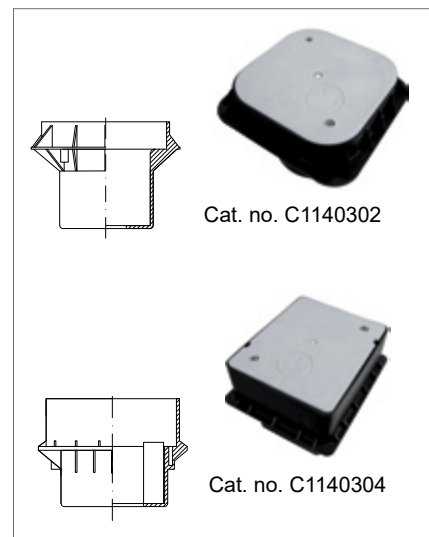


### Inspection pits

Enable to control rod – earthing conductor connections with no problems as well as to make time earth resistance measurements.

Pit C1140304 can be mounted in different kind of hardened surfaces (recommended for areas with setts because of specially designed reinforced flange). Pit C1140302 can be mounted in surfaces hardened with concrete or asphalt

Cat. no.	Dimensions length x width x height x depth mm	Material
C1140302	258 x 258 x 215 x 160	plastic pit with hardened cover
C1140304	260 x 215 x 210 x 110	

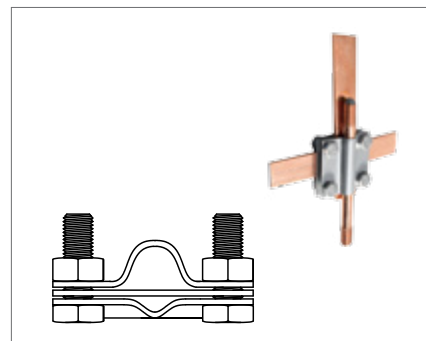


## Clamps

### Cruciform clamps

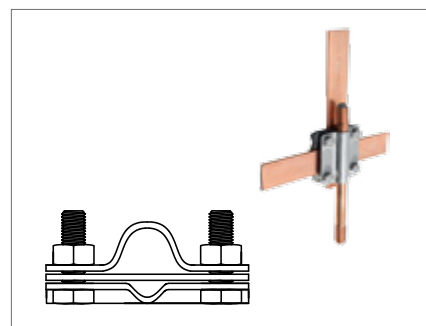
Cruciform clamp – profile, bolted M10 with stainless steel separator, to connect rod to galvanized tape or circular conductor (with stainless steel separator inside protecting from corrosion between copper and zinc when different metals are connected)

Cat. no.	Dimensions			Material
	rod St/Cu mm	tape mm	wire/cable mm <sup>2</sup>	
C1030432N	14.2; 16.0	≤ 40	28-78	stainless steel 2 mm, stainless steel bolts M10
C1030433N	17.2	≤ 40	28-78	



Cruciform clamp – profile, bolted M8 with stainless steel separator, to connect rod to galvanized tape or circular conductor (with stainless steel separator inside protecting from corrosion between copper and zinc when different metals are connected)

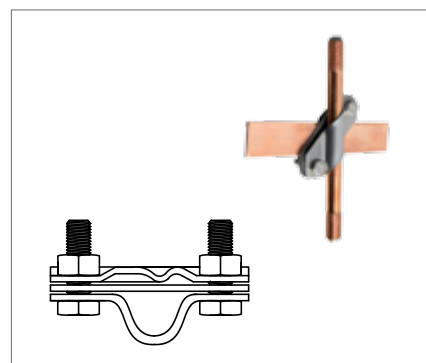
Cat. no.	Dimensions			Material
	rod St/Cu mm	tape mm	wire/cable mm <sup>2</sup>	
C1030495N	14.2; 16.0	≤ 40	28-78	stainless steel 2 mm, stainless steel bolts M8
C1030496N	17.2	≤ 40	28-78	



### Skew clamps

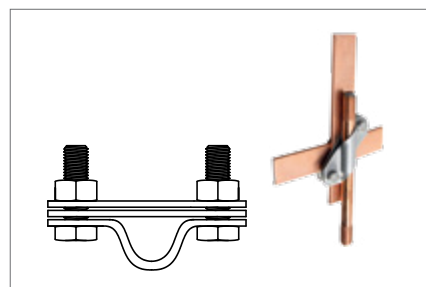
Skew clamp universal, with stainless steel separator, to connect rod to tape or circular conductor (with stainless steel separator inside protecting from corrosion between copper and zinc when different metals are connected)

Cat. no.	Dimensions			Material
	rod St/Cu mm	tape parallel or squarely to rod mm	wire/cable parallel or squarely to rod mm <sup>2</sup>	
C1030428N	14.2; 16.0	≤ 30	28-78	stainless steel 2 mm, stainless steel bolts M8
C1030429N	17.2	≤ 30	28-78	



Skew clamp, with stainless steel separator, to connect rod to tape parallel or squarely. Clamp ensures good contact of rod and tape

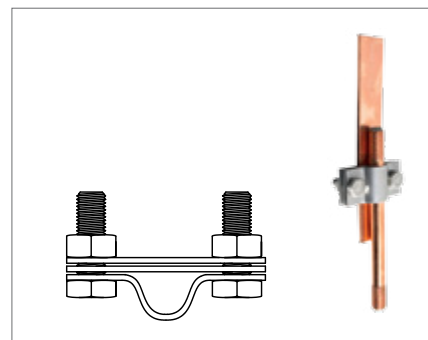
Cat. no.	Dimensions		Material
	rod St/Cu mm	tape parallel or squarely to rod mm	
C1030478N	14.2; 16.0	≤ 40	stainless steel 2 mm, stainless steel bolts M8
C1030479N	17.2	≤ 40	



## Terminal clamp

Terminal clamp – flat, bolted 2 x M10, with stainless steel separator inside, enables to connect rod to tape. Stainless steel separator inside protects from corrosion between copper and zinc when different metals are connected

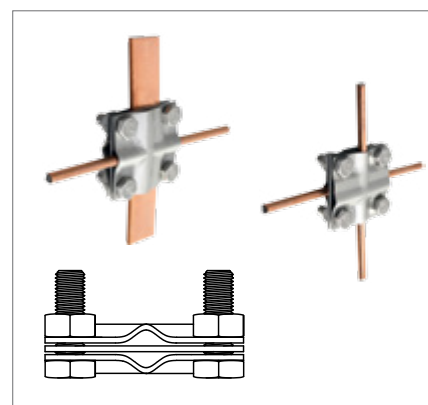
Cat. no.	Dimensions		Material
	rod St/Cu mm	tape mm	
C1030472N	14.2; 16.0	≤ 40	stainless steel 2 mm, stainless steel bolts M10
C1030473N	17.2	≤ 40	stainless steel 2 mm, stainless steel bolts M10



## Cruciform clamps

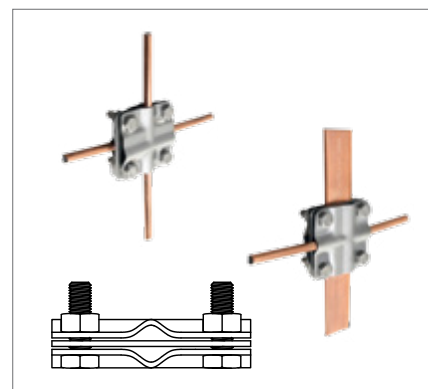
Cruciform clamp to connect conductor to conductor, bolted M10. Clamp enabling connection of two conductors

Cat. no.	Dimensions		Material
	tape St/Cu mm	wire mm <sup>2</sup>	
C1030442N	≤ 40	28-78	stainless steel 2 mm, stainless steel bolts M10



Cruciform clamp to connect conductor to conductor, bolted M8. Clamp enabling connection of two conductors

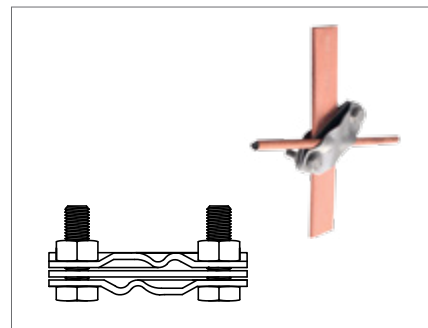
Cat. no.	Dimensions		Material
	tape St/Cu mm	wire mm <sup>2</sup>	
C1030405N	≤ 40	28-78	stainless steel 2 mm, stainless steel bolts M8



## Skew clamps

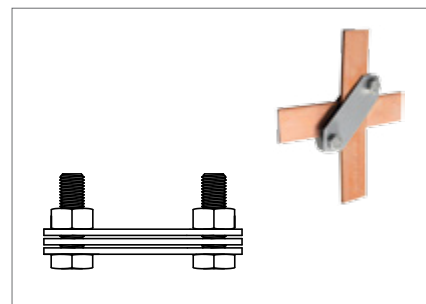
Skew clamp universal to connect rod to tape or circular conductor (with stainless steel separator inside protecting from corrosion between copper and zinc when different metals are connected)

Cat. no.	Dimensions		Material
	tape St/Cu mm	wire mm <sup>2</sup>	
C1030430N	≤ 40	28-78	stainless steel 2 mm, stainless steel bolts M8



Skew clamp, flat, to connect tape with tape, bolted 2 x M8

Cat. no.	Dimensions		Material
	tape St/Cu mm	tape mm	
C1030431N	≤ 40	≤ 40	stainless steel 2 mm, stainless steel bolts M8



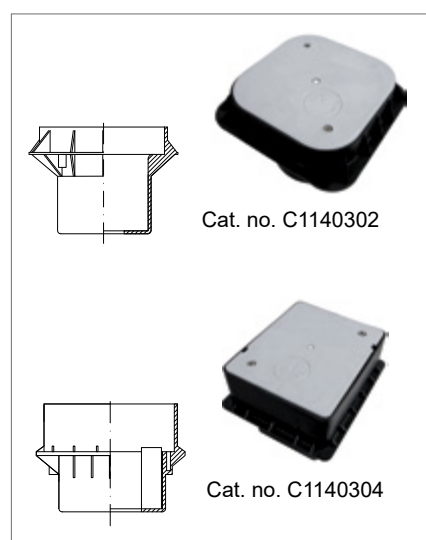
## Additional accessories

### Inspection pits

Enable to control rod – earthing conductor connections with no problems as well as to make time earth resistance measurements.

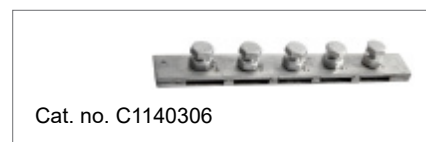
Pit C1140304 can be mounted in different kind of hardened surfaces (recommended for areas with setts because of specially designed reinforced flange). Pit C1140302 can be mounted in surfaces hardened with concrete or asphalt

Cat. no.	Dimensions		Material
	length x width x height x depth mm		
C1140302	258 x 258 x 215 x 160		plastic pit with hardened
C1140304	260 x 215 x 210 x 110		cover



### Inspection pit earth bar for plastic pits C1140302 and C1140304

Pits number: C1140302 and C1140304 can be equipped with equipotential earth bar enables connection of five bus bars (tapes) of max. size 30 x 4 mm. Earth bar fit into the slots provided in the inspection pit.



### Lubricating medium for couplings of threaded earthing rods

It is used for additional protection of contacts inside coupling. When connecting rods with coupling, we recommend to pour little paste into coupling. It can also be used as lubricating medium for driving stud making it easy to screw it out.



### Protective sleeve

When galvanized tape is connected to copper or to copper plated element buried underground, this sleeve is to protect galvanized tape from electrochemical corrosion.



## Insulating tape for wrapping underground joints

Insulating tape protects underground connections from soil and electrochemical corrosion

Cat. no.	Width mm	Length m
C1030355	30	10
C1030356	50	10



## CBM Resistivity

CBM Resistivity is fine powder which increases surface area of earth electrode thus reducing resistance to earth.

It is being sold in the bags of 25 kg each. Before using it needs to be mixed with Portland cement before using in following proportion:

CBM Resistivity : cement  
3 : 1



Cat. no. C1070302

## CBM Discharge Counter

Lightning strike counter LSC-01 is a unit dedicated to mount on downconductors of lightning protection system in order to indicate and record time of direct lightning strike to the structure.

### Advantages:

- tested in accordance with PN-EN 62561-6:2011
- maximum withstand discharge current 100 kA 10/350 µs
- registration of the number and time of discharges
- easy assembly
- battery powered
- small dimensions

### Application:

- radiocommunication towers
- industrial buildings
- energy buildings
- residential construction



Cat. no. C2000350

## Steel tape and wire bending tools

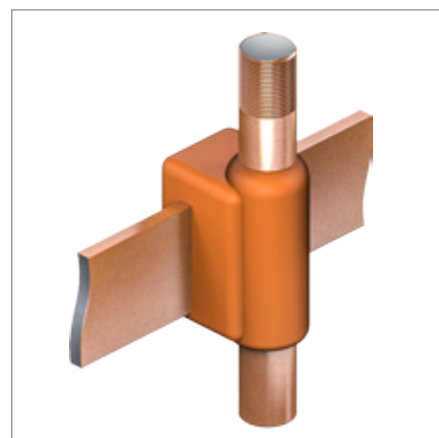
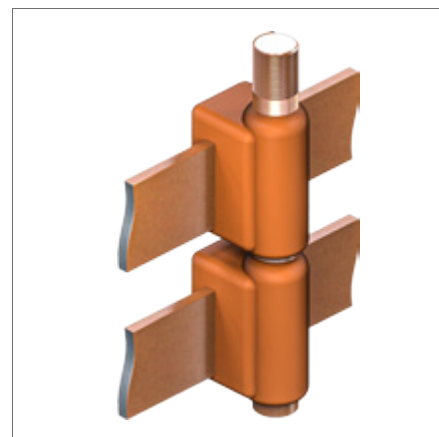
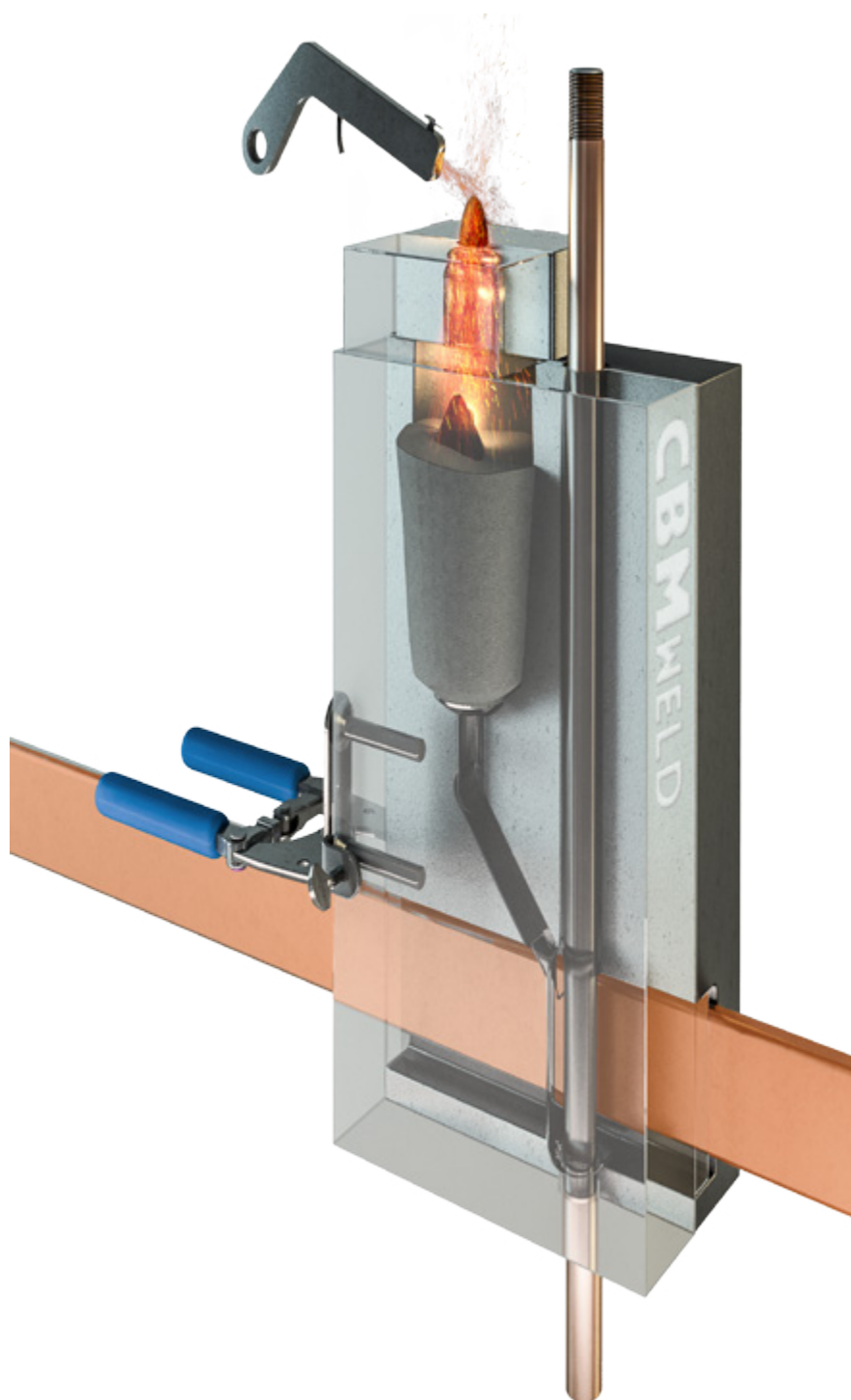
The manual bending tool is a simple failure-free device which provides a wide range of possibilities in bending wires and tapes at 90 degrees. Thanks to its compact design and small size, it is perfect for bending wires at construction sites, trenches and power stations. The bending tool is intended for copper-bonded steel wires with the following dimensions: copper-bonded flat bar: 3-5 x 25-40 mm, copper-bonded wire: 8-10 mm.

The manufacturer is not liable for any damage to the bending tools if it is used for bending tapes and wires other than those manufactured by CBM Technology. Furthermore, the manufacturer is not liable for any damage to protective layer of tapes and wires other than those manufactured by CBM Technology.

Cat. no.	Dimensions length x width x height mm	Application
C1140350B	530 x 120 x 80	bending tape
C1140350D	530 x 120 x 80	bending wire



# CBMWELD



[www.cbm-weld.pl](http://www.cbm-weld.pl)



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C0000172	4	C1090377	5
C0000175	4	C1090385	5
C0000185	4	C1090386	5
C0000195	4	C1090387	5
C1000111	6	C1100272(60M)	7
C1000112	6	C1100273(40M)	7
C1000113	6	C1100274(30M)	7, 9
C1000114	6	C1100275(30M)	7, 9
C1000115	6	C1100279(40M)	7, 9
C1000121	6	C1100281(20M)	7, 9
C1000122	6	C1100283(20M)	7
C1000123	6	C1100284(20M)	8
C1000124	6	C1100291(60M)	8
C1000125	6	C1100292(40M)	8
C1030355	13	C1100293(30M)	8
C1030356	13	C1100294(40M)	8
C1030358	13	C1100295(30M)	8
C1030405N	11	C1100296(30M)	8
C1030428N	9, 10	C1110249	8
C1030429N	9, 10	C1110249(20M)	8
C1030430N	11	C1110249(60M)	8
C1030431N	12	C1110249(80M)	8
C1030432N	10	C1110249C250	8
C1030433N	10	C1110250	8
C1030442N	11	C1110250(20M)	8
C1030472N	11	C1110250(50M)	8
C1030473N	11	C1110280	8
C1030478N	10	C1110280(20M)	8
C1030479N	10	C1110280(60M)	8
C1030495N	10	C1110280(80M)	8
C1030496N	10	C1110281	8
C1040302/60	6	C1110281(20M)	8
C1040303/72	6	C1110281(50M)	8
C1060302	7	C1130301	12
C1060303	7	C1140302	9, 12
C1070302	13	C1140304	9, 12
C1070375	5	C1140306	12
C1070385	5	C1140350B	14
C1070395	5	C1140350D	14
C1080302	6	C2000350	13
C1080303	6		
C1080375	5		
C1080385	5		
C1080395	5		
C1090301	7		
C1090375	5		
C1090376	5		