DEHN + SÖHNE

Lightning Protection
Earthing

Catalogue 2011/2012

New Products

Air-termination Masts for HVI Conductors

- For attachment mounting at the conductor holder for rafters
- Optically adjusted inside laying of the HVI conductor or HVI conductor light
- Sub-roof installation – visually not recognizable
- Attachment mounting with only one visible tube

see page 90

Conductor Holder for Rafters

- For lateral fixing of DEHNcon-H supporting tube (Ø40 mm)
- HVI conductor inside the supporting tube (Ø50 mm)
- For attachment mounting of the supporting tubes and for sub-roof installation of the HVI conductor or HVI conductor light

see page 89

Air-termination Stud

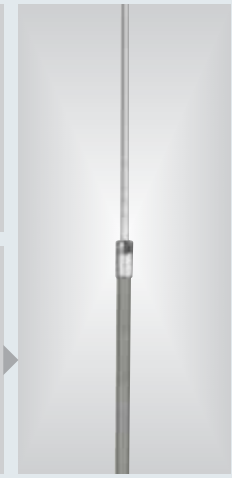
- For implementing air-termination systems according to the mesh method, for walkable and drivable flat roofs e.g. parking decks
- Material StSt

see page 32

Air-termination Rods GRP/Al

- Combined air-termination rods made of glass-fibre reinforced plastic and aluminium for keeping the separation distance
- For wedge mounted concrete base
- Ready-to-install

see page 50



DEHNiso Roof Conductor Holders

- Variable program of holders for the installation of conductors on flat roofs, for keeping the separation distance
- Spacer bar made of glass-fibre reinforced plastic (GRP Ø10 mm)

see page 52

FS Clamps

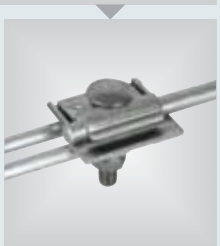
- For connecting of air-termination rods/air-termination spikes with one or two conductors
- With special pressure disc for longitudinal and cross connection
- Connection of two conductors provides better distribution of lightning current

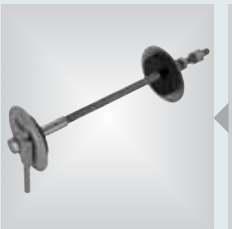
see page 158

Connecting Set for Safety Rope System

- For connecting safety rope systems at roof superstructures with the existing air-termination system
- With mounted terminal lug for the safety rope
- With clamping frame for the air-termination system
- Tested according to EN 50164-1

see page 163





Earth Electrode and Wall Bushings

- Design for subsequent installation through bore (Ø14 mm) or if necessary through the formwork spreading
- Pressure water tested up to 1 bar
- Ready-to-install with MV clamp
- Earth-contact components made of StSt (V4A)

see page 185

UNI Earthing Clamps

- For integrating the mounting systems e.g. of PV systems into the functional equipotential bonding/functional earthing and lightning equipotential bonding
- With StSt contact plate for different materials (Cu, Al, St/tZn and StSt)
- For single/stranded conductors 4-50 mm² and Rd 8-10 mm

see page 209

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DEHN – Safety with Tradition

At first there was the idea of diverting lightning to the ground without risk for house and home. This was the challenge, Hans Dehn met in his company founded in Nuremberg in 1910. Since the beginning of the 1920s DEHN has produced lightning protection and earthing components. Over the years, a diversified product range for external lightning protection came into existence.

However, not only protecting systems and buildings against the effects of lightning, but also the protection of people installing and maintaining electrical systems became a central requirement.

In 1952, DEHN + SÖHNE extended production by the safety equipment product range, i. e. safety devices for working in/at electrical systems/installations.

The entering of electrical and electronic equipment in industries, administrations and households showed soon, that conventional lightning protection was not sufficient to protect these devices. With the experience of decades in the field of external lightning protection, the necessity of surge protection came up. Therefore, the first generation of surge protective devices (SPDs) of DEHN + SÖHNE was introduced to the market in 1954.

For more than 100 years now DEHN has been committed to the topic of safety. Our concern is the protection against the consequences of the lightning force of nature, the protection against surges and the safety when working with electricity – a triumvirate in terms of safety.

On the Neumarkt site meanwhile more than 4000 components and devices of the product groups

Surge Protection,
Lightning Protection / Earthing and
Safety Equipment

are being developed, produced and marketed. With a great deal of engineering competence and know-how components and modules are turned into comprehensive and tailored protection concepts and solutions.

DEHN + SÖHNE is a booster of technological progress. We do intensive, application-related research work for customized solutions. The performance parameters of our impulse current test laboratories are unique worldwide.

With the experience in research and development, production, quality assurance and application of components for lightning and surge protection as well as safety equipment, we have influenced national and international standardisation considerably.

Trends are recognized at an early stage. Our most important aim is to stipulate a maximum quality and safety level. This has made DEHN + SÖHNE known as a brand of quality far beyond the borders of Germany.

Now already under the forth generation DEHN continues to be a sound and healthy, modern, medium-sized family-owned company with approx. 1400 employees and a broadly based global sales network in more than 70 countries.

Regardless of how changeful and drastic history was, DEHN has always counted on continuity in connection with a sense of responsibility, on high quality standards, on innovative thinking and action, on industriousness and a sense for what is feasible.

...your safety is our concern.

Our products protect human lives and material assets. High quality requirements and awareness in the treatment of the environment is therefore a must. In order to ensure this and make it also transparent for you as our customer, the company was certified according to EN ISO 9001 and EN ISO 14001. Annual examinations and complete reaudits every three years show the central significance of quality and environmental management in the company. We cooperate intensively with international and national standard committees and take part in congresses worldwide. We are active members of the "Ausschuss fur Blitzschutz und Blitzforschung" (ABB) [Commission for Lightning Protection and Research] and "Verband Deutscher Blitzschutzfirmen (VDB)" [Association of German Lightning Protection Companies]. Thus, we foster nationally and internationally the aims and further development of lightning protection. Our aim is to provide sophisticated, customer-orientated solutions to increase the economy of companies. Only those who are accessible can be quick, flexible and efficient. We provide you with the necessary safety. DEHN + SÖHNE supplies equipment and provides services covering lightning and surge protection as well as safety equipment worldwide.

We have committed ourselves to continuous market presence, productivity, product quality and delivery in time. Proximity to customers is an essential prerequisite for the developement of innovative and market orientated products. Spirit of innovation, flexibility and short decision making processes are features of DEHN + SÖHNE and beneficial to customers worldwide. Only the adjustment to regional and local conditions ensures success on the market. DEHN market presence means: 17 sales offices and 4 outlets in Germany, subsidiaries or representatives in more than 70 countries. Besides continuous participation in national and international fairs, DEHN + SÖHNE offers extensive technical support and customer service on site. We also organise seminars and lectures, provide detailed information and designing material, expert contributions to trade publications and a steady PR work on the subject of lightning and surge protection as well as safety equipment.

...Your safety is our concern.
This not only applies to the protective features and benefits of our products, but also to the relation-ship with our customers and suppliers. You always can be sure, we are your reliable partner.

DEHN – keeping you informed

Already in 1752 Benjamin Franklin discovered that lightning is an electrical phenomenon. The invention of the lightning conductor is based on his contribution. It is common knowledge today that lightning protection is more than just an assembly of an air termination system, down conductors and earth termination system. An extensive protection system is needed which is defined and illustrated in standards. The current standard series EN 62305 is an internationally approved standard. It is binding, both legally and technically. This standard series represents a complete and comprehensive concept for lightning protection.

DEHN + SÖHNE offers components and devices for complete lightning protection systems. Lightning protection components used for the external lightning protection system have to meet certain mechanical and electrical requirements which are specified in the standard series EN 50164-x. Our products of course are manufacutred and tested accordingly.

Our aspriation and intention now and in future especially for our customers interests is to be always one step ahead of the state of engineering and to be better.
In our highly specialized laboratories the active parameters of lightning can be simulated and thus installations/ systems can be tested for lightning safety and upgraded if necessary.
Special solutions for lightning and surge protective systems can anytime be tested and analysed in our laboratories. Certainly we test in accordance with the current international and national standards. In addition we have been working in international and national standard committees for decades. Thus you can be sure that most modern devices are our tools and our knowledge is based on the current state of standarization. Implementation of a functional lightning protection system requires the application of standard conform tested components and devices. The installer of lightning protection systems has to choose the components in accordance with the requirements of the installation site and to install them correctly. Supplementary to the mechanical requirements the electrical criteria have to be minded and complied with in present lightning protection engineering.
For your safety DEHN + SÖHNE offers tests and analyses of lightning protection and surge protection systems.

IEC 62305 / EN 62305 Protection against lightning	
Part 1:	General principles
Part 2:	Risk management
Part 3:	Physical damage to structures and life hazard
Part 4:	Electrical and electronic systems within structures

EN 50164 Lightning Protection Components (LPC)	
Part 1:	Requirements for connection components
Part 2:	Requirements for conductors and earth electrodes
Part 3:	Requirements for isolating spark gaps
Part 4:	Requirements for conductor fasteners
Part 5:	Requirements for earth electrode inspection housings and earth electrode seals

Brochures, Data Sheets, Test Reports and Audit Records

DEHN provides you with detailed installation instructions, data sheets and test reports in order to support you already in the designing of installations and systems. The necessary technical details are practice conveniently prepared. The papers are being updated continuously and are always available under www.dehn.de. But also after the erection of the system we will support you in creating a documentation e.g. in case of a system inspection with the corresponding test protocols (e.g. inspection of the lightning protection system according to EN 62305-3 or documentation of the earth-termination system). These are also available under www.dehn.de.
Numerous brochures with practical information on our products as well as many application proposals complete the offer and can be downloaded also from www.dehn.de service range.

Specialist Publication LIGHTNING PROTECTION GUIDE

For nearly 30 years the LIGHTNING PROTECTION GUIDE by DEHN + SÖHNE has been an indispensible aid for the technical expert and is now the brandmark for practice orientated technical literature in the field of lightning and surge protection of buildings and structures. Whatever you may need for the practical understanding of lightning and surge protection – the LIGHTNING PROTECTION GUIDE provides comprehensive and detailed expert knowledge about e.g. standards, regulations, projecting fundamentals, installation examples and application proposals for special cases on more than 300 pages. The LIGHTNING PROTECTION GUIDE by DEHN + SÖHNE is available as book or pdf file on CD or under www.dehn.de.

Planning Software for Lightning Protection Systems

The electronic decision aid DEHNsupport Toolbox offers the planner and installer easy and practical programmes. These range from the risk management to the calculation of the air-termination rod length, the determination of the separation distance to the calculation of the length of the earth electrodes. Thus designing of a lightning protection system will be considerably easier. Please see also the following page for more details.

DEHN-Seminars

DEHN + SÖHNE offers a wide spectrum for practice orientated education and training in the fields of surge protection, lightning protection / earthing and safety equipment. The seminars impart practical knowledge about the application of components and devices in special structures and systems. More details and information is available under www.dehn.de.

DVD

A picture is worth a thousand words. With DVD DS708 we provide 3D-Animated films to show the use of products and to meet DEHN + SÖHNE on a tour through the company with the DEHNtour DS707 DVD.

Tender Specifications

A current description of our products for tenders (delivery list texts) is available in the service download range under www.dehn.de.

DEHN – quick and direct

Proximity to our customers is important to us! For any questions on special application topics of the DEHN products we are at your disposal with the service hotline 09181 / 906-750. You can also contact our competent partners in your region. We shall be pleased to name you the contact person or our subsidiaries or representatives.
The catalogue lightning protection / earthing comprises components for lightning protection, earthing and equipotential bonding. Further technical information is available under www.dehn.de. We also shall be pleased to send you the brochures.

Detailed information as well as a demo version is available on our homepage www.dehn.de

System requirements

- Operating Systems Supported:
  - Windows® 2000
  - Windows® XP
  - Windows® 2003
  - Windows® Vista
  - Windows® 7
- Office package with word processing and spreadsheet
- Internet connection (optional)

Order Form DEHNsupport Toolbox

Herewith I order the DEHNsupport Toolbox (mark with cross):

☐ Basic Edition

☐ Distance Edition (single place installation)
(incl. separation distance calculation
according to the nodal point potential method)

☐ Distance Edition (multi place installation)
for ___ workplaces

☐ Upgrade from Basic to Distance Edition
(Separation distance calculation according to the
nodal point method for an already existing
DEHNsupport Basic Edition)

Name _____

Company _____

Street _____

Place _____

Phone _____ Fax _____

Date and Signature _____

Please fill in and fax to 09181 906-593

Calculation Programme for Lightning Protection Systems

The DEHNsupport Toolbox provides a calculation tool for the specific determination and realisation of lightning and surge proteciton measures based on the requirements of the EN 62305-1 to 4 standard series. In addition to international requirements, there are country-specific adaptations which were integrated into the software and which are regularly extended. In order to give the user a targeted support for his application the DEHNsupport Toolbox offers a variety of planning aids:

DEHN Risk Tool
Risk management in accordance with EN 62305-2

Risk analysis: A risk analysis allows to assess the potential risk for structures and to take specific measures to reduce the risk. The result is the selection of protection measures which make good economic sense and which are ideally suited for the characteristics of the structure and the type of utilisation.

DEHN Distance Tool
Calculation of the separation distance in accordance with EN 62305-3

Base of the DEHN Distance Tool module is a 3D building model with automatic calculation of the separation distance s. Calculation is based on the nodal point potential method. The automatic calculation saves time and simplifies the work steps.

DEHN Air-termination Tool
Calculation of the air-termination rod length in accordance with EN 62305-3

This software tool allows for calculating of air-termination rod lengths depending on the class of the lightning protection system.

DEHN Earthing Tool
Calculation of the earth electrode length in accordance with EN 62305-3

This software provides an aid to determine the necessary earth electrode length depending on the type of earth electrode and on the specific earth resistance.

Lightning protection components used for installing the external lightning protection system have to fulfil certain mechanical and electrical requirements specified in the EN 50164-x standard series. Lightning protection components are categorised according to their function, for example connection components (clamps), conductors and earth electrodes

Testing of conventional lightning protection components

Metal lightning protection components (clamps, conductors, air-termination rods, earth electrodes) exposed to weathering have to be subjected to artificial ageing/conditioning prior to testing to verify their suitability for the intended application. In accordance with EN 60068-2-52 and EN ISO 6988 metal components are subjected to artificial ageing and tested in two steps.

Natural weathering and exposure to corrosion of lightning protection components

Step 1: Salt mist treatment

This test is intended for components or devices which were designed to withstand exposure to a saline atmosphere. The test equipment (**Figure 1**) consists of a salt mist chamber where the specimens are tested using severity 2 for more than three days. Severity 2 includes three spraying phases with a 5% sodium chloride solution (NaCl) of 2 h each at a temperature between 15 °C and 35 °C and subsequent humidity storage between 20 h and 22 h at a relative humidity of 93^{+2}_{-3} % and a temperature of 40 ±2 °C in accordance with EN 60068-2-52.

Step 2: Humid sulphurous atmosphere treatment

This test is to evaluate the resistance of materials or objects to condensed humidity containing sulphur dioxide in accordance with BS EN ISO 6988. The test equipment (**Figure 2**) consists of a test chamber where the specimens are treated with a concentration of sulphur dioxide of 667 ppm (in volume) (±24 ppm (in volume)) in seven test cycles. Each cycle which has duration of 24 h is composed of a heating period of 8 h at a temperature of 40 ±3 °C in a humid saturated atmosphere which is followed by a rest period of 16 h. After that, the humid sulphurous atmosphere is replaced.

Both components for outdoor use and components buried in the ground are subjected to ageing / conditioning. For components buried in the ground additional requirements and measures have to be considered. No aluminium clamps or conductors may be buried in the ground. If stainless steel is to be buried in the ground, only high-alloy stainless steel may be used, e.g. StSt V4A. In accordance with DIN VDE 0151 StSt V2A is not allowed.

Components for indoor use such as equipotential bonding bars do not have to be subjected to ageing / conditioning. The same applies to components which are embedded in concrete. These components are therefore often made of non-galvanised (black) steel.

Air-termination systems / air-termination rods

Air-termination rods, which are available in different designs ranging from 1 m in length (e.g. installed in a concrete base for flat roofs) to 25 m in length (telescopic lightning protection masts) for e.g. biogas plants, are predominantly used as air-termination systems.

EN 50164-2 specifies the minimum cross-sections, permissible materials and corresponding electrical and mechanical properties for air-termination rods.

For air-termination rods with larger heights the bending resistance of the air-termination rod and the stability of complete systems (air-termination rod in tripod) have to be verified by means of a static calculation. The required cross-sections and materials have to be selected based on this calculation. The wind speeds of the relevant wind load zone also have to be used as basis for this calculation.

Figure 1: Salt spray cabinet

Figure 2: Kesternich cabinet

Connection components

Connection components, or often simply called clamps, are used for the installation of lightning protection systems to connect conductors (down conductor, air-termination conductor, earth entry) with one another or to an installation. Depending on the type of clamp and clamp material, a lot of different clamp combinations are possible. The type of conductor routing and possible material combinations are decisive for this. Type of conductor routing means that the clamp connects the conductor or conductors in cross or parallel arrangement.

A lightning current load causes electrodynamic and thermal forces which act on the clamp and have to be taken up by the clamp. The resulting forces are highly dependant on the type of conductor routing and the clamp connection. **Table 1** shows materials which can be combined without causing contact corrosion.

	Steel	Aluminium	Copper	StSt	Titanium	Tin
Steel (St/tZn)	yes	yes	no	yes	yes	yes
Aluminium	yes	yes	no	yes	yes	yes
Copper	no	no	yes	yes	no	yes
StSt	yes	yes	yes	yes	yes	yes
Titanium	yes	yes	no	yes	yes	yes
Tin	yes	yes	yes	yes	yes	yes

Table 1: Material combinations of air-termination systems and down conductors with one another and with structural parts

Figure 3: New and aged components

The combination of different materials with one another and their different mechanical strengths and thermal properties have different effects on the connection components in the event of a lightning current load. This is particularly evident for connection components made of stainless steel (StSt) where high temperatures occur due to the low conductivity as soon as lightning currents flow through the connection components. Therefore a lightning current test in compliance with EN 50164-1 has to be carried out for all clamps. To test the worst case scenario, the material combinations specified by the manufacturer have to be tested apart from the different conductor arrangements.

Figure 4: Test combinations for MV clamps (parallel and cross arrangement)

Test procedure using the example of an MV clamp

At first it must be determined how many combinations are to be tested. The MV clamp used is made of stainless steel (StSt) and hence can be combined with steel, aluminium, StSt and copper conductors as stated in the above table. Moreover, it can be connected in cross and parallel arrangement which also has to be tested. This means that there are eight possible test combinations for the MV clamp used (**Figures 3** and **4**).

In accordance with EN 50164 each of these test combinations has to be tested on three suitable specimens / test set-ups. This means that 24 specimens of this single MV clamp have to be tested to cover the complete range. Every single specimen is mounted with the adequate tightening torque in compliance with normative requirements and is subjected to artificial ageing by means of salt mist and humid sulphurous atmosphere treatment as described above. For the subsequent electrical test the specimens have to be fixed on an insulating plate (**Figure 5**). Three lightning current impulses of 10/350 µs wave shape with 50 kA (Normal duty) and 100 kA (Heavy duty) are applied to every specimen. After being loaded with lightning current, the specimens must not show signs of damage. The transition resistance (measured above the clamp) for a stainless steel clamp must not exceed 1 mΩ in case of normal duty and 2.5 mΩ in case of heavy duty. The required loosening torque has to be ensured. A manufacturer's test report is prepared for every test combination. A detailed test report is available on request from the manufacturer or a less detailed report (**Figure 6**) can be downloaded from the internet (e.g. www.dehn.de ⇒ Products ⇒ Product data).

For installers of lightning protection systems this means that the connection components have to be selected for the duty (H or N) to be expected on site. This means that a clamp for H duty (100 kA) has to be used for e.g. an air-termination rod (full lightning current) and a clamp for N duty (50 kA) has to be used e.g. in a mesh or at an earth entry (lightning current already distributed).

Conductors

EN 50164-2 also places special demands on conductors such as air-termination and down conductors or earth electrodes e.g. ring earth electrodes, for example:

- Mechanical properties (minimum tensile strength, minimum elongation),
- Electrical properties (max. resistivity) and
- Corrosion resistance properties (artificial ageing as described above).

The mechanical properties have to be tested and adhered to. **Figure 7** shows the test set-up for tensile testing of circular conductors (e.g. aluminium). The

quality of coating (smooth, continuous) as well as the minimum thickness and adhesion to the base material are important and have to be tested particularly if coated materials such as galvanised steel (St/tZn) are used.
This is described in the standard in the form of a bend test. For this purpose, a specimen is bent through a radius equal to 5 times of its diameter to an angle of 90°. In doing so, the specimen may not show sharp edges, breakage or exfoliation. Moreover, conductor materials have to be easy to process during the installation of lightning protection systems. Wires or strips (coils) are supposed to be easily straightened by means of a wire straightener (straightening coils) or by means of twisting.
Furthermore, it should be easy to install / bend the materials at structures or in soil. These normative requirements are relevant product features which have to be documented. This information can be found in the manufacturer's product data sheets.

Earth electrodes / earth rods

The separable DEHN earth rods are made of special steel and are completely hot-dip galvanised or consist of high-alloy stainless steel (StSt V4A; material No. 1.4571). A coupling joint which allows connection of the rods without enlarging the diameter is a special feature of theses earth rods. There is a hole at the end of every rod, whereas the other rod end features the corresponding stud.
EN 50164-2 describes the requirements earth electrodes have to fulfil. These requirements include material, geometry, minimum dimensions as well as mechanical and electrical properties and are stated in tables. The coupling joints linking the individual rods are weak points. For this reason EN 50164-2 requires that additional mechanical and electrical tests have to be performed to test the quality of these coupling joints.

The test is carried out in a test holder with an impact area (steel plate). A specimen consisting of two combined rod parts with a length of 500 mm each is inserted in this test equipment. Three of these specimens are required for every type of earth electrode. The top end of the specimen is impacted with a vibration hammer with adequate hammer insert for a duration of two minutes. The percussion rate of the hammer must be 2 000 ±1 000 min^{-1} and the single stroke impact energy must be 50 ±10 [Nm].
If the joints have passed this test without visible defects, they are subjected to artificial ageing by means of salt mist and humid sulphurous atmosphere treatment. After that, each joint is loaded three times by lightning current impulses of 10/350 µs wave shape with 50 kA and 100 kA. The transition resistance of stainless steel earth rods (measured above the joint) must not exceed 1 mΩ after being loaded with 50 kA or 2.5 mΩ after being loaded with 100 kA. To test whether the coupling joint is still firmly connected following the exposure to this lightning current load, the coupling force is tested by means of a tensile testing machine. The specimens passed the test if a tensile force of at least 1 000 N (±10 N) can be applied.

Implementation of a functional lightning protection system requires the application of normatively tested components and devices. The components are to be selected and duely applied by the installer of lightning protection systems in accordance with the requirements at the installation site. In addition to the mechanical necessities the electrical criteria of the present state of lightning protection engineering are to be considered and complied with.

Figure 5: Specimen fixed on insulating plate (MV clamp) for a test in the impulse current laboratory

Manufacturer's Test Report

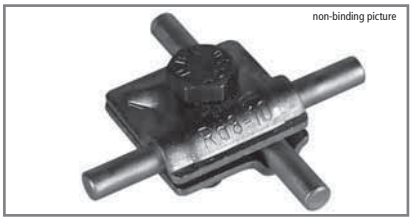
Test according to EN 50164-1

MV Clamp Part No. 390 059

Material: StSt

DEHN + SÖHNE

non-binding picture



Application: above ground

Connected conductor	Test result
Conductor (1): Rd 8 St/tZn Conductor (2): Rd 8 St/tZn	N
Conductor (1): Rd 8 Cu Conductor (2): Rd 8 Cu	H
Conductor (1): Rd 8 StSt Conductor (2): Rd 8 StSt	H
Conductor (1): Rd 8 Al Conductor (2): Rd 8 Al	H

Legend

Lightning current carrying capability class H 100 kA (10/350 µs)
Lightning current carrying capability class N 50 kA (10/350 µs)

More details on the test conditions are available on request.

Figure 6: Less detailed manufacturer's test report

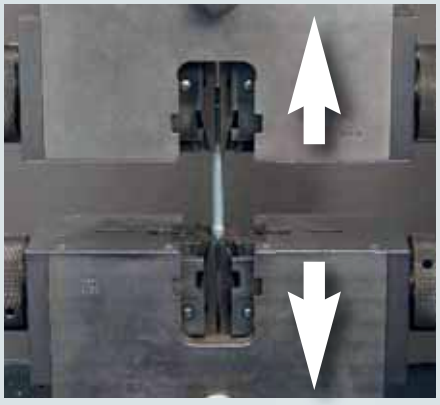
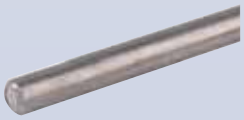


Figure 7: Tensile testing of conductors

Round wires according to EN 50164-2, for use in lightning protection and earth-termination systems

DEHNalu wire

Al and AlMgSi must not be installed directly (without distance) on, in, or under plaster, mortar or concrete nor in soil.



Part No.		840 008	840 108	840 018	840 028	840 010
Ø Conductor	mm	8	8	8	8	10
Cross section	mm^2	50	50	50	50	78
Material		AlMgSi	AlMgSi	AlMgSi	AlMgSi	Al
Characteristics/Material No.		medium hard	medium hard	soft-twistable	soft-twistable	
Standard		EN 50164-2	EN 50164-2	EN 50164-2	EN 50164-2	EN 50164-2
Coil weight	kg	20	approx. 3	approx. 20	approx. 3	approx. 21
Packing unit	m	148	21	148	21	100

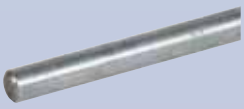
DEHNalu wire with plastic coating

This wire with halogen-free, frost-proof and UV stabilized plastic coating as additional mechanical protection/corrosion protection e.g. when being installed behind facades is suitable for the installation on, in and under plaster, mortar or concrete.

Part No.		840 118
Ø Conductor	mm	8
Cross section	mm^2	50
Material		AlMgSi
Characteristics/Material No.		soft
Standard		EN 50164-2
Ø Outer	mm	11
Coating material		plastic
Coating thickness	mm	1.5
Coil weight	kg	approx. 20
Packing unit	m	100

Steel wire

with zinc coating ≥ 50 µm average (approx. 350 g/m^2)



Part No.		800 008	800 010	800 310
Ø Conductor	mm	8	10	10
Cross section	mm^2	50	78	78
Material		St/tZn	St/tZn	St/tZn
Standard		EN 50164-2	EN 50164-2	EN 50164-2
Short-circuit current (50 Hz) (1 s; ≤ 300°C)	kA		5.5	5.5
Coil weight	kg	approx. 50	approx. 50	approx. 18.5
Packing unit	m	127	81	29

Steel wire with plastic coating

Type with plastic coating as an additional mechanical protection/corrosion protection e.g. at connections to the lightning protection system

Part No.		800 108	800 110
Ø Conductor	mm	8	10
Cross section	mm²	50	78
Material		St/tZn	St/tZn
Standard		EN 50164-2	EN 50164-2
Ø Outer	mm	11	13
Coating material		plastic	plastic
Coating thickness	mm	1.5	1.5
Coil weight	kg	33	34
Packing unit	m	75	50

Copper wire

Part No.		830 008	830 108	830 038
Ø Conductor	mm	8	8	8
Cross section	mm²	50	50	50
Material		Cu	Cu	Cu
Characteristics/Material No.		soft F20	soft F20	medium hard F25
Standard		EN 50164-2	EN 50164-2	EN 50164-2
Short-circuit current (50 Hz)				
(1 s; ≤ 300°C)	kA	9.8	9.8	9,8
Coil weight	kg	45	9	45
Packing unit	m	100	20	100

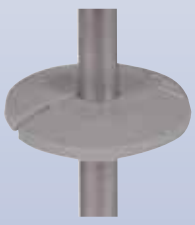
Stainless steel wire

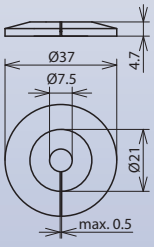
According to EN 50164-2, EN 62305-3 and DIN VDE 0151, stainless steel to be installed in soil (Rd 10 mm) has to be made of StSt (V4A) with a molybdenum fraction > 2 % e.g. 1.4571.

Part No.		860 908	860 910	860 920	860 008	860 010	860 020
Ø Conductor	mm	8	10	10	8	10	10
Cross section	mm²	50	78	78	50	78	78
Material		StSt	StSt	StSt	StSt (V4A)	StSt (V4A)	StSt (V4A)
Characteristics/Material No.		1.4301	1.4301	1.4301	1.4571	1.4571	1.4571
Standard		EN 50164-2	EN 50164-2	EN 50164-2	EN 50164-2	EN 50164-2	EN 50164-2
Short-circuit current (50 Hz)							
(1 s; ≤ 300°C)	kA					2.9	2.9
Coil weight	kg	50	50	12	50	50	12
Packing unit	m	125	80	20	125	80	20

Dripping Water Protective Collars

Collars for preventing rain water from draining along the round wire. Polution of the façade thus can be avoided.



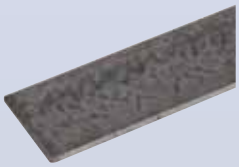


Part No.		276 056	276 057
Material		Plastic	Plastic
Conductor Rd	mm	8	8
Colour		grey	brown
Diameter	mm	37	37
Borehole	mm	7.5	7.5
Packing unit	pc(s)	100	100

Strips according to EN 50164-2, for use in earth-termination and lightning protection systems as well as for ring equipotential bonding.

Steel strip

zinc coating = 70 µm average (approx. 500 g/m²)



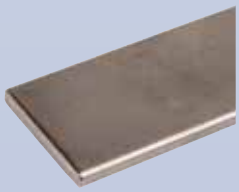
Part No.		810 225	810 335	852 335	810 304	810 404	810 405
Width	mm	20	30	30	30	40	40
Thickness	mm	2.5	3.5	3.5	4	4	5
Cross section	mm²	50	105	105	120	160	200
Material		St/tZn	St/tZn	St/tZn	St/tZn	St/tZn	St/tZn
Standard		EN 50164-2	EN 50164-2	EN 50164-2	EN 50164-2	EN 50164-2	EN 50164-2
Short-circuit current (50 Hz)							
(1 s; ≤ 300 °C)	kA		7.3	7.3	8.4	11.2	14
Coil weight	kg	approx. 40	approx. 42	approx. 21	approx. 50	approx. 50	approx. 50
Packing unit	m	100	50	25	52	40	30

Copper strip

Part No.		831 225
Width	mm	20
Thickness	mm	2.5
Cross section	mm²	50
Material		Cu
Standard		EN 50164-2
Short-circuit current (50 Hz)		
(1 s; ≤ 300 °C)	kA	9.8
Coil weight	kg	approx. 45
Packing unit	m	100

Stainless steel strip

According to EN 50164-2, EN 62305-3 and DIN VDE 0151, stainless steel installed in soil has to be made of StSt (V4A) with a molybdenum fraction > 2 % e.g. 1.4571.



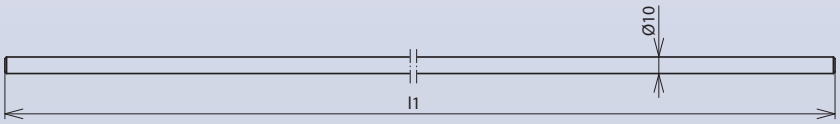
Part No.		860 925	860 900	860 325	860 335
Width	mm	30	30	30	30
Thickness	mm	3.5	3.5	3.5	3.5
Cross section	mm²	105	105	105	105
Material		StSt	StSt	StSt (V4A)	StSt (V4A)
Characteristics/Material No.		1.4301	1.4301	1.4571	1.4571
Standard		EN 50164-2	EN 50164-2	EN 50164-2	EN 50164-2
Short-circuit current (50 Hz)					
(1 s; ≤ 300 °C)	kA			3.9	3.9
Coil weight	kg	approx. 21	approx. 50	approx. 21	approx. 50
Packing unit	m	25	60	25	60

Terminal Lugs straightened

Terminal lugs straightened, made of corrosion-resistant stainless steel StSt (V4A), for connecting down conductors to the earth-termination system

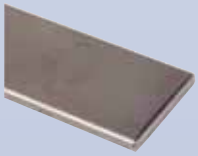
Other dimensions available on request

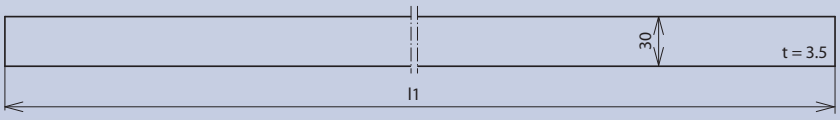
Round wires



Part No.		860 115	860 130
Material		StSt (V4A)	StSt (V4A)
Length (l1)	mm	1500	3000
Dimension	mm	Ø10	Ø10
Cross section	mm²	78	78
Material No.		1.4571	1.4571
Standard		EN 50164-2	EN 50164-2
Packing unit	pc(s)	1	1

Flat strips

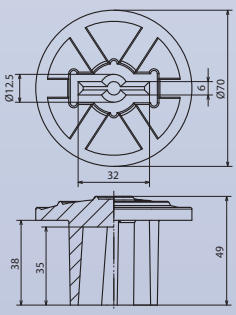




Part No.		860 215	860 230
Material		StSt (V4A)	StSt (V4A)
Length (l1)	mm	1500	3000
Dimension	mm	30x3.5	30x3.5
Cross section	mm²	105	105
Material No.		1.4571	1.4571
Standard		EN 50164-2	EN 50164-2
Packing unit	pc(s)	1	1

Protective Cap for Terminal Lugs

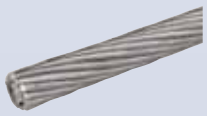
Protective cap to be attached to wires or strips as striking marker and accident prevention during the construction phase



Part No.		478 099
Material		PVC
Diameter	mm	70
Attach to Fl	mm	30x3.5
Attach to Rd	mm	10
Colour		green/yellow
Packing unit	pc(s)	20

Cables for use in lightning protection and earth-termination systems

Aluminium cable



Al must neither be installed directly (without distance) on, in or under plaster, mortar or concrete nor in soil.

Part No.		840 050
Cross section	mm²	50
Cable structure qty x ∅ wire	mm	19 x 1.8
Material		Al
Standard		EN 50164-2
Outer ∅	mm	9
Coil weight	kg	approx. 13.5 kg
Packing unit	m	100

Steel cable

Part No.		801 050
Cross section	mm²	42
Cable structure qty x ∅ wire	mm	[6x] 19 x 0.65
Material		St/gal Zn
Outer ∅	mm	10
Coil weight	kg	approx. 35
Packing unit	m	100

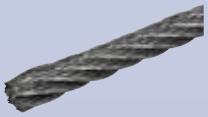
Copper cable

Part No.		832 739	832 740	832 192	832 193	832 095	832 120
Cross section	mm²	50	50	70	70	95	120
Cable structure qty x ∅ wire	mm	19 x 1.8	19 x 1.8	19 x 2.1	19 x 2.1	19 x 2.5	19 x 2.8
Material		Cu	Cu	Cu	Cu	Cu	Cu
Standard		EN 50164-2	EN 50164-2	EN 50164-2	EN 50164-2	EN 50164-2	EN 50164-2
Outer ∅	mm	9	9	10.5	10.5	12.5	14.5
Short-circuit current(50 Hz) (1 s; ≤ 300 °C)	kA	9.8				18.5	23.4
Coil weight	kg	approx. 22	approx. 44	approx. 30	approx. 60	approx. 42	approx. 53
Packing unit	m	50	100	50	100	50	49
Versorgungs-Nr.		6145-12-336-0722					

Copper cable tinned

Part No.		832 839	832 292	832 295	832 320
Cross section	mm²	50	70	95	120
Cable structure qty x ∅ wire	mm	19 x 1,8	19 x 2.1	19 x 2.5	19 x 2.8
Material		Cu/gal Sn	Cu/gal Sn	Cu/gal Sn	Cu/gal Sn
Standard		EN 50164-2	EN 50164-2	EN 50164-2	EN 50164-2
Outer ∅	mm	9	10.5	12.5	14.5
Short-circuit current(50 Hz) (1 s; ≤ 300 °C)	kA	(max. 150 °C) 7.2	(max. 150 °C) 10.1	(max. 150 °C) 13.8	(max. 150 °C) 17.3
Coil weight	kg	approx. 44	approx. 60	approx. 42	approx. 53
Packing unit	m	100	100	49	50

Stainless steel cable



Part No.		850 008	850 010
Cross section	mm²	27	42
Cable structure qty x ∅ wire	mm	[7x] 19 x ca. 0.59	[7x] 19 x ca. 0.68
Material		StSt (V4A)	StSt (V4A)
Outer ∅	mm	8	10
Coil weight	kg	approx. 23.5	approx. 39.5
Packing unit	m	100	100

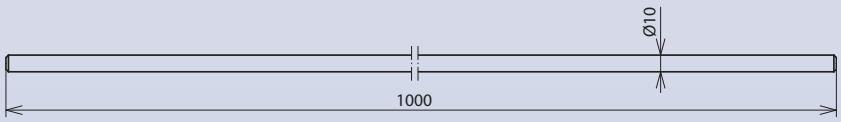
Air-termination rods for protecting roof-mounted structures, chimneys, etc.

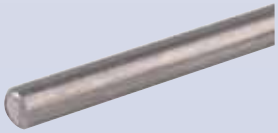
also for installation with concrete base

Due to the wind load, air-termination rods of more than 2500 mm in free length, established on concrete base need to be additionally fixed e.g. by DEHNiso spacers.

with a diameter of 10 mm chamfered

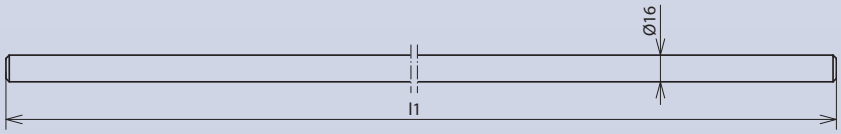
especially for wedge mounting concrete base 8.5 kg (Part No. 102 075) or for fixing with conductor holders

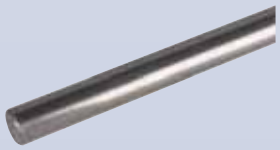




Part No.		101 000	101 009	101 007
Total length (l1)	mm	1000	1000	1000
Material		Al	StSt	Cu
Standard		EN 50164-2	EN 50164-2	EN 50164-2
Diameter	mm	10	10	10
Packing unit	pc(s)	20	20	20

with a diameter of 16 mm chamfered

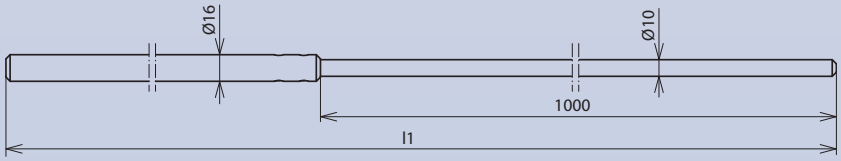




Part No.		104 150	104 200	104 250	104 300	483 100	483 125	483 150	483 200
Total length (l1)	mm	1500	2000	2500	3000	1000	1250	1500	2000
Material		AlMgSi	AlMgSi	AlMgSi	AlMgSi	St/tZn	St/tZn	St/tZn	St/tZn
Standard		EN 50164-2	EN 50164-2	EN 50164-2	EN 50164-2	EN 50164-2	EN 50164-2	EN 50164-2	EN 50164-2
Diameter	mm	16	16	16	16	16	16	16	16
Packing unit	pc(s)	10	10	10	10	10	10	10	10

with tapering, chamfered

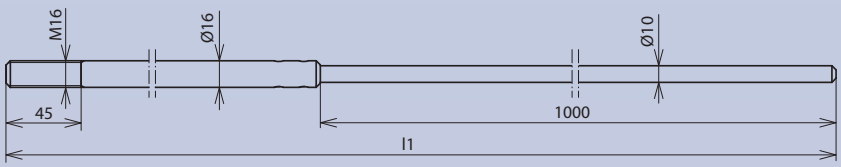
length of tapering 1000 mm each



Part No.		103 210	103 220	103 230	103 240	103 250	103 260	103 280
Total length (l1)	mm	1500	2000	2500	3000	3500	4000	5000
Material		AlMgSi	AlMgSi	AlMgSi	AlMgSi	AlMgSi	AlMgSi	AlMgSi
Standard		EN 50164-2	EN 50164-2	EN 50164-2	EN 50164-2	EN 50164-2	EN 50164-2	EN 50164-2
Diameter	mm	16/10	16/10	16/10	16/10	16/10	16/10	16/10
Type		chamfered	chamfered	chamfered	chamfered	chamfered	chamfered	chamfered
Packing unit	pc(s)	10	10	10	10	10	10	10

with tapering, thread M16

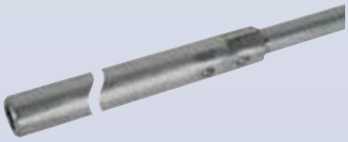
length of tapering 1000 mm each

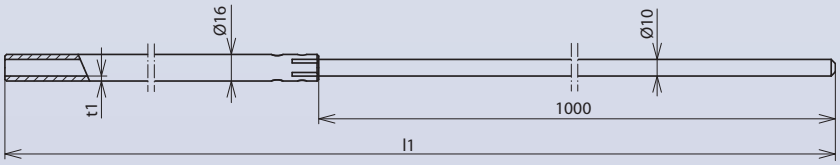


Part No.		103 211	103 221	103 231	103 241	103 251	103 261
Total length (l1)	mm	1500	2000	2500	3000	3500	4000
Material		AlMgSi	AlMgSi	AlMgSi	AlMgSi	AlMgSi	AlMgSi
Standard		EN 50164-2	EN 50164-2	EN 50164-2	EN 50164-2	EN 50164-2	EN 50164-2
Diameter	mm	16/10	16/10	16/10	16/10	16/10	16/10
Type		M16	M16	M16	M16	M16	M16
Packing unit	pc(s)	10	10	10	10	10	10

Tubular air-termination rods with tapering

light design, length of tapering 1000 mm each



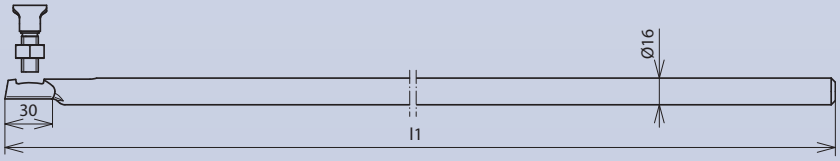


Part No.		103 410	103 420	103 430	103 440	103 450	103 460
Total length (l1)	mm	1500	2000	2500	3000	3500	4000
Material		AlMgSi	AlMgSi	AlMgSi	AlMgSi	AlMgSi	AlMgSi
Standard		EN 50164-2	EN 50164-2	EN 50164-2	EN 50164-2	EN 50164-2	EN 50164-2
Diameter	mm	16/10	16/10	16/10	16/10	16/10	16/10
Wall thickness of pipe (t1)	mm	2.5	2.5	2.5	2.5	2.5	2.5
Packing unit	pc(s)	10	10	10	10	10	10

Part No.		103 480	103 419	103 429	103 439	103 449	103 417
Total length (l1)	mm	5000	1500	2000	2500	3000	1500
Material		AlMgSi	StSt	StSt	StSt	StSt	Cu
Standard		EN 50164-2	EN 50164-2	EN 50164-2	EN 50164-2	EN 50164-2	EN 50164-2
Diameter	mm	16/10	16/10	16/10	16/10	16/10	16/10
Wall thickness of pipe (t1)	mm	2.5	3	3	3	3	2.5
Packing unit	pc(s)	10	10	10	10	10	10

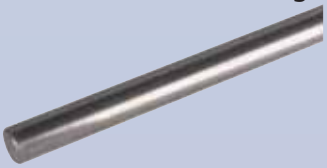
with forged tab

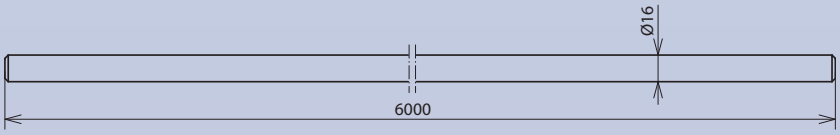
and KS screw for connecting Rd 7-10 mm



Part No.		100 100	100 150
Total length (l1)	mm	1000	1500
Material		St/tZn	St/tZn
Standard		EN 50164-(1+2)	EN 50164-(1+2)
Diameter	mm	16	16
Terminal clamping range	mm	7-10	7-10
Packing unit	pc(s)	10	10

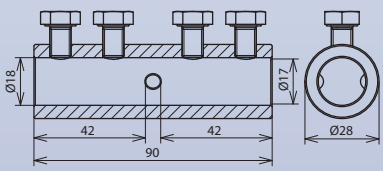
with a diameter of 16 mm, for cutting to length on site





Part No.		104 600
Total length (l1)	mm	6000
Material		AlMgSi
Standard		EN 50164-2
Diameter	mm	16
Packing unit	pc(s)	1

Connecting Sleeve for Air-termination Rods



Connecting sleeve with tongues (stop) for jointing air-termination rods to greater lengths (transport length)

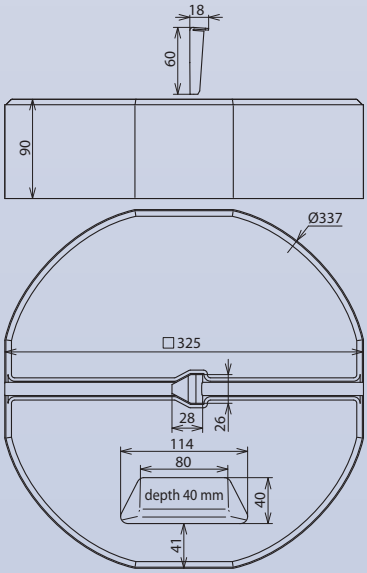
Using the connecting sleeve requires an additional fixing of the air-termination rod above the sleeve.

Part No.		385 216
Material		Al
Clamping range Rd / Rd	mm	16 / 16
Screw	mm	M8x12
Material of screw		StSt
Outer Ø	mm	28
Standard		EN 50164-1
Packing unit	pc(s)	10

Concrete bases for air-termination rods protecting small-sized roof superstructures on flat roofs and for installing spacers of the DEHNiso spacer programme e.g. for isolated ring conductors or for self-supporting air-termination rods in the tripod (only with a weight of 17 kg)

Weight 17 kg for wedge mounting

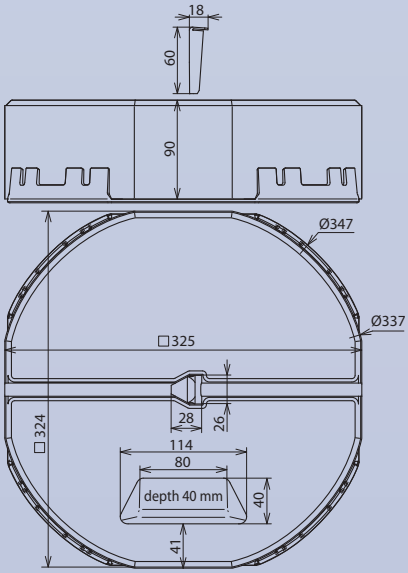
stackable, for air-termination rod Ø16 mm, chamfered, tapered, or for DEHNiso spacer Ø16 mm



Part No.		102 010
Weight	kg	17
Support		wedge Ø16 mm
Diameter Ø	mm	337
Material		concrete (C45/55)
Material of wedge		StSt
Packing unit	pc(s)	54

Weight 17 kg for wedge mounting and adapted support plate

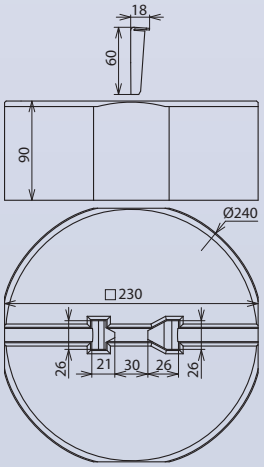
stackable



Part No.		102 340
Weight	kg	17
Support		wedge Ø16 mm
Diameter Ø	mm	337
Material		concrete (C45/55)
Material of wedge		StSt
Packing unit	pc(s)	54

Weight 8.5 kg for wedge mounting

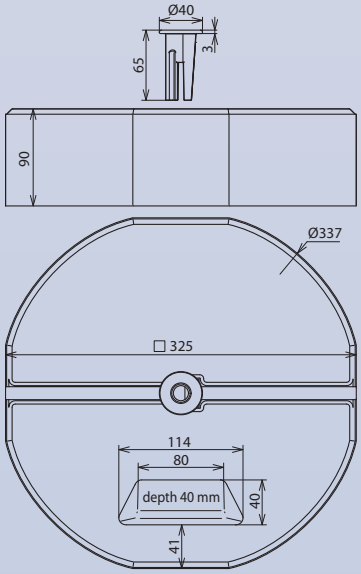
for air-termination rods Ø10 mm, length 1000 mm or DEHNiso spacers Ø16 mm, length up to 675 mm (distance 1 m)



Part No.		102 075
Weight	kg	8.5
Support		wedge Ø10/16 mm
Diameter Ø	mm	240
Material		concrete (C45/55)
Material of wedge		StSt
Packing unit	pc(s)	120

Weight 17 kg with threaded adapter

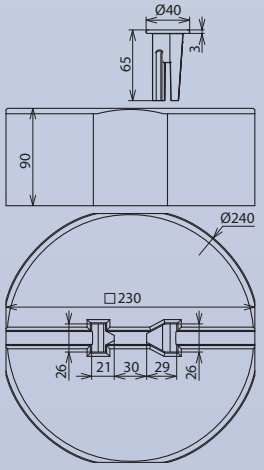
for air-termination rods with thread M16



Part No.		102 002
Weight	kg	17
Support		thread M16
Diameter Ø	mm	337
Material		concrete (C45/55)
Material of adapter		plastic
Packing unit	pc(s)	54

Weight 8.5 kg with threaded adapter

for air-termination rods with thread M16 and additional fixing e.g. with DEHNiso spacers



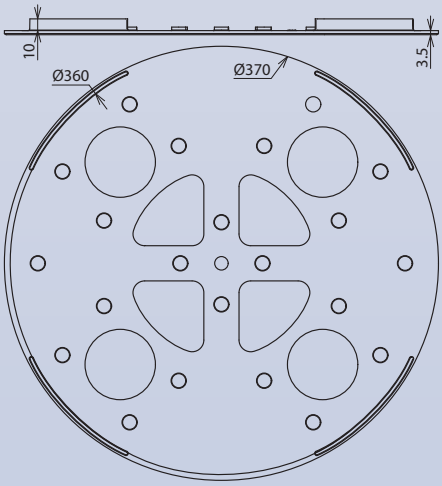
Part No.		102 003
Weight	kg	8.5
Support		thread M16
Diameter Ø	mm	240
Material		concrete (C45/55)
Material of adapter		plastic
Packing unit	pc(s)	120

Support Plates

Support plates to protect the roof sheeting under the concrete base

Large design

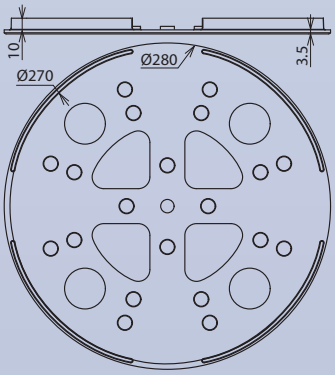
for concrete bases (Part No. 102 010, 102 002) weight 17 kg



Part No.		102 050
Diameter ∅ (d1)	mm	370
Diameter ∅ (d2)	mm	360
Material		EVA
Colour		black
Packing unit	pc(s)	1

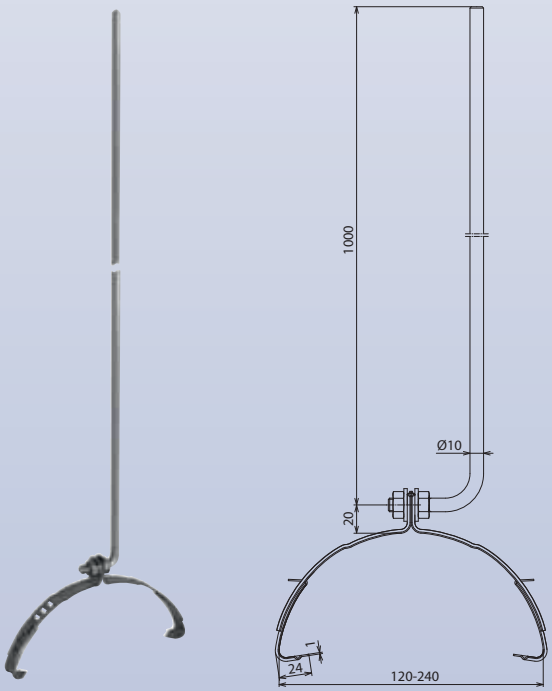
Small design

for concrete bases (Part No. 102 075, 102 003) weight 8.5 kg



Part No.		102 060
Diameter ∅ (d1)	mm	280
Diameter ∅ (d2)	mm	270
Material		EVA
Colour		black
Packing unit	pc(s)	1

Air-termination Rod for Ridge and Hip Tiles



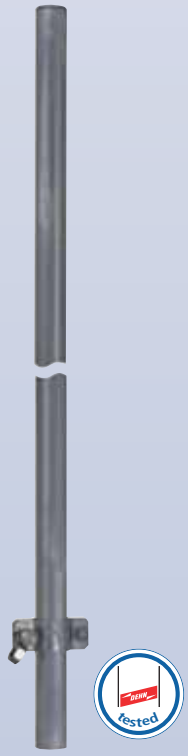
Air-termination rod for protecting solar thermal modules or photovoltaic generators, or other superstructures on gable roofs

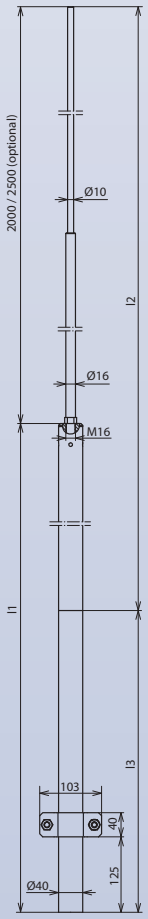
Installation of the air-termination rod is based on a clamping technique. As the clamping brackets are stepwise adjustable, they may be preset to the respective ridge tile diameter.

More details in installation instructions No. 1528

Part No.		123 109
Material of air-termination rod		Al
Length	mm	1000
Diameter	mm	10
Material of clip		StSt
Clamping range	mm	120-240
Standard		EN 50164-2
Packing unit	pc(s)	1

Air-termination Rods D40





Air-termination rod for free lengths up to 5500 mm, for fixing e.g. at walls or other constructions

Combinable with air-termination rods Ø16/10 mm tapered, e.g. length 2000 mm (Part No. 103 221) or length 2500 mm (Part No. 103 231). The air-termination rods have to be ordered separately.

The air-termination rods are dimensioned for wind velocities up to 145 km/h (wind load zone II).

Components:
- pipe Ø40x5 mm with threaded head M16
- lock nut M16
- earthing terminal St/tZn with KS connector made of StSt

Fixing e.g. at a wall shall be implemented with Part No. 105 140, fixing at pipes with Part No. 105 354.

The maximum free length of the air-termination rod is measured from the tip to the upper support (fixing point).
For stability reasons, the middle support (3 fixings) shall be mounted as closely as possible to the top support.
The distance must not be more than 15 cm. At the bottom the support (fixing point) shall be installed in a height of ≤ 15 cm.

Part No.		105 202	105 203	105 214	105 215	105 216
Length of pipe (l1)	mm	2000	3000	4000	5000	6000
Max. free length with air-term. rod 2000/2500 mm (l2)	mm	3500 / 4000	4000 / 4500	4500 / 5000	5500 / 5500	5500 / 5500
Clamping length with air-term. rod 2000/2500 mm (l3)	mm	500	1000	1500	1500 / 2000	2500 / 3000
Quantity of fixings		2	2	3	3	3
Material air-termination rod		Al	Al	Al	Al	Al
Standard		EN 50164-(1+2)	EN 50164-(1+2)	EN 50164-(1+2)	EN 50164-(1+2)	EN 50164-(1+2)
Packing unit	pc(s)	1	1	1	1	1

Tripods for air-termination rods to be established with concrete base (weight 17 kg)

adjustable to the roof inclination up to max. 10° by means of threaded rod M16

dimensioned for a wind velocity up to 145 km/h (wind load zone II)

The air-termination rods D40/supporting tubes or the stackable concrete base (Part No. 102 010) and the support plate (Part No. 102 050) have to be ordered separately.

The air-termination rods D40 can be set up detached in the tripod without additional fixing.

Possible combinations for the tripod **radius 590 mm**:

- Height 4000 mm: Part No. 105 202 + 103 221
- Height 4500 mm: Part No. 105 202 + 103 231
- Height 5000 mm: Part No. 105 203 + 103 221
- Height 5500 mm: Part No. 105 203 + 103 231

Possible combinations for the tripod **radius 1155 mm**:

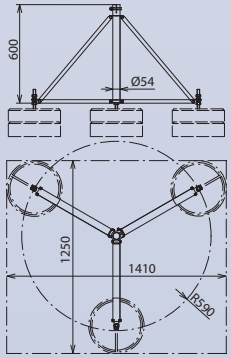
- Height 6000 mm: Part No. 105 214 + 103 221
- Height 6500 mm: Part No. 105 214 + 103 231
- Height 7000 mm: Part No. 105 215 + 103 221
- Height 7500 mm: Part No. 105 215 + 103 231
- Height 8000 mm: Part No. 105 216 + 103 221

More details in installation instructions No. 1690

Applications in other wind load zones/wind velocities available upon request

Hinged design

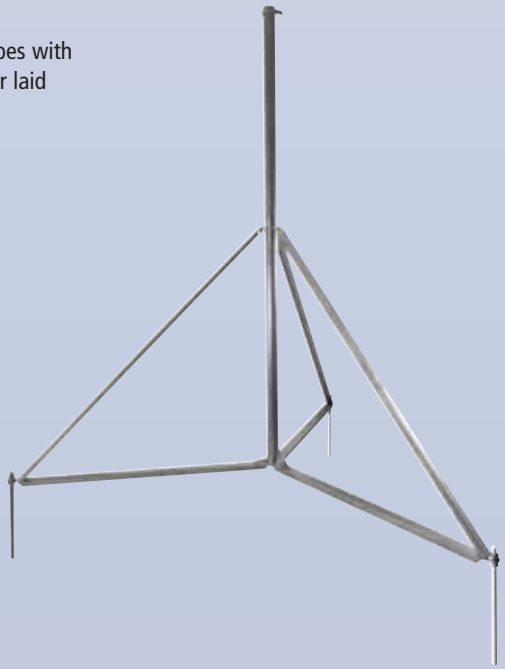
for air-termination rods D40 up to a height of 5500 mm, DEHNiso Combi supporting tubes with a length of 3200 mm with air-termination spike/rod (nine concrete bases), or HVI conductor laid in/at the supporting tube with a length of 3200 mm (nine concrete bases)

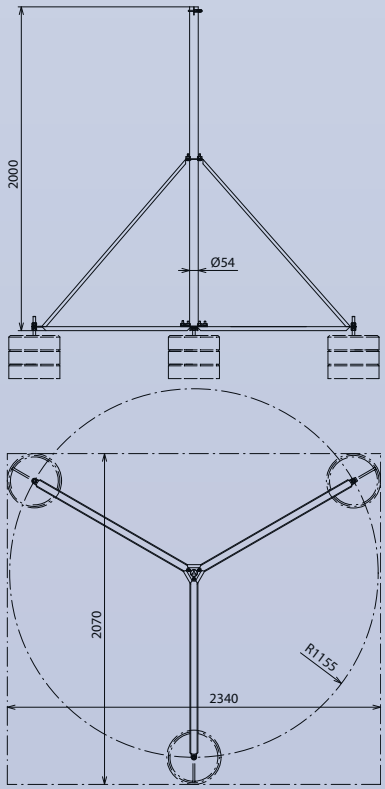


Part No.		105 290
Material of tripod		StSt
Support	mm	Ø40/50
Radius	mm	590
Required space for tripod	mm	1230x1370
Height – quantity of contrete bases		4000/4500 mm – 3 5000/5500 mm – 6
Packing unit	pc(s)	1

Separable design

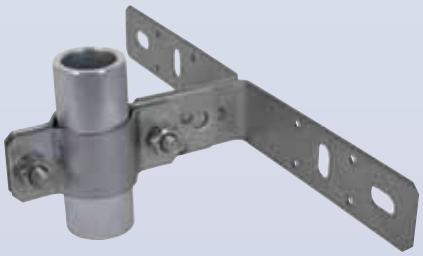
for air-termination rods D40 up to a height of 8000 mm, DEHNiso Combi supporting tubes with a length of 4700 mm with air-termination spike (nine concrete bases), or HVI conductor laid in/at the supporting tube with a length of 4700 mm (nine concrete bases)

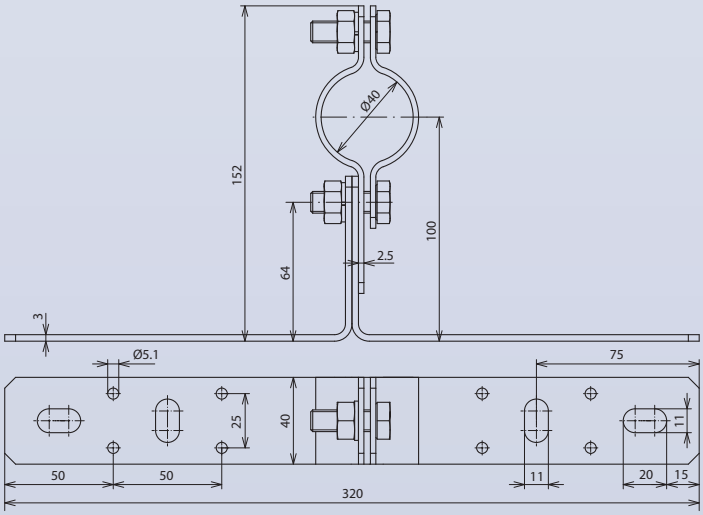




Part No.		105 291
Material of tripod		StSt
Support	mm	Ø40/50
Radius	mm	1155
Required space for tripod	mm	2050x2300
Height – quantity of contrete bases		6000/6500mm – 6 7000/8000mm – 9
Packing unit	pc(s)	1

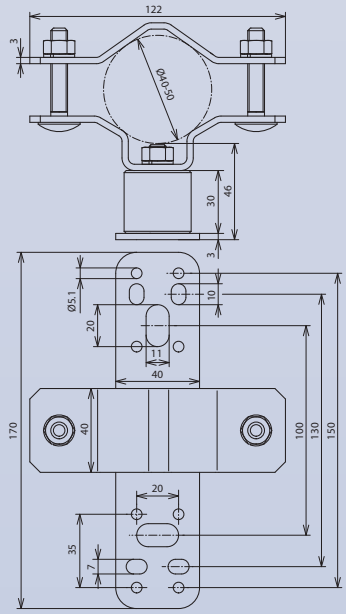
Wall mounting bracket for horizontal mounting





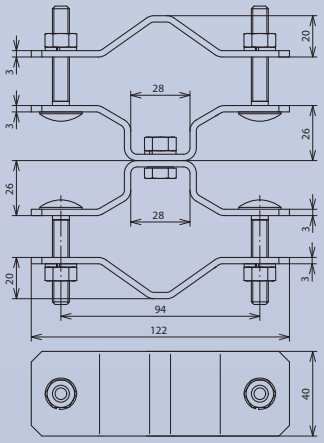
Part No.		105 140
Material		StSt
Fixing	mm	[8x] Ø5.1 / [4x] 11x20
Wall distance	mm	80
Clamping range of air-termination rod	mm	40
Material of screw		StSt
Packing unit	pc(s)	1

Wall mounting bracket for vertical mounting



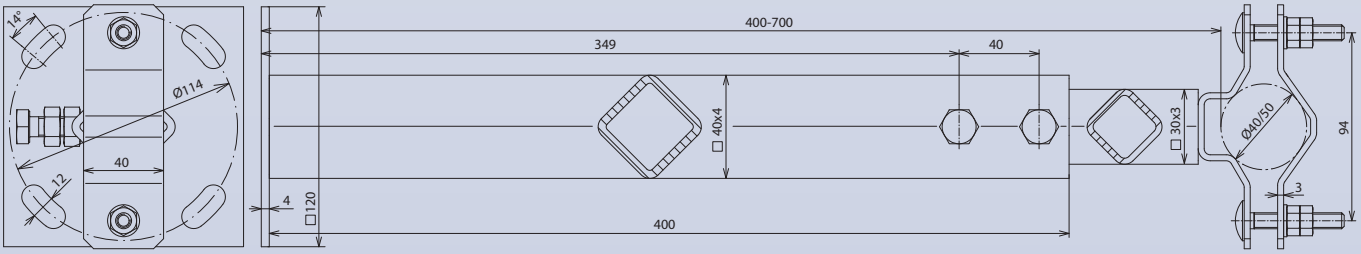
Part No.		105 342
Material		StSt
Fixing	mm	[8x] Ø5.1 / [4x] 7x10 / [2x] 11x20
Wall distance	mm	46
Clamping range of air-termination rod	mm	40-50
Material of screw		StSt
Packing unit	pc(s)	1

Rail fixing clamp



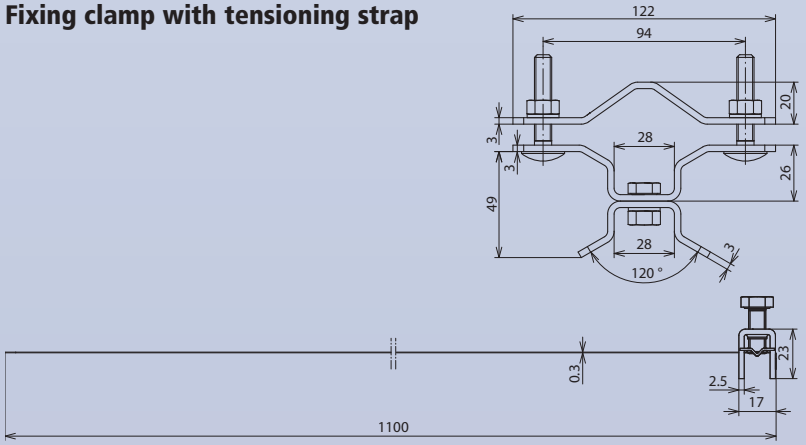
Part No.		105 354
Material		StSt
Clamping range Ø of pipe	mm	48-60 ($1^1/_2$ - 2")
Clamping range of air-termination rod	mm	40-50
Material of screw		StSt
Packing unit	pc(s)	5

Wall mounting bracket adjustable from 400-700 mm



Part No.		105 343
Material		St/tZn / StSt
Fixing	mm	[4x] 12x25
Wall distance	mm	400-700
Clamping range of air-termination rod	mm	40-50
Material of screw		StSt
Packing unit	pc(s)	1

Fixing clamp with tensioning strap



Part No.		105 160
Material		StSt
Clamping range of pipe	mm	50-300
Clamping range of air-termination rod	mm	40-50
Material of screw		StSt
Packing unit	pc(s)	1

Air-termination Rods for Metal Roofs

Air-termination rods for protecting roof-mounted structures, domelights etc.

Brace ends (borings Ø11 mm) to be fixed by means of four roof conductor holders.

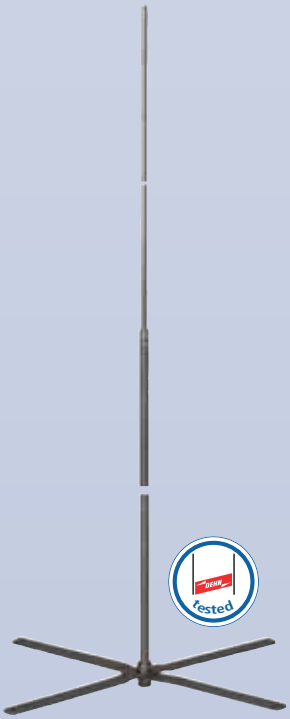
The roof conductor holders have to be selected accordingly (e.g. use Part No. 365 059 for standing seam, Part No. 223 010 for round standing seam.

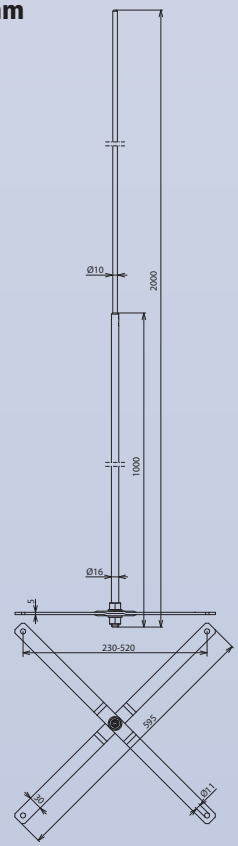
Using these four conductor holders (clamps) for the corresponding roof profile, provides the lightning current carrying capacity of 100 kA (10/350).

The air-termination rods are dimensioned for wind velocities up to 162 km/h (wind load zone III).

Type with a height of 2000 mm

with thread connection M16



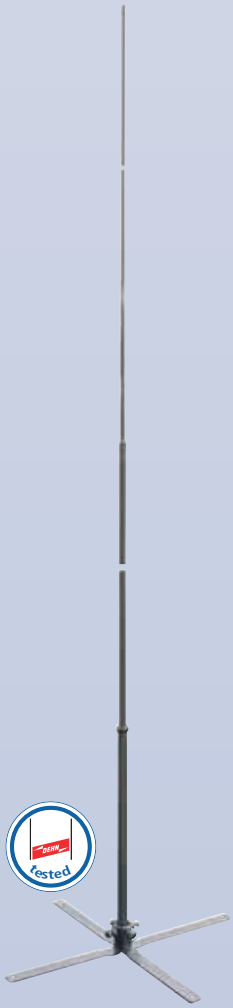


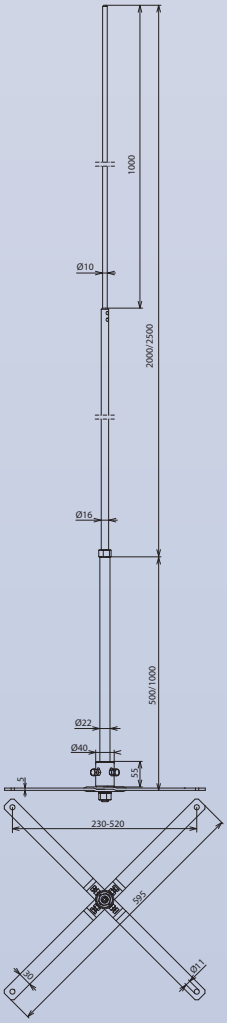
Part No.		123 021
Total length	mm	2000
Length (Ø16/10 mm)	mm	2000
Profile distance	mm	230-520
Fixing	mm	[4x] Ø11
Material of air-termination rod		Al
Material of braces		StSt
Material of nut/washer		StSt
Standard		EN 50164-2
Packing unit	pc(s)	1

Type with a length of 1500 mm (Part No. 103 211) available upon request.

Type with a height of up to 3500 mm

with adjustment to the roof inclination up to max. 10°





Part No.		123 425	123 430	123 435
Total length	mm	2500	3000	3500
Length (Ø16/10 mm)	mm	2000	2000	2500
Length (Ø22 mm)	mm	500	1000	1000
Profile distance	mm	230-520	230-520	230-520
Fixing	mm	[4x] Ø11	[4x] Ø11	[4x] Ø11
Material of air-term. rod		Al	Al	Al
Material of braces		StSt	StSt	StSt
Material of nut/washer		StSt	StSt	StSt
Standard		EN 50164-2	EN 50164-2	EN 50164-2
Packing unit	pc(s)	1	1	1

Air-termination Rod for Trapezoidal Sheet Metal Roofing

Air-termination rod for protecting roof superstructures, domelights etc.

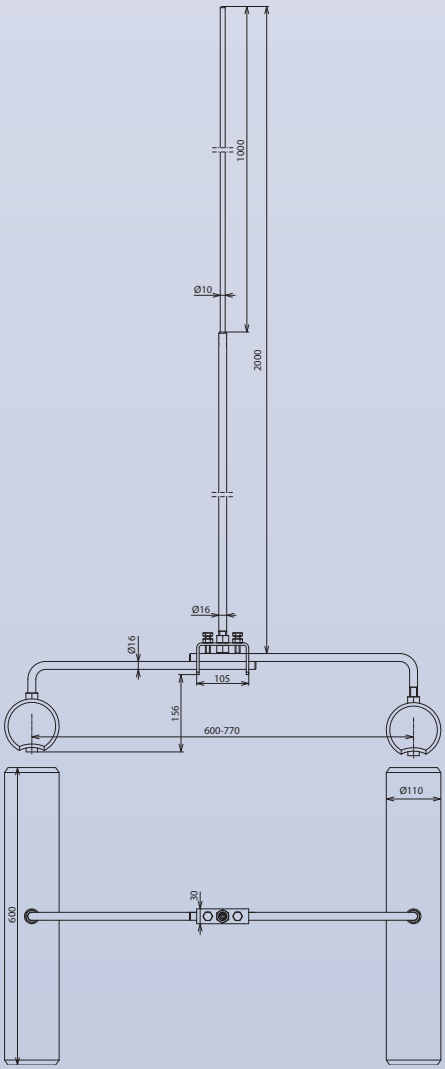
The air-termination rod will be set into the profile valley of the sheeting.

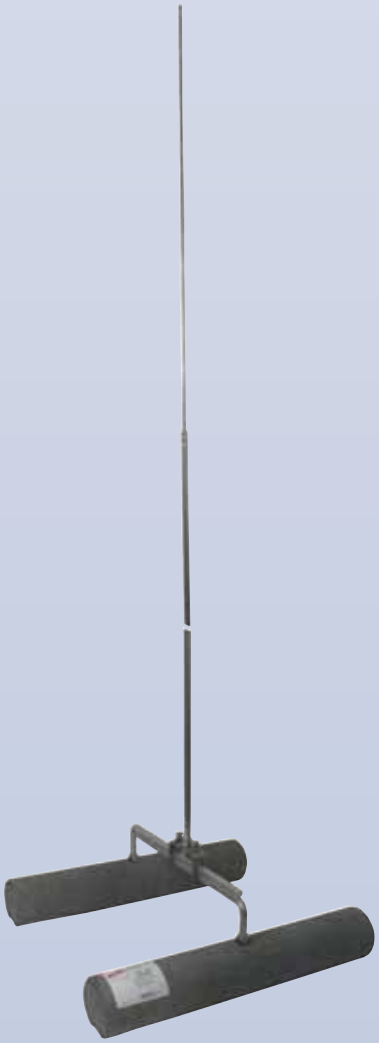
Due to the variable base frame it is adjustable to any trapezoidal profile.

The special support of the air-termination rod allows to compensate roof inclinations up to 10°.

Due to the integrated slip resistance there is no risk of the roof surface being damaged.

This air termination rod is dimensioned for wind velocities up to 145 km/h (wind load zone II).





Part No.		123 031
Total length	mm	2000
Length (Ø10 mm)	mm	1000
Length (Ø16 mm)	mm	1000
Profile distance	mm	600-770
Material of air-termination rod		Al
Material of bases		plastic
Material of braces		Al
Standard		EN 50164-2
Packing unit	pc(s)	1

Type with a length of 1500 mm (with Part No. 103 211) upon request

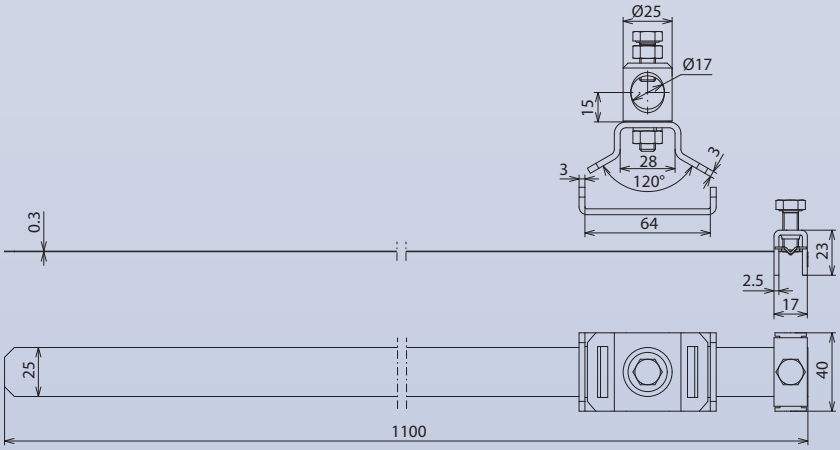
Pipe Clamp for Air-termination Rods

Pipe clamp for air-termination rods for fixing as well as lightning-current-carrying-capable contacting of the air-termination rod e.g. at metal subconstructions of photovoltaic (PV) installations (square hollow profile); typically installed at steel skeleton or reinforced concrete structures

For mounting at pipes, the pressure plate (flat plate 2x angled) has to be removed.

Two pipe clamps have to be mounted at every air-termination rod. Using two pipe clamps provides the mechanical strength and lightning current carrying capacity of 100 kA (10/350 µs).

The maximum free length of the respective air-termination rod according to the wind load has to be considered for the installation.

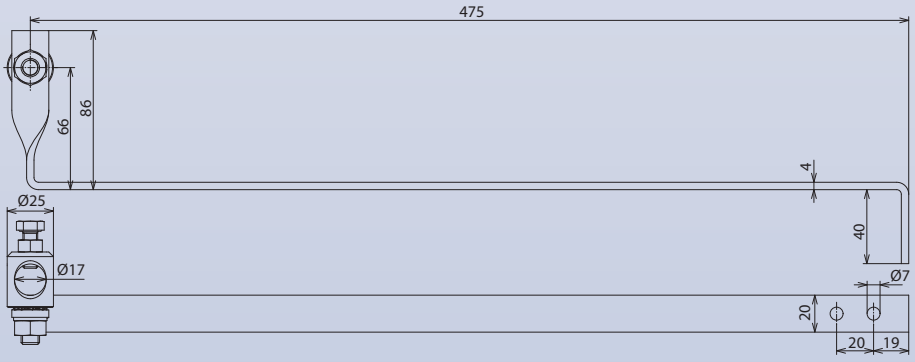


Part No.		540 105
Material of head/strip		StSt
Clamping range of square hollow profile	mm	40x60 up to 70x70
Clamping range of pipe	mm	50-300
Connection Rd	mm	16
Dimension of strip (l x w x d)	mm	1100x25x0.3
Screw	mm	M8x20
Material of screw		StSt
Standard		EN 50164-1
Packing unit	pc(s)	1

Rod Holder for Gable Roofs

Rod holder as footing for air-termination rods to be fixed on gable roofs with rotation locking (toothed washer) and lock nut as well as bores for screwing the brace at the roof battens

At the chimney the air-termination rod shall to be fixed additionally e.g. by means of DEHNiso spacer.



Part No.		223 005
Material of brace		St/tZn
Material of bolt		StSt
Fixing	mm	[2x] Ø7
Length of bolt	mm	475
Conductor holder support Rd	mm	16
Material of screw/nut		StSt
Screw	mm	M8x20
Packing unit	pc(s)	1

Angled Air-termination Spikes

Air-termination spikes for protecting e.g. PV free-field plants or carports with PV installation against direct lightning strike

With two saddle clamps the air-termination spike will be fixed e.g. at the metal subconstruction of the PV modules, thus providing a lightning-current-carrying-capable contact.

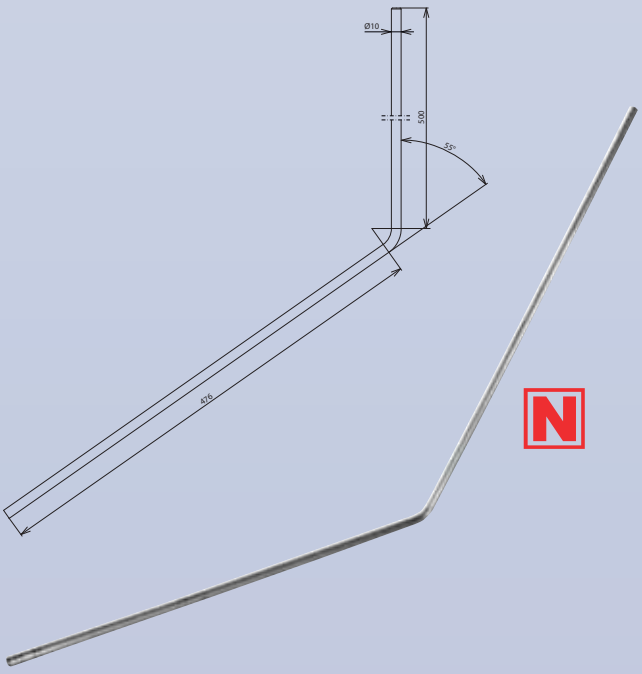
A maximum distance of 15 cm between the saddle clamps as well as the free length of ≤ 85 cm has to be minded concerning the installation of the air-termination spike which is dimensioned for wind velocities up to 162 km/h (wind load zone III).

Professional installation implements the mechanical strength and a lightning current carrying capability of 100 kA (10/350).

The air-termination spike is adjustable to the inclination angle of the PV system. The standard design provides an angle of 55° which corresponds to an inclination of the PV system of 35°.

Separate air-termination spike

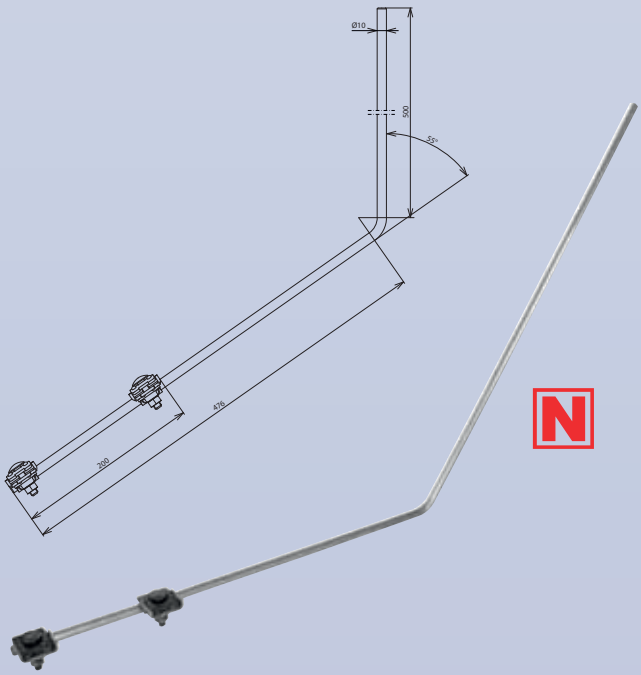
to be combined e.g. with terminal clamps for steel girders



Part No.		101 010
Total length	mm	1000
Material		Al
Diameter	mm	10
Packing unit	pc(s)	10

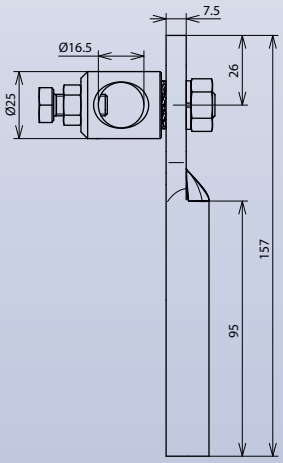
Air-termination spike with two saddle clamps (Part No. 365 031)

clamping range of the saddle clamps 0.7-8 mm



Part No.		101 110
Total length	mm	1000
Material		Al
Diameter	mm	10
Packing unit	pc(s)	1

Air-termination Rod Adapter



Air-termination rod adapter for uprighting air-termination rods in case of roof inclinations up to 10°

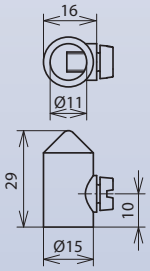
for concrete bases with wedge mounting technique (Part No. 102 010 or 102 340)

Part No.		106 008
Inclination		up to 10°
Material of support		St/tZn
Clamping range	mm	16
Material of bolt		StSt
Type of screw	mm	M8/M10
Material of screw		StSt
Packing unit	pc(s)	1

Air-termination Caps

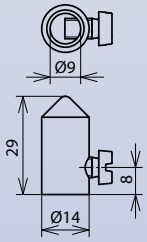
Air-termination caps to be attached ontop of the air-termination conductors

for steel or aluminium conductors



Part No.		110 000
Material		ZG
Conductor Rd	mm	7-10
Length	mm	29
Outside ∅	mm	15
Packing unit	pc(s)	50

for copper conductors



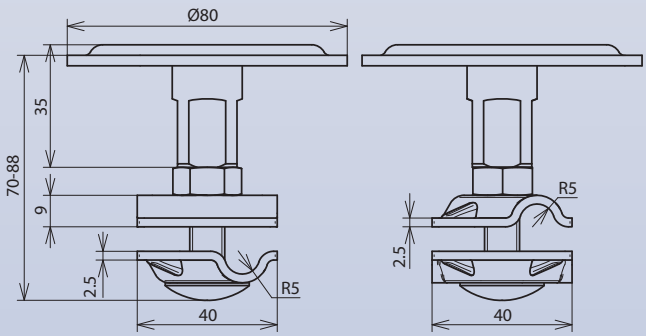
Part No.		110 017
Material		Ms/gal Cu
Conductor Rd	mm	8
Length	mm	29
Outside ∅	mm	14
Packing unit	pc(s)	10

Air-termination Stud

Air-termination stud for use in air-termination systems installed according to the mesh net method, for walkable and drivable flat roofs, e.g. parcking decks

The air-termination stud and the conductors can either be installed in concrete or in the joints of the deck slabs.

More details in installation instructions No.1505

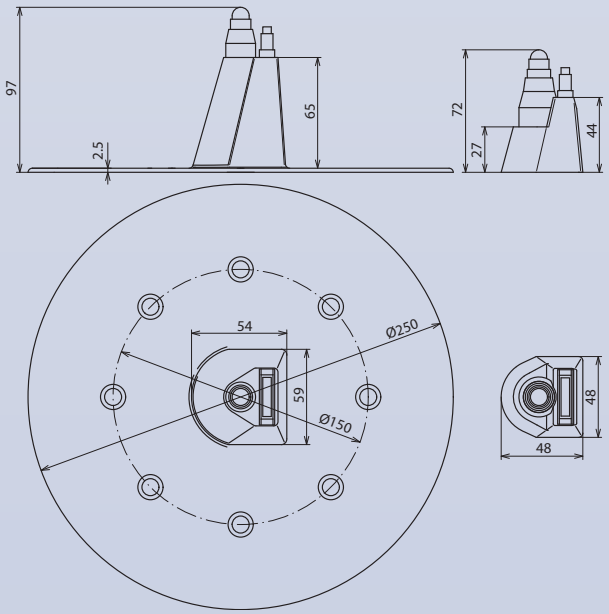


Part No.		108 009
Material of clamp		StSt
Material of stud		StSt
Connection Rd	mm	8-10
Standard		EN 50164-1
Installation depth	mm	min. 70
Levelling range	mm	18
Packing unit	pc(s)	10

For bushing and sealing of the roof when installing down conductors

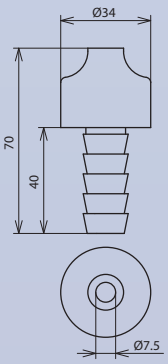
for flat roofing

The max. processing temperature of +110 °C has to be minded on installation. If the termination is higher than 100 mm, roof bushing and conductor have to be wrapped with a self-adhesive universal sealing tape (alu-fix tape).



Part No.		552 030
Material		plastic
Colour		black
Bushing Rd	mm	8 / 10 / 16
Bushing Fl	mm	20x2.5 / 30x3.5
Diameter	mm	250
Packing unit	pc(s)	25

for tiled and corrugated plate roofing



Part No.		552 010
Bore	mm	Ø16
Material		plastic
Colour		black
Bushing Rd	mm	8-10
Diameter	mm	34
Packing unit	pc(s)	25

Wind Load at Isolated Air-termination Systems

External lightning protection components such as air-termination rods, self-supporting air-termination rods in a tripod or ring conductors with concrete bases are to be established/installed under consideration of the wind load to be expected at the site of installation.

For calculation of the really expected wind load stressing not only the zone specific wind load but also the building height as well as the local conditions (detached building, in open country or with surrounding development) has to be taken into account. **Figure 1** shows that approx. 85 % of the area in Germany are attributed either to wind load zone I or II.

Zone	Dynamic pressure q [kN/m²]	Wind velocity v [km/h]	Wind force
I	0.80	127	12-17
II	1.05	145	
III	1.30	162	
IV	1.70	185	

Figure 1: Survey of wind load zones in Germany with the respective values of dynamic pressure and maximum wind velocity

The components are standardized and designed for wind velocities up to 145 km/h and a building height up to 40 m.

Other factors of influence such as

- building height of more than 40 m
- ground level above 600 m sea level (normal zero)
- dynamic pressure
- natural oscillation
- safety coefficients
- ice accretion

are to be taken into regard.

Air-termination rod	Zone I	Zone II	Zone III	Zone IV
1.5 m				
2.0 m				
2.5 m				on request
3.0 m			on request	on request

The particulars apply for all tapered air-termination rods.
The spacer is recommended to be mounted in the mid of the airtermination rod.

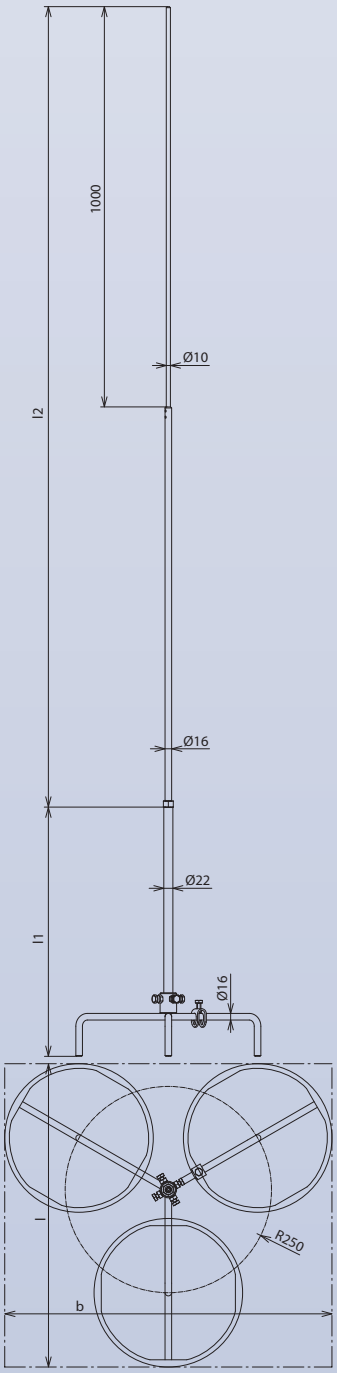
Following specifications about ring conductor height (Al round wire Ø8 mm), distance and type or quantity of concrete blocks are referring to wind load zone II.

Height of ring conductor	Distance of concrete bases Middle / Middle	
675 mm	800 mm	
1000 mm	1200 mm	
1500 mm	1200 mm	

Legend:

1x	concrete block (weight 8.5 kg)	Part No. 102 075
1x	concrete block (weight 17 kg)	Part No. 102 010
2x	concrete block stackered (weight 34 kg)	Part No. 102 010
1x	concrete block (weight 17 kg) with spacer made of GRP	Part No.102 010 e.g. Part No. 106 120

Self-supporting Air-termination Rods 2500 to 3500 mm



Self-supporting air-termination rods with tripod for the protection of roof-mounted structures, adjustable to the roof pitch up to max. 10°

The air-termination rods are dimensioned for wind velocities up to 145 km/ and 162 km/h (wind load zone II + III).

The concrete base (Part No. 102 075 or 102 010) and the support plate (Part No. 102 060 or 102 050) have to be ordered separately.

Air-termination rod	Concrete base	Support plate
Part No. 105 425	3x Part No. 102 075	3x Part No. 102 060
Part No. 105 430	3x Part No. 102 010	3x Part No. 102 050
Part No. 105 435	3x Part No. 102 010	3x Part No. 102 050

Components:

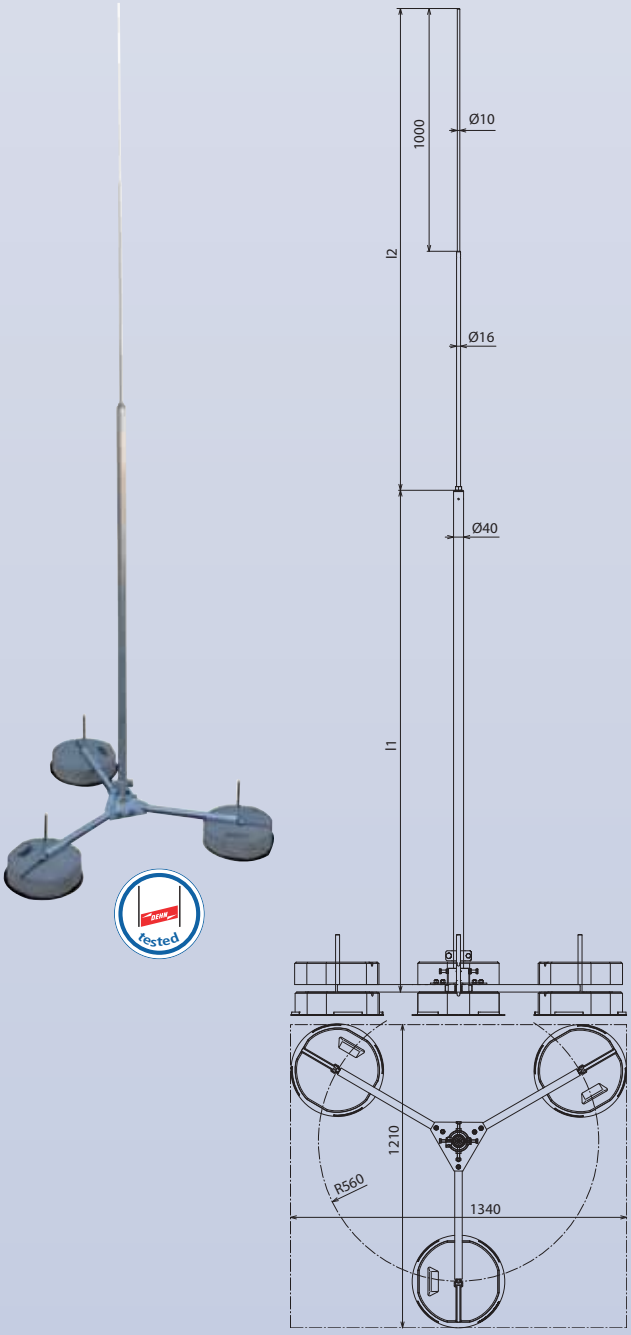
- pipe Ø22x4 mm
- air-termination rod, tapered Ø16/10 mm
- terminal clamp (rod clamp) for Rd 8-10 mm
- tripod for wedge mounting concrete base

More details in installation instructions No. 1712

Part No.		105 425	105 430	105 435
Height	mm	2500	3000	3500
Length (Ø22x4) (l1)	mm	500	1000	1000
Length (Ø16/10) (l2)	mm	2000	2000	2500
Radius	mm	250	250	250
Space required for tripod (l x w)	mm	620x670	750x810	750x810
Quantity of bases		3 of 8.5 kg each	3 of 17 kg each	3 of 17 kg each
Material of air-termination rod		Al	Al	Al
Material of tripod		St/tZn	St/tZn	St/tZn
Standard		EN 50164-(1+2)	EN 50164-(1+2)	EN 50164-(1+2)
Packing unit	pc(s)	1	1	1

Self-supporting Air-termination Rods 4000 to 8500 mm

up to a height of 5500 mm



Self-supporting air-termination rods with hinged tripod to protect larger roof superstructures and adjustment to the roof pitch up to max. 10° The air-termination rods are dimensioned for wind velocities up to 145 km/h (wind load zone II).

The stackable concrete base (Part No. 102 010) and the support plate (Part No. 102 050) have to be ordered separately.

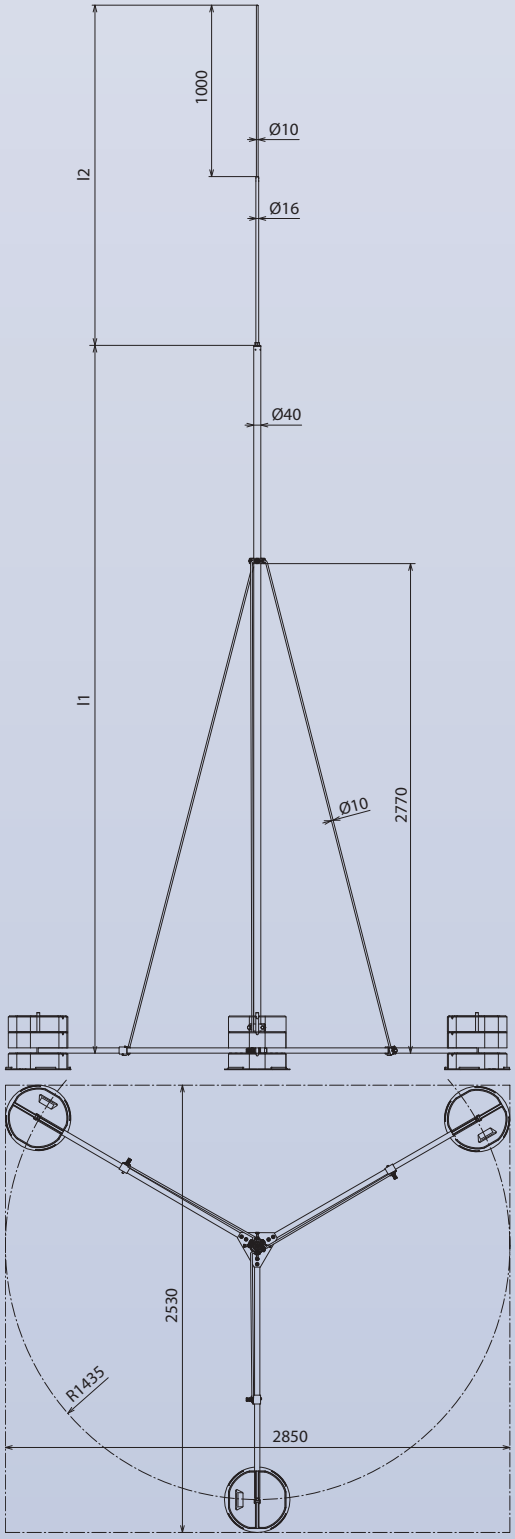
Components:
- pipe Ø40 x 5 mm
- air-termination rod tapered Ø16/10 mm
- terminal clamp for Rd 6-10 mm
- tripod for wedge mounting concrete bases

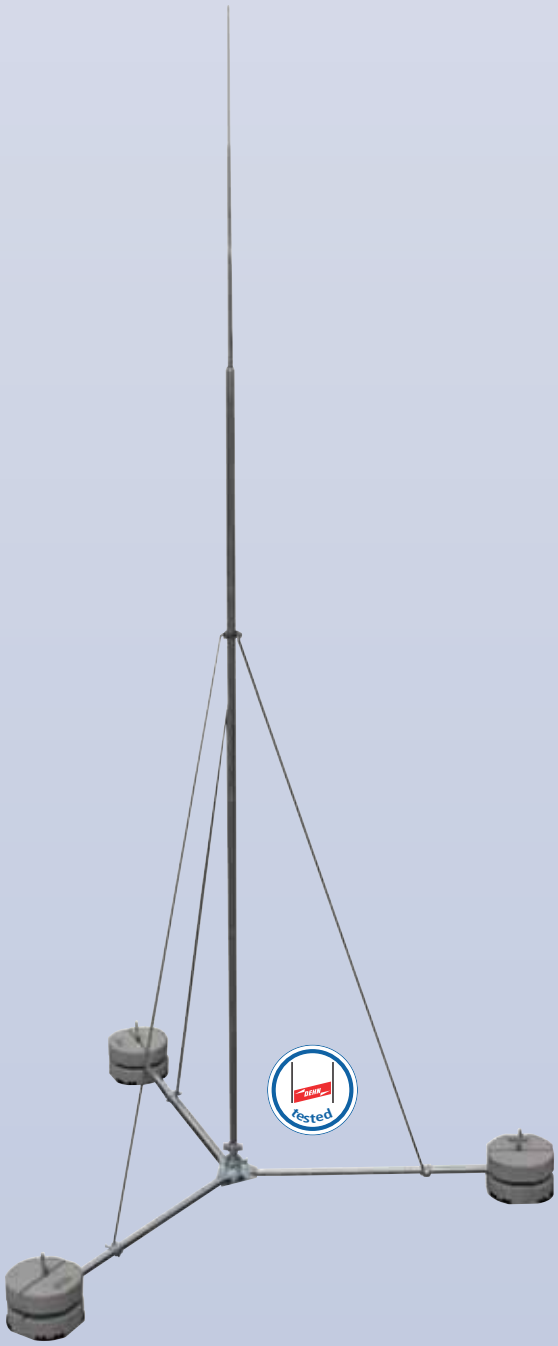
More details in installation instructions No. 1436

Part No.		105 400	105 450	105 500	105 550
Height	mm	4000	4500	5000	5500
Length (Ø40x5) (l1)	mm	2000	2000	3000	3000
Length (Ø16/10) (l2)	mm	2000	2500	2000	2500
Radius	mm	560	560	560	560
Space required for tripod (l x w)	mm	1180x1320	1180x1320	1180x1320	1180x1320
Quantity of concrete bases		3 of 17 kg each	3 of 17 kg each	6 of 17 kg each	6 of 17 kg each
Material of tripod		St/tZn	St/tZn	St/tZn	St/tZn
Material of air-termination rod		Al	Al	Al	Al
Standard		EN 50164-(1+2)	EN 50164-(1+2)	EN 50164-(1+2)	EN 50164-(1+2)
Packing unit	pc(s)	1	1	1	1

Self-supporting Air-termination Rods 4000 to 8500 mm

up to a height of 8500 mm with adjustable StSt braces Ø10 mm





Part No.		105 600	105 650	105 700	105 750	105 800	105 850
Height	mm	6000	6500	7000	7500	8000	8500
Length (Ø40x5) (l1)	mm	4000	4000	5000	5000	6000	6000
Length (Ø16/10) (l2)	mm	2000	2500	2000	2500	2000	2500
Radius	mm	1435	1435	1435	1435	1435	1435
Space required for tripod (l x w)	mm	2490x2830	2490x2830	2490x2830	2490x2830	2490x2830	2490x2830
Quantity of concrete bases		6 of 17 kg each	6 of 17 kg each	6 of 17 kg each	6 of 17 kg each	9 of 17 kg each	9 of 17 kg each
Material of tripod		St/tZn	St/tZn	St/tZn	St/tZn	St/tZn	St/tZn
Material of air-termination rod		Al	Al	Al	Al	Al	Al
Standard		EN 50164-(1+2)	EN 50164-(1+2)	EN 50164-(1+2)	EN 50164-(1+2)	EN 50164-(1+2)	EN 50164-(1+2)
Packing unit	pc(s)	1	1	1	1	1	1

Self-supporting Air-termination Rods 12/14 m

Self-supporting air-termination rods with hinged tripod to protect larger roof superstructures or for erection on solid ground without foundation works adjustable to the roof inclination up to max. 5°

The air-termination rods are dimensioned for wind velocities up to 145 km/h (wind load zone II).

The stackable concrete base (Part No. 102 010) and the support plate (Part No. 102 050) have to be ordered separately.

The tapered pipes will be telescoped and then screwed together.
The transport length is approx. 4500 mm.

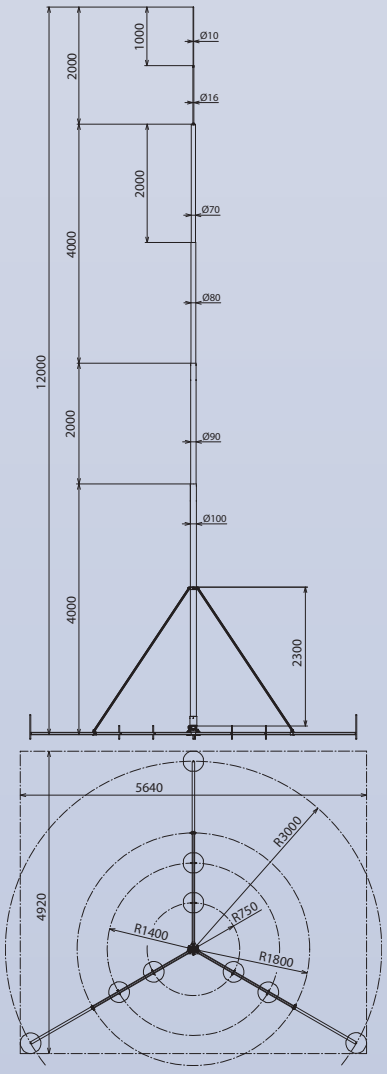
More details in installation instructions No.1683

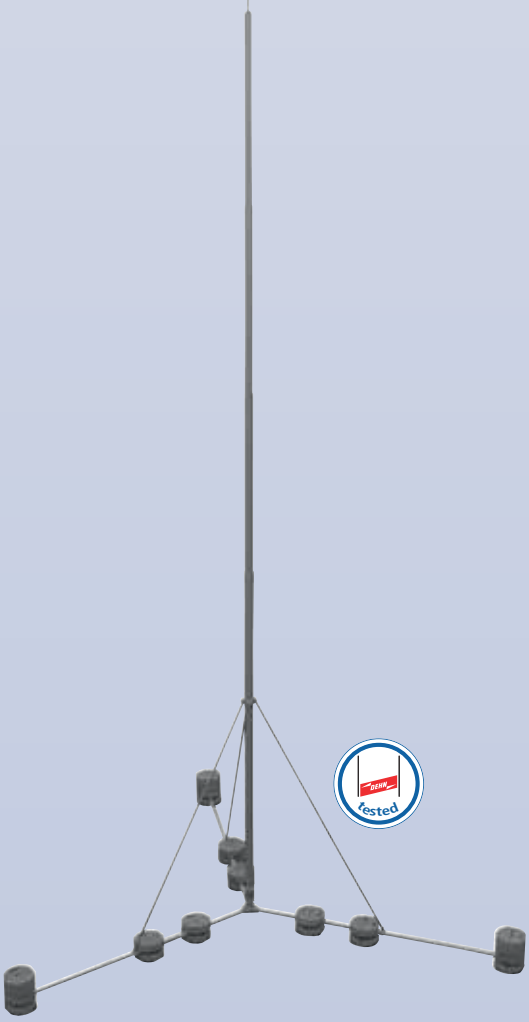
Components:

Aluminium pipe, tapered:

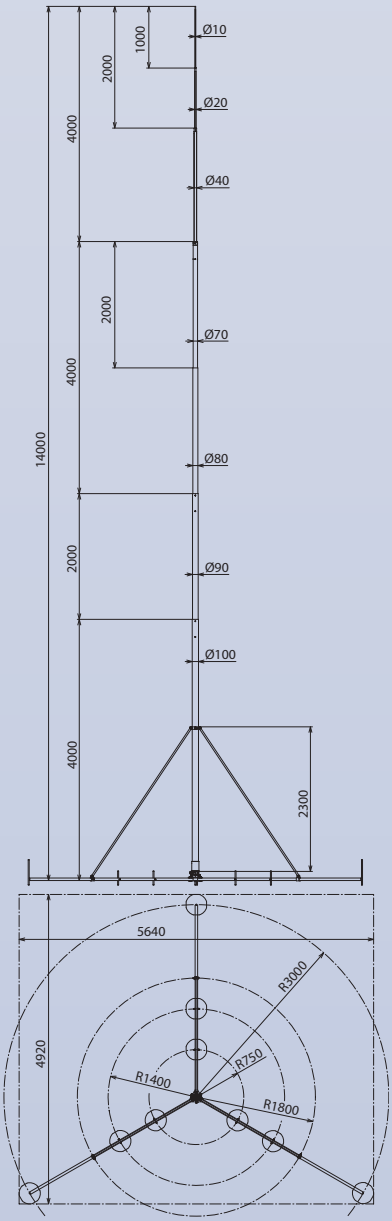
- pipe Ø100x5 mm, length approx. 4000 mm
- pipe Ø90x3 mm, length approx. 2000 mm
- pipe Ø80x3 mm + Ø70x3 mm, length approx. 2000 mm each
- opt. pipe Ø40x5 mm, length approx. 2000 mm
- air-termination rod Al
- terminal clamp for Rd 6-10 mm
- tripod for wedge mounting concrete bases including StSt braces 20x20x2 mm

free height 12 m





free height 14 m



Part No.		105 912
Height	mm	12000
Air-termination rod (Ø length)	mm	16/10-2000
Radius	mm	3000
Space required for tripod	mm	4920x5640
Quantity of concrete bases		21 of 17 kg each
Material of tripod		St/tZn
Material of air-termination rod		Al
Standard		EN 50164-(1+2)
Roof load	kg	approx. 460
Packing unit	pc(s)	1

Part No.		105 914
Height	mm	14000
Air-termination rod (Ø length)	mm	20/10-2000
Radius	mm	3000
Space required for tripod	mm	4920x5640
Quantity of concrete bases		24 of 17 kg each
Material of tripod		St/tZn
Material of air-termination rod		Al
Standard		EN 50164-(1+2)
Roof load	kg	approx. 515
Packing unit	pc(s)	1

Telescopic Lightning Protection Mast with Screw Foundation

Air-termination mast to protect special facilities e.g. biogas plants or free-field PV installation plants against direct lightning strike

The masts will be established with screw foundation.

Excavation or foundation works are not necessary.

The screw foundation will just be screwed into the ground and fixed additionally with earth rods.

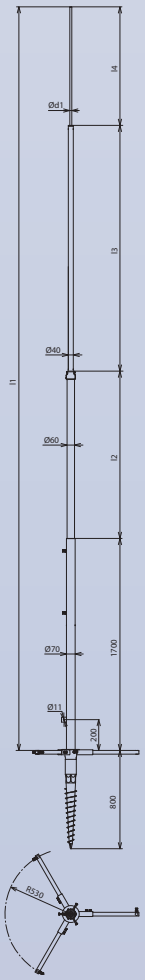
Three earth rods ∅20 mm with a length of 1500 mm (Part No. 620 151) each are necessary for the screw foundation.
These have to be ordered separately.

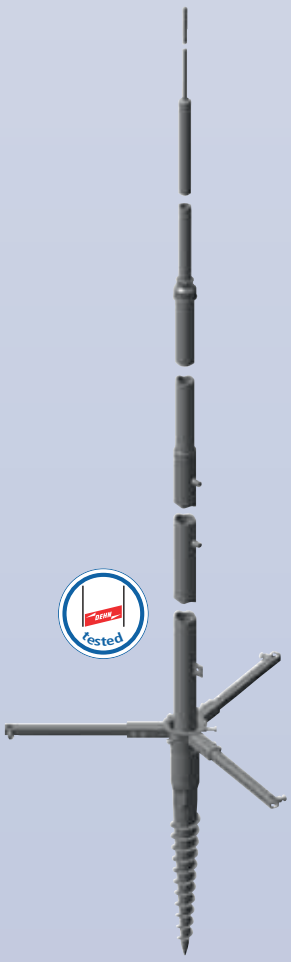
The masts are designed for wind velocities up to 145 km/h (wind load zone II).
These calculations are based on an applied pressure of 0.02 kN/cm² of natural ground (e.g. loam, sand, medium tight gravel).

Components:
- air-termination mast out of St/tZn and Al, tapered ∅70/60/40 mm
- air-termination rod out of Al ∅16/10 mm, length 1 or 2 m with thread M16
- screw foundation out of St/tZn, length 800 mm with braces of length 530 mm and M10 locking screws with lock nut
- earthing terminal lug with boring ∅11 mm

Advantages:
- easy erection due to tapered design out of St/tZn and aluminium
- if necessary, the air-termination mast can simply be removed from the screw foundation and put down

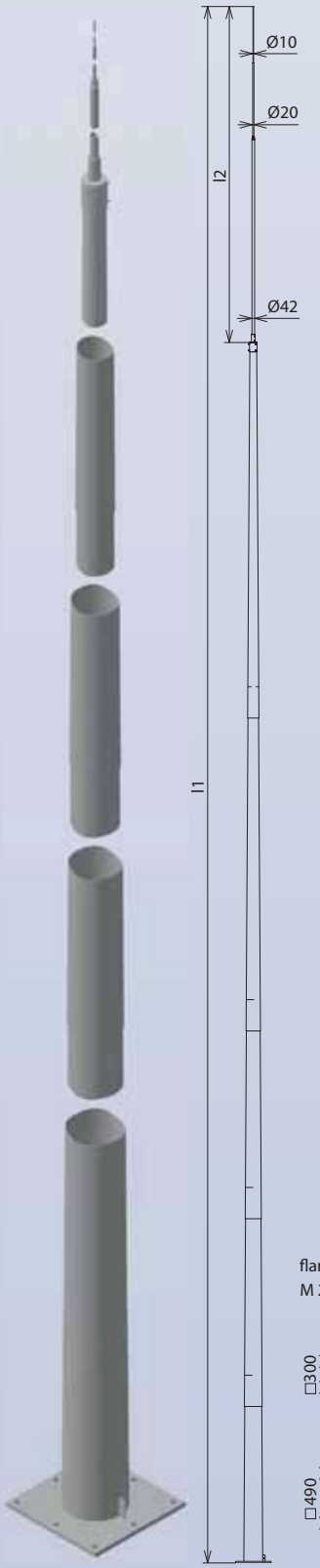
More details in installation instructions No. 1581





Part No.		103 121	103 122	103 123	103 124	103 125	103 126
Material		St/tZn / Al	St/tZn / Al	St/tZn / Al	St/tZn / Al	St/tZn / Al	St/tZn / Al
Height above floor (l1)	mm	6000	7000	8000	9000	10000	11000
Length of pipe ∅70 mm	mm	1700	1700	1700	1700	1700	1700
Length of pipe ∅60 mm (l2)	mm	2000	2000	4000	4000	6000	6000
Length of pipe ∅40 mm (l3)	mm	2000	2000	2000	2000	2000	2000
Air-termination rod (d1) (l4)	mm	16 / 1000	16/10 / 2000	16 / 1000	16/10 / 2000	16 / 1000	16/10 / 2000
Standard		EN 50164-(1+2)	EN 50164-(1+2)	EN 50164-(1+2)	EN 50164-(1+2)	EN 50164-(1+2)	EN 50164-(1+2)
Packing unit	pc(s)	1	1	1	1	1	1

Telescopic Lightning Protection Mast in Bucket or Concrete Foundation



Air-termination masts to protect special facilities, e.g. biogas plants, free-field PV installation plants, Ex systems, ammunition dumps etc. against direct lightning strike

This air-termination mast system turns whole systems/areas into strike protected areas (lightning protection zone 0_B) without a horizontal air-termination system (spanning of cables) having to be installed.

The separation distance s according to EN 62305-3 between the air-termination mast and the object to be protected has to be kept.

The masts will be set up with bucket foundation (pre-fabricated element) or an on-site concrete foundation with foundation basket (to be ordered separately). For details on the locking system, the foundation and installation see installation instructions No. 1729.

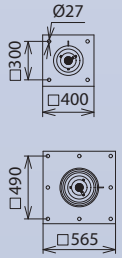
The masts are dimensioned for wind velocities up to 162 km/h (wind load zone III).

Advantages of the air-termination mast system:
- excavation works can be completely done in advance
- installation on (prefabricated) bucket foundation requires little on-site efforts
- or installation on concrete foundation on site with foundation basket (time of concrete hardening has to be taken into account for scheduling and installation)
- type with flange plate for quick mounting
- easy adjustment by threaded bolts M24
- detailed installation instructions
- statical calculations (upon request)

Components:
- air-termination rod St/tZn Ø42/20/10 mm length 2400 or 5400 mm with thread M20 and lock nut
- conic mast segments
- flange plate with terminal lug and bore Ø12 mm for earth connection (of round conductor Ø10 mm e.g. with KS connector Part No. 301 019)

max. transport length 6 m

flange plate
M 2:1



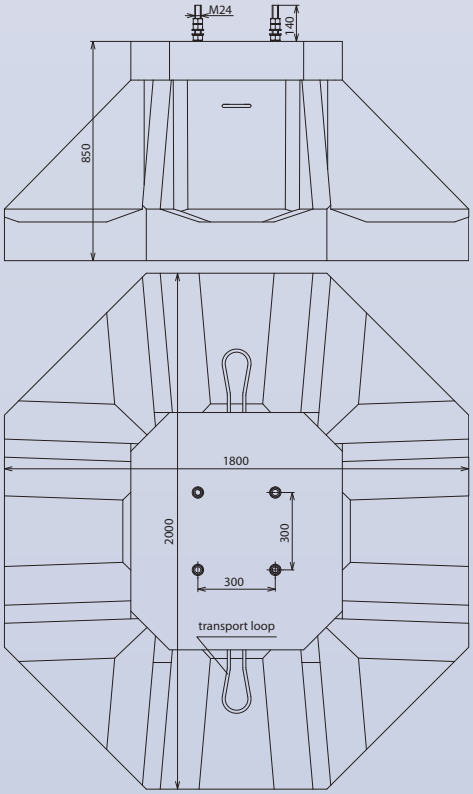
Part No.		103 013	103 016	103 019	103 022	103 025
Material		St/tZn	St/tZn	St/tZn	St/tZn	St/tZn
Height above floor (l1)	m	13.35	16.35	19.35	22.35	24.85
Mast segments		2	2	3	4	5
Length of air-termination rod (l2)	mm	2400	5400	5400	5400	5400
Dimension of flange plate	mm	400x400	400x400	400x400	565x565	565x565
Type of flange plate	mm	4xØ28 for 4xM24 (300x300)	4xØ28 for 4xM24 (300x300)	4xØ28 for 4xM24 (300x300)	8xØ28 for 8xM24 (490x490)	8xØ28 for 8xM24 (490x490)
Concrete foundation on-site (a x b x c)	mm	1400x1400x900	1400x1400x900	1600x1600x900	1800x1800x900	2000x2000x900
Standard		EN 50164-(1+2)	EN 50164-(1+2)	EN 50164-(1+2)	EN 50164-(1+2)	EN 50164-(1+2)
Weight	kg	approx. 228	approx. 230	approx. 310	approx. 450	approx. 550
Packing unit	pc(s)	1	1	1	1	1

Bucket Foundations for Telescopic Lightning Protection Masts

Bucket foundations as pre-fabricated components for easy erection of the telescopic lightning protection masts

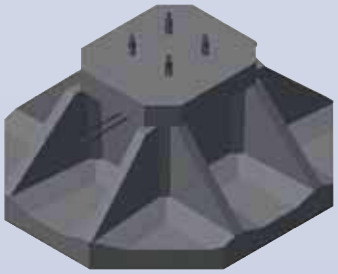
No need of on-site concreting.

More details in installation instruction No. 1729

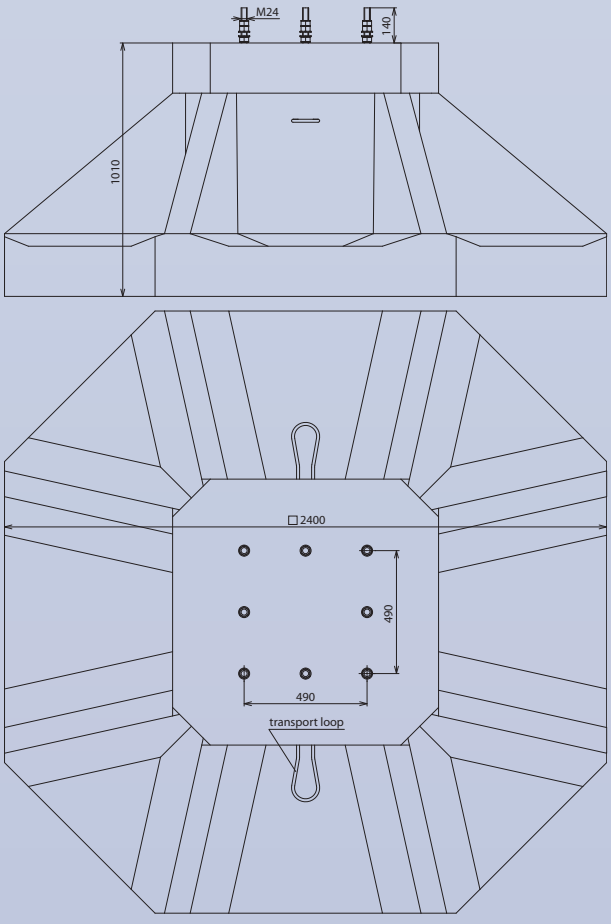


Type KöFU I

for masts with a height above floor of 13.35 to 19.35 m
(Part No. 103 013 / 103 016 / 103 019)
flange plate 400x400 mm

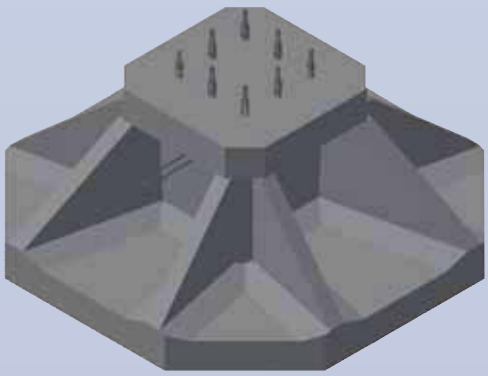


Part No.		103 030
Material		concrete (C50/60)
Dimension (l x b x h)	mm	1800x2000x850
Weight	t	approx. 2.5
Type of threaded bolts	mm	4xM24 (300x300)
Packing unit	pc(s)	1



Type KöFU II

for masts with a height above floor of 22.35 and 24.85 m
(Part No. 103 022 + 103 025)
flange plate 565x565 mm



Part No.		103 031
Material		concrete (C50/60)
Dimension (l x b x h)	mm	2400x2400x1010
Weight	t	approx. 4.9
Type of threaded bolts	mm	8xM24 (490x490)
Packing unit	pc(s)	1

Foundation Basket for On-site Concrete Foundation

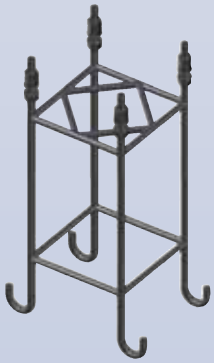
Foundation baskets for concreting

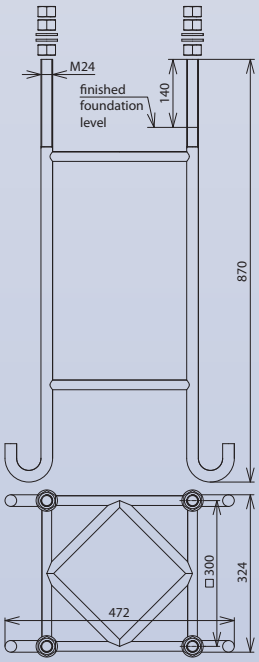
with threaded bolts, suitable for flange plate of the telescopic lightning protection masts

More details in installation instructions No. 1729

Small design

for masts with a height above floor of 13.35 m up to 19.35 m
(Part No. 103 013 / 103 016 / 103 019)
flange plate 400x400 mm

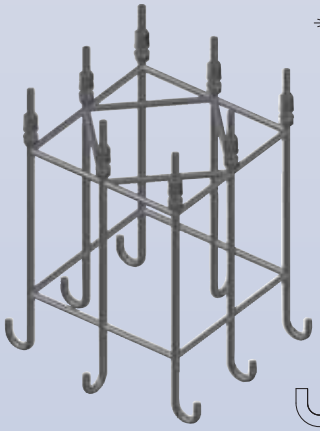


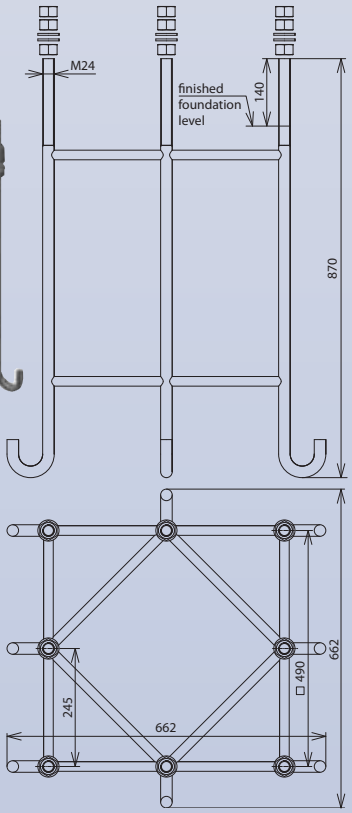


Part No.		103 040
Material		steel
Dimension (l x b x h)	mm	472x324x870
Type of threaded bolt	mm	4xM24 (300x300)
Packing unit	pc(s)	1

Large design

for masts with a height above floor of 22.35 m + 24.85 m
(Part No. 103 022 + 103 025)
flange plate 565x565 mm





Part No.		103 041
Material		steel
Dimension (l x b x h)	mm	662x662x870
Type of threaded bolt	mm	8xM24 (490x490)
Packing unit	pc(s)	1

Elevated air-termination system with spacers and concrete bases in the range of the electrical installation on the roof

Spacer with attachment, fixing bush and tensioning strap

Angled support with saddle clamp

Variable range of supports for conductors and air-termination rods for keeping the separation distance according to EN 62305-3

Spacer bar made of glass-fibre reinforced plastic (GRP), ∅16 mm, UV-stabilised, light grey colour, permanent temperature range -50 to +100 °C

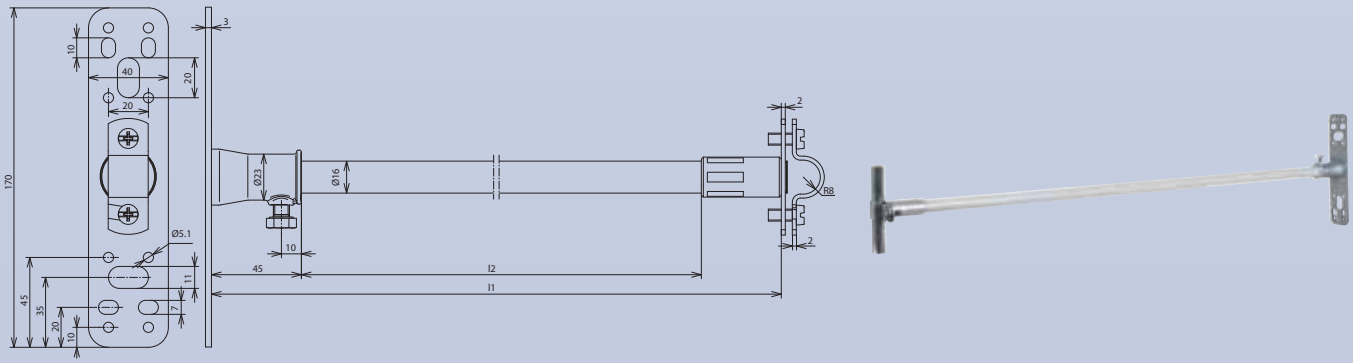
Material factor k_m = 0.7 is used to determine the separation distance (length of spacer bar)

A spacer bar length of 1000 mm is equivalent to a clearance of 700 mm

Design providing other spacer lengths available on request

with rod holder and fixing plate

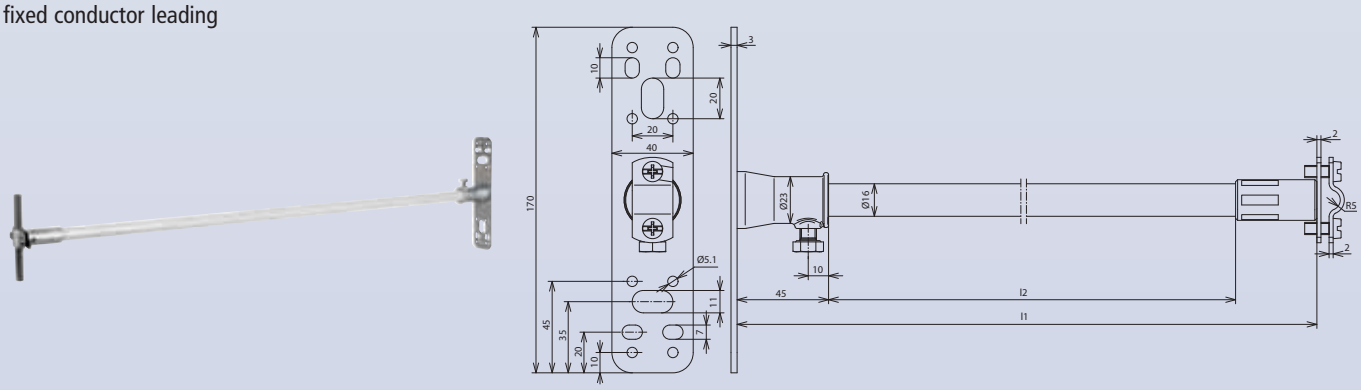
fixed conductor leading



Part No.		106 115	106 120	106 123
CH Rd	mm	16	16	16
Material of CH		StSt	StSt	StSt
Length (l1)	mm	530	690	1030
Insulating distance (l2)	mm	445	605	945
Fixing	mm	[8x] ∅5,1 / [4x] 7x10 / [2x] 11x20	[8x] ∅5,1 / [4x] 7x10 / [2x] 11x20	[8x] ∅5,1 / [4x] 7x10 / [2x] 11x20
Material of plate		StSt	StSt	StSt
Material of fixing bushing		ZDC	ZDC	ZDC
Packing unit	pc(s)	1	1	1

with conductor holder and fixing plate

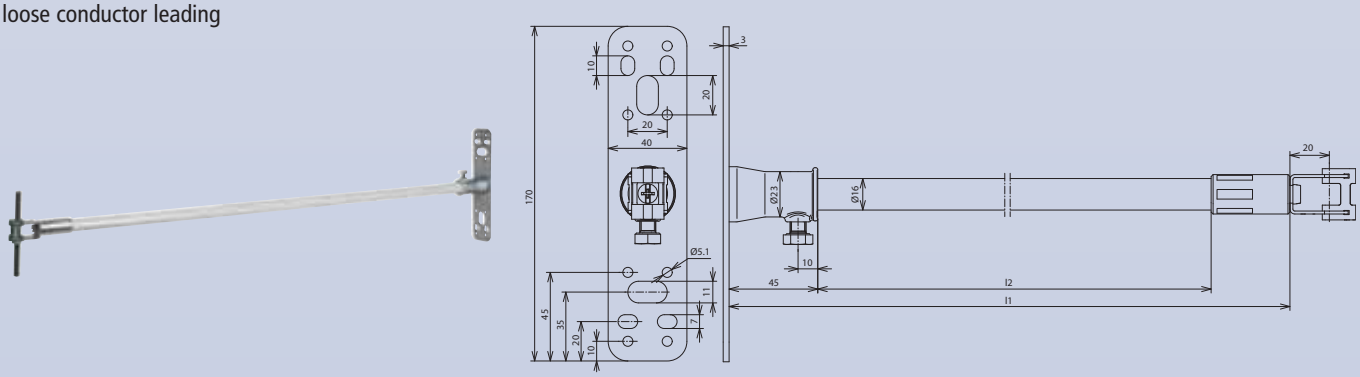
fixed conductor leading



Part No.		106 090	106 100	106 105
CH Rd	mm	7-10	7-10	7-10
Material of CH		StSt	StSt	StSt
Length (l1)	mm	530	690	1030
Insulating distance (l2)	mm	445	605	945
Fixing	mm	[8x] Ø5.1 / [4x] 7x10 / [2x] 11x20	[8x] Ø5.1 / [4x] 7x10 / [2x] 11x20	[8x] Ø5.1 / [4x] 7x10 / [2x] 11x20
Material of plate		StSt	StSt	StSt
Material of fixing bush		ZDC	ZDC	ZDC
Packing unit	pc(s)	1	1	1

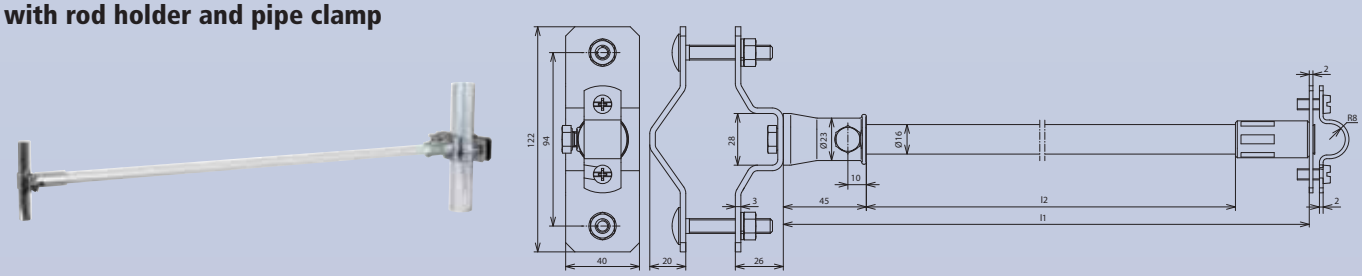
with conductor holder DEHNgrip and flixing plate

loose conductor leading



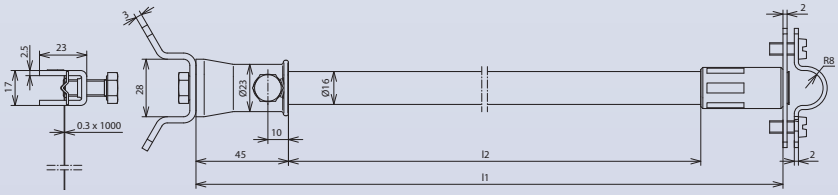
Part No.		106 110
CH Rd	mm	8
Material of CH		StSt
Length (l1)	mm	690
Insulating distance (l2)	mm	605
Fixing	mm	[8x] Ø5.1 / [4x] 7x10 / [2x] 11x20
Material of plate		StSt
Material of fixing bush		ZDC
Packing unit	pc(s)	1

with rod holder and pipe clamp



Part No.		106 225	106 226	106 228
CH Rd	mm	16	16	16
Material of CH		StSt	StSt	StSt
Length (l1)	mm	530	690	1030
Insulating distance (l2)	mm	445	605	945
Clamping range of pipe	mm	40-60 ($1^1/_4$ - 2")	40-60 ($1^1/_4$ - 2")	40-60 ($1^1/_4$ - 2")
Material of fixing bush		ZDC	ZDC	ZDC
Material of fixing element		StSt	StSt	StSt
Packing unit	pc(s)	1	1	1

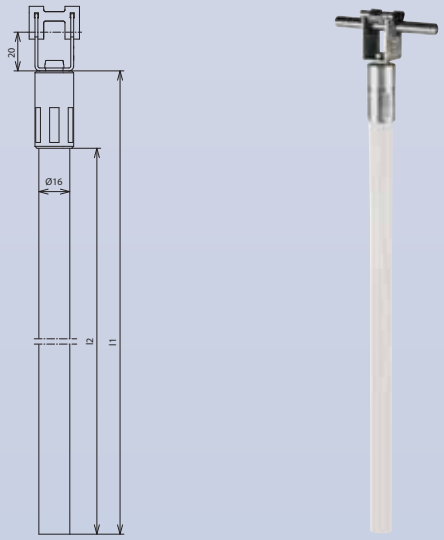
with rod holder and pipe clamp



Part No.		106 245	106 246	106 248
CH Rd	mm	16	16	16
Material of CH		StSt	StSt	StSt
Length (l1)	mm	530	690	1030
Insulating distance (l2)	mm	445	605	945
Clamping range of pipe	mm	50-300	50-300	50-300
Material of fixing bush		ZDC	ZDC	ZDC
Material of fixing element		StSt	StSt	StSt
Packing unit	pc(s)	1	1	1

with conductor holder DEHNgrip

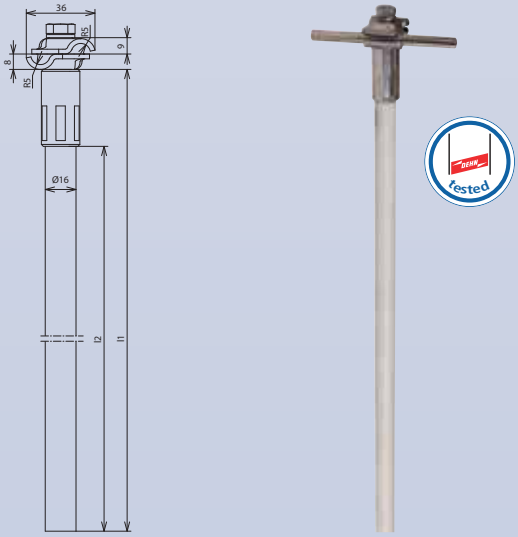
for installation e.g. in concrete base (Part No. 102 075)
loose conductor leading



Part No.		106 160
CH Rd	mm	8
Material of CH		StSt
Length (l1)	mm	675
Insulating distance (l2)	mm	590
Material of fixing bush		Al
Packing unit	pc(s)	1

with MMV clamp

for crossings, on installation in concrete base (Part No. 102 075)
fixed conductor leading



Part No.		106 150
CH Rd	mm	6-10
Material of CH		StSt
Length (l1)	mm	675
Insulating distance (l2)	mm	590
Material of fixing bush		Al
Packing unit	pc(s)	1

Single Parts for DEHNiso Spacers

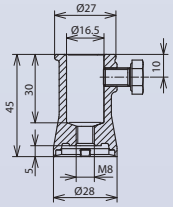
Spacer Bar

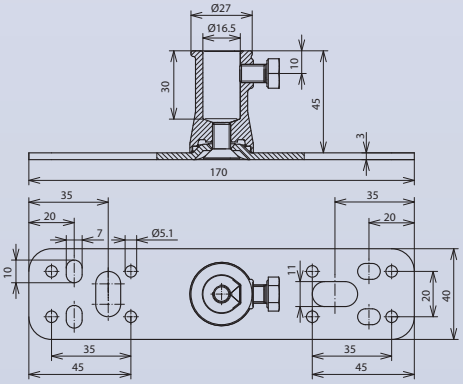
Part No.		106 125
Material		GRP
Permanent temperature range	°C	-50 to +100
Colour of spacer bar		light grey (RAL 7035)
Diameter	mm	16
Total length	mm	3000
Packing unit	pc(s)	1

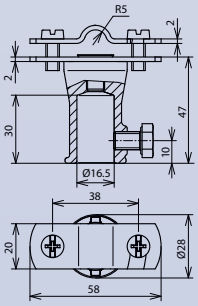
Tensioning Strap

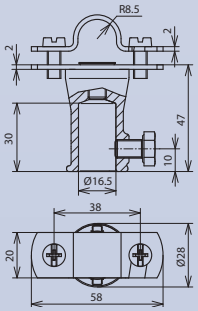
Part No.		540 901
Material		StSt
Dimension of strap (l x w x d)	mm	...x25x0.3
Length	m	100
Packing unit	pc(s)	1

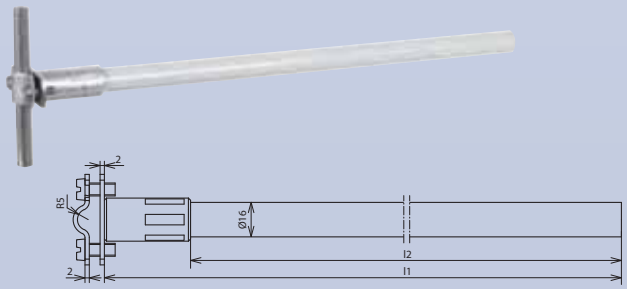
Single Parts for DEHNiso Spacers

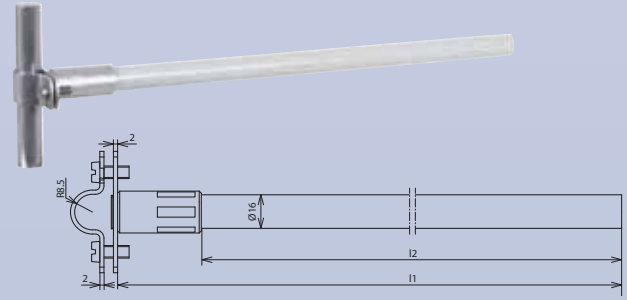












Fixing Bush

for variable fixing of conductor and rod holders at a spacer bar (Ø16 mm) with female thread M8

Part No.		106 126
Material		ZDC
Female thread		M8
Diameter	mm	23
Screw	mm	M8x12
Material of screw		StSt
Packing unit	pc(s)	20

Fixing Plate

basic plate for the spacer or the spacer bar (Ø16 mm) to be fixed e.g. at construction components

Part No.		106 127
Material of fixing plate		StSt
Material of fixing bush		ZDC
Fixing	mm	[8x] Ø5.1 / [4x] 7x10 / [2x] 11x20
Dimension (l x w x d)	mm	170x40x3
Screw	mm	M8x12
Material of screw		StSt
Packing unit	pc(s)	20

Conductor Holder with Fixing Bush

for conductors to be fixed at the GRP rod

Part No.		106 128
Material of conductor holder		StSt
Conductor holder support Rd	mm	7-10
Material of fixing bush		ZDC
Conductor leading		fixed
Screw	mm	M6x14 / M8x12
Material of screw		StSt
Packing unit	pc(s)	20

Rod Holder with Fixing Bush

for air-termination rods to be fixed at the GRP rod

Part No.		106 129
Material of conductor holder		StSt
Conductor holder support Rd	mm	16
Material of fixing bush		ZDC
Conductor leading		fixed
Screw	mm	M6x14 / M8x12
Material of screw		StSt
Packing unit	pc(s)	20

Spacer with Conductor Holder

for conductors to be fixed at different supports, fixed conductor leading

Part No.		106 165	106 170	106 175
Conductor holder support Rd	mm	7-10	7-10	7-10
Material of conductor holder		StSt	StSt	StSt
Length (l1)	mm	515	675	1015
Insulating clearance (l2)	mm	435	595	935
Material of bush		Al	Al	Al
Packing unit	pc(s)	1	1	1

Spacer with Rod Holder

for air-termination rods to be fixed at different supports, fixed conductor leading

Part No.		106 178	106 180	106 185
Conductor holder support Rd	mm	16	16	16
Material of conductor holder		StSt	StSt	StSt
Length (l1)	mm	515	675	1015
Insulating clearance (l2)	mm	435	595	935
Material of bush		Al	Al	Al
Packing unit	pc(s)	1	1	1

Single Parts for DEHNiso Spacers

Fixing Bolt

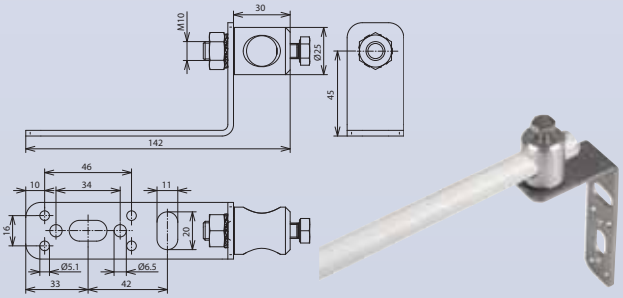
with thread M10, nut, toothed lock washer and screw for the support of the spacer bar

Part No.		106 301	106 309
Material of bolt		Al	StSt
Clamping range Rd	mm	16	16
Screw	mm	M8x12	M8x12
Material of screw/nut		StSt	StSt
Packing unit	pc(s)	20	20

Fixing Bracket

with fixing bolt for spacer bar (Ø16 mm)

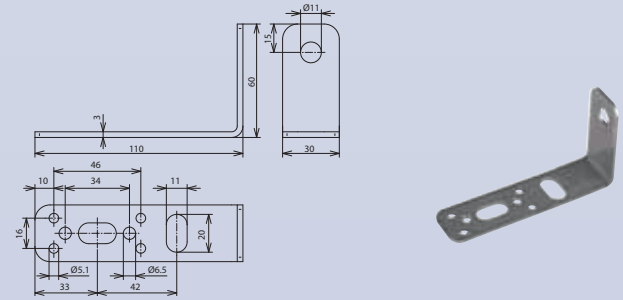
Part No.		106 311
Material		StSt
Angle		90°
Fixing	mm	[4x] Ø5.1 / [2x] Ø6.5 / [2x] 11x20
Dimension (l x w x h)	mm	110x60x30
Packing unit	pc(s)	20



Frixing Bracket

for DEHNiso spacer with bore Ø11 mm

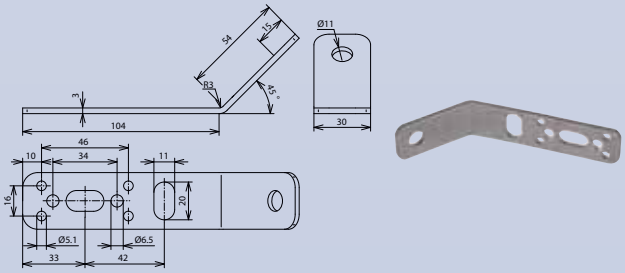
Part No.		106 310
Material		StSt
Angle		90°
Fixing	mm	[4x] Ø5.1 / [2x] Ø6.5 / [2x] 11x20
Dimension (l x w x h)	mm	110x60x30
Packing unit	pc(s)	20



Fixing Bracket

for DEHNiso spacer with bore Ø11 mm

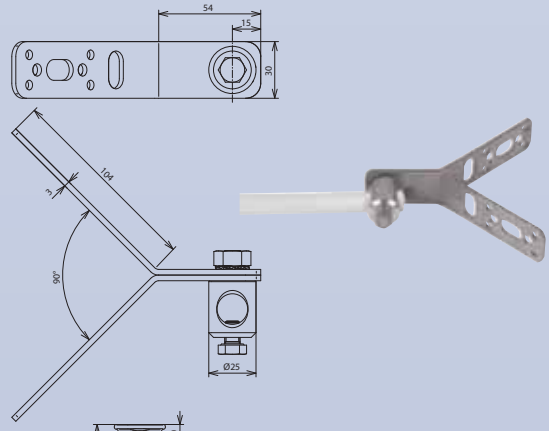
Part No.		106 315
Material		StSt
Angle		45°
Fixing	mm	[4x] Ø5.1 / [2x] Ø6.5 / [2x] 11x20
Dimension (l x w x h)	mm	104x54x30
Packing unit	pc(s)	20



Corner Bracket

with fixing bolt for spacer (Ø16 mm)

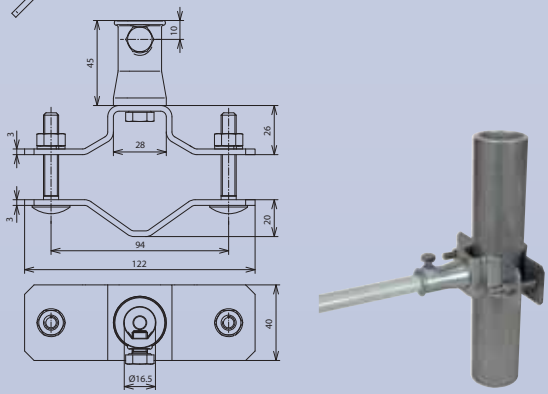
Part No.		106 316
Material		StSt
Angle		90°
Fixing	mm	[8x] Ø5.1 / [4x] Ø6.5 / [4x] 11x20
Dimension (l x w x h)	mm	132x155x30
Packing unit	pc(s)	20



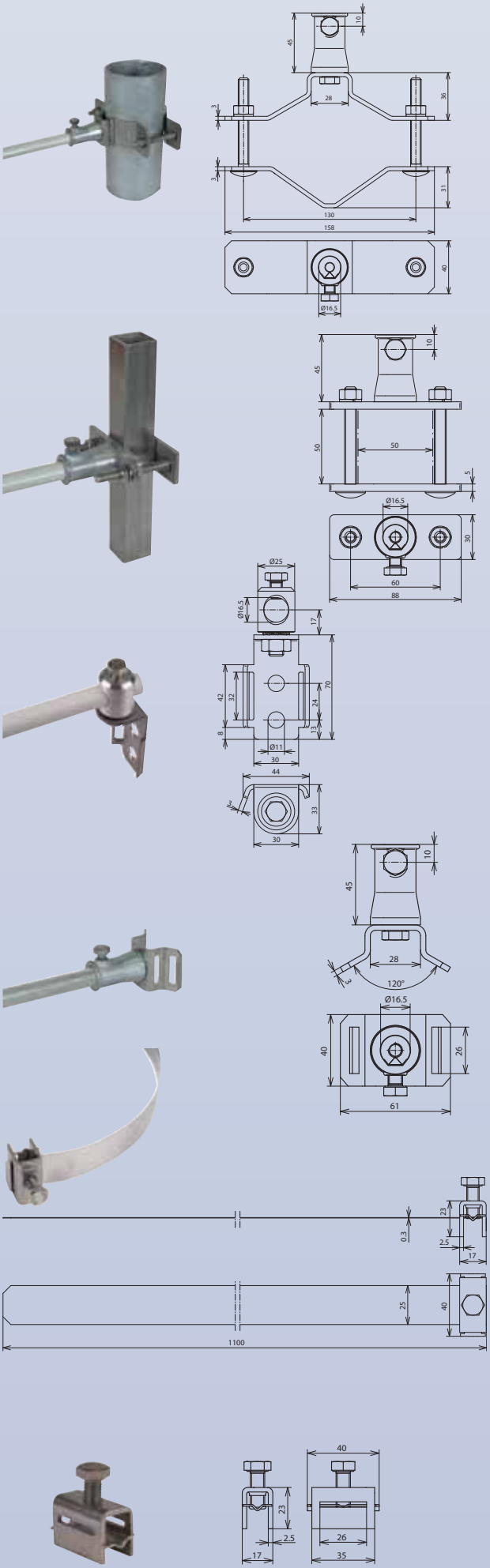
Pipe Clamp

with fixing bush for spacer (Ø16 mm) for pipes up to Ø60 mm

Part No.		106 352
Material of clamp		StSt
Clamping range Ø pipe	mm	40-60 ($1^1/_4$ - 2")
Material of bush		ZDC
Screw	mm	M8x50 / M8x12
Material of screw/nut		StSt
Packing unit	pc(s)	10



Single Parts for DEHNiso Spacers



Pipe Clamp

with fixing bush for spacer (Ø16 mm) for pipes up to Ø90 mm

Part No.		106 353
Material of clamp		StSt
Clamping range Ø pipe	mm	70-90 ($2^1/_4$ - 3")
Material of bush		ZDC
Screw	mm	M8x70 / M8x12
Material of screw/nut		StSt
Packing unit	pc(s)	10

Fixing Equipment for Railings

for square hollow profiles with bush for spacer

Part No.		106 312
Material		ZDC / StSt
Clamping range of square profile	mm	20x20 to 50x50
Screw	mm	M8x70 / M8x12
Material of screw		StSt
Packing unit	pc(s)	5

Fixing Clip for Spacers at Pipes

fixing by tensioning straps up to 30 mm

(e.g. tensioning strap 25x0.3 mm with grip head Part No. 106323) with fixing bolt

Part No.		106 321
Material of clip		StSt
Material of bolt		Al
Width of slot (l x w)	mm	32x6
Fixing	mm	[2x] Ø11
Packing unit	pc(s)	10

Attachment with Fixing Bush

for fixing of spacers at pipes e.g. with tensioning strap Part No. 106 323

Part No.		106 322
Material		StSt
Width of slot (l x w)	mm	26x6
Clamping range Rd	mm	16
Material of bush		ZDC
Packing unit	pc(s)	10

Pipe Clamp for Attachment and Clip

for fixing (tensioning) of clip (Part No. 106 321) or attachment with fixing bush (Part No. 106 322) at different pipes

Part No.		106 323
Material of head/strap		StSt
Clamping range Ø	mm	50-300
Dimension of strap (l x w x d)	mm	1100x25x0.3
Screw	mm	M8x20
Material of screw		StSt
Packing unit	pc(s)	10

Pipe Clamp for Attachment and Clip

separate grip head, for combination with endless tensioning strap (Part No. 540 901) for larger diameters e.g. for attachment with fixing bush (Part No. 106 322)

Part No.		106 324
Material of head		StSt
For strap (w x d)	mm	25x0.3
Screw	mm	M8x20
Material of screw		StSt
Packing unit	pc(s)	20

Adapter for Angled Support

for air-termination rods (Ø16 mm) with 2 fixing bolts for spacer bar (Ø16 mm)

Part No.		106 325
Material		StSt
Clamping range Rd	mm	16/16
Screw	mm	M6x12 / M8x12
Material of screw/nut		StSt
Packing unit	pc(s)	10

Adapter for Angled Support

for supporting tubes DEHNiso Combi (Ø50 mm) with 2 fixing bolts for spacer bar (Ø16 mm)

Part No.		106 326
Material		StSt
Clamping range Rd	mm	50/16
Screw	mm	M8x16
Material of screw/nut		StSt
Packing unit	pc(s)	10

Fixing Adapter

for saddle and terminal clamps, angled

Part No.		106 341
Material of bar		StSt
Bar Ø	mm	8
Angle		90°
Material of bush		ZDC
Packing unit	pc(s)	20

Fixing Adapter

for saddle and terminal clamps, angled

Part No.		106 342
Material of bar		StSt
Bar Ø	mm	8
Angle		130°
Material of bush		ZDC
Packing unit	pc(s)	20

Fixing Adapter

for saddle and terminal clamps, straight

Part No.		106 340
Material of bar		StSt
Bar Ø	mm	8
Angle		0°
Material of bush		ZDC
Packing unit	pc(s)	20

MV Clamp

especially for the fixing of air-termination rods at the spacer bar without fixing bush

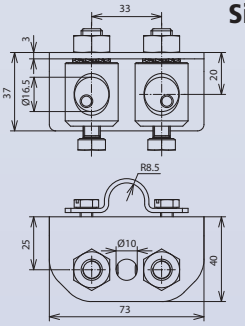
Part No.		393 069
Material		StSt
Conductor holder support Rd	mm	16/16
Conductor leading		fixed
Screw	mm	M10x50
Material of screw		StSt
Packing unit	pc(s)	50

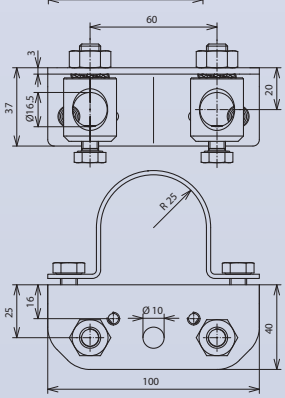
Terminal Clamp with Fixing Bolt

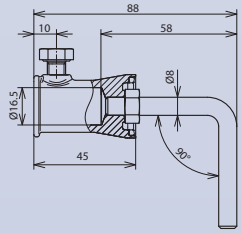
for fixing of spacers Ø16 mm e.g. at steel girders

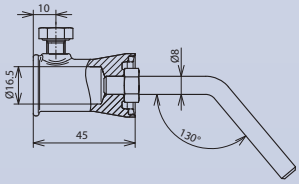
Part No.		106 319
Material of clamp		StSt
Clamping range	mm	5-18
Clamping range Rd	mm	16
Material of fixing bolt		Al
Screw	mm	M8x25
Packing unit	pc(s)	25

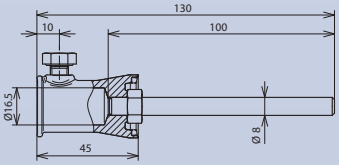
Single Parts for DEHNiso Spacers

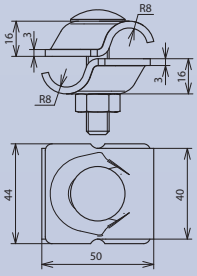


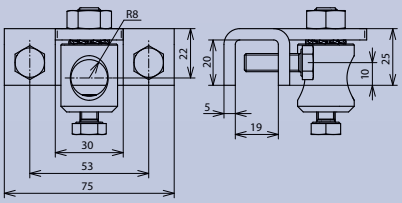












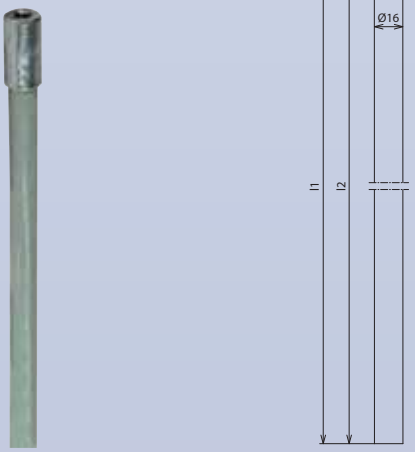

Air-termination rods for the implementation of isolated air-termination systems e.g. on flat roofs, installed on wedge mounting contrete base

Material factor k_m = 0.7 is used to determine the separation distance (length of spacer bar)
diameter 16 mm, UV stabilized, light grey colour, permanent temperature range -50° to +100 °C

The air-termination rods have to be installed with two concrete blocks (weight 17 kg each) for wind velocities up to 145 km/h (wind load zone II). The stackable concrete block (Part No. 102 010) and the support plate (Part No. 102 050) have to be ordered separately.

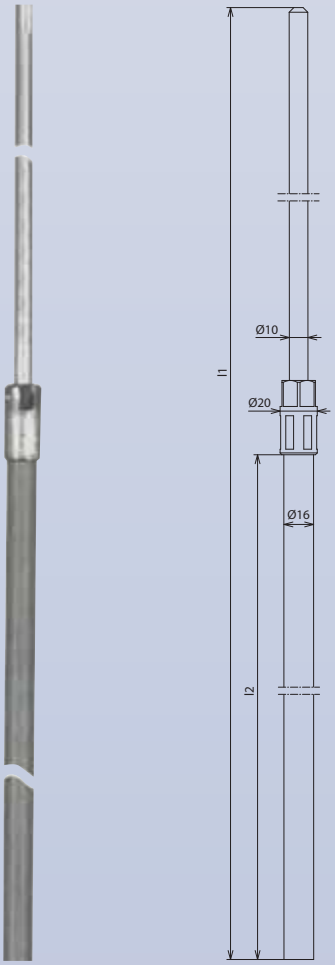
Variable design with thread M10

e.g. for air-termination spike Part No. 101 001, air-termination spike with MV clamp Part No. 105 071 (for crossings) or MV clamp for spanning Part No. 105 079



Part No.		106 214	106 217	106 220
Total length (l1)	mm	415	675	1015
Insulating distance (l2)	mm	375	635	975
Material of air-termination spike/bushing		Al	Al	Al
Material of spacer		GRP	GRP	GRP
Packing unit	pc(s)	10	10	10

Crimped design



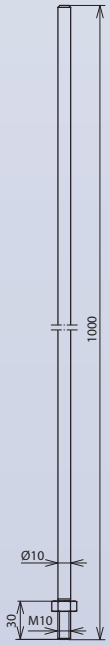
Part No.		106 207	106 210
Total length (l1)	mm	1660	2000
Insulating distance (l2)	mm	635	975
Material of air-termination spike/bushing		Al	Al
Material of spacer		GRP	GRP
Packing unit	pc(s)	10	10

Accessories for Air-termination Rods GRP/Al

Air-termination Spike with Lock Nut

for screwing

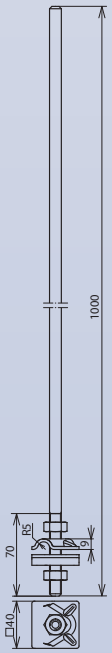
Part No.		101 001
Material		Al
Diameter	mm	10
Length	mm	1000
Thread		M10
Material of nut		StSt
Standard		EN 50164-2
Packing unit	pc(s)	1



Air-termination Spike with MV Clamp

for screwing

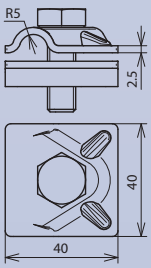
Part No.		105 071
Material of air-termination spike		Al
Material of MV clamp		StSt
Air-termination spike (l x Ø)	mm	1000x10
Clamping range Rd	mm	8-10
Thread		M10
Standard		EN 50164-(1+2)
Packing unit	pc(s)	1

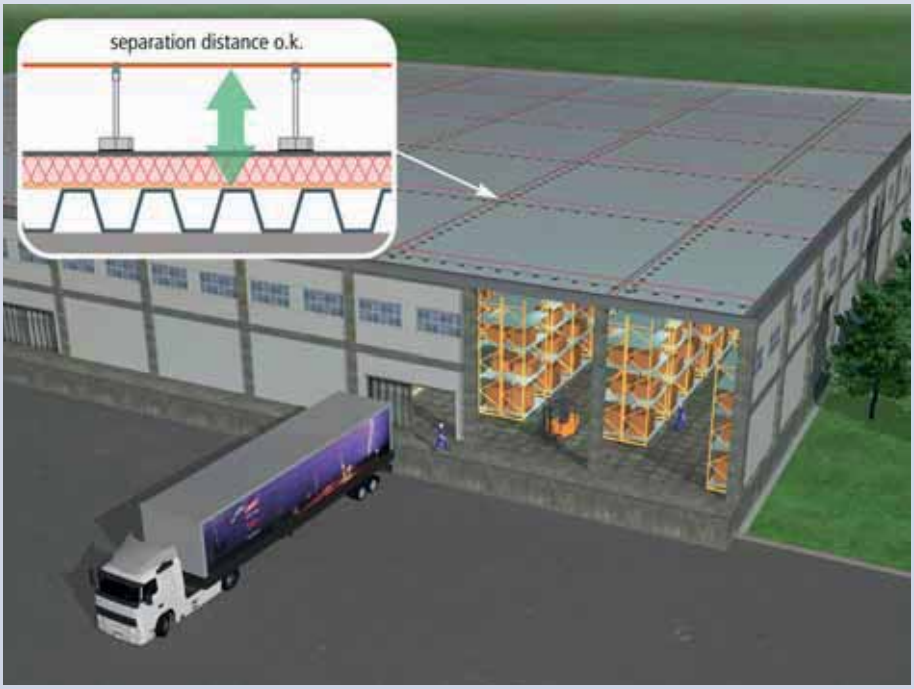


MV Clamp for Spanning

for screwing

Part No.		105 079
Material		StSt
Clamping range Rd	mm	8-10
Type of screw	mm	M10x30
Material of screw		StSt
Standard		EN 50164-1
Packing unit	pc(s)	1





Non-compliance with the separation distance can lead to sparkover from the external lightning protection system conductors to electrical and metal installations inside of the building or structure.
Nevertheless elecrical separation in external lightning protection is a problem which often is considered as less important. Consequently the meshes of the external lightning protection air-termination system installed e.g. on extended facilities such as logistics centres, high-bay warehouses or production buildings do not have the necessary separation distance to metal components and electrical systems lying underneath.

The roof conductor holders DEHNiso RCH have been developed for an easy and practical realisation of the electrical separation in external lightning protection. They consist of a glass-fibre reinforced plastic (GRP) bar with plastic conductor holder and a concrete block with support plate.

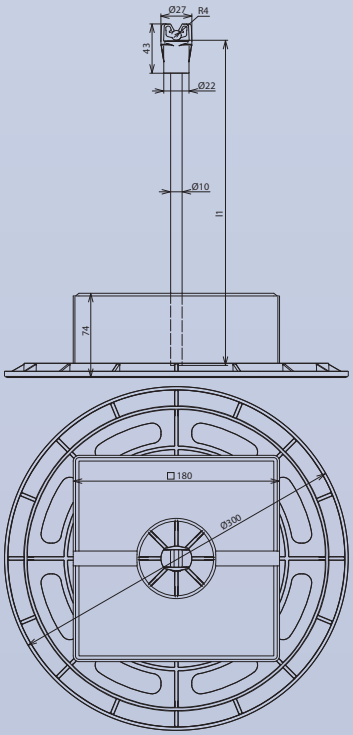
The distance between the roof conductor holders (mid to mid of GRP bar) is max. 1.2 m each.

The roof conductor holders are dimensioned for wind velocities up to 145 km/h and 162 km/h (wind load zone II and III) provided that the specified distance ≤ 1.2 m is complied with.
This system is compatible with GRP/Al air-termination rods, if there are e.g. roof superstructures being required as protected areas.

Spacer bar made of glass-fibre reinforced plastic (GRP) ∅10 mm, UV stabilized, light grey colour

Material factor k_m = 0.7 is applied to determine the separation distance (length of spacer bar).
The insulating clearance of 220 / 360 mm thus is equal to a separation distance of 150 / 250 mm (in air) or 300 / 500 mm (solid material).

Spacer with concrete block and support plate, loose conductor leading



Part No.		253 115	253 125
Conductor holder Rd	mm	8	8
Material of roof conductor holder		P/GRP	P/GRP
Length (l1)	mm	295	435
Insulating clearance	mm	220	360
Total weight	kg	approx. 5.2	approx. 5.2
Packing unit	pc(s)	24	24

Single Parts for DEHNiso Roof Conductor Holders

Spacer Bar with Conductor Holder

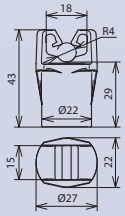
for fixing of conductors with concrete block and support plate
loose conductor leading

Part No.		253 315	253 325
Conductor holder support Rd	mm	8	8
Material of conductor holder		plastic	plastic
Length (l1)	mm	220	420
Insulating clearance	mm	280	360
Packing unit	pc(s)	24	24

Conductor Holder with Lock Bush

for the fixing of conductors at the GRP bar

Part No.		253 302
Ø lock bush	mm	10
Material		plastic
Colour		grey
Conductor holder support Rd	mm	8
Packing unit	pc(s)	24



Spacer Bar for DEHNiso Roof Conductor Holder

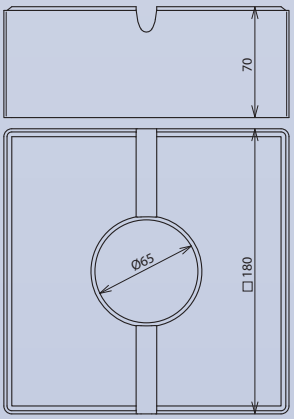
for cutting to length

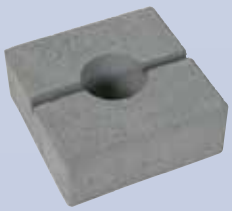
Part No.		253 310
Material		GRP
Permanent temperature range	°C	-50 to +100
Colour		light grey (RAL 7035)
Diameter	mm	10
Length	mm	3000
Packing unit	pc(s)	10

Concrete Block

for stabilization of the base plate with attached spacer bar

Part No.		253 301
Type		square open form
Material		concrete (C35/45)
Weight	kg	4.6
Dimension (l x w x h)	mm	180x180x70
Packing unit	pc(s)	24

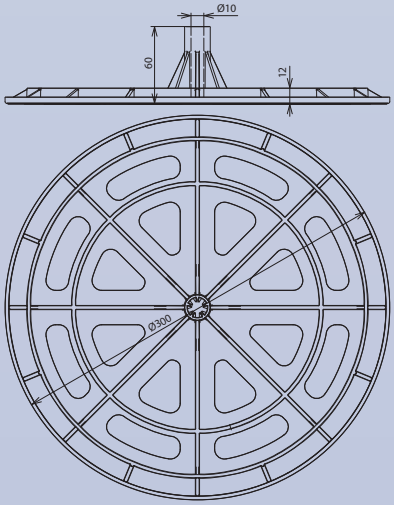


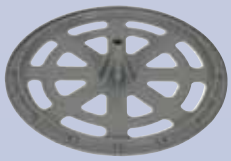


Support Plate

support plate with lock bush for the spacer bar (Part No. 253 315, 253 325) and as protection of the roofing sheets under the concrete block (Part No. 253 301)

Part No.		253 300
Diameter	mm	300
Diameter of lock bush	mm	10
Height	mm	60
Material		plastic
Colour		grey
Packing unit	pc(s)	24





Spacers at the supporting tube

Components for isolated air-termination systems (insulated)

to protect larger roof superstructures, e.g. air-conditioning systems, recooling plants etc.

For the separation distance to electrically conductive parts to be kept according to EN 62305-3

Tubes and spacers are made of glass-fibre reinforced plastic (GRP), are UV stabilized, of light grey colour and for a permanent temperature range of -50 to +100 °C

- complete unit ready-to-install
- low own weight
- stable overall construction
- single-screw fixing clamps
- various bore patterns for different mounting requirements

Material factor k_m = 0.7 is applied to determine the separation distance (length of the spacer bar.
A spacer bar of 1000 mm is equivalent to a clearance in air of 700 mm.

The distance between supporting tube head and upper holder (fixing point) is considered as maximum free length.

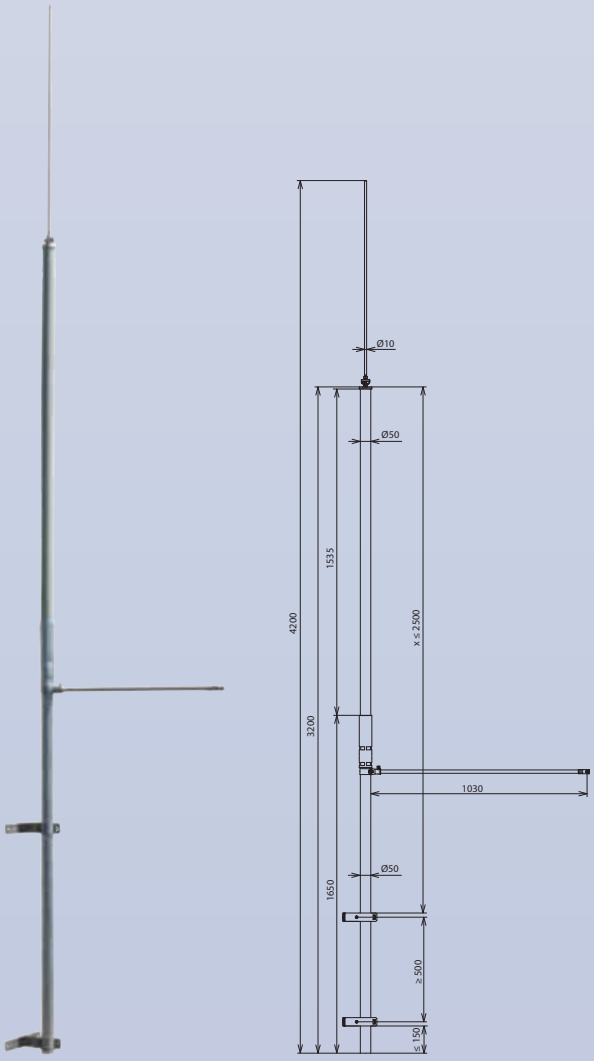
In case of an elevated spanning with aluminium cable (Part No. 840 050) distances of max. 10 m are allowed (mind the sagging).

More details in installation instructions No. 1475

Isolated air-termination system DEHNiso Combi

one-piece, total height 4200 mm

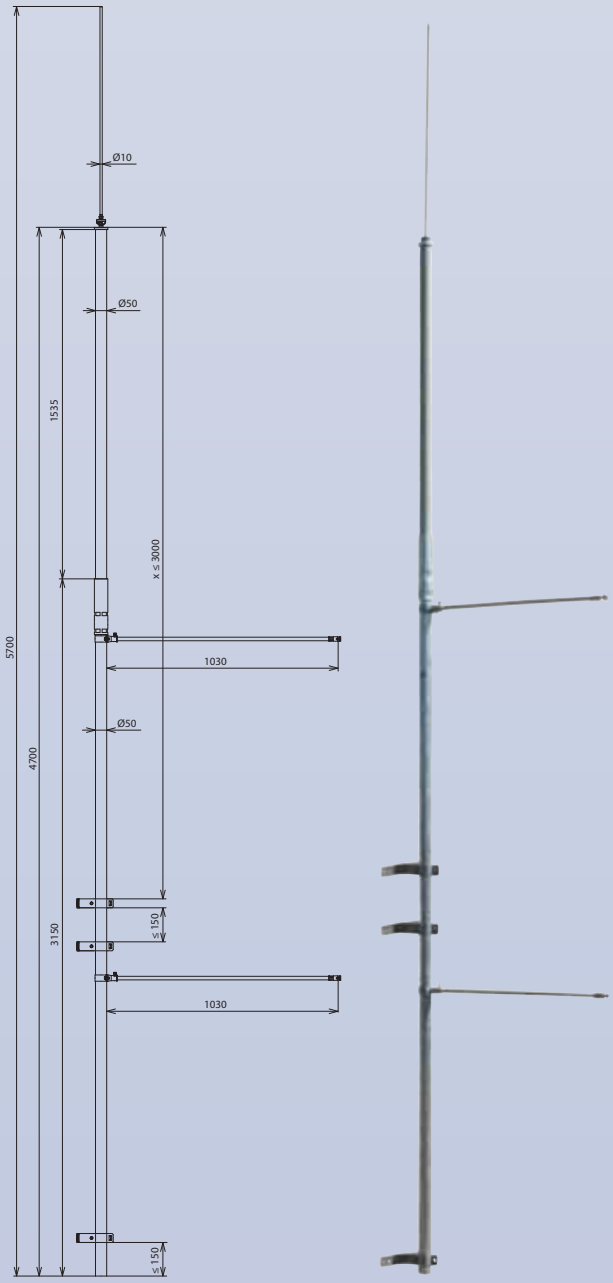
comprising
1x air-termination spike Al, L = 1000 mm (Part No. 105 071)
1x supporting tube GRP/Al, L = 3200 mm (Part No. 105 300)
2x wall fixing bracket StSt (Part No. 105 340)
1x spacer GRP/Al, L = 1030 mm (Part No. 106 331)



Part No.		105 440
Total length	mm	4200
Quantity of spacers		1
Quantity of fixing brackets		2
Length of supporting tube	mm	3200
Max. free length	mm	2500
Material of supporting tube		GRP / Al
Packing unit	pc(s)	1

one-piece, total height 5700 mm

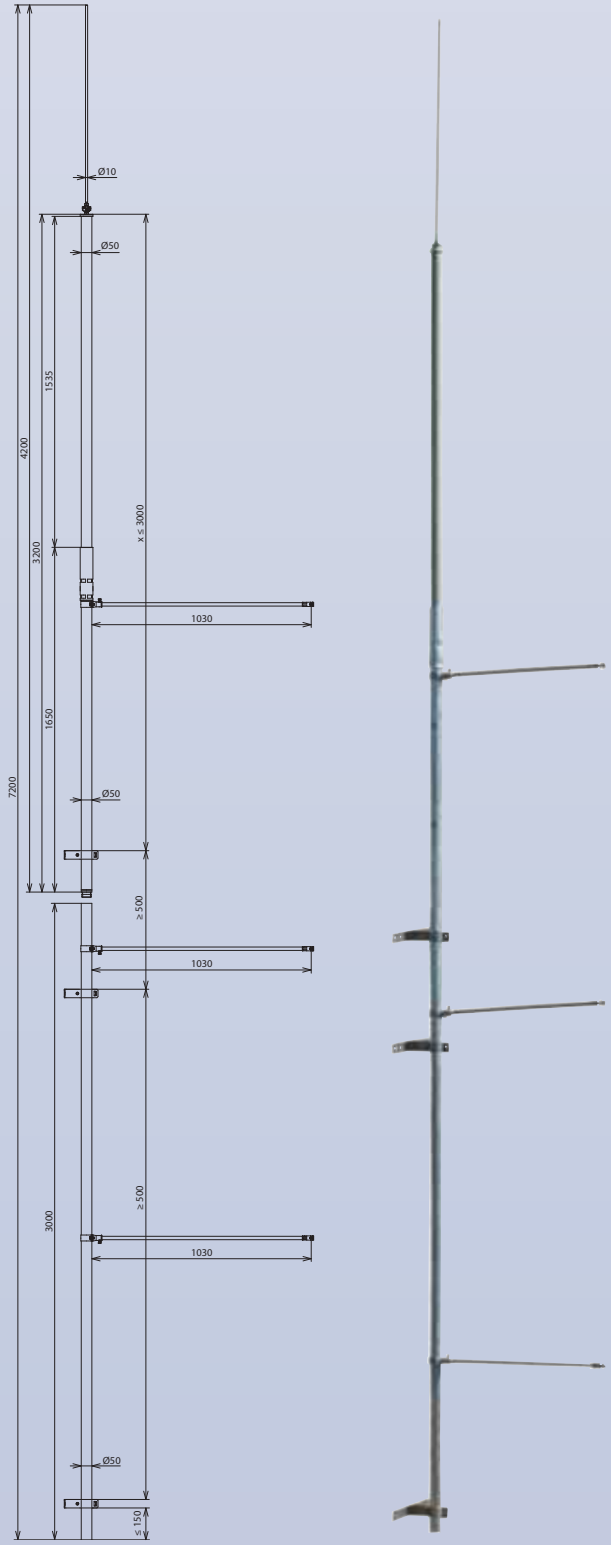
comprising
1x air-termination spike Al, L = 1000 mm (Part No. 105 071)
1x supporting tube GRP/Al, L = 4700 mm (Part No. 105 301)
3x wall fixing bracket StSt (Part No. 105 340)
2x spacer GRP/Al, L = 1030 mm (Part No. 106 331)



Part No.		105 455
Total length	mm	5700
Quantity of spacers		2
Quantity of fixing brackets		3
Length of supporting tube	mm	4700
Max. free length	mm	3000
Material of supporting tube		GRP / Al
Packing unit	pc(s)	1

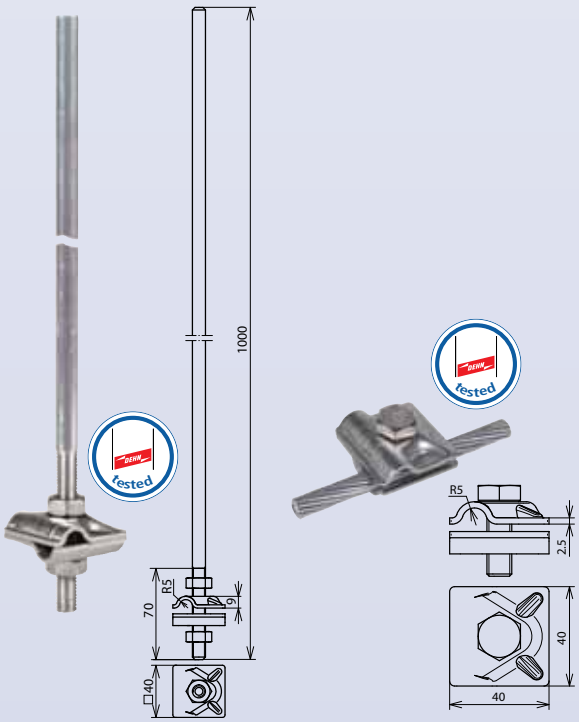
two-piece, total height 7200 mm

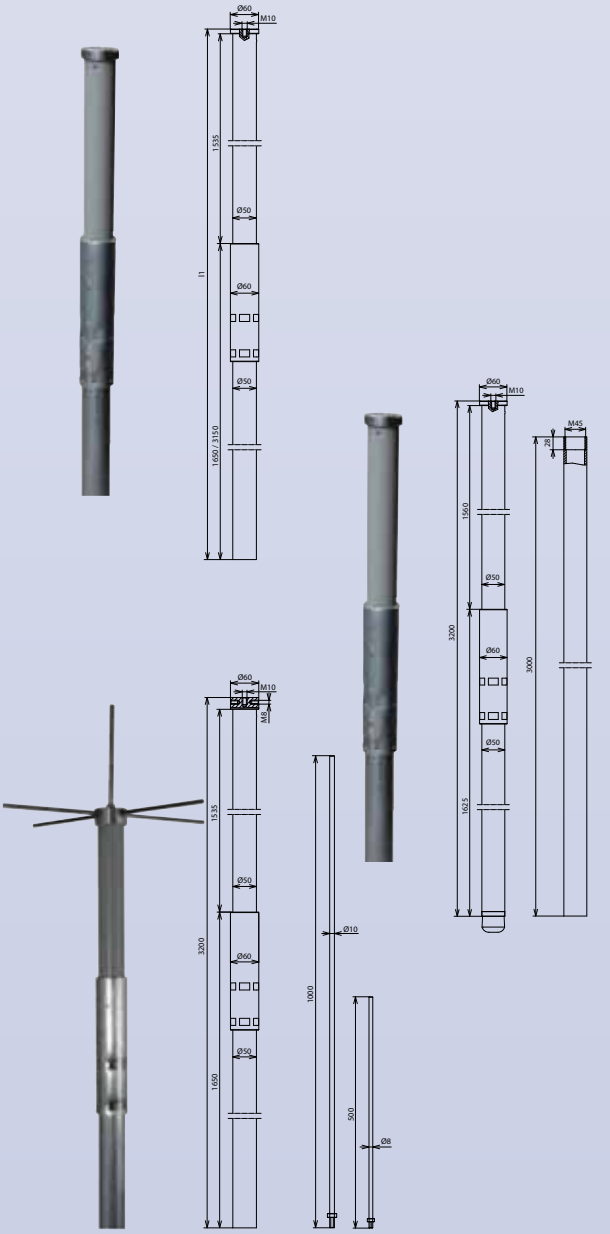
(transport length 3200 mm)
comprising
1x air-termination spike Al, L = 1000 mm (Part No. 105 071)
1x supporting tube GRP/Al, L = 6200 mm (Part No. 105 302)
3x wall fixing bracket StSt (Part No. 105 340)
3x spacer GRP/Al, L = 1030 mm (Part No. 106 331)



Part No.		105 470
Total length	mm	7200
Quantity of spacers		3
Quantity of fixing brackets		3
Length of supporting tube	mm	6200
Max. free length	mm	3000
Material of supporting tube		GRP / Al
Packing unit	pc(s)	1

Single Parts for DEHNiso Combi Sets





Air-termination Spike with MV Clamp

for screwing on top of the supporting tube and for fixing the air-termination conductor (wire or cable)

with thread M10

Part No.		105 071
Material of air-termination spike		Al
Material of MV clamp		StSt
Air-termination spike (l x Ø)	mm	1000x10
Clamping range Rd	mm	8-10
Thread		M10
Standard		EN 50164-(1+2)
Packing unit	pc(s)	1

MV Clamp for Spanning

for screwing on top of the supporting tube with screw M10 in order to support cable spanning

Part No.		105 079
Material		StSt
Clamping range Rd	mm	8-10
Type of screw	mm	M10x30
Material of screw		StSt
Standard		EN 50164-1
Packing unit	pc(s)	1

Supporting Tubes GRP/Al

for a separated (insulated) construction of air-termination systems with female thread

for attachment of air-termination spike or MV clamp for spanning as well as for the HVI conductor to be fixed

one-piece

Part No.		105 300	105 301
Material of supporting tube		GRP / Al	GRP / Al
Length of supporting tube (l1)	mm	3200	4700
Outer diameter	mm	50	50
Transport length	mm	3200	4700
Length of insulating clearance	mm	1535	1535
Permanent temperature range	°C	-50 to +100	-50 to +100
Packing unit	pc(s)	1	1

Supporting Tube GRP/Al

for a separated (insulated) construction of air-termination systems with female thread

for attachment of air-termination spike or MV clamp for spanning as well as for the HVI conductor to be fixed

two-piece

Part No.		105 302
Material of supporting tube		GRP / Al
Length of supporting tube	mm	6200
Outer diameter	mm	50
Transport length	mm	3200/3000
Length of insulating clearance	mm	1535
Permanent temperature range	°C	-50 to +100
Packing unit	pc(s)	1

Supporting Tube GRP/Al

one-piece with air-termination spike Ø10 mm, length 1000 mm, Al and lateral/horizontal air-termination spikes Ø8 mm, length 500 mm, StSt

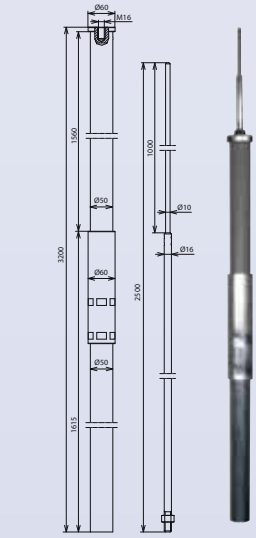
Part No.		105 310
Material of supporting tube		GRP / Al
Length of supporting tube	mm	3200
Outer diameter	mm	50
Transport length	mm	3200
Length of insulating clearance	mm	1535
Permanent temperature range	°C	-50 to +100
Packing unit	pc(s)	1

Single Parts for DEHNiso Combi Sets

Supporting Tube GRP/Al

one-piece with air-termination rod Ø16/10 mm, length 2500 mm, Al

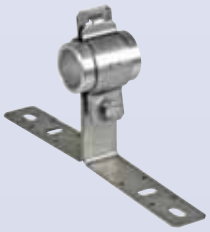
Part No.		105 306
Material of supporting tube		GRP / Al
Length of supporting tube	mm	3200
Outer diameter	mm	50
Transport length	mm	3200
Length of insulating clearance	mm	1535
Permanent temperature range	°C	-50 to +100
Packing unit	pc(s)	1

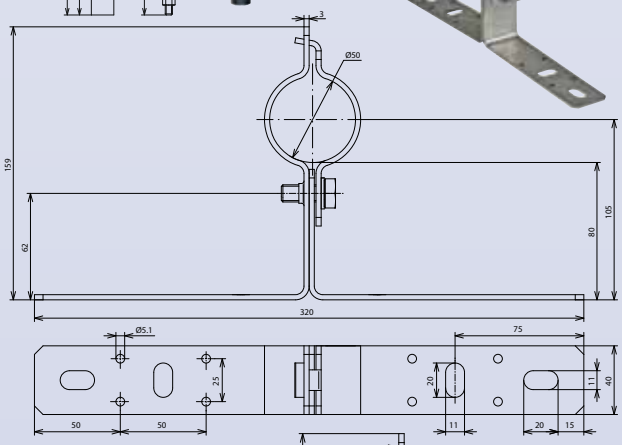


Fixing Bracket

for the supporting tubes to be fixed at the structure to be protected or at the wall

Part No.		105 340
Material		StSt
Clamping range of supporting tube	mm	50
Wall/corner distance	mm	80
Dimension of fixing	mm	320
Fixing	mm	[8x] Ø5.1 / [4x] 11x20
Material of screw		StSt
Packing unit	pc(s)	1





Fixing Bracket

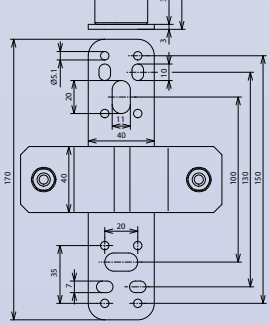
for the supporting tubes to be fixed at the structure to be protected or at the wall

Part No.		105 341
Material		StSt
Clamping range of supporting tube	mm	50
Wall/corner distance	mm	80
Dimension of fixing	mm	152
Fixing	mm	[8x] Ø5.1 / [4x] 11x20
Material of screw		StSt
Packing unit	pc(s)	1

Fixing Bracket

wall fixing bracket for vertical mounting
for fixing of the supporting tubes or air-termination rods D40/D50

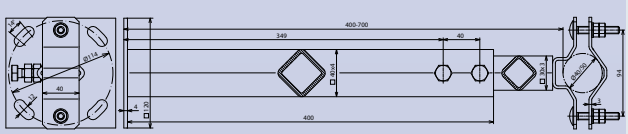
Part No.		105 342
Material of bracket		StSt
Fixing	mm	[8x] Ø5,1 / [4x] 7x10 / [2x] 11x20
Clamping range of supporting tube	mm	40-50
Wall/corner distance	mm	46
Dimension of fixing	mm	170
Material of screw		StSt
Packing unit	pc(s)	1



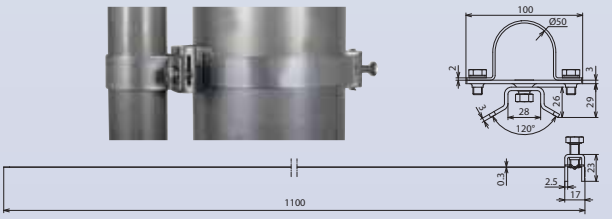
Fixing Bracket

wall fixing bracket with adjustment range of 400-700 mm
for fixing of the supporting tubes or air-termination rods D40/D50

Part No.		105 343
Material of bracket		St/tZn / StSt
Clamping range of supporting tube	mm	40-50
Wall/corner distance	mm	400-700
Dimension of plate	mm	120x120x4
Fixing	mm	[4x] 12x25
Profile		40x40x4 / 30x30x3
Packing unit	pc(s)	1



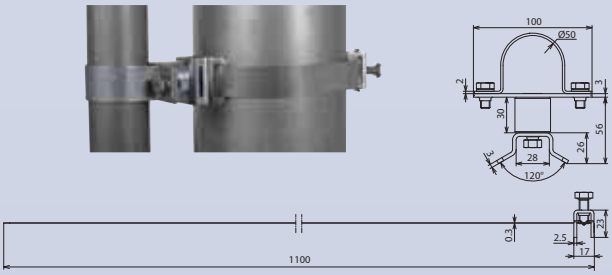
Single Parts for DEHNiso Combi Sets



Fixing Clamp with Tensioning Strap

for the supporting tubes to be fixed at construction elements e.g. antenna masts

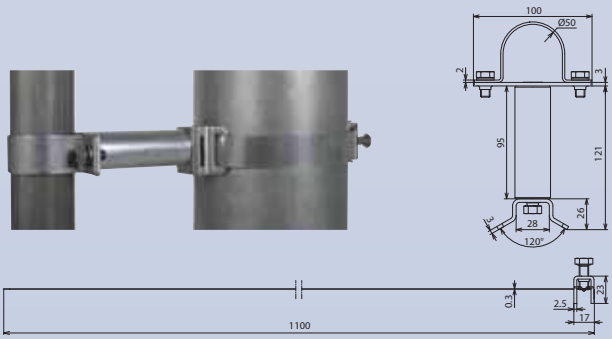
Part No.		105 360
Material of clip		StSt
Clamping range of supporting tube	mm	50
Clamping range Ø pipe	mm	50-300
Material of tensioning strap		StSt
Material of screw		StSt
Packing unit	pc(s)	1



Fixing Clamp with Tensioning Strap

with additional long spacer for holders of sector antennas to be adjusted at the mast

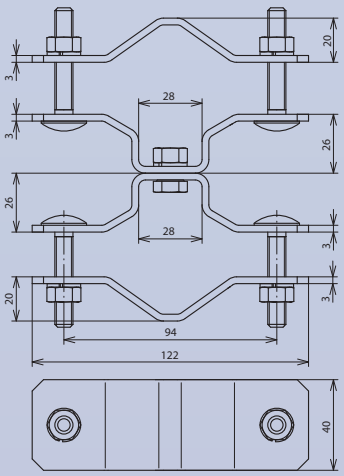
Part No.		105 361
Material of clip		StSt
Clamping range of supporting tube	mm	50
Clamping range Ø pipe	mm	50-300
Material of tensioning strap		StSt
Material of screw		StSt
Length of spacer	mm	30
Material of spacer		Al
Packing unit	pc(s)	1



Fixing Clamp with Tensioning Strap

with additional long spacer for holders of sector antennas to be adjusted at the mast

Part No.		105 362
Material of clip		StSt
Clamping range of supporting tube	mm	50
Clamping range Ø pipe	mm	50-300
Material of tensioning strap		StSt
Material of screw		StSt
Length of spacer	mm	95
Material of spacer		Al
Packing unit	pc(s)	1



Fixing Equipment for Railings

for pipes

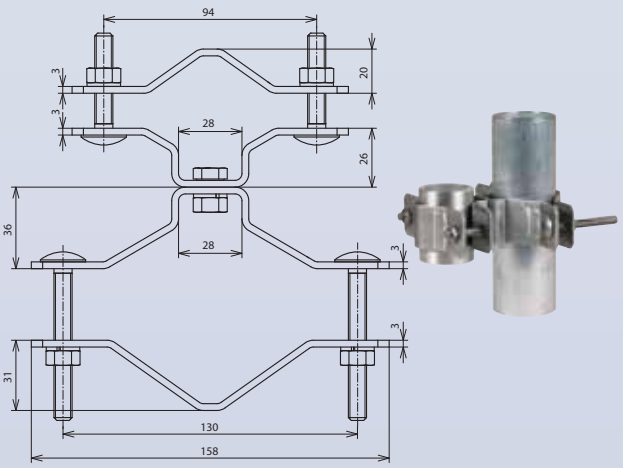
Part No.		105 354
Material		StSt
Clamping range Ø pipe	mm	48-60 ($1^1/_2$ - 2")
Screw	mm	M8x40 / M8x50
Material of screw		StSt
Clamping range of supporting tube	mm	40-50
Packing unit	pc(s)	5

Single Parts for DEHNiso Combi Sets

Fixing Equipment for Railings

for pipes

Part No.		105 355
Material		StSt
Clamping range Ø pipe	mm	70-90 ($2^1/_4$ - 3'')
Screw	mm	M8x40 / M8x70
Material of screw		StSt
Clamping range of supporting tube	mm	40-50
Packing unit	pc(s)	5

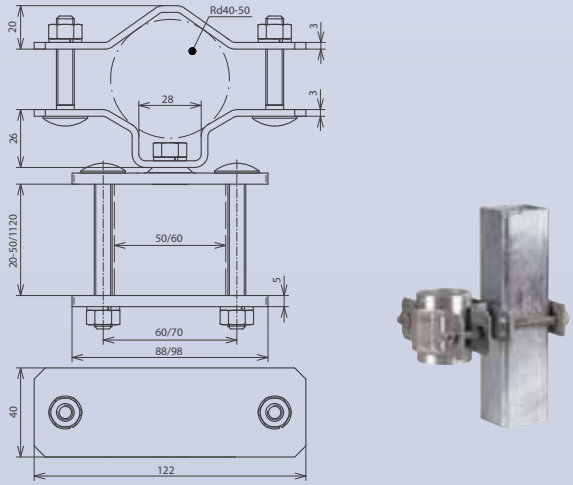


Fixing Equipment for Railings

for square hollow profiles

Part No. 105377 with additional spacer length 53 mm

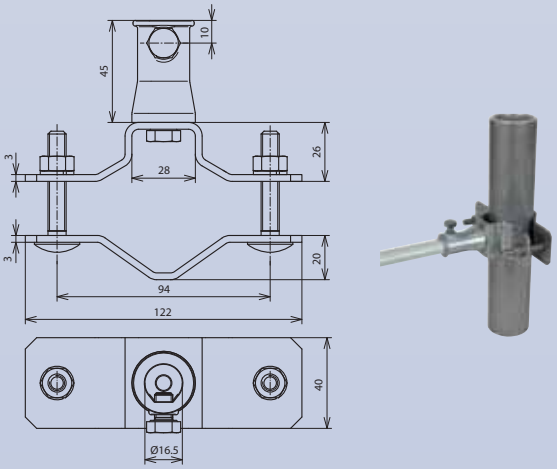
Part No.		105 356	105 376	105 377
Material		StSt	StSt	StSt
Clamping range of square profile	mm	20x20 to 50x50	60x120	60x120
Screw	mm	M8x40 / M8x70	M8x40 / M8x150	M8x40 / M8x150
Material of screw		StSt	StSt	StSt
Clamping range of supporting tube	mm	40-50	40-50	40-50
Packing unit	pc(s)	5	5	5



Pipe Clamp

with fixing bush for spacer (Ø16 mm) for pipes up to Ø60 mm

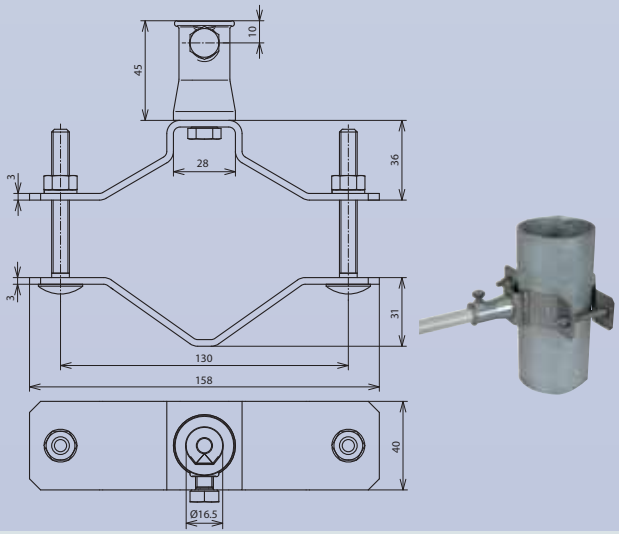
Part No.		106 352
Material of clamp		StSt
Clamping range Ø pipe	mm	40-60 ($1^1/_4$ - 2'')
Material of bush		ZDC
Screw	mm	M8x50 / M8x12
Material of screw/nut		StSt
Packing unit	pc(s)	10



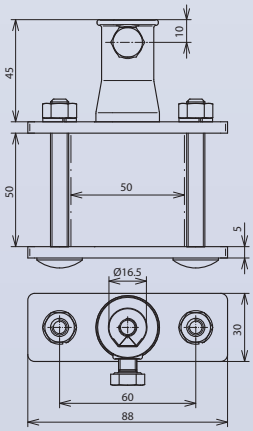
Pipe Clamp

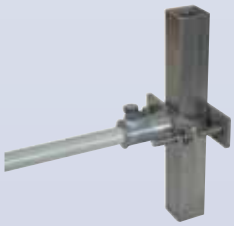
with fixing bush for spacer (Ø16 mm) for pipes up to Ø90 mm

Part No.		106 353
Material of clamp		StSt
Clamping range Ø pipe	mm	70-90 ($2^1/_4$ - 3'')
Material of bush		ZDC
Screw	mm	M8x70 / M8x12
Material of screw/nut		StSt
Packing unit	pc(s)	10



Single Parts for DEHNiso Combi Sets

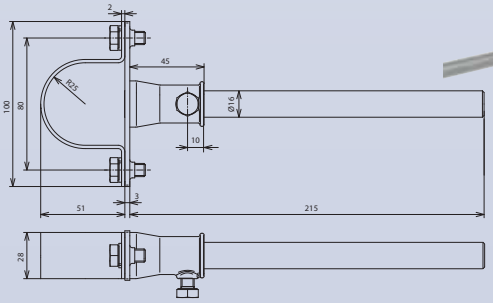




Fixing Equipment for Railings

for square hollow profiles with bush for spacer

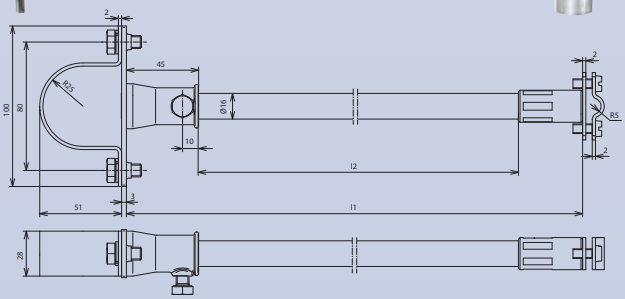
Part No.		106 312
Material		ZDC / StSt
Clamping range of square profile	mm	20x20 to 50x50
Screw	mm	M8x70 / M8x12
Material of screw		StSt
Packing unit	pc(s)	5



Fixing Equipment for Railings

clamp for supporting tube with spacer (Ø16 mm, length 200 mm), for the supporting tube to be fixed e.g. at protrusions

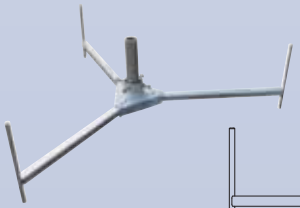
Part No.		106 121
Material		NIRO
Screw	mm	M8x16
Material of screw		NIRO
Clamping range of supporting tube	mm	50
Material of fixing bush		ZDC
Packing unit	pc(s)	1

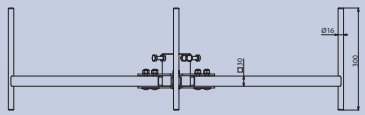


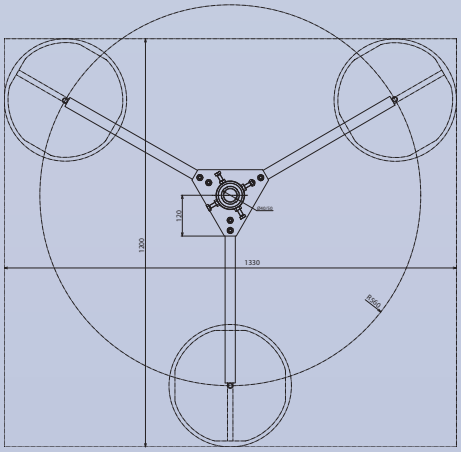
Spacer for Supporting Tubes

for the conductors to be fixed at the supporting tube and for the separation distance to be kept according to EN 62305

Part No.		106 328	106 331
Material of spacer		GRP	GRP
Material of fixing element		StSt	StSt
Material of conductor holder		StSt	StSt
Conductor holder support Rd	mm	7-10	7-10
Height of conductor holder	mm	20	20
Total length (l1)	mm	690	1030
Insulating clearance (l2)	mm	605	945
Clamping range of supporting tube	mm	50	50
Packing unit	pc(s)	1	1







Tripod for DEHNiso Combi

for supporting tubes or air-termination rods D40 with a length of 3200 mm (e.g. Part No. 105 300 or 105 440) to be set up freely without additional fixing at construction elements

adjustable to the roof inclination up to max. 10°

The stackable concrete block (Part No. 102 010) and the support plate (Part No. 102 050) have to be ordered separately.

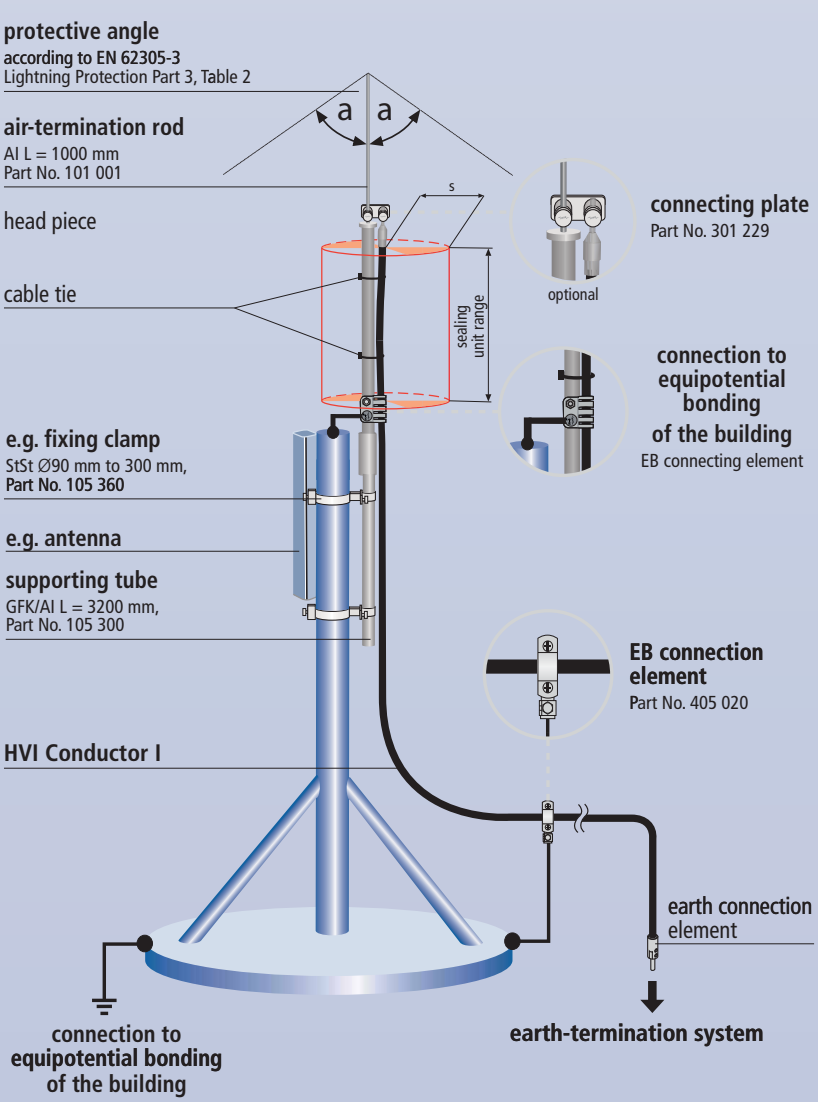
to be hinged for transport

Part No.		105 200
Material of tripod		St/tZn
Support	mm	40/50
Quantity of concrete blocks		6/9
Radius	mm	560
Space required for tripod	mm	1180x1320
Packing unit	pc(s)	1

For dangerous flashovers between parts of the external lightning protection system and internal conductive parts (electrical installation, piping, etc.) to be avoided, keeping of the **separation distance s** is an important requirement to be considered when designing and installing a lightning protection system.
At new installations as well as in case of existing systems keeping of the separation distance s often is a problem. The innovative HVI conductor provides an easy solution of this problem.

Performance of the HVI conductor:
Without supporting measures, high impulse voltages cause flashovers on surfaces of insulating materials. This effect is known as a creeping flashover. The so-called creepage discharge inception voltage being exceeded, a surface discharge will be initiated which can easily spark over a gap of several metres. In order to avoid creepage discharges, the HVI conductor has a special external coating with the potential to reset high lightning impulse voltages to a reference potential. Therefore a functional connection will be performed in the sealing end range between the external semiconductive coating and the equipotential bonding of the building (not afflicted with lightning voltage). This equipotential bonding can be implemented e.g. by connection with metal earthed roof-mounted structures in the protection area of the lightning protection system, with earthed parts of the building construction which are not afflicted with lightning voltage, or with the protective conductor of the low-voltage system.
There must not be any metal parts within the **separation distance s** of the sensitive sealing end range.

Isolated air-termination system for recooling plant with HVI conductor grey in a supporting tube



Schematic illustration showing the application at a mobile radio antenna

Parallel ducted HVI conductor with terminal clamp Part No. 301 329

High-voltage resistant insulated down conductor for keeping the separation distance from electrically conductive parts according to EN 62305-3
Equivalent separation distance s ≤ 0.75 m (in air) or s ≤ 1.5 m (solid building material).

Hence, depending on the protection class of the lightning protection system (LPS) **one** down conductor realizes the following maximum conductor lengths:

LPS I	max.	9.40 m
LPS II	max.	12.50 m
LPS III/IV	max.	18.75 m

The HVI conductor meets the requirements according to EN 50164-2.
A processing temperature of ≥ 0 °C and a permanent temperature range (at fixed installation) of -30 °C up to +70 °C are to be minded.

Minimum order length 4 m, conductor length to be indicated when ordering.

Three types of HVI conductor are available:

HVI conductor I for application to directly connect the air-termination system of the external lightning protection with the earth-termination system of the building.

HVI conductor II for application e.g. to interconnect several system components to be protected via a common "isolated ring conductor" with the earth-termination system of the building.

HVI conductor III with a firmly affixed sealing end and a sealing end to be implemented in situ for typical application in cases where the total conductor length can not be determined exactly when designing the installation. HVI conductor III can be used just like HVI conductor II.

HVI conductors I and III may be shortened but not extended.

More details in installation instructions No.1566.

For being a customized product (customized conductor length) the conductor can not be returned.

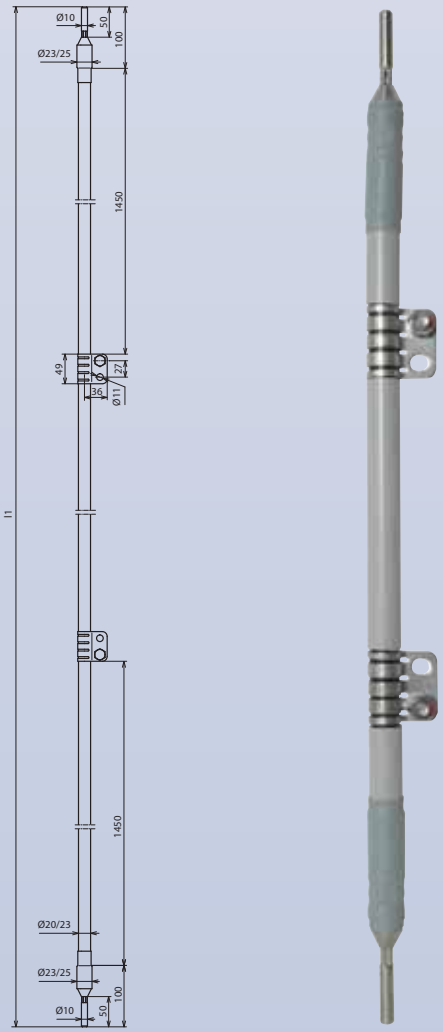
HVI Conductor I

with one head piece, one equipotential bonding connection element and one earth connection element

Part No.		819 020	819 023
Material of conductor		Cu	Cu
Material of insulation		PE	PE
Material of coating		PVC	PVC
Colour of conductor		black	grey
Cross section of core	mm^2	19	19
Outer Ø conductor	mm	20	23
Minimum order length (l1)	m	4	4
Packing unit	pc(s)	1	1

HVI Conductor II

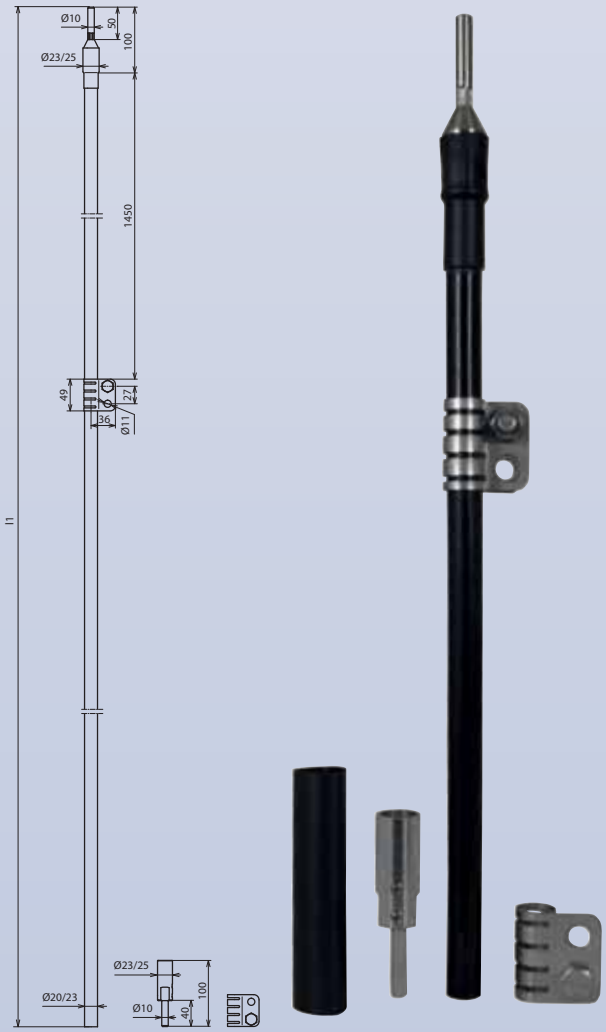
with two head pieces and two equipotential bonding connection elements



Part No.		819 021	819 024
Material of conductor		Cu	Cu
Material of insulation		PE	PE
Material of coating		PVC	PVC
Colour of conductor		black	grey
Cross section of core	mm^2	19	19
Outer ∅ conductor	mm	20	23
Minimum order length (l1)	m	4	4
Packing unit	pc(s)	1	1

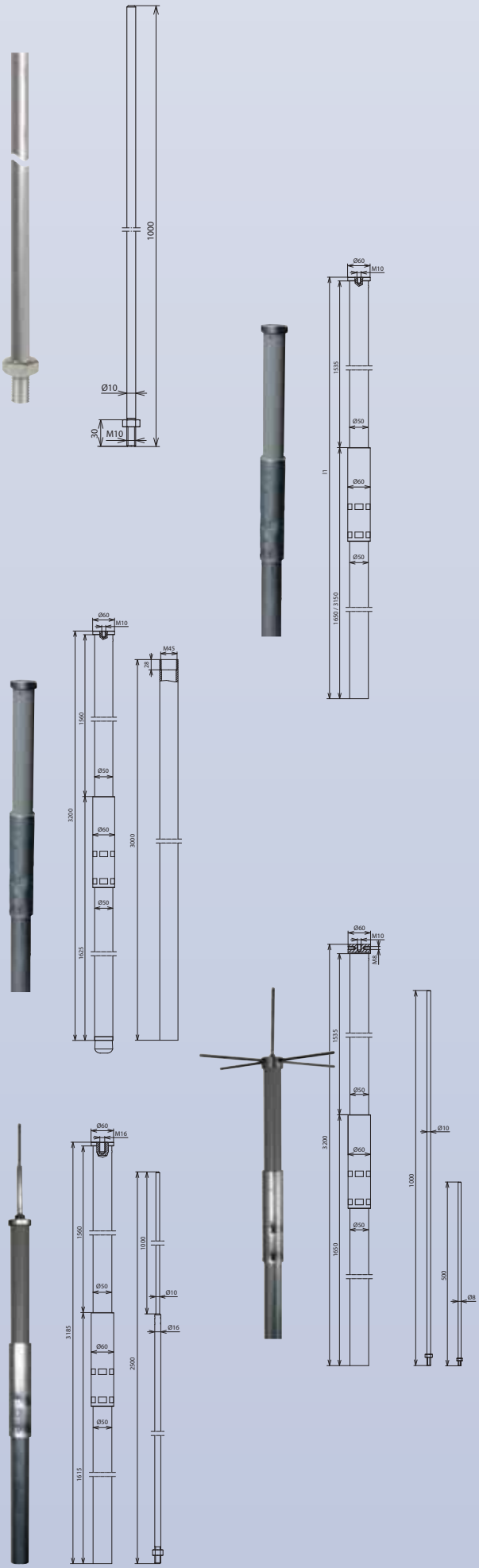
HVI Conductor III

with one head piece, one connection element and two equipotential bonding connection elements.
One equipotential bonding connection element and one connection element are loosely enclosed.



Part No.		819 022	819 025
Material of conductor		Cu	Cu
Material of insulation		PE	PE
Material of coating		PVC	PVC
Colour of conductor		black	grey
Cross section of core	mm^2	19	19
Outer ∅ conductor	mm	20	23
Minimum order length (l1)	m	4	4
Packing unit	pc(s)	1	1

Accessories for HVI Conductor



Air-termination Spike with Lock Nut

for screwing on top of the supporting tube and for connecting the HVI conductor

Part No.		101 001	101001/S
Material		Al	StSt
Diameter	mm	10	10
Length	mm	1000	1000
Thread		M10	M10
Material of nut		StSt	StSt
Standard		EN 50164-2	EN 50164-2
Ident number		--	046334
Packing unit	pc(s)	1	

Supporting Tubes GRP/Al

for a separated (insulated) construction of air-termination systems wtih female thread

for attachment of air-termination spike or MV clamp for spanning as well as for the HVI conductor to be fixed

one-piece

Part No.		105 300	105 301
Material of supporting tube		GRP / Al	GRP / Al
Length of supporting tube (l1)	mm	3200	4700
Outer diameter	mm	50	50
Transport length	mm	3200	4700
Length of insulating clearance	mm	1535	1535
Permanent temperature range	°C	-50 to +100	-50 to +100
Packing unit	pc(s)	1	1

Supporting Tube GRP/Al

for a separated (insulated) construction of air-termination systems wtih female thread

for attachment of air-termination spike or MV clamp for spanning as well as for the HVI conductor to be fixed

two-piece

Part No.		105 302
Material of supporting tube		GRP / Al
Length of supporting tube	mm	6200
Outer diameter	mm	50
Transport length	mm	3200/3000
Length of insulating clearance	mm	1535
Permanent temperature range	°C	-50 to +100
Packing unit	pc(s)	1

Supporting Tube GRP/Al

one-piece with air-termination spike Ø10 mm, length 1000 mm, Al and lateral/horizontal air-termination spikes Ø8 mm, length 500 mm, StSt

Part No.		105 310
Material of supporting tube		GRP / Al
Length of supporting tube	mm	3235
Outer diameter	mm	50
Transport length	mm	3235
Length of insulating clearance	mm	1535
Permanent temperature range	°C	-50 to +100
Packing unit	pc(s)	1

Supporting Tube GRP/Al

one-piece with air-termination rod Ø16/10 mm, length 2500 mm, Al

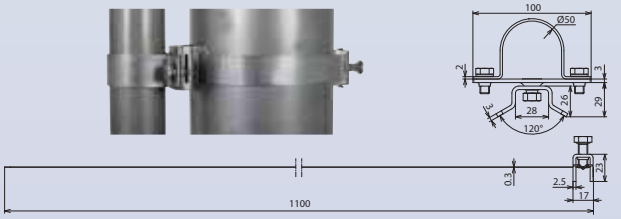
Part No.		105 306
Material of supporting tube		GRP / Al
Length of supporting tube	mm	3200
Outer diameter	mm	50
Transport length	mm	3200
Length of insulating clearance	mm	1535
Permanent temperature range	°C	-50 to +100
Packing unit	pc(s)	1

Accessories for HVI Conductor

Fixing Clamp with Tensioning Strap

for the supporting tubes to be fixed at construction elements e.g. antenna masts

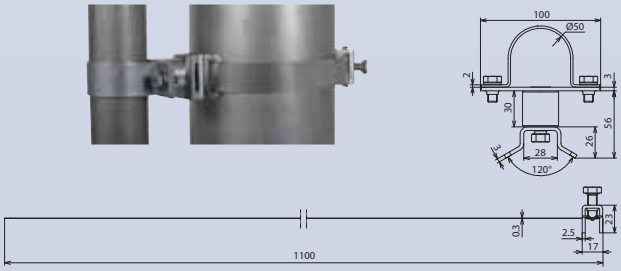
Part No.		105 360
Material of clip		StSt
Clamping range of supporting tube	mm	50
Clamping range ∅ pipe	mm	50-300
Material of tensioning strap		StSt
Material of screw		StSt
Packing unit	pc(s)	1



Fixing Clamp with Tensioning Strap

with additional long spacer for holders of sector antennas to be adjusted at the mast

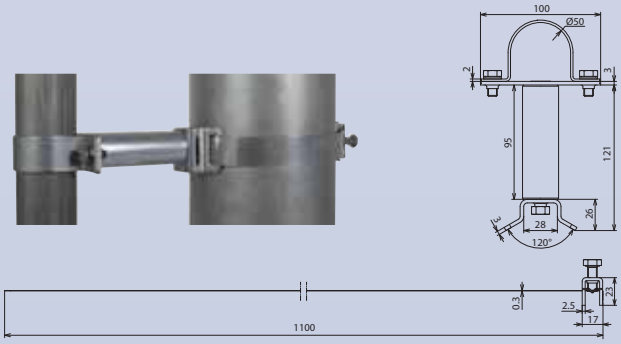
Part No.		105 361
Material of clip		StSt
Clamping range of supporting tube	mm	50
Clamping range ∅ pipe	mm	50-300
Material of tensioning strap		StSt
Material of screw		StSt
Length of spacer	mm	30
Material of spacer		Al
Packing unit	pc(s)	1



Fixing Clamp with Tensioning Strap

with additional long spacer for holders of sector antennas to be adjusted at the mast

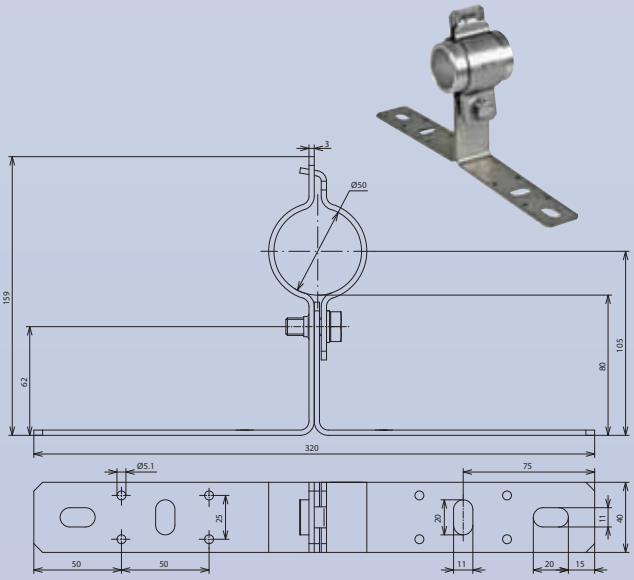
Part No.		105 362
Material of clip		StSt
Clamping range of supporting tube	mm	50
Clamping range ∅ pipe	mm	50-300
Material of tensioning strap		StSt
Material of screw		StSt
Length of spacer	mm	95
Material of spacer		Al
Packing unit	pc(s)	1



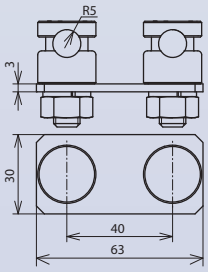
Fixing Bracket

for the supporting tubes to be fixed at the structure to be protected or at the wall

Part No.		105 340
Material		StSt
Clamping range of supporting tube	mm	50
Wall/corner distance	mm	80
Dimension of fixing	mm	320
Fixing	mm	[8x] ∅5.1 / [4x] 11x20
Material of screw		StSt
Packing unit	pc(s)	1



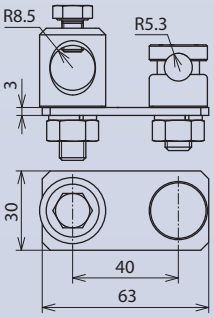
Accessories for HVI Conductor



Terminal Plate

for connecting the HVI conductor to the air-termination spike with two KS connectors

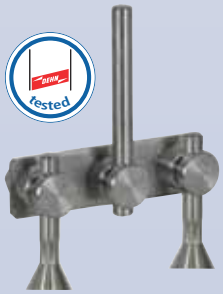
Part No.		301 229
Material of terminal plate		StSt
Material of KS connector		StST
Clamping range Rd	mm	2x 6-10
Type		with spring washer
Dimension (l x w x d)	mm	63x30x3
Standard		EN 50164-1
Packing unit	pc(s)	1

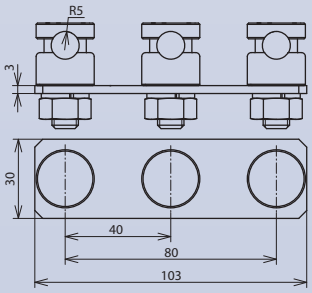


Terminal Plate

for connecting the HVI conductor to the air-termination rod Ø16 mm with KS screw

Part No.		301 239
Material of terminal plate		StSt
Material of KS connector		StSt
Clamping range Rd	mm	1x 16 / 1x 6-10
Type		with spring washer
Dimension (l x w x d)	mm	63x30x3
Standard		EN 50164-1
Packing unit	pc(s)	1

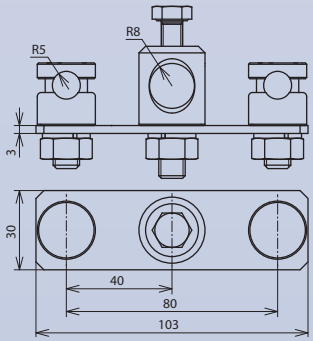




Terminal Plate

for connecting two HVI conductors to the air-termination spike Ø10 mm with KS connector

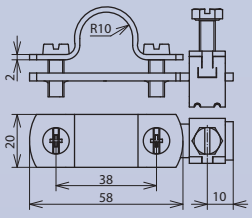
Part No.		301 329
Material of terminal plate		StSt
Material of KS connector		StSt
Clamping range Rd	mm	3x 6-10
Type		with spring washer
Dimension (l x w x d)	mm	103x30x3
Packing unit	pc(s)	1



Terminal Plate

for connecting two HVI conductors to the air-termination spike Ø16 mm with KS screw

Part No.		301 339
Material of terminal plate		StSt
Material of KS connector		StSt
Clamping range Rd	mm	1x 16 / 2x 6-10
Type		with spring washer
Dimension (l x w x d)	mm	103x30x3
Standard		EN 50164-1
Packing unit	pc(s)	1



EB Clamp

for connecting the special coating of the HVI conductor to the equipotential bonding

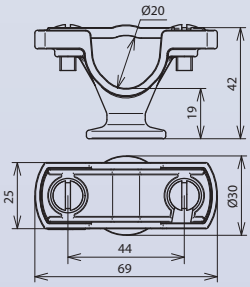
Part No.		405 020
Material of clamp		St/tZn
Clamping range Ø	mm	20
Terminal cross section	mm²	4-95
Material of cleat		StSt
Type of screw	mm	M6x16
Material of screw		StST
Packing unit	pc(s)	25

Accessories for HVI Conductor

Conductor Holder for HVI Conductor

for wall mounting and for mounting in the sealing end range

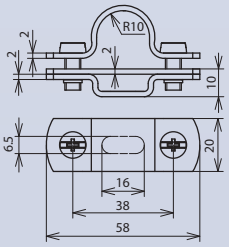
Part No.		275 220	275 225
Material of conductor holder		PA	PA
Conductor holder support Rd	mm	20	23
Female thread		M8	M8
Fixing bore	mm	6.5	6.5
Screw	mm	M6x16	M6x16
Packing unit	pc(s)	25	25



Conductor Holder for HVI Conductor

StSt, for wall mounting with two-screw cleat (not in the sealing end range)

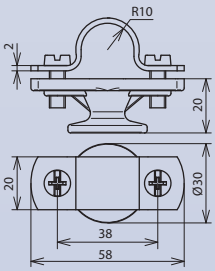
Part No.		275 229	275 239
Material of conductor holder		StSt	StSt
Conductor holder support Rd	mm	20	23
Fixing bore	mm	6.5x16	6.5x16
Screw	mm	M6x14	M6x14
Packing unit	pc(s)	50	50



Conductor Holder for HVI Conductor

ZDC-StSt, for wall mounting with two-screw cleat (not the sealing end range)

Part No.		275 120
Material of conductor holder		ZDC / StSt
Conductor holder support Rd	mm	20
Female thread		M8
Fixing bor	mm	6.5
Screw	mm	M6x16
Packing unit	pc(s)	25

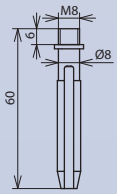


Impact Dowel for Conductor Holder HVI Conductor

Impact dowel (8x60 mm) for solid brickwork, for fixing the conductor holder (Part No. 275 220 or 275 225) applied in the sealing end range

Note: When installing at honeycomb bricks, drill without drive

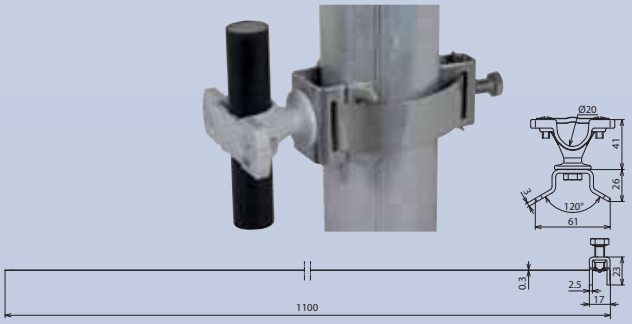
Part No.		106 760
Material of conductor holder		GRP
Female thread	mm	M8x6
Fixing bore	mm	8
Packing unit	pc(s)	25



Conductor Holder with Tensioning Strap

with conductor holder PA

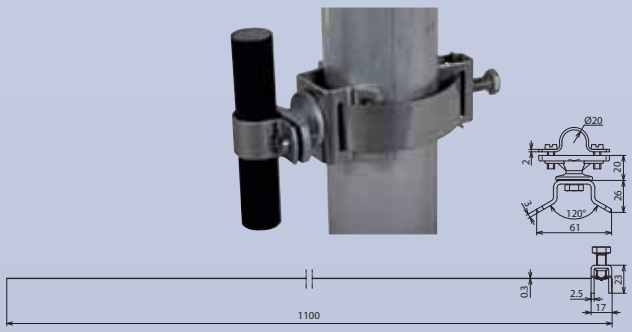
Part No.		275 330	275 333
Material of conductor holder		PA	PA
Conductor holder support Rd	mm	20	23
Tensioning range Ø pipe	mm	50-300	50-300
Screw	mm	M6x16	M6x16
Material of screw		StSt	StSt
Packing unit	pc(s)	1	1



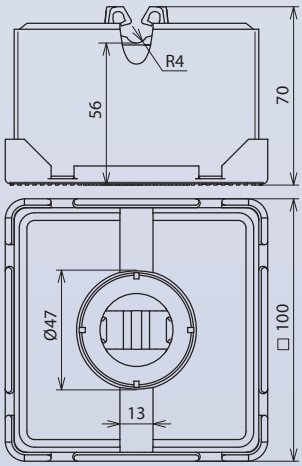
Conductor Holder with Tensioning Strap

with metal conductor holder

Part No.		275 320
Material of conductor holder		ZDC / StSt
Conductor holder support Rd	mm	20
Tensioning range Ø pipe	mm	50-300
Screw	mm	M6x16
Material of screw		StSt
Packing unit	pc(s)	1



Accessories for HVI Conductor

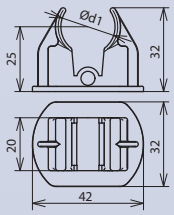


Roof Conductor Holder for flat roofs

for the fixing of round conductors and strips on flat roofs

with single conductor holder Type FB

Part No.		253 015
Conductor leading		loose
Material of conductor holder		plastic
Colour of conductor holder		black
Conductor holder support Rd	mm	8
Block		concrete (C35/45)
Weight	kg	1
Packing unit	pc(s)	10

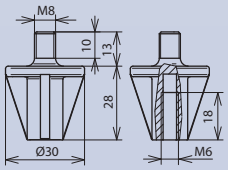


Adapter for HVI Conductor Installation on flat roofs

with roof conductor holder Type FB (Part No. 253 015)

for snapping on

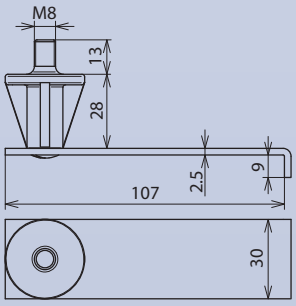
Part No.		253 026	253 027
Material		plastic	plastic
Colour		black	black
Conductor holder support Rd	mm	20	23
Packing unit	pc(s)	50	50



Adapter for Roof Conductor Holders

for fixing plastic conductor holders with thread M8 on different roof conductor holder base parts (standard conductor holder will be removed)

Part No.		106 898
Material		plastic
Thread		M8
Female thread		M6
Length	mm	28
Colour		light beige
Packing unit	pc(s)	25



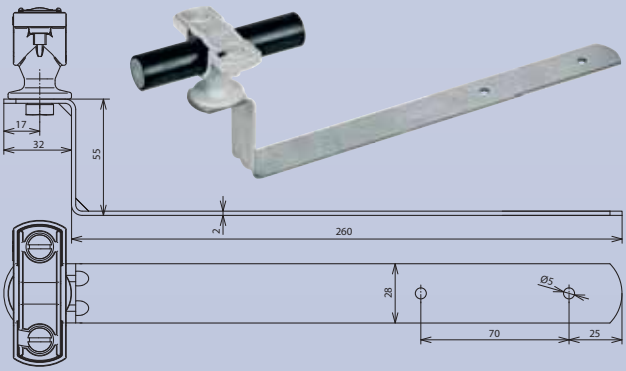
Plastic Fixing Brace

for mounting of the plastic conductor holder (Part No. 275 220 and 275 223) with thread M8

for hooking or pushing underneath of tiles

for the sealing end range

Part No.		202 890
Material of roof conductor holder		plastic
Thread		M8
Length of brace	mm	107
Packing unit	pc(s)	10



Roof Conductor Holder with Straight Brace for HVI Conductor

for installing the HVI conductor on gable roof surfaces

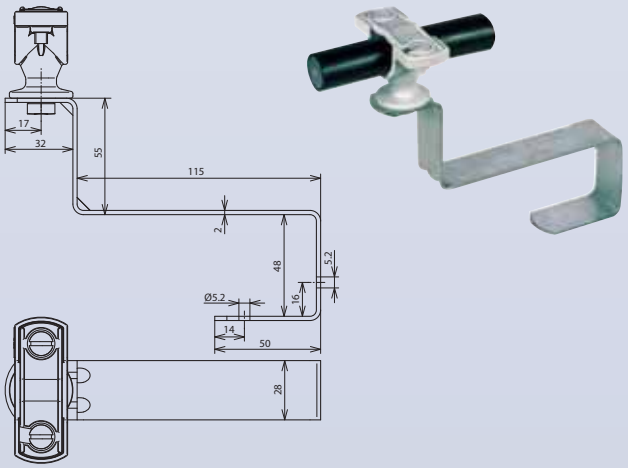
Part No.		202 831	202 841
Material of roof conductor holder		St/tZn	St/tZn
Material of conductor holder		PA	PA
Conductor leading		fixed	fixed
Conductor holder support Rd	mm	20	23
Height of brace	mm	55	55
Length of brace	mm	260	260
Fixing	mm	[2x] Ø5	[2x] Ø5
Packing unit	pc(s)	25	25

Accessories for HVI Conductor

Roof Conductor Holder with Angled Brace for HVI Conductor

for installing the HVI conductor on the surface of gable roofs

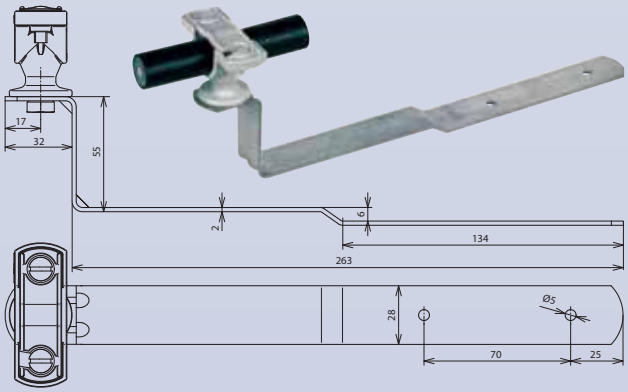
Part No.		202 830	202 840
Material of roof conductor holder		St/tZn	St/tZn
Material of conductor holder		PA	PA
Conductor leading		fixed	fixed
Conductor holder support Rd	mm	20	23
Height of brace	mm	55	55
Length of brace	mm	115	115
Fixing	mm	[2x] Ø5.2	[2x] Ø5.2
Packing unit	pc(s)	25	25



Roof Conductor Holder with Cranked Brace for HVI Conductor

for installing the HVI conductor on the surface of gable roofs

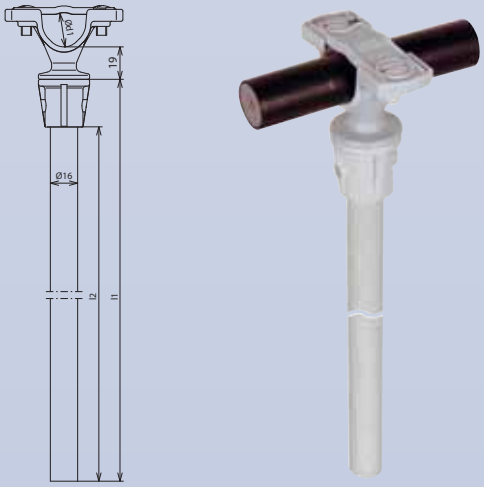
Part No.		202 832	202 842
Material of roof conductor holder		St/tZn	St/tZn
Material of conductor holder		PA	PA
Conductor leading		fixed	fixed
Conductor holder support Rd	mm	20	23
Height of brace	mm	55	55
Length of brace	mm	260	260
Fixing	mm	[2x] Ø5	[2x] Ø5
Packing unit	pc(s)	25	25



Spacer for HVI Conductor

with polyamide conductor holder (Part No. 275 220 or 275 225) for the sealing end range

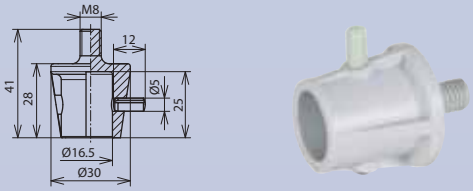
Part No.		106 852	106 812	106 813
Material of spacer		GRP	GRP	GRP
Material of conductor holder/adapter		PA	PA	PA
Length (l1)	mm	500	1000	1000
Insulating clearance (l2)	mm	410	910	910
Conductor holder support Rd	mm	20	20	23
Conductor leading		fixed	fixed	fixed
Thread		M8	M8	M8
Screw / grooved pin		M6x16	M6x16	M6x16
Packing unit	pc(s)	1	1	1



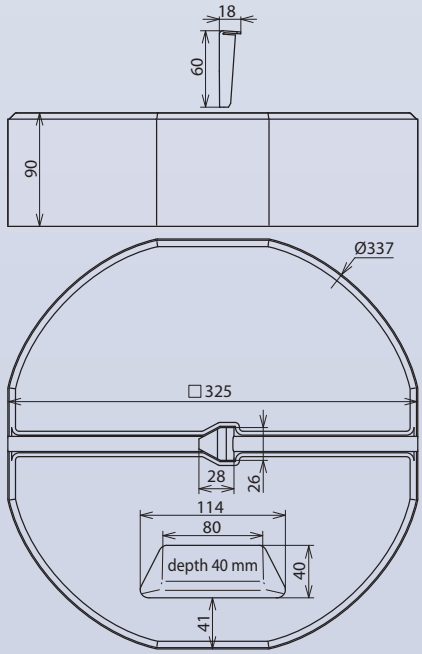
Spacer for HVI Conductor

with polyamide conductor holder (Part No. 275 220 or 275 225) for the sealing end range

Part No.		106 899
Material of conductor holder/adapter		plastic
Length	mm	30
Thread		M8
Screw / grooved pin		cylindrical pin 5 mm
Packing unit	pc(s)	25



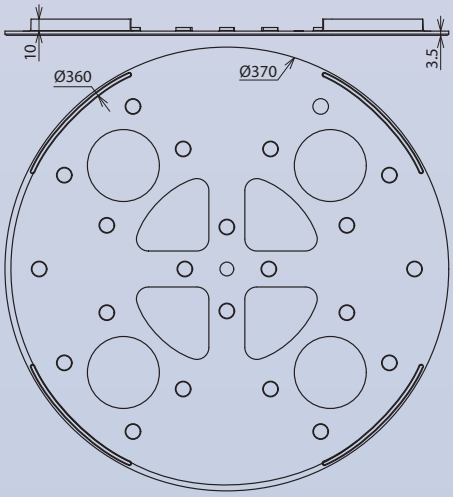
Accessories for HVI Conductor

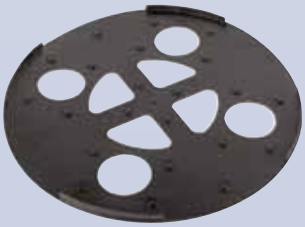


Concrete Base

stackable, for wedge mounting of chamfered or tapered air-termination rods Ø16 mm or of DEHNiso spacers Ø16 mm

Part No.		102 010
Weight	kg	17
Support	mm	wedge mounting Ø16
Diameter	mm	337
Material		concrete (C45/55)
Material of wedge/adapter		StSt
Packing unit	pc(s)	54



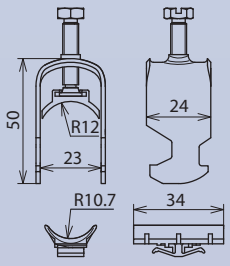


Support Plate

to protect the roofing sheets under the concrete base

for concrete bases (Part No. 102 010, 102 0029

Part No.		102 050
Diameter (d1)	mm	370
Diameter (d2)	mm	360
Material		EVA
Colour		black
Packing unit	pc(s)	1

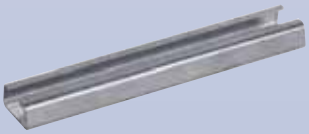


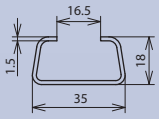
Bolt Clamp

for fixing the HVI conductor e.g. at already mounted C rails

clamp with bottom saddle

Part No.		275 520
Material of conductor holder		St/tZn-P
Conductor holder support Rd	mm	20/23
Screw	mm	M6x25
Material of screw		St/tZn
Packing unit	pc(s)	1





C Rail

separate for cutting to length

Part No.		275 521
Werkstoff		St/tZn
Length	mm	2000
Packing unit	m	2

Accessories for HVI Conductor

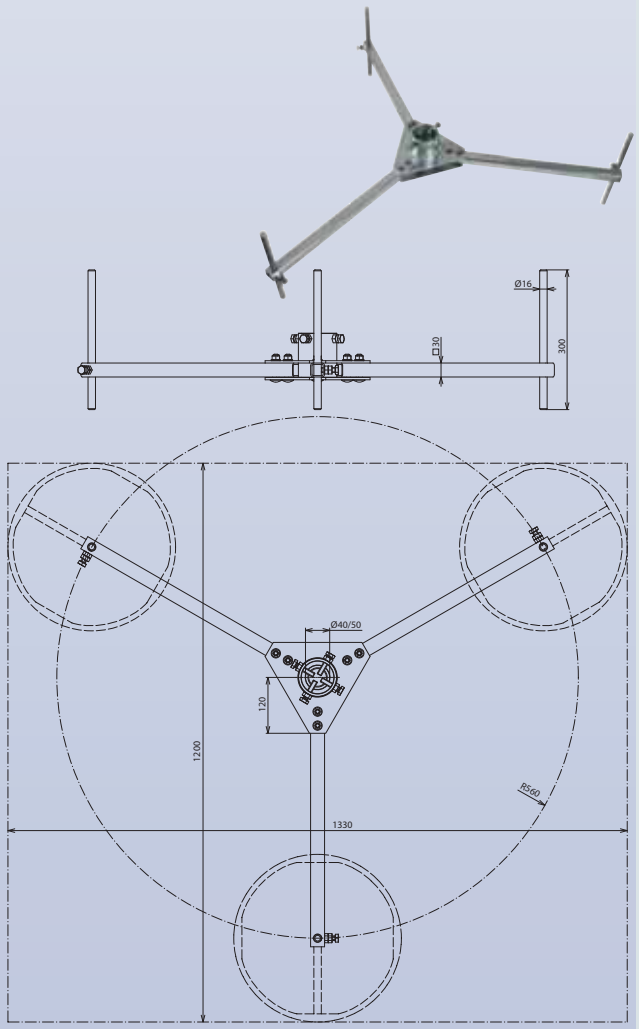
Tripod for HVI Conductor in Supporting Tube

Special design for HVI Conductor run inside of the supporting tube (length 3200 mm)

In order to keep the bending radius of the HVI Conductor at the bottom of the tripod, two concrete blocks will be positioned under the limb and one on top.

The stackable concrete block (Part No. 102 010) and the support plate (Part No. 102 050) have to be ordered separately.

Part No.		105 350
Material of tripod		St/tZn
Support	mm	50
Quantity of concrete blocks		9
Radius	mm	560
Space required for tripod	mm	1180x1320
Packing unit	pc(s)	1



HVI® Conductor in Supporting Tube

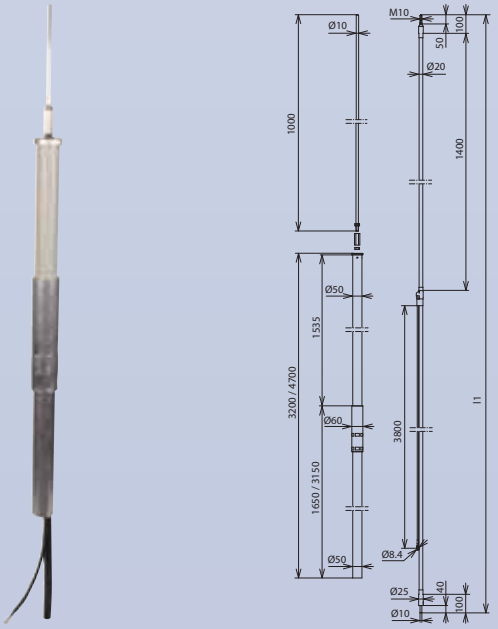
HVI conductor inside of the supporting tube, optically adjusted, provides little wind exposed surface

Minimum order length 6 or 8 m. Conductor length to be indicated when ordering

Being a customized product (customized conductor length) the conductor can not be returned.

HVI Conductor I in supporting tube with air-termination spike

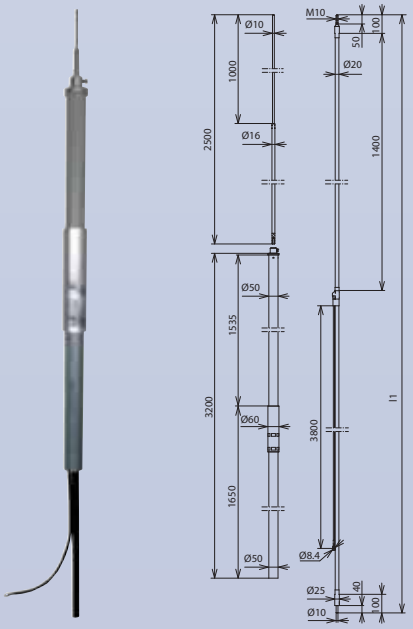
with interior sealing end and air-termination spike Ø10 mm, length 1000 mm



Part No.		819 320	819 323	819 420	819 423
Material of conductor		Cu	Cu	Cu	Cu
Material of supporting tube		GRP / Al	GRP / Al	GRP / Al	GRP / Al
Length of supporting tube	mm	3200	3200	4700	4700
Colour of conductor		black	grey	black	grey
Outer Ø conductor	mm	20	23	20	23
Minimum order length (l1)	m	6	6	8	8
Packing unit	pc(s)	1	1	1	1

HVI Conductor I in supporting tube with air-termination rod

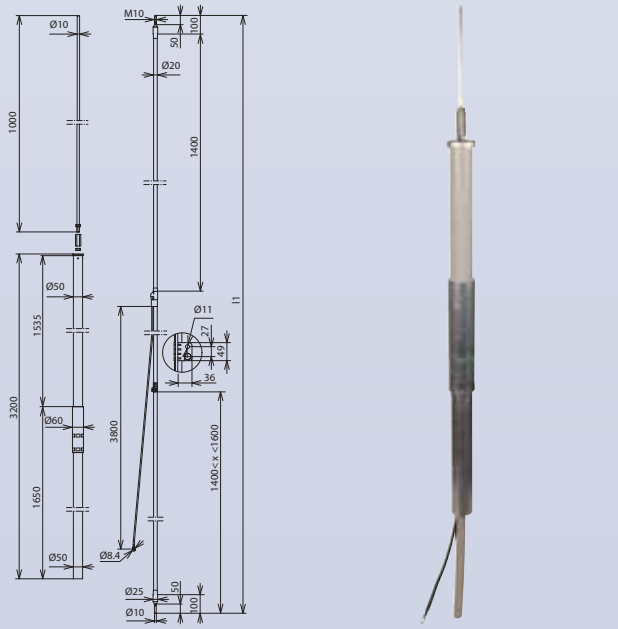
with interior sealing end and air-termination rod Ø16/10 mm, length 2500 mm



Part No.		819 360
Material of conductor		Cu
Material of supporting tube		GRP / Al
Length of supporting tube	mm	3200
Colour of conductor		black
Outer Ø conductor	mm	20
Minimum order length (l1)	m	6
Packing unit	pc(s)	1

HVI Conductor II in supporting tube with air-termination spike

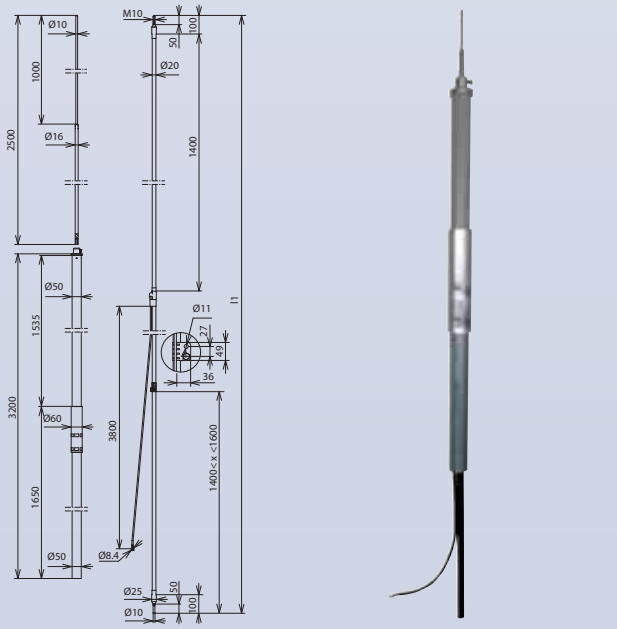
with interior sealing end and air-termination spike Ø10 mm, length 1000 mm



Part No.		819 321	819 324
Material of conductor		Cu	Cu
Material of supporting tube		GRP / Al	GRP / Al
Length of supporting tube	mm	3200	3200
Colour of conductor		black	grey
Outer Ø conductor	mm	20	23
Minimum order length (l1)	m	6	6
Packing unit	pc(s)	1	1

HVI Conductor II in supporting tube with air-termination rod

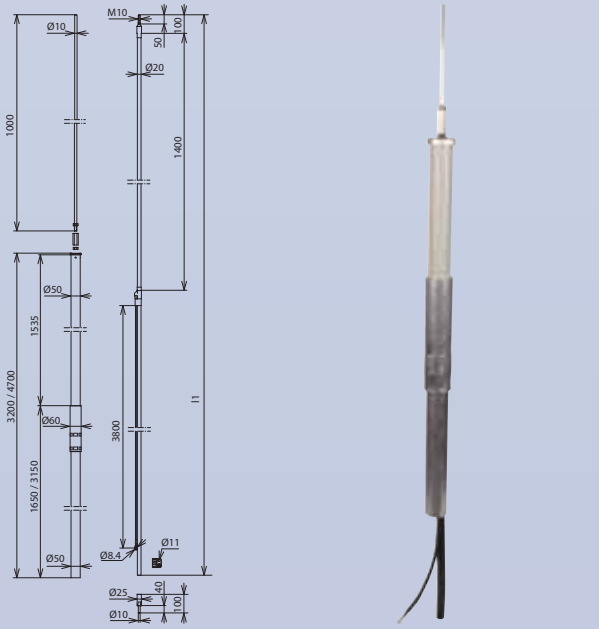
with interior sealing end and air-termination rod Ø16/10 mm, length 2500 mm



Part No.		819 361
Material of conductor		Cu
Material of supporting tube		GRP / Al
Length of supporting tube	mm	3200
Colour of conductor		black
Outer Ø conductor	mm	20
Minimum order length (l1)	m	6
Packing unit	pc(s)	1

HVI Conductor III in supporting tube with air-termination spike

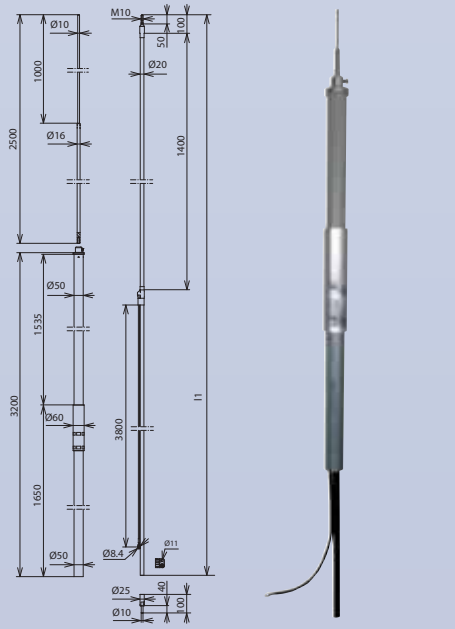
with interior sealing end and air-termination spike Ø10 mm, length 1000 mm



Part No.		819 322	819 325	819 422	819 425
Material of conductor		Cu	Cu	Cu	Cu
Material of supporting tube		GRP / Al	GRP / Al	GRP / Al	GRP / Al
Length of supporting tube	mm	3200	3200	4700	4700
Colour of conductor		black	grey	black	grey
Outer Ø conductor	mm	20	23	20	23
Minimum order length (l1)	m	6	6	8	8
Packing unit	pc(s)	1	1	1	1

HVI Conductor III in supporting tube with air-termination rod

with interior sealing end and air-termination rod Ø16/10 mm, length 2500 mm



Part No.		819 362
Material of conductor		Cu
Material of supporting tube		GRP / Al
Length of supporting tube	mm	3200
Colour of conductor		black
Outer Ø conductor	mm	20
Minimum order length (l1)	m	6
Packing unit	pc(s)	1

Antennas with a radiation characteristic of 360° are used in different fields of radio application. Such antennas are known as "omnidirectional antennas" on the market. Typical applications of omnidirectional antennas in practice are private mobile radio (PMR) systems, safety nets and sometimes also GSM networks. In GSM networks, however, they are only applied if there is a low frequency of radio waves.

For omnidirectional antennas it has to be taken into account that metal structures in the direct vicinity have a negative, i.e. attenuating influence on the radiation characteristics. Hence, the father from the antenna, the lower the influence of these structures on the radiation characteristics.
For evaluating what type and size of closely situated metal structures do interfere the radiation characteristics, measurings for products of DEHN + SÖHNE have been carried out together with Kathrein, a German company in Rosenheim.

When installing an isolated air-termination systems at an omnidirectional antenna it has to be minded that an isolated air-termination rod provides a sufficient protective angle for the antenna to be protected. A sufficient separation distance s has to be kept as well.

If the HVI conductor is used for isolated air-termination systems, a maximum separation distance in air of 0.75 m has to be complied with. Considering the mechanical deflection of antenna and air-termination system in case of wind, a distance of 1 m between antenna and isolated air-termination system has to be specified for wind velocities up to 145 km/h.
Referring to the radio technical evaluation the resulting distance is equal to one quarter of the wave length.
Calculation of wave length and a **synopitcal table** are shown in the following.

Preferred frequency range of private mobile radio systems is 40 MHz. The typical frequency range of emergency call systems (fire brigade, police, etc.) presently is 80 MHz and 160 MHz. Security authorities and organizations (BOS) in Germany are going to be operated at a frequency of 400 MHz. Current GSM networks are operated at 900 MHz and 1800 MHz, UMTS system has 2 GHz.

The corresponding wave length is shown in the synoptical table. This table also states that the quarter-wave distance is more critical for applications with a lower transmission frequency than for GSM and UMTS networks, for example.

Examinations have been performed for the case of an air-termination system with Ø50 mm (metal pole) and the HVI conductor with Ø20 mm (copper conductor Ø5 mm) installed in parallel to the antenna. Detailed test results are available at DEHN + SÖHNE.

Technical implementation of the isolated air-termination system is shown in **Figure 1**. It refers to an omnidirectional antenna with a length of approx. 1000 mm and a supporting tube with an air-termination spike length of approx. 1000 mm. Depending on the used HVI conductor I, II or III (e.g. black), Part Nos. 819 320, 819 321 or 819322 can be used for the design as shown.

Omnidirectional antennas can be up to approx. 3000 mm long. These lengths require supporting tubes with an air-termination rod up to 2500 mm for covering the corresponding protective area, e.g. Part No. 819 360, 819 361 or 819 362.
Figure 2 shows a possible design and the necessary components.

For connecting the HVI conductor to the air-termination rod, a special terminal element is necessary. This terminal plate for the HVI conductor consists of a terminal bolt (Ø16 mm) and a KS connector (6-10 mm) Part No. 301 239.

Special spacers are necessary to fasten the supporting tube construction at the anntenna pole. This type of spacers is shown in **Figure 3**.

At least two spacers have to be mounted at each of the supporting tubes of the isolated air-termination system. These are available according to the diameter of the pole.

DEHN installation instructions No. 1521 has to be observed for installing the isolated air-termination system.

The wind load and the resulting statics are essential for the whole subject of an isolated air-termination system for omnidirectional antennas. Therefore it is subject to approval by the system operator or owner.
Further information about the own weight and the wind exposed surface of the components is available on request.
Our components and configurations of the structures are dimensioned for wind load zone II with a maximum wind velocity of 145 km/h.

More details in installation instructions No. 1521.

Calculations of arising forces/moments are available on request.

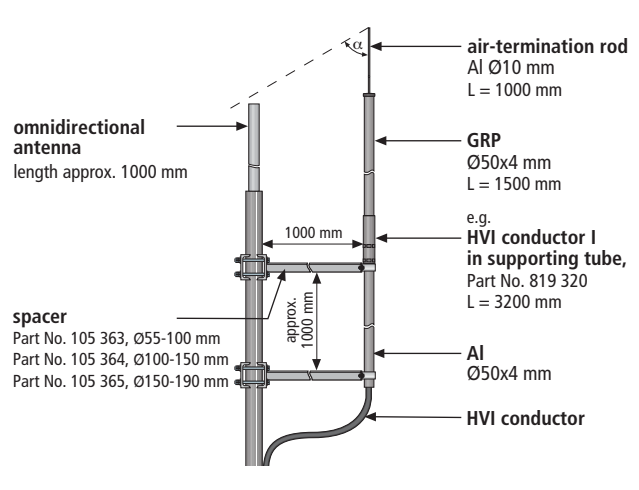


Figure 1: Exemplary design for an omnidirectional antenna length 1000 mm

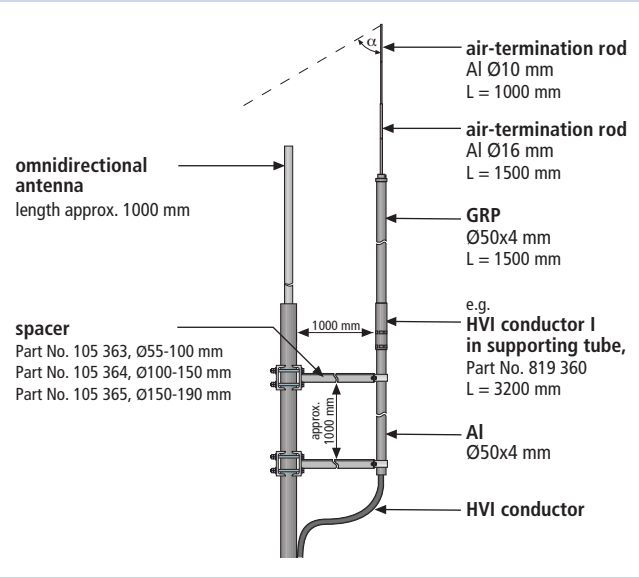


Figure 2: Exemplary design for an omnidirectional antenna, length 3000 mm

Figure 3: Spacer – detail view

$$\text{wave length} = \frac{\text{velocity of light}}{\text{frequency}}$$

$$\lambda = \frac{c}{f} \left[\frac{\frac{m}{s}}{\frac{1}{s}} \right]$$

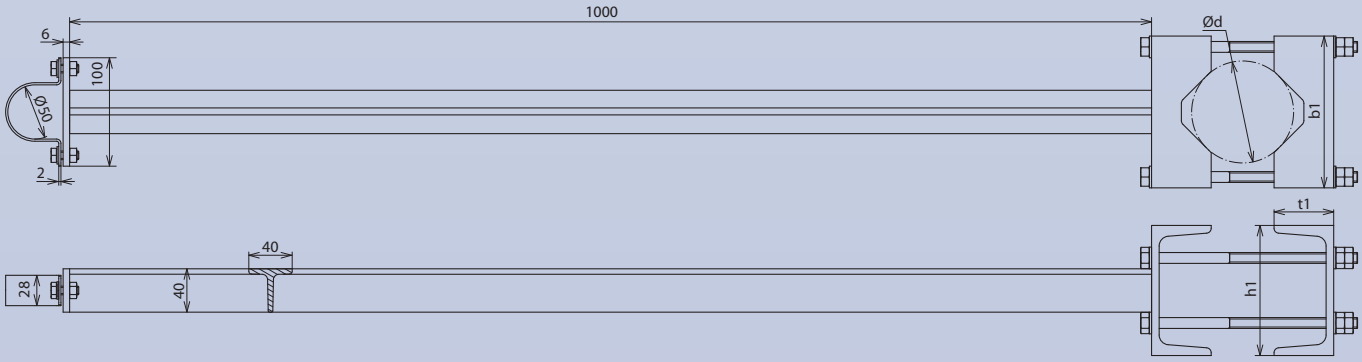
velocity of light c = 300 000 km/s = 3 x 10^8 m/s

Calculation of the wave length

Frequency (Hz = $\frac{1}{s}$)	Wave length (m)
100 000	3 000
1 000 000	300
10 000 000	30
100 000 000	3
40x 10^6	7.5
80x 10^6	3.75
160x 10^6	1.875
900x 10^6	0.33
1 800x 10^6	0.17

Table

Spacer for DEHNiso Combi supporting tubes with HVI conductor inside and/or outside



Part No.		105 363	105 364	105 365
Material of spacer/T profile		St/tZn	St/tZn	St/tZn
Clamping range (Ø mast)	mm	55-100	100-150	150-190
Clamping range of supporting tube	mm	50	50	50
Length of spacer	mm	1000	1000	1000
Screw	mm	M10x192/M8x20	M10x242/M8x20	M10x292/M8x20
Material of screw		StSt	StSt	StSt
Dimension (w1 x h1 x d1)	mm	140x120x55	190x140x60	230x180x70
Packing unit	pc(s)	1	1	1

Biogas/natural gas plant Kerpen, Germany
Protection of the fermenters – air-termination masts with HVI conductors

Air-termination mast for a maximum free length of the whole air-termination system of 8.5 m.
Fixing has to be performed with 3 variable supports (Part No. 105 345).
The air-termination masts are designed for wind velocities up to 145 km/h (wind load zone II).

The separable air-termination mast consists of

- air-termination rod Al Ø16/10 mm, length 2500 mm
- supporting tube GRP/Al Ø50/60 length 2050 mm (telescoping of 200 mm)
- mast pipe St/tZn Ø60, length 6000 mm with locking screws M10 StSt
- HVI conductor installed inside/outside
- transport length 6000 mm

More details in installation instructions No. 1565

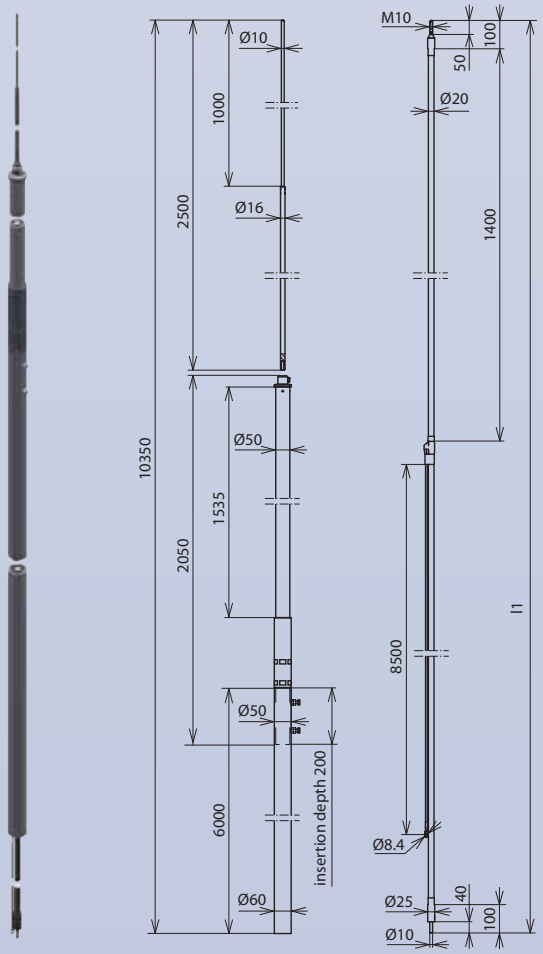
with one HVI Conductor I

design with 1x HVI conductor I inside, conductor length 10 m

additionally required conductor length of the HVI conductor has to be ordered separately

maximum total length of the HVI conductor 12.5 m for protection class II of the lightning protection system

maximum total length of the HVI conductor 19 m for protection class III of the lightning protection system



Part No.		819 720
Conductor length of HVI conductor (l1)	mm	10000
Length of air-termination rod	mm	2500
Length of supporting tube	mm	2050
Length of mast pipe	mm	6000
Total length of air-termination mast	mm	10350
Packing unit	pc(s)	1

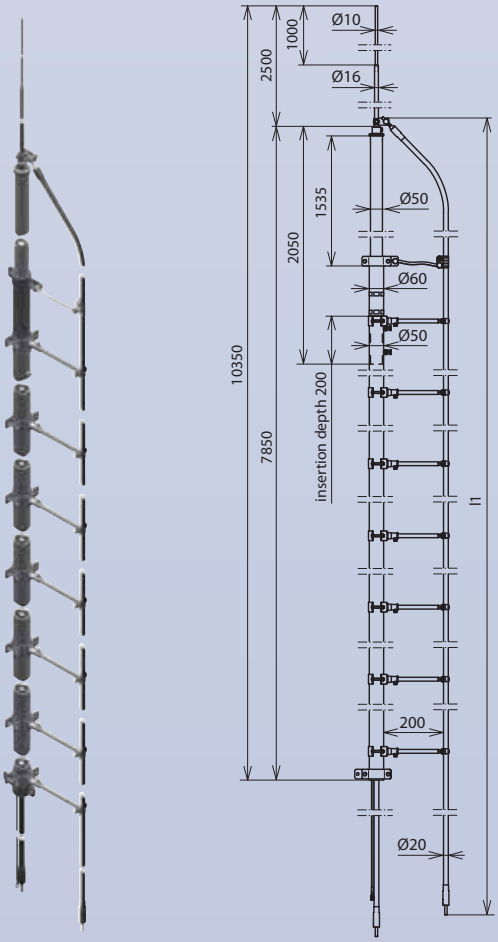
with two HVI Conductors I

design with 2x HVI conductor I, conductor length 10.0 m, inside and outside

additionally required conductor lengths of the HVI conductors lengths have to be ordered separately (twice)

maximum total length of the HVI conductors 16.5 m for protection class II of the lightning protection system

maximum total length of the HVI conductors 24 m for protection class III of the lightning protection system



Part No.		819 750
Conductor length of HVI conductor (l1)	mm	10000
Length of air-termination rod	mm	2500
Length of supporting tube	mm	2050
Length of mast pipe	mm	6000
Total length of air-termination mast	mm	10350
Packing unit	pc(s)	1

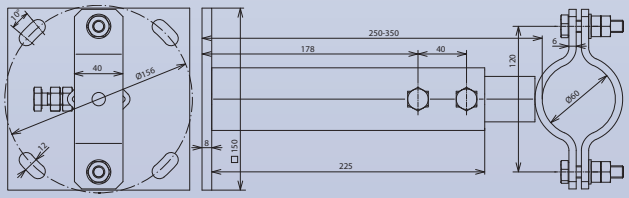
Accessory for Air-termination Masts with HVI Conductor

Variable Support for Air-termination Masts

three supports per air-termination mast are to be mounted

clamping range of air-termination mast ∅60 mm

Part No.		105 345
Material of support		St/tZn
Range of adjustment	mm	250-350
Clamping range of air-termination mast	mm	60
Fixing bores ∅	mm	[4x] 12x25
Profile		40x40x4 / 30x30x3
Screw	mm	M10x30 / M10x45
Material of screw		StSt
Packing unit	pc(s)	1



HVI conductor light also allows for installations without performing an equipotential bonding with the building or structure at the end of an adjustment range.

HVI conductor light is a supplementation to the proved HVI conductor. The coupling point has to be implemented as defined, e.g. at the tripod, without an equipotential bonding (functional earth conductor) being necessary. Thus mounting and installation is easier and a lot of time can be saved.

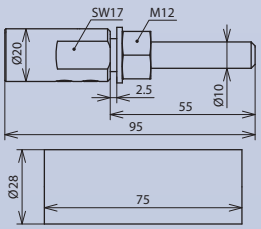
The roof surface of buildings today is often the final installation level. Pipings, electrical and IT systems as well as PV systems are installed on the roof regardless of the potential risk of lightning strikes. All of these systems having a conductive connection into the structure, lightning partial currents can also enter the building and influence or even destroy electrical/electronic equipment. This dragging of lightning partial currents into the buildings can be avoided by isolated air-termination systems.

HVI conductor light is the system for keeping the separation distance on flat roofs. Uncontrolled flashover e.g. through the roofing to metal or electrical parts underneath will be avoided by the high-voltage resistant insulation of the HVI conductor light.
The conductor will be delivered in a length of 100 m on a disposable plywood reel (diameter approx. 800 mm, width approx. 500 mm) including one Allen key.

- high-voltage-resistant insulated HVI conductor light for keeping the separation distance from electrically conductive parts according to EN 62305-3
- equivalent separation distance s ≤ 0.45 m (in air), or s ≤ 0.90 m (solid building material)
- The HVI conductor light meets the requirements according to EN 50164-2

Part No.		819 125
Material of conductor		Cu
Material of insulation		PE
Material of coating		PVC
Colour of conductor		grey
Cross section of core	mm^2	19
Outer ∅ conductor	mm	20
Packing unit	m	1

Accessories for HVI Conductor light

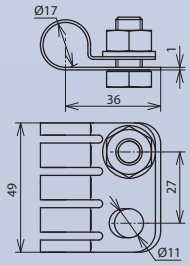


Terminal Element for HVI Conductor light

For closing both sides of the HVI Conductor light when connecting the conductor e.g. to the terminal plate at the air-termination mast or to other parts of the external lightning protection system.

including heat-shrinkable sleeve / packing unit

Part No.		819 299
Material		StSt
Terminal bolt		∅10 mm and M12
Type		with spring washer
Screw	mm	threaded bolt M6x8
Material of screw/nut		StSt
Packing unit	pc(s)	1



EB Terminal Element for HVI Conductor light

For controlled resetting of the electrical field in the sealing end range of the HVI conductor light

Especially slotted design for best electrical contacting of the semi-conductive coating

Part No.		410 219
Material		StSt
Clamping range ∅	mm	17
Terminal bore ∅	mm	11
Screw	mm	M10x20
Material of screw/nut		StSt
Packing unit	pc(s)	1

Air-termination Masts for HVI® Conductor light on Flat Roofs

Air-termination mast complete set with quad terminal plate for HVI conductor light and fixing set for mounting the conductor at the air-termination mast

adjustable to roof inclination up to max. 10°

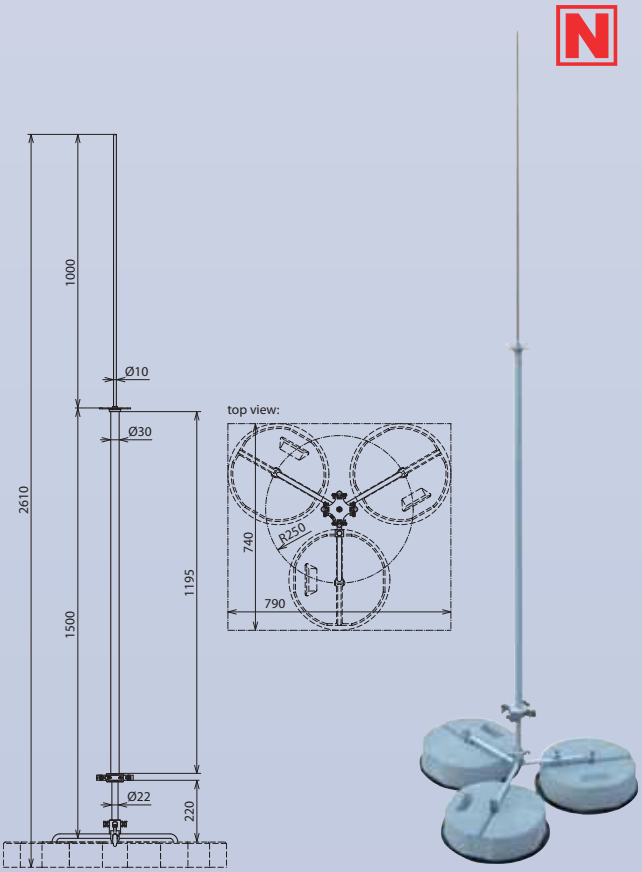
concrete bases (weight 17 kg) and support plates have to be ordered separately

When using air-termination mast Part No. 819 280 with a total height of 2900 mm, and Part No. 819 281, total height 2600 mm, three concrete bases (weight 17 kg) provide stability for wind velocities up to 162 km/h (wind load zone III).

When using air-termination mast Part No, 819 285 with a total height of 3900 mm, three concrete bases (weight 17 kg) are necessary to provide stability for wind velocities up to 145 km/h (wind load zone II) and six contrete bases (weight 17 kg) provide stability for wind velocities up to 162 km/h (wind load zone III).

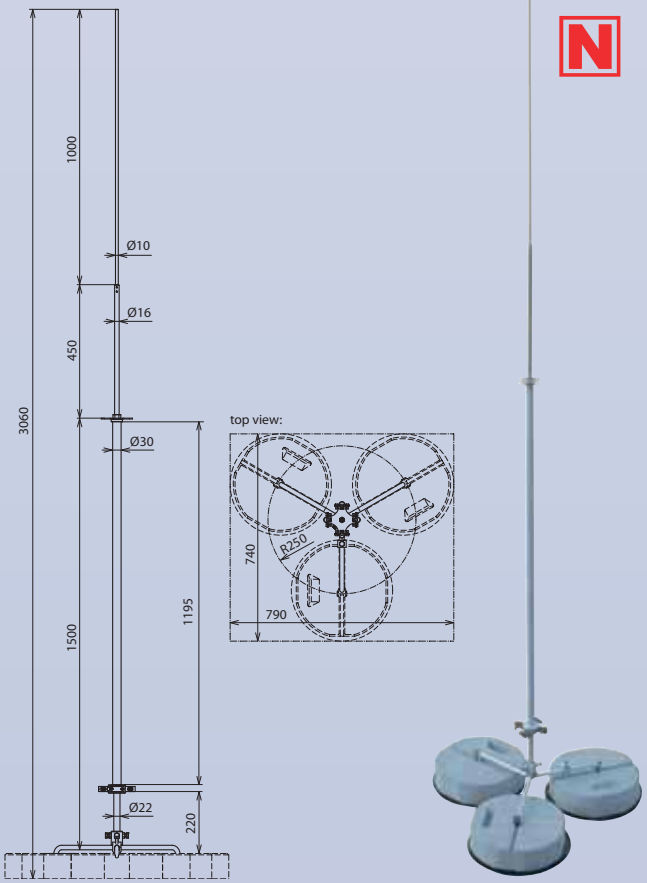
For air-termination mast Part No. 819 286 with a total height of 3100 mm, three concrete bases (weight 17 kg) have to be used to provide stability for wind velocities up to 145 km/h (wind load zone II).

Air-termination mast 30 for HVI conductor light SET I 2600 mm total height



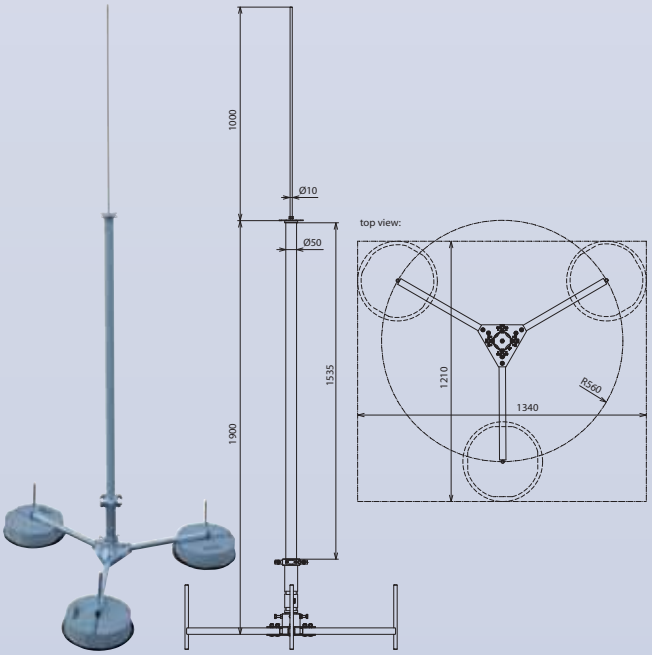
Part No.		819 281
Material of tripod		St/tZn
Material of supporting tube		GRP / Al
Length of supporting tube	mm	1500
Insulating clearance	mm	1195
Female thread		M10
Length of air-termination spike	mm	1000
Material of air-termination spike		Al
Packing unit	pc(s)	1

Air-termination mast 30 for HVI conductor light SET II 3100 mm total height



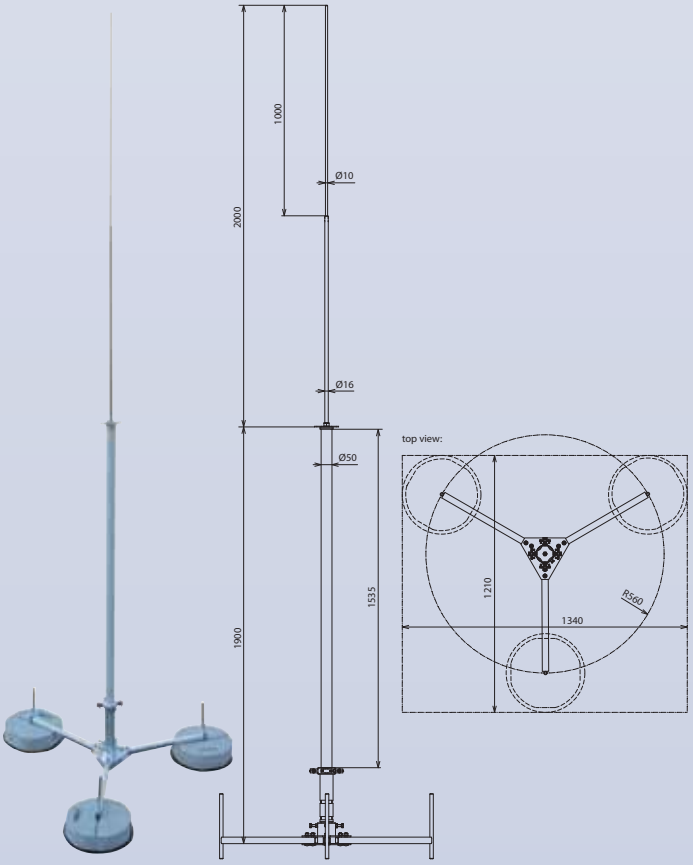
Part No.		819 286
Material of tripod		St/tZn
Material of supporting tube		GRP / Al
Length of supporting tube	mm	1500
Insulating clearance	mm	1195
Female thread		M10
Length of air-termination rod	mm	1500
Material of air-termination rod		Al
Packing unit	pc(s)	1

Air-termination mast 50 for HVI conductor light SET I 2900 mm total height



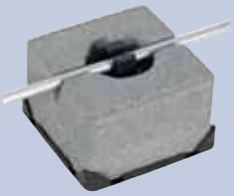
Part No.		819 280
Material of tripod		St/tZn
Material of supporting tube		GRP / Al
Length of supporting tube	mm	1900
Insulating clearance	mm	1535
Female thread		M10
Length of air-termination spike	mm	1000
Material of air-termination spike		Al
Packing unit	pc(s)	1

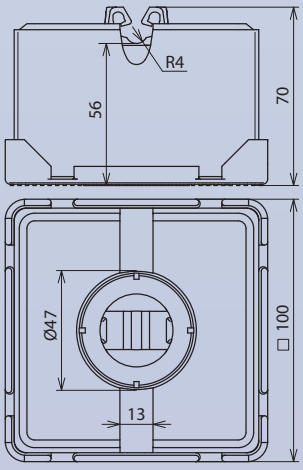
Air-termination mast 50 for HVI conductor light SET II 3900 mm total height



Part No.		819 285
Material of tripod		St/tZn
Material of supporting tube		GRP / Al
Length of supporting tube	mm	1900
Insulating clearance	mm	1535
Female thread		M16
Length of air-termination rod	mm	2000
Material of air-termination rod		Al
Packing unit	pc(s)	1

Accessories

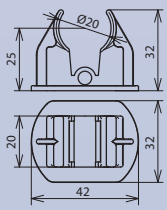




Roof Conductor Holder for flat roofs

for the fixing of round conductors and strips on flat roofs
with single conductor holder Type FB

Part No.		253 015
Conductor leading		loose
Material of conductor holder		plastic
Colour of conductor holder		black
Conductor holder support Rd	mm	8
Block		concrete (C35/45)
Weight	kg	1
Packing unit	pc(s)	10



Adapter for HVI Conductor Installation on flat roofs

with roof conductor holder Type FB (Part No. 253 015)
for snapping on

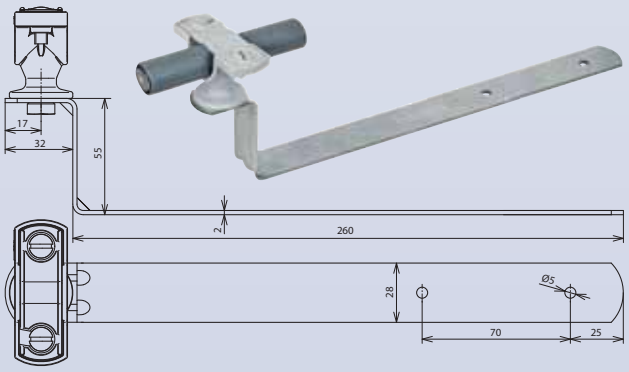
Part No.		253 026
Material		plastic
Colour		black
Conductor holder support Rd		20
Packing unit	pc(s)	50

Accessories

Roof Conductor Holder with Straight Brace for HVI Conductor

for installing the HVI conductor on gable roof surfaces

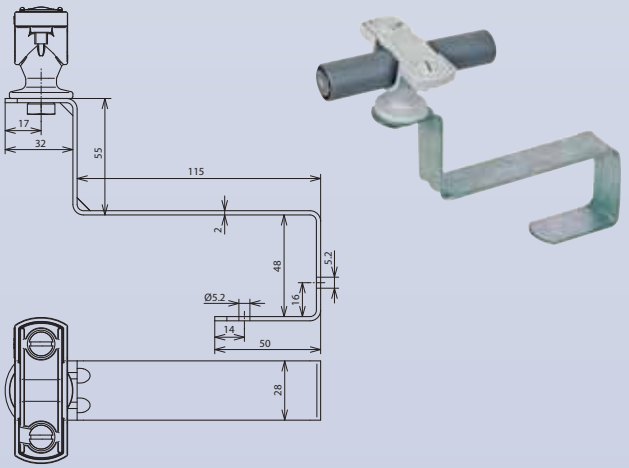
Part No.		202 831
Material of roof conductor holder		St/tZn
Material of conductor holder		PA
Conductor leading		fixed
Conductor holder support Rd	mm	20
Height of brace	mm	55
Length of brace	mm	260
Fixing	mm	[2x] Ø5
Packing unit	pc(s)	25



Roof Conductor Holder with Angled Brace for HVI Conductor

for installing the HVI conductor on the surface of gable roofs

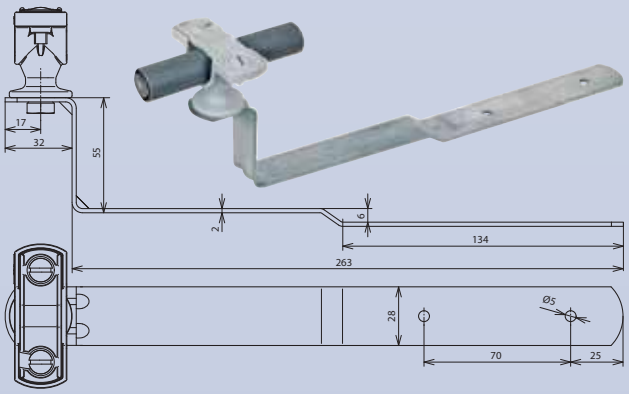
Part No.		202 830
Material of roof conductor holder		St/tZn
Material of conductor holder		PA
Conductor leading		fixed
Conductor holder support Rd	mm	20
Height of brace	mm	55
Length of brace	mm	115
Fixing	mm	[2x] Ø5.2
Packing unit	pc(s)	25



Roof Conductor Holder with Cranked Brace for HVI Conductor

for installing the HVI conductor on the surface of gable roofs

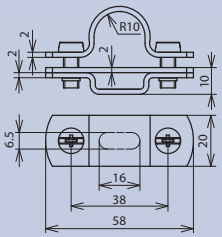
Part No.		202 832
Material of roof conductor holder		St/tZn
Material of conductor holder		PA
Conductor leading		fixed
Conductor holder support Rd	mm	20
Height of brace	mm	55
Length of brace	mm	260
Fixing	mm	[2x] Ø5
Packing unit	pc(s)	25



Conductor Holder for HVI Conductor

StSt, for wall mounting with two-screw cleat (not in the sealing end range)

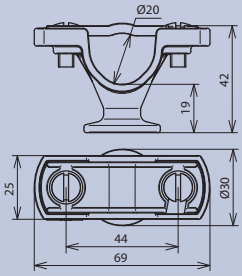
Part No.		275 229
Material of conductor holder		StSt
Conductor holder support Rd	mm	20
Fixing bore	mm	6.5x16
Screw	mm	M6x14
Packing unit	pc(s)	50



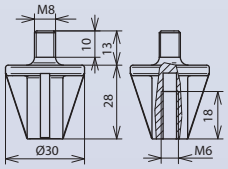
Conductor Holder for HVI Conductor

for wall mounting and for mounting in the sealing end range

Part No.		275 220
Material of conductor holder		PA
Conductor holder support Rd	mm	20
Female thread		M8
Fixing bore	mm	6.5
Screw	mm	M6x16
Packing unit	pc(s)	25



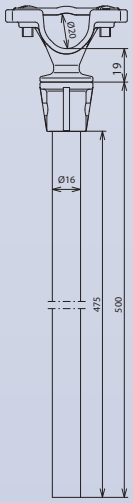
Accessories



Adapter for Roof Conductor Holders

for fixing plastic conductor holders with thread M8 on different roof conductor holder base parts (standard conductor holder will be removed)

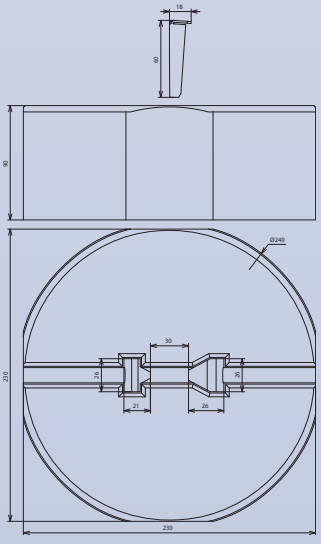
Part No.		106 898
Material		plastic
Thread		M8
Female thread		M6
Length	mm	28
Colour		light beige
Packing unit	pc(s)	25



Spacer for HVI Conductor light

for wedge mounting installation e.g. with concrete base 8.5 kg (Part No. 102 075)

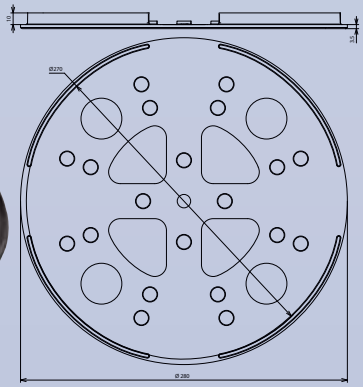
Part No.		106 852	106 812
Material of spacer		GRP	GRP
Material of conductor holder/adapter		PA	PA
Length	mm	500	1000
Insulating clearance	mm	410	910
Conductor holder support Rd	mm	20	20
Conductor leading		fixed	fixed
Thread		M8	M8
Screw / grooved pin		M6x16	M6x16
Packing unit	pc(s)	1	1



Concrete Base

for wedge mounting of air-termination rods Ø10, length 1000 mm or of DEHNiso spacers Ø16 mm, length up to 675 mm (distance 1 m)

Part No.		102 075
Total weight	kg	8.5
Diameter	mm	240
Material		concrete (C45/55)
Material of wedge/adapter		StSt
Packing unit	pc(s)	120



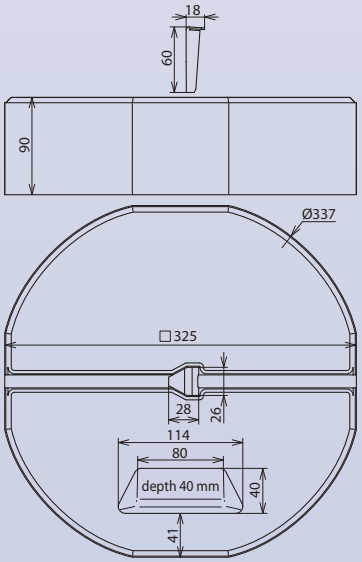
Support Plate

to protect the roofing sheets under the concrete base

for concrete bases (Part No. 102 075, 102 0039)

Part No.		102 060
Diameter (d1)	mm	280
Diameter (d2)	mm	270
Material		EVA
Colour		black
Packing unit	pc(s)	1

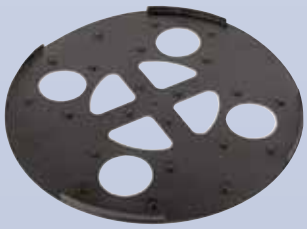
Accessories

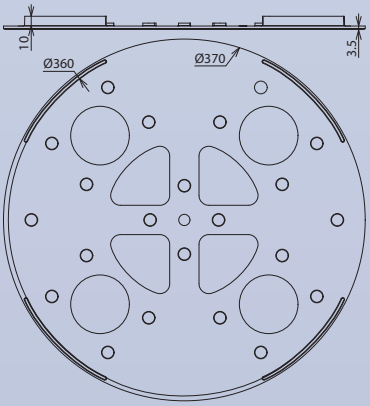


Concrete Base

stackable, for wedge mounting of chamfered or tapered air-termination rods Ø16 mm or of DEHNiso spacers Ø16 mm

Part No.		102 010
Weight	kg	17
Support	mm	wedge mounting Ø16
Diameter	mm	337
Material		concrete (C45/55)
Material of wedge/adapter		StSt
Packing unit	pc(s)	54



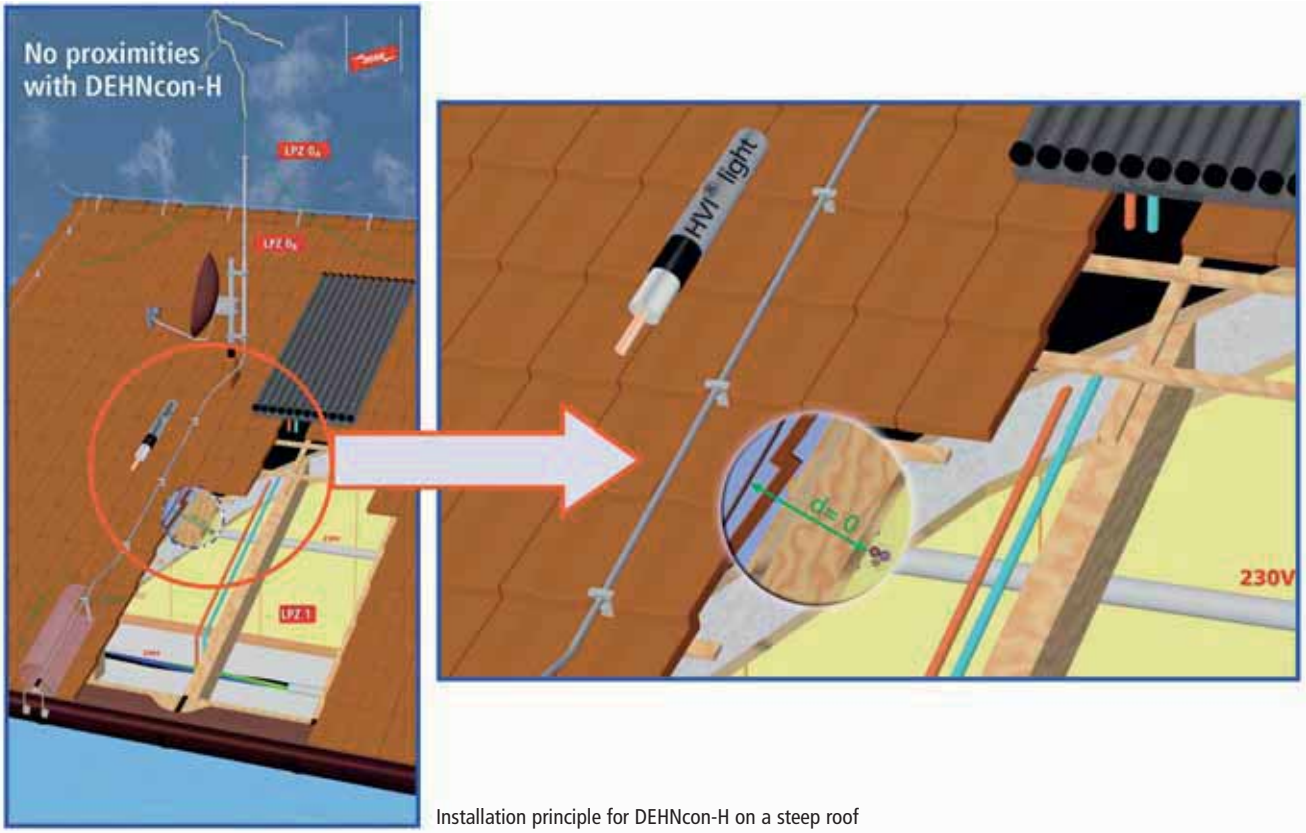


Support Plate

to protect the roofing sheets under the concrete base

for concrete bases (Part No. 102 010, 102 0029)

Part No.		102 050
Diameter (d1)	mm	370
Diameter (d2)	mm	360
Material		EVA
Colour		black
Packing unit	pc(s)	1



Installation principle for DEHNcon-H on a steep roof

Isolated air-termination system – all roof-mounted structures such as solar thermal, PV and exhaust systems incl. the parabolic antenna in the protective area

When laying bare, uninsulated wires of the air-termination system directly on the roof surface, the separation distance to electrical and metal systems installed under the roof has to be kept according to state-of-the-art and the actual standard of protection against lightning EN 62305-3.
Cables, pipings and metal parts installed underneath the roofing often are in close vicinity to the air-termination systems/down conductors thus may provide a problem in terms of proximity. Isolated air-termination systems with high-voltage insulated down conductors are a solution in such cases.

- New type of isolated air-termination system for transmitters/ receivers (parabolic, terrestrial antennas) or whole buildings or structures
- Optically adjusted design with the HVI conductor light inside of the supporting tube, reduced size of the supporting tubes (Al pipe 40x5 mm) and light weight of the whole structure, also suitable for subsequent mounting at antenna poles
- Interior sealing end providing a flexible StSt strip which is led out at the bottom end of the supporting tube for equipotential bonding connection
- High-voltage-resistant insulated down conductor for keeping the separation distance from electrically conductive parts according to EN 62305-3
- Equivalent separation distance s ≤ 0.45 m (in air), s ≤ 0.90 m (solid building material)
- Supporting tube with insulating section out of glass-fibre reinforced plastic (GRP) tube Ø30 mm
- Material factor k_m = 0.7
- Colour light grey, UV stabilized

HVI conductor light fulfils the requirements of EN 50164-2.

DEHNcon-H HVI conductor light I is used if the air-termination system is directly connected with the earth-termination system of the building.

DEHNcon-H HVI conductor light III with a sealing end to be implemented on site is used if connection with other parts of the external lightning protection system shall be effected. The separation distance at the terminal point is s ≤ 0.175 m (in air) or s ≤ 0.35 m (solid building material).

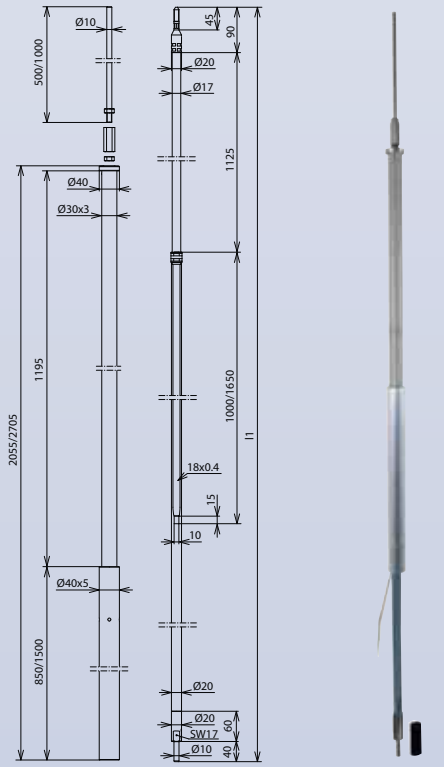
The entire structure is dimesioned for wind velocities up to 185 km/h (Wind Load Zone IV).

Minimum order quantity is 6 m. Please indicate the conductor length on your order.

More details in installation instructions No. 1632
Being a customized product (customized conductor length) the conductor can not be returned.

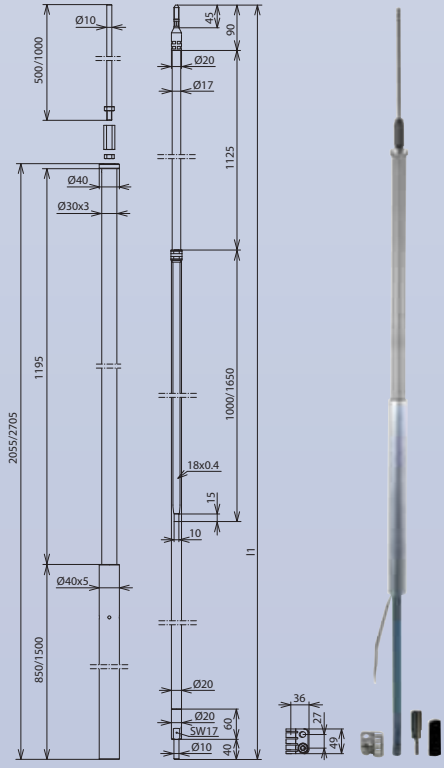
Detail – supporting tube with installed conductor

DEHNcon-H HVI conductor light I SET



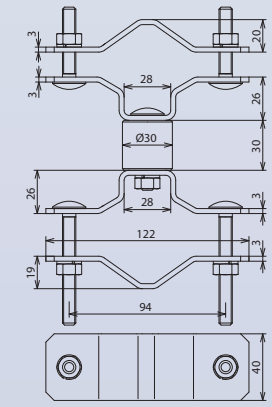
Part No.		819 250	819 251	819 252	819 253
Material of conductor		Cu	Cu	Cu	Cu
Material of supporting tube		GRP / Al	GRP / Al	GRP / Al	GRP / Al
Length of air-termination spike	mm	500	1000	500	1000
Length of supporting tube	mm	2055	2055	2705	2705
Outer Ø conductor	mm	20	20	20	20
Colour of conductor		grey	grey	grey	grey
Minimum order quantity (l1)	m	6	6	6	6
Packing unit	pc(s)	1	1	1	1

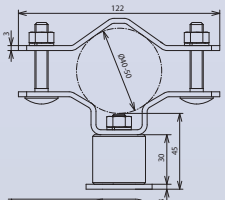
DEHNcon-H HVI conductor light III SET

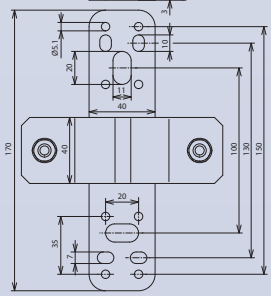
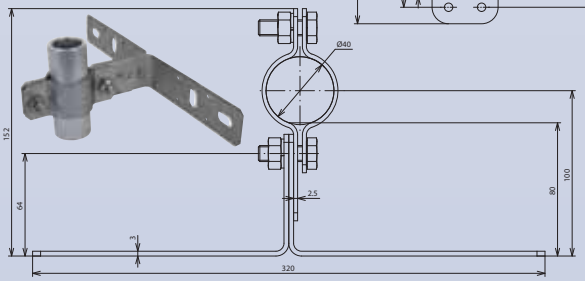
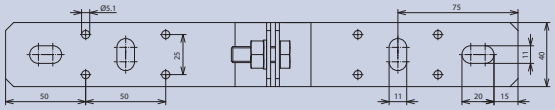


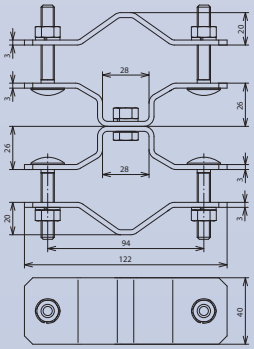
Part No.		819 260	819 261	819 262	819 263
Material of conductor		Cu	Cu	Cu	Cu
Material of supporting tube		GRP / Al	GRP / Al	GRP / Al	GRP / Al
Length of air-termination spike	mm	500	1000	500	1000
Length of supporting tube	mm	2055	2055	2705	2705
Outer Ø conductor	mm	20	20	20	20
Colour of conductor		grey	grey	grey	grey
Minimum order quantity (l1)	m	6	6	6	6
Packing unit	pc(s)	1	1	1	1

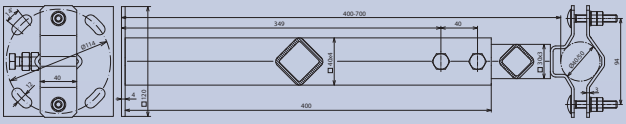
Accessories for DEHNcon-H

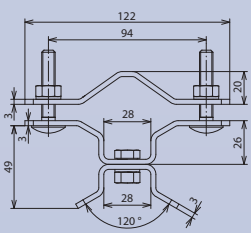
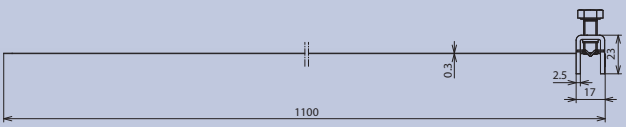








Fixing Clamp for DEHNcon-H

Clamp for fixing the supporting tube e.g. at the antenna pole with spacer length 30 mm, in order to adjust antenna supports

Part No.		105 161
Material		StSt
Clamping range Ø pipe	mm	45-65 ($1^1/_2$ - 2'')
Clamping range of supporting tube	mm	40
Length of spacer	mm	30
Screw	mm	M8x40 / M8x70
Material of screw		StSt
Packing unit	pc(s)	1

Fixing Bracket

wall fixing bracket for vertical mounting

for fixing of the supporting tubes or air-termination rods D40/D50

Part No.		105 342
Material of bracket		StSt
Fixing	mm	[8x] Ø5.1 / [4x] 7x10 / [2x] 11x20
Clamping range of supporting tube	mm	40-50
Wall/corner distance	mm	46
Dimension of fixing	mm	170
Material of screw		StSt
Packing unit	pc(s)	1

Support for Air-termination Rod D40 and DEHNcon-H

wall fixing bracket

Part No.		105 140
Material		StSt
Fixing	mm	[8x] Ø5.1 / [4x] 11x20
Wall distance	mm	80
Clamping range of air-termination rod	mm	40
Material of screw		StSt
Packing unit	pc(s)	1

Fixing Equipment for Railings

for pipes

Part No.		105 354
Material		StSt
Clamping range Ø pipe	mm	48-60 ($1\ ^1/_2$ - 2'')
Screw	mm	M8x40 / M8x50
Material of screw		StSt
Clamping range of supporting tube	mm	40-50
Packing unit	pc(s)	5

Fixing Bracket

wall fixing bracket with adjustment range of 400-700 mm

for fixing of the supporting tubes or air-termination rods D40/D50

Part No.		105 343
Material of bracket		St/tZn / StSt
Clamping range of supporting tube	mm	40-50
Wall/corner distance	mm	400-700
Dimension of plate	mm	120x120x4
Fixing	mm	[4x] 12x25
Profile		40x40x4 / 30x30x3
Packing unit	pc(s)	1

Support for Air-termination Rod D40 and DEHNcon-H

fixing clamp witb tensioning strap

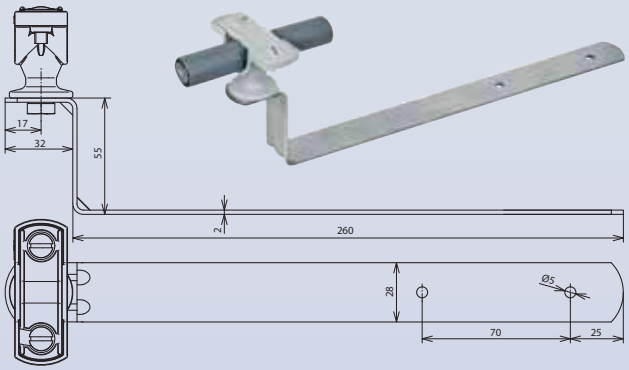
Part No.		105 160
Material		StSt
Clamping range Ø pipe	mm	50-300
Clamping range of air-termination rod	mm	40
Material of screw		StSt
Packing unit	pc(s)	1

Accessories for DEHNcon-H

Roof Conductor Holder with Straight Brace for HVI Conductor

for installing the HVI conductor on gable roof surfaces

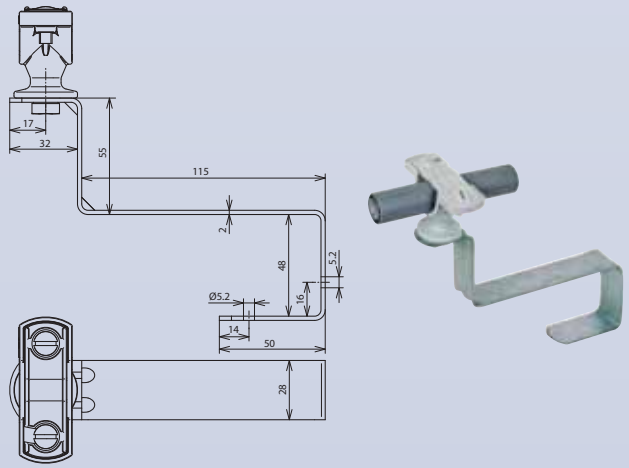
Part No.		202 831
Material of roof conductor holder		St/tZn
Material of conductor holder		PA
Conductor leading		fixed
Conductor holder support Rd	mm	20
Height of brace	mm	55
Length of brace	mm	260
Fixing	mm	[2x] Ø5
Packing unit	pc(s)	25



Roof Conductor Holder with Angled Brace for HVI Conductor

for installing the HVI conductor on the surface of gable roofs

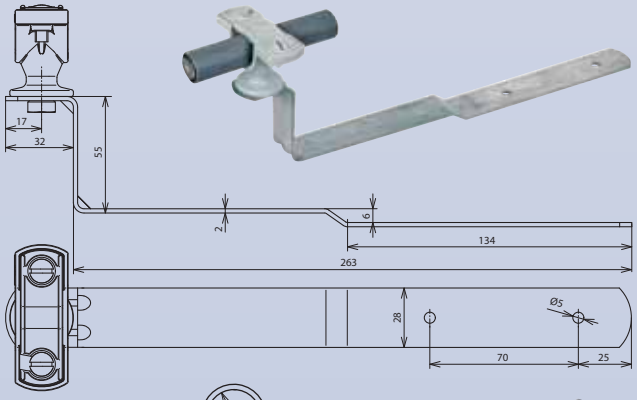
Part No.		202 830
Material of roof conductor holder		St/tZn
Material of conductor holder		PA
Conductor leading		fixed
Conductor holder support Rd	mm	20
Height of brace	mm	55
Length of brace	mm	115
Fixing	mm	[2x] Ø5.2
Packing unit	pc(s)	25



Roof Conductor Holder with Cranked Brace for HVI Conductor

for installing the HVI conductor on the surface of gable roofs

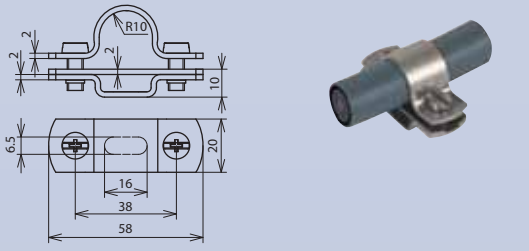
Part No.		202 832
Material of roof conductor holder		St/tZn
Material of conductor holder		PA
Conductor leading		fixed
Conductor holder support Rd	mm	20
Height of brace	mm	55
Length of brace	mm	260
Fixing	mm	[2x] Ø5
Packing unit	pc(s)	25



Conductor Holder for HVI Conductor

StSt, for wall mounting with two-screw cleat (not in the sealing end range)

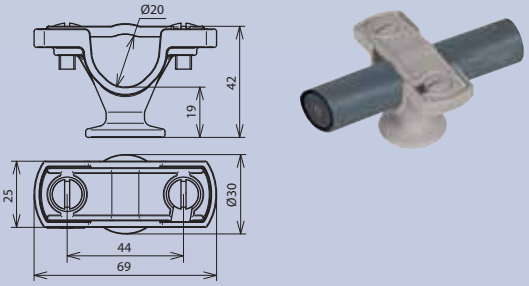
Part No.		275 229
Material of conductor holder		StSt
Conductor holder support Rd	mm	20
Fixing bore	mm	6.5x16
Screw	mm	M6x14
Packing unit	pc(s)	50



Conductor Holder for HVI Conductor

for wall mounting and for mounting in the sealing end range

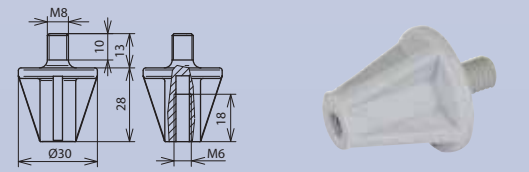
Part No.		275 220
Material of conductor holder		PA
Conductor holder support Rd	mm	20
Female thread		M8
Fixing bore	mm	6.5
Screw	mm	M6x16
Packing unit	pc(s)	25



Adapter for Roof Conductor Holders

for fixing plastic conductor holders with thread M8 on different roof conductor holder base parts (standard conductor holder will be removed)

Part No.		106 898
Material		plastic
Thread		M8
Female thread		M6
Length	mm	28
Colour		light beige
Packing unit	pc(s)	25

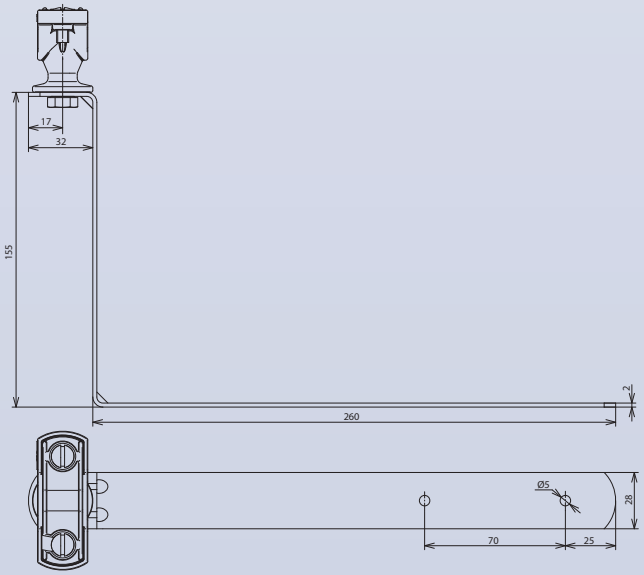


Roof Conductor Holder with Brace for HVI® Conductor light

Roof conductor holder for fixing the HVI Conductor light I at the end of the connection range (height: 175 mm), e.g. at eaves gutters of gable roofs

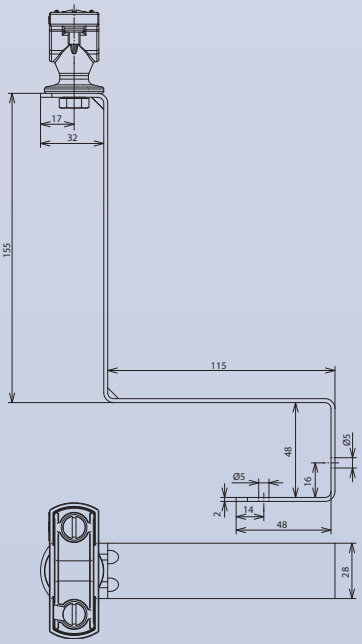
with straight brace

Part No.		202 836
Material of roof conductor holder		St/tZn
Material of conductor holder		PA
Conductor leading		fixed
Conductor holder support Rd	mm	20
Height of brace	mm	155
Length of brace	mm	260
Fixing	mm	[2x] Ø5
Packing unit	pc(s)	10

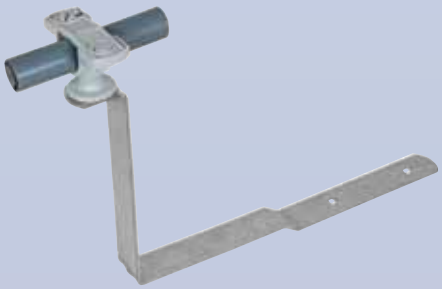


with angled brace

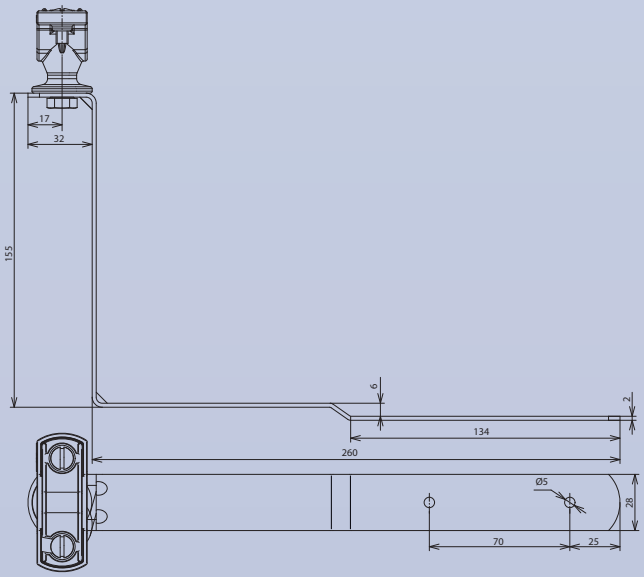
Part No.		202 835
Material of roof conductor holder		St/tZn
Material of conductor holder		PA
Conductor leading		fixed
Conductor holder support Rd	mm	20
Height of brace	mm	155
Length of brace	mm	115
Fixing	mm	[2x] Ø5
Packing unit	pc(s)	10



with cranked brace



Part No.		202 837
Material of roof conductor holder		St/tZn
Material of conductor holder		PA
Conductor leading		fixed
Conductor holder support Rd	mm	20
Height of brace	mm	155
Length of brace	mm	260
Fixing	mm	[2x] Ø5
Packing unit	pc(s)	10



Conductor Holder for Rafters

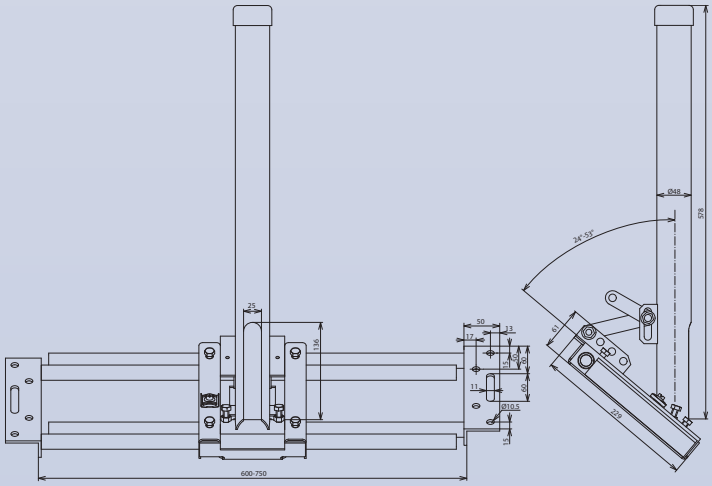
Conductor holder for use at rafters for lateral fixing of the
- DEHNcon-H supporting tube (Ø40 mm)
- HVI conductor laid inside the supporting tube (Ø50 mm)

as well as for the supporting tube to be attached on top and for the sub-roof installation of the HVI conductor or HVI conductor light.

The conductor holder for rafters may only be mounted on suitable, stable subconstructions.
The conductor holder for rafters is designed for a commencing moment up to 485 Nm.
To be mounted from outside and to be screwed directly on the rafters or on the counter-battening.

The conductor holder for rafters may not be used in case of on-roof insulation and only conditionally in case of plain tiles.

More details in installation instructions No. 1759



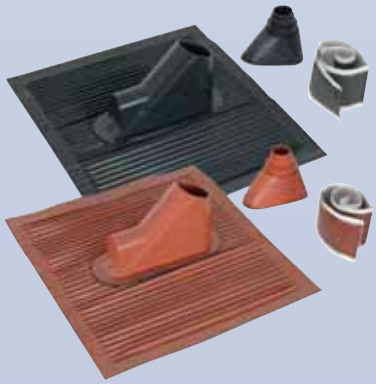
Part No.		105 240
Material	mm	St/tZn
Adjustment range	mm	600-750
Roof pitch		24° - 53°
Outer Ø of supporting tube	mm	48
Ø of cable bushing in supporting tube	mm	25
Packing unit	pc(s)	1

Accessories for Conductor Holder for Rafters

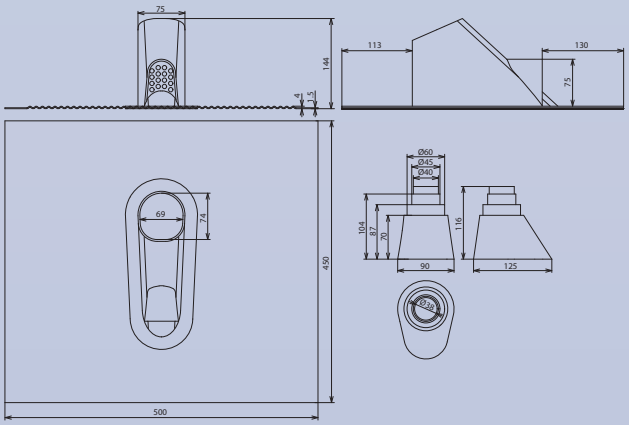
Roof Bushing Set

- for bushing and sealing of poles and pipes on steep roofs
- for universal application with different roof tiles/roof stones due to formable aluminium roof tile

Roof bushing set comprising aluminium roof tile, rubber grommet and sealing tape



Part No.		105 245	105 246
Material of roof tile		aluminium mit UV stabilized plastic coating	
Dimension of roof tile	mm	450 x 500	450 x 500
Mast hole Ø	mm	38 - 60	38 - 60
Roof inclination		24° - 53°	24° - 53°
Material of rubber grommet		UV stabilized rubber mixture	
Material of sealing tape		rubber based plastical sealant	
Type of sealing tape		strongly adhesive, self-welding	
Dimension of sealing tape	mm	600 x 80	600 x 80
Processing temperature	°C	+5 to +40	+5 to +40
Permanent temperature range of sealing tape	°C	-40 to +80	-40 to +80
Colour		black	red
Packing unit		1	1



Air-termination mast for attachment on the conductor holder for rafters

Optically adjusted inside laying of the HVI conductor or HVI conductor light in the supporting tube. The HVI conductors will be conducted through the supporting tube of the conductor holder for rafters and installed in the range of counter-battens/roof battens.

Advantages:
- sub-roof installation – optically not recognizable
- attachment mounting – only one visible tube
- no mechanical loading e.g. by snow

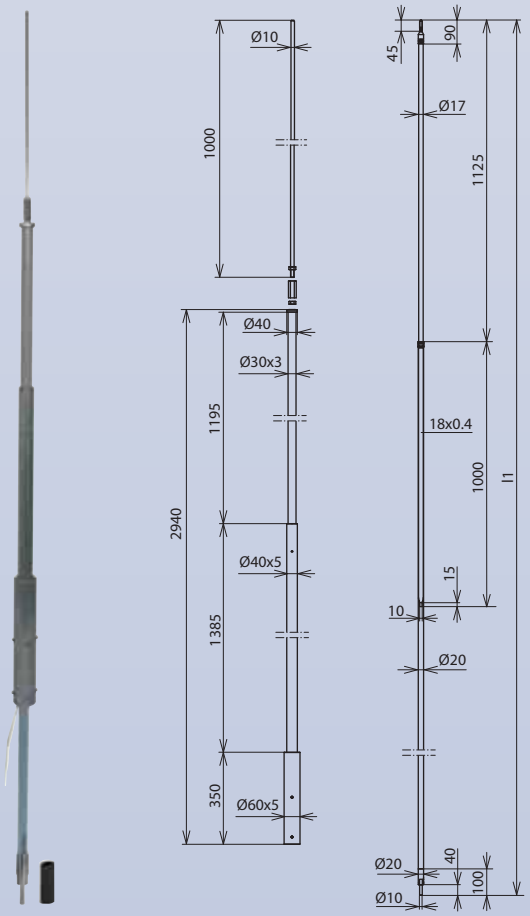
More details in installation instructions No.1759

The minimum order length is 6 m, conductor length to be indicated when ordering.

For being a customized product (customized conductor length) the conductor can not be returned.

DEHNcon-H HVI conductor light l in the supporting tube with air-termination spike

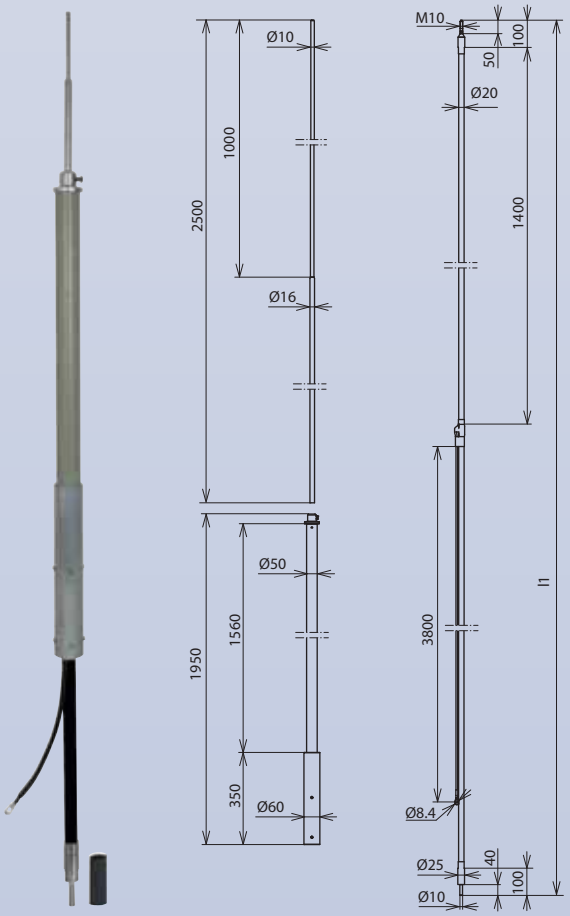
with interior sealing end and air-termination spike Ø10 mm, length 1000 mm



Part No.		819 241
Material of conductor		Cu
Material of supporting tube		GRP / Al
Supporting tube Ø GRP	mm	30
Length of supporting tube	mm	2940
Colour of conductor		grey
Outer Ø of conductor	mm	20
Equivalent separation distance s (in air)	m	0.45
Minimum order length (l1)	m	6
Packing unit	pc(s)	1

DEHNcon-H HVI conductor l in the supporting tube with air-termination rod

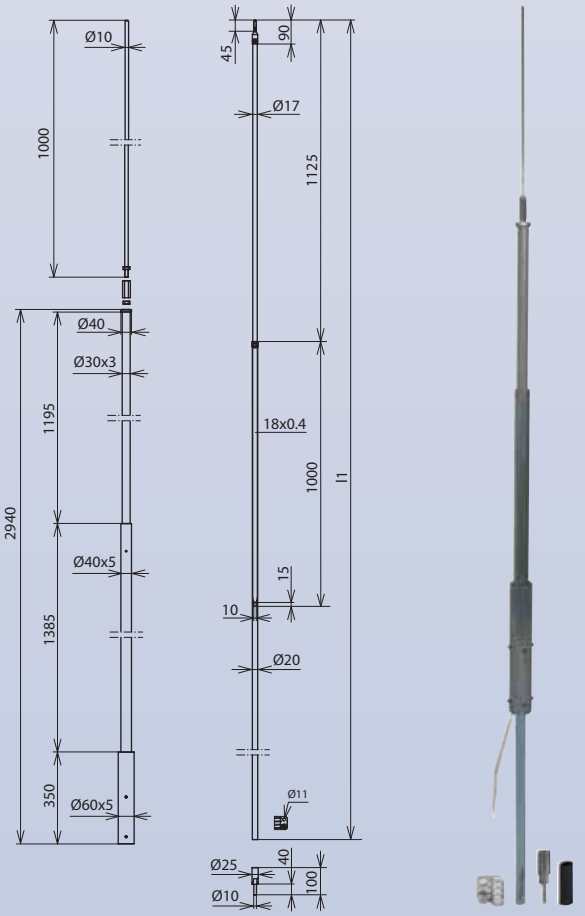
with interior sealing end and air-termination rod Ø16/10 mm, length 2500 mm



Part No.		819 245
Material of conductor		Cu
Material of supporting tube		GRP / Al
Supporting tube Ø GRP	mm	50
Length of supporting tube	mm	1950
Colour of conductor		black
Outer Ø of conductor	mm	20
Equivalent separation distance s (in air)	m	0.75
Minimum order length (l1)	m	6
Packing unit	pc(s)	1

DEHNcon-H HVI conductor light III in the supporting tube with air-termination spike

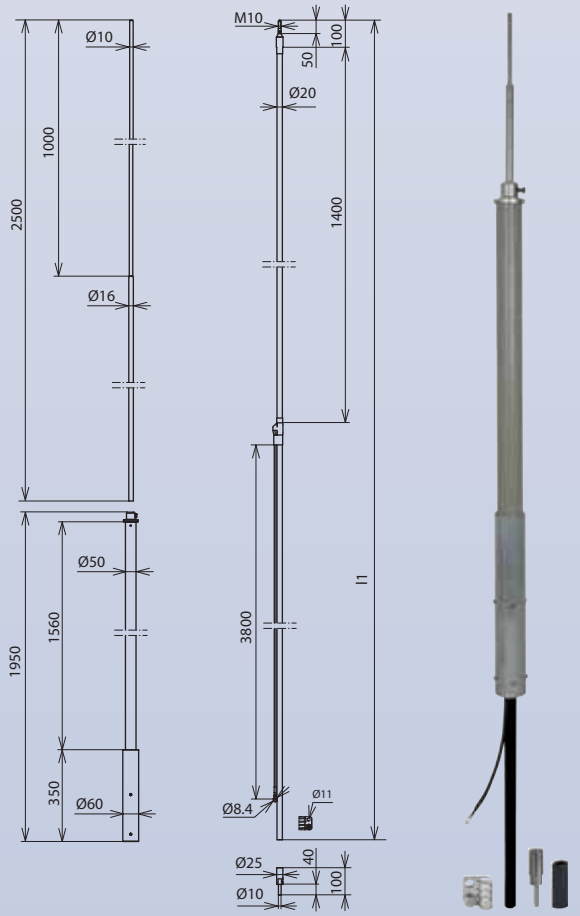
with interior sealing end and air-termination spike Ø10 mm, length 1000 mm



Part No.		819 242
Material of conductor		Cu
Material of supporting tube		GRP / Al
Supporting tube Ø GRP	mm	30
Length of supporting tube	mm	2940
Colour of conductor		grey
Outer Ø of conductor	mm	20
Equivalent separation distance s (in air)	m	0.45
Minimum order length (l1)	m	6
Packing unit	pc(s)	1

DEHNcon-H HVI conductor III in the supporting tube with air-termination rod

with interior sealing end and air-termination rod Ø16/10 mm, length 2500 mm



Part No.		819 246
Material of conductor		Cu
Material of supporting tube		GRP / Al
Supporting tube Ø GRP	mm	50
Length of supporting tube	mm	1950
Colour of conductor		black
Outer Ø of conductor	mm	20
Equivalent separation distance s (in air)	m	0.75
Minimum order length (l1)	m	6
Packing unit	pc(s)	1

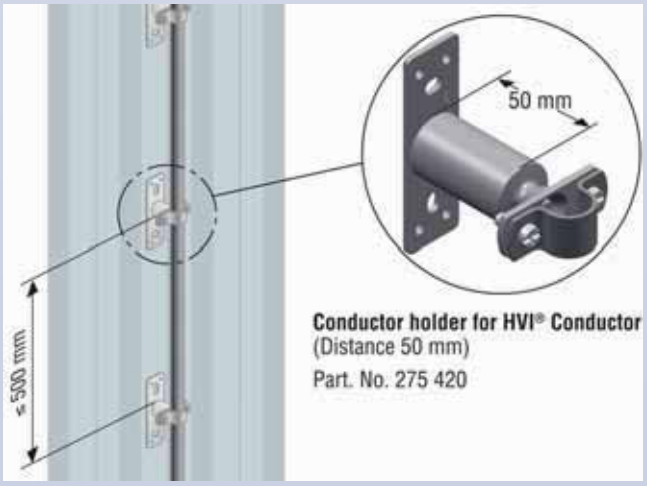
HVI conductor installed in Ex zone 2

Connection of the HVI conductor at the earthing terminal

Operators of explosion-hazardous facilities are obligated to subdivide these facilities/structures into different explosion-hazard zones. For these facilities lightning has to be taken into account as potential source of ignition. According to the national health and safety at work regulations, provision of an explosion protection document is required. This paper describes the different explosion-risk areas.

The HVI conductor is suitable for use in hazardous areas specified as Ex zones 1 and 2 (gases, vapours, mists) as well as Ex zones 21 and 22 (dusts).
The special terms of installation make sure that any electrical sparking to neighbouring metal parts will be avoided when lightning currents are flowing through the HVI conductor.

Generally installation instructions No. 1566 for the HVI conductor have to be observed and installation instructions No. 1501 are binding in case of the special application in explosion-hazardous areas.



Schematic illustration – installation in Ex zones 1 or 2 and 21 or 22 at a metal facade

TÜV HESSEN

CERTIFICATE

in the style of Directive 94/9/EG

Certificate No.: AISK-11-11-2004

for inspection report No. 41165148

Name and address of the manufacturer: DEHN + SÖHNE GmbH + Co. KG
Hans-Dehn-Straße 1
P.O. Box 1640
92306 Neumarkt

Product: HVI Conductor

The construction type of this product as well as the various designs permitted are specified in the installation instructions of DEHN + SÖHNE, Publication No.: 1501/11.04. Id. No. 047775.

Inspection result: The product meets the basic safety requirements for the field of application stated in inspection report No.: 41165148.

Inspection result: TÜV Hessen GmbH
Industrial Services
Knorrstr. 36
34121 Kassel

This product can be labelled as follows:

Ex II 3G bzw. Ex II 3D

Issued:
Kassel, 2004-12-16
Fd
Industrial Services
The expert (Dipl.-Ing. Hufschmidt)
The expert (Dipl.-Ing. Fuste)

TÜV Technische Überwachung Hessen GmbH
Industrial Service
Knorrstr. 36, 34121 Kassel

MANUFACTURER'S DECLARATION

DEHN + SÖHNE

Product: HVI® conductor

Product designation: Part No. 819 020, Part No. 819 021, Part No. 819 022, Part No. 819 023, Part No. 819 024, Part No. 819 025 and relevant applications

Manufacturer: DEHN + SÖHNE GmbH + Co.KG.
Hans-Dehn-Straße 1
92318 Neumarkt i.d.OPf.
Germany

Application description:

HVI® conductors are used as insulated down conductors for discharging lightning currents within the context of external lightning protection. HVI® conductors are part of the connection between air-termination rod and earth-termination system.

If the specified technical data are observed, absence of ignition sparks is ensured when lightning currents are discharged.

We herewith confirm that HVI® conductors can be used in potentially explosive areas in hazardous area 1 and 2 (gases, mists, vapours) as well as in hazardous area 21 and 22 (dusts) provided that installation instructions No. 1566 and the special specifications stated in installation instructions No. 1501 are observed.

HVI® conductors do not have their own potential source of ignition (mechanical device). Thus, requirements specified in the European Directive 94/9/EC do not have to be observed.

HVI® conductors do not have to be certified in accordance with the European Directive 94/9/EC with respect to explosion protection.

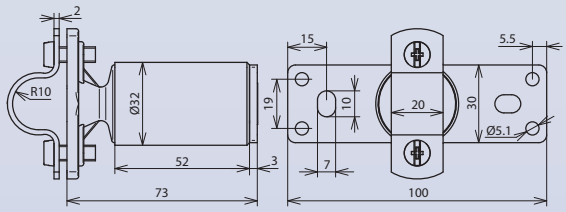
When designing HVI® conductors, the risk of ignition due to electrostatic charging was taken into consideration. Based on specifications for conductive pipes or hoses, the semi-conductive outer sheath of HVI® conductors with a resistance of $< 10^4$ Ωm is sufficiently conductive.

Neumarkt i.d.OPf., 15th January 2008

Dr.-Ing. Ralph Brocke
Head of R&D / Construction

with Spacer Sleeve distance 50 mm

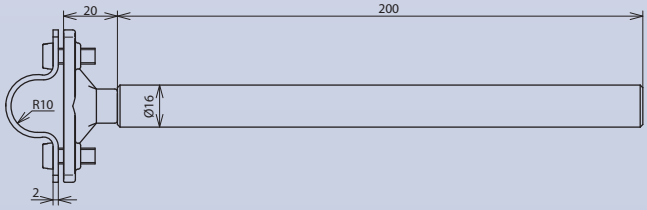
for fixing on metal construction parts (façades) in Ex zones 1 or 2 and 21 or 22

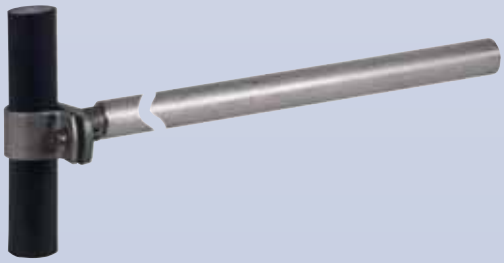


Part No.		275 420
Material of base part		ZDC
Material of cleat		StSt
Conductor holder support Rd	mm	20
Material of brace		StSt
Fixing	mm	[4x] Ø5.1 / [2x] 7x10
Screw	mm	M6x16
Packing unit	pc(s)	10

with Spacer Bar distance 200 mm

for fixing e.g. with fixing plate for DEHNiso spacer (Part No. 106 127, to be ordered separately) at metal construction parts (façades) in Ex zones 1 or 2 and 21 or 22

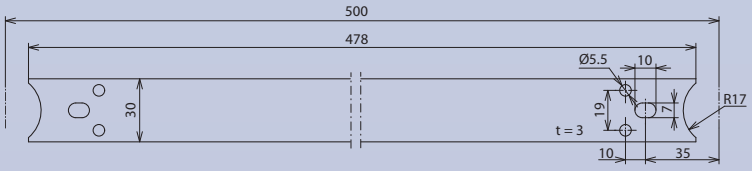


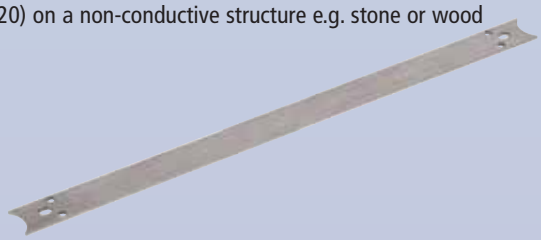


Part No.		275 430
Material of base part		ZDC
Material of cleat		StSt
Conductor holder support Rd	mm	20
Material of brace		Al
Screw	mm	M6x16
Packing unit	pc(s)	20

Connecting Brace

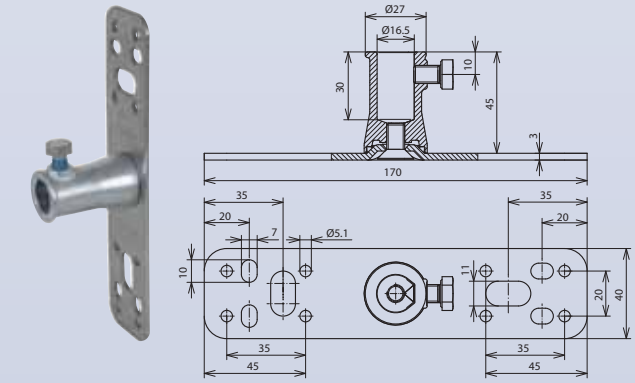
for installing the HVI conductor with conductor holder and spacer sleeve (Part No. 275 420) on a non-conductive structure e.g. stone or wood





Part No.		275 499
Material of brace		StSt
Fixing	mm	[4x] Ø5.5 / [2x] 7x10
Dimension (l x w x d)	mm	478x30x3
Packing unit	pc(s)	1

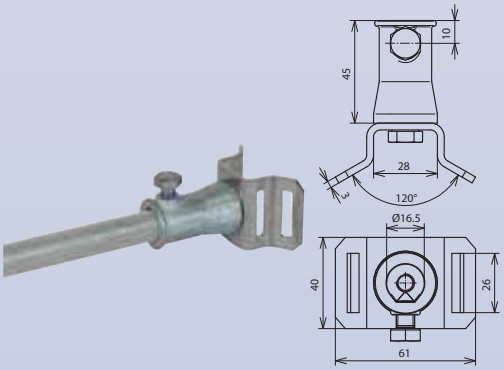
Accessories for Conductor Holder for HVI Conductor in Ex Areas



Fixing Plate

Base plate for the spacer or the spacer bar (Ø16 mm) to be fixed e.g. at construction components

Part No.		106 127
Material of fixing plate		StSt
Material of fixing bush		ZDC
Fixing	mm	[8x] Ø5.1 / [4x] 7x10 / [2x] 11x20
Dimension (l x w x d)	mm	170x40x3
Screw	mm	M8x12
Material of screw		StSt
Packing unit	pc(s)	20



Attachment with Fixing Bush

for fixing of spacers at pipes e.g. with tensioning strap Part No. 106 323

Part No.		106 322
Material		StSt
Width of slot (l x w)	mm	26x6
Clamping range Rd	mm	16
Material of bush		ZDC
Packing unit	pc(s)	10

Pipe Clamp

for fixing (tensioning) of the attachment with fixing bush (Part No. 106 322) at different pipes

Part No.		106 323
Material of head/strap		StSt
Clamping range Ø	mm	50-300
Dimension of strap (l x w x d)	mm	1100x25x0.3
Screw	mm	M8x20
Material of screw		StSt
Packing unit	pc(s)	10

EN 62305-3 points out that in certain conditions the touch voltage in the vicinity of the down-conductors may be hazardous to life even if the lightning lightning protection system has been designed and installed in accordance with the state of standardization.
Special cases for example are the entrance or sheltering areas of buildings with a high frequency of visitors such as theatres, cinemas, malls, where bare/uninsulated down-conductors and lightning protection earth electrodes are in close proximity.
For especially exposed (lightning endangered) buildings and structures and for publicly accessible areas, e.g. shelters, measures against inadmissibly high touch voltages may also be required.

Touch voltage is defined as the voltage which may affect a human within a range of approx. 1 m around the down conductor on contact with the down conductor. In such a case the current flows through the hand into the body down to the feet (see **Figure 1**).
The hazardous area for persons outside of a building is defined as the area around the down conductor reaching from ground level up to a height of approx. 3 m and in a circle of 3 m around the down conductor.
According to EN 62305-3 Subclause E.4.2.4.2, the area to be protected against touch voltage corresponds to the height of a person with raised arm plus the separation distance s (see **Figure 2**).
Furthermore, the step voltage in the vicinity of the building/down conductor has to be taken into account.

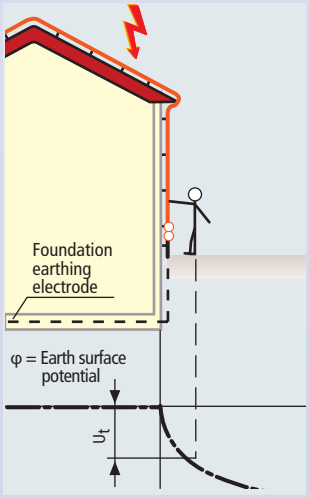


Figure 1: Schematic diagram – touch voltage U_t

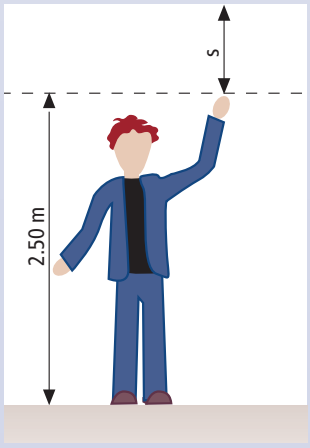


Figure 2: Protected area for a person

Effective protection measures against injuries due to touch voltages are defined according to the standard as follows
- the bare down conductor is coated with a material providing insulation at an impulse withstand voltage of 100 kV at 1.2/50 µs, e.g. cross-linked polyethylene at least 3 mm thick;
- there are physical restrictions and/or warning signs to minimize the probability of down conductors being touched.

The CUI conductor (**CU** copper **I**nsulated) has an inner cooper conductor with a diameter of 8 mm and a high-voltage-resistant insulation (see **Figure 3**).

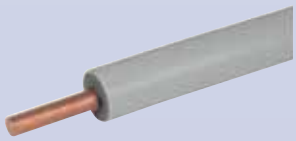


Figure 3: Design of a CUI conductor

These conductors have
- to provide a surge withstand capability of 100 kV (1.2/50 µs) and
- to avoid creepage sparkover even at rain.

The surge withstand capability of 100 kV (1.2/50 µs) is achieved by an insulation out of special cross-linked polyethylene (XLPE). Without additional measures, high impulse voltages cause sparkovers at insulating surfaces. This effect is known as creeping discharge. If the creeping discharge inception voltage is exceeded, a surface discharge will be initiated, which can easily spark over a distance of several metres to earthed parts. In order to avoid arising creeping discharges even at rain, the CUI conductor additionally has a shield which keeps the conductor dry. This shield on the conductor and the drops after the rain test is shown in **Figure 4**.

For the development of the CUI conductor, account was taken to the "rain test" according to IEC 60-1 Subclause 9.
This test requires a specific quantity of water to be sprayed on the conductor in an angle of approx. 45°. This test is shown in **Figs. 4** and **5**.

Figure 4: Rain test

Figure 5: Detail of Figure 4

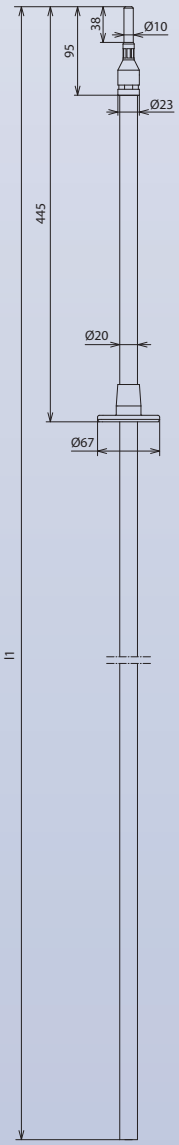
The CUI conductor is available in two standard lengths of 3.5 m and 5 m and will be installed vertically at the wall with corresponding conductor holders. One head piece and the shield are premounted. The conductor can be shortened on site but can not be extended.
Disconnecting or MV clamps e.g. can be used for connection to the down conductor. Cross units which additionally have to be protected against corrosion can be used e.g. to connect the CUI conductor to the earth-termination system.
Application of the CUI conductor in the entrance/exit area of a mulit-purpose hall is shown in **Fig. 6.**

With the new patented system CUI conductor, touch voltage at down conductors can be avoided.

More details on CUI conductor in installation instructions No. 1482

Figure 6: Application in entrance area

CUI Conductor



By the novel CUI conductor touch voltage at down conductors can be avoided.

The touch and step voltage hazardous area for living beings is defined as the space from ground level up to a height of approx. 3 m and a circle of 3 m around the down conductor.

The CUI conductor has a copper core and a high-voltage-resistant insulation.

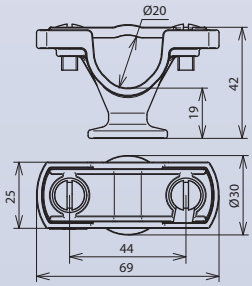
These conductors are required to have a
- surge withstand capability of 100 kV (1.2/50 µs) and
- to avoid a creepage sparkover even at rain

Part No.		830 208	830 218
Material of conductor		Cu	Cu
Material of insulation		XLPE	XLPE
Outer Ø of conductor	mm	20	20
Colour of conductor		light grey	light grey
Cross section of core	mm^2	50	50
Total length (l1)	mm	3500	5000
Packing unit	pc(s)	1	1

Conductor Holder for CUI Conductor

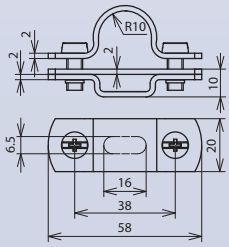
Conductor holder for installing the CUI conductor at walls or façades

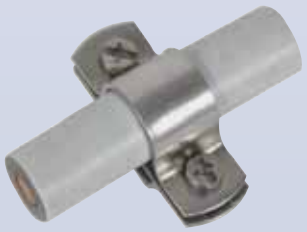
Height 19 mm



Part No.		275 220
Material of conductor holder		PA
Conductor holder support Rd	mm	20
Height of conductor holder	mm	19
Fixing	mm	Ø6.5
Thread		M8
Packing unit	pc(s)	25

Height 10 mm

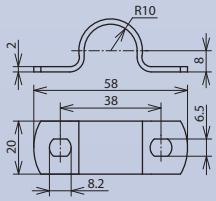




Part No.		275 229
Material of conductor holder		StSt
Conductor holder support Rd	mm	20
Height of conductor holder	mm	10
Fixing	mm	6.5x16
Packing unit	pc(s)	50

Two-screw cleat for direct wall mounting

especially recommended way of mounting (without distance) for school and kindergarten facilities as the conductor can not be used as climbing aid



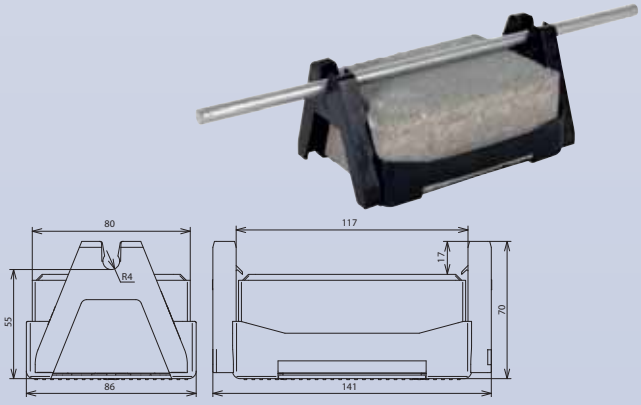
Part No.		275 129
Material of conductor holder		StSt
Conductor holder support Rd	mm	20
Fixing	mm	[2x] 6.5x8
Packing unit	pc(s)	10

Roof Conductor Holders for flat roofs

Roof conductor holders for fixing solid round and strip conductors on flat roofs

Two-piece type comprising
- conductor holder with support plate made of weather resistant plastic, UV stabilized and halogen-free
- snapped-on freeze-proof concrete block in accordance with EN 1338 for paving stones
- freeze resistance tested in freeze-thaw test according to EN 1926
- concrete block and support plate, separately recyclable

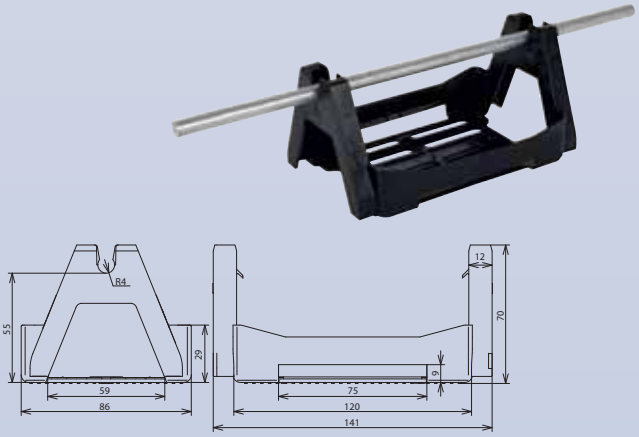
double conductor retention Type FB2



Part No.		253 050	253 060
Conductor leading		loose	fixed
Material of conductor holder		plastic	plastic
Colour of conductor holder		black	black
Conductor holder support Rd	mm	8	8
Block		concrete (C35/45)	concrete (C35/45)
Weight	kg	1	1
Dimension (l x w x h)	mm	141x86x70	141x86x70
Packing unit	pc(s)	10	10

double conductor retention Type KF2

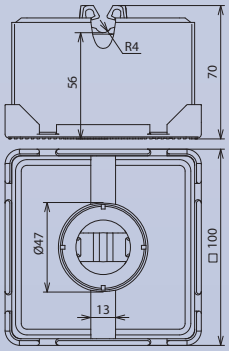
For clamping into roof sheeting stripes (up to 5 mm thick) which are fused with or adhered to the roof sheeting

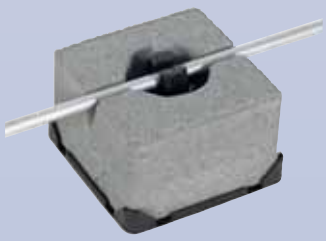


Part No.		253 051
Conductor leading		loose
Material of conductor holder		plastic
Colour of conductor holder		black
Conductor holder support Rd	mm	8
Dimension (l x w x h)	mm	141x86x70
Packing unit	pc(s)	100

single conductor retention Type FB

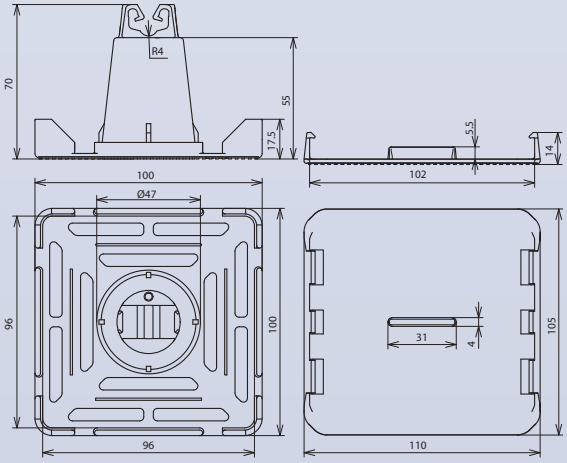
Part No.		253 015
Conductor leading		loose
Material of conductor holder		plastic
Colour of conductor holder		black
Conductor holder support Rd	mm	8
Block		concrete (C35/45)
Weight	kg	1
Dimension (l x w x h)	mm	100x100x70
Packing unit	pc(s)	10





single conductor retention Type KF

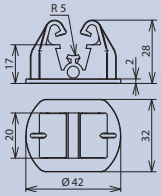
for clamping at roofing sheet stripes (up to 2.5 mm thick) which are welded or adhered to the roofing sheet



Part No.		253 030
Conductor leading		loose
Material of conductor holder		plastic
Colour of conductor holder		black
Conductor holder support Rd	mm	8
Dimension (l x w x h)	mm	110x100x75
Packing unit	pc(s)	100

More details in installation instructions No. 1251
Separate plastic top Type KF Part No. 253 016 upon request

Accessories for Roof Conductor Holders for flat roofs

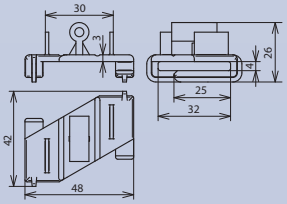


Adapter for round conductor holders Type FB and KF

to be snapped on roof conductor holders for conductors Rd 10 mm, loose conductor leading

Note: Adapters for conductors Rd 6 mm available on request

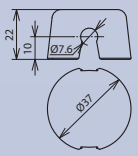
Part No.		253 023
Conductor holder support Rd	mm	10
Material		plastic
Colour		black
Packing unit	pc(s)	50



Adapter for flat conductor holders Type FB and KF

to be snapped on roof conductor holder (Part No. 253015) for flat conductors 30 mm, loose conductor leading

Part No.		253 021
Conductor holder support Fl	mm	30
Material		plastic
Colour		black
Packing unit	pc(s)	50



Clamp for Type FB and KF

to be snapped on roof conductor holders (Part No. 253015), for additional fixing of the holder at the installed air-termination conductor in case of pitched roofs

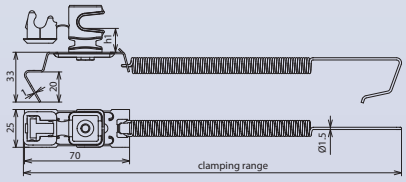
Part No.		253 025
Conductor holder support Rd	mm	8
Material		plastic
Colour		black
Packing unit	pc(s)	50

Roof Conductor Holders with tension spring for ridge and hip tiles

Roof conductor holders for air-termination conductors to be fixed at the ridge e.g. of tiled roofs

SPANNsnap light

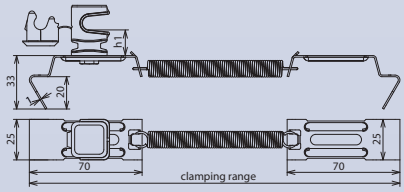
for fixing by StSt tension spring with conductor holder DEHNsnap, loose conductor leading, laterally adjustable

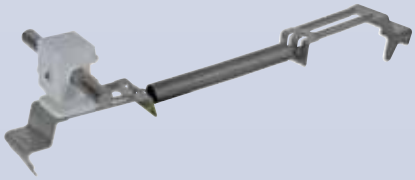


Part No.		204 469	204 467	204 449	204 447
Material of roof conductor holder		StSt	Cu	StSt	Cu
Clamping range of ridge tile width	mm	180-280	180-280	180-280	180-280
Height of conductor holder (h1)	mm	16	16	36	36
Material of conductor holder		plastic	plastic	plastic	plastic
Colour of conductor holder		grey	brown	grey	brown
Conductor holder support Rd	mm	8	8	8	8
Packing unit	pc(s)	25	25	25	25

SPANNsnap

for fixing by StSt tension spring with conductor holder DEHNsnap, loose conductor leading, laterally adjustable

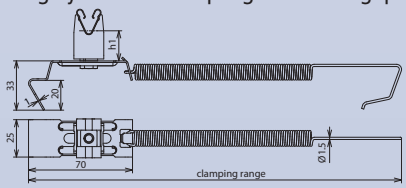




Part No.		204 269	204 267	204 249	204 247
Material of roof conductor holder		StSt	Cu	StSt	Cu
Clamping range of ridge tile width	mm	180-280	180-280	180-280	180-280
Height of conductor holder (h1)	mm	16	16	36	36
Material of conductor holder		plastic	plastic	plastic	plastic
Colour of conductor holder		grau	brown	grey	brown
Conductor holder support Rd	mm	8	8	8	8
Packing unit	pc(s)	25	25	25	25

SPANNgrip light

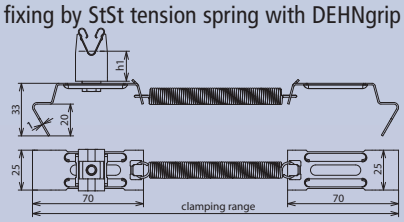
for fixing by StSt tension spring with DEHNgrip conductor holder, loose conductor leading, laterally adjustable

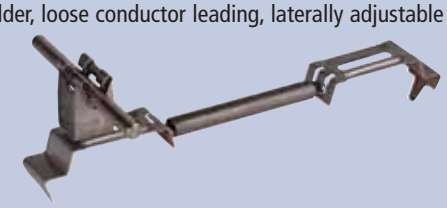


Part No.		206 439	206 437	206 449	206 447
Material of roof conductor holder		StSt	Cu	StSt	Cu
Clamping range of ridge tile width	mm	180-280	180-280	180-280	180-280
Height of conductor holder (h1)	mm	20	20	32	32
Material of conductor holder		StSt	StSt / gal Cu	StSt	StSt / gal Cu
Conductor holder support Rd	mm	8	8	8	8
Packing unit	pc(s)	25	25	25	25

SPANNgrip

for fixing by StSt tension spring with DEHNgrip conductor holder, loose conductor leading, laterally adjustable





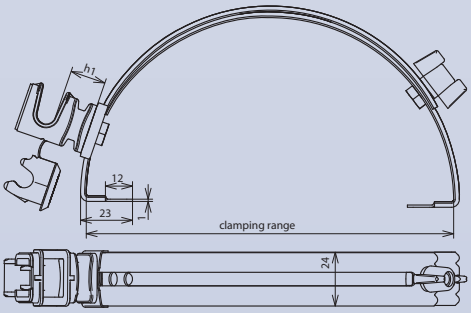
Part No.		206 239	206 237	206 249	206 247
Material of roof conductor holder		StSt	Cu	StSt	Cu
Clamping range of ridge tile width	mm	180-280	180-280	180-280	180-280
Height of conductor holder (h1)	mm	20	20	32	32
Material of conductor holder		StSt	StSt / gal Cu	StSt	StSt / gal Cu
Conductor holder support Rd	mm	8	8	8	8
Packing unit	pc(s)	25	25	25	25

Roof Conductor Holders adjustable to ridge and hip tiles

Conductor holder for air-termination conductors to be fixed at the ridge e.g. of tiled roofs

continuously adjustable with conductor holder DEHNsnap

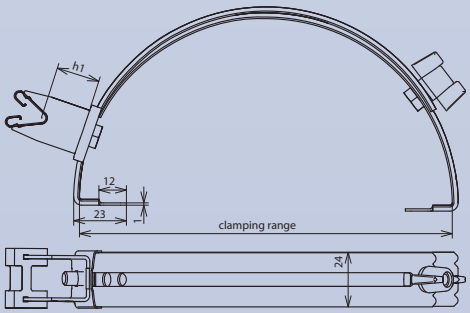
loose conductor leading, laterally adjustable (top centre to the bottom)



Part No.		204 109	204 911	204 107	204 129	204 913	204 127
Material of roof conductor holder		StSt	StSt	StSt / gal Cu	StSt	StSt	StSt / gal Cu
Clamping range	mm	180-280	180-280	180-280	180-280	180-280	180-280
Height of conductor holder (h1)	mm	16	16	16	36	36	36
Material of conductor holder		plastic	plastic	plastic	plastic	plastic	plastic
Colour of conductor holder		grey	brown	brown	grey	brown	brown
Conductor holder support Rd	mm	8	8	8	8	8	8
Packing unit	pc(s)	25	25	25	25	25	25

continuously adjustable with conductor holder DEHNgrip

loose conductor leading, laterally adjustable (top centre to the bottom)



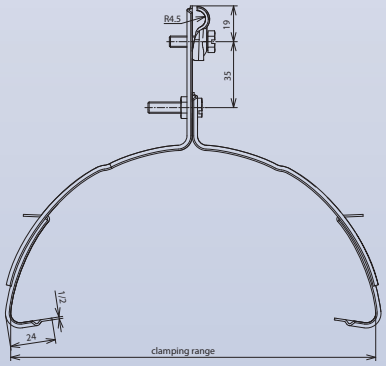
Part No.		206 109	206 809	206 807	206 817	206 819
Material of roof conductor holder		StSt	StSt	StSt / gal Cu	StSt / gal Cu	StSt
Clamping range	mm	180-280	180-280	180-280	180-280	180-280
Height of conductor holder (h1)	mm	20	*20	*20	*32	*32
Material of conductor holder		StSt	StSt	StSt / gal Cu	StSt / gal Cu	StSt
Conductor holder support Rd	mm	8	8	8	8	8
Packing unit	pc(s)	25	25	25	25	25

* short holding claws (l1=15 mm), standard length of holding claws 23 mm

Roof Conductor Holders adjustable to ridge and hip tiles

stepwise adjustable with conductor holder DEHNQUICK

fixed conductor leading



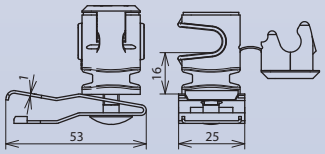
Part No.		202 020	202 021	202 900	202 027	202 227
Material of roof conductor holder		St/tZn	St/tZn	StSt	Cu	Cu
Clamping range	mm	120-240	200-280	120-240	120-240	200-280
Material of conductor holder		St/tZn	St/tZn	StSt	Cu	Cu
Conductor holder support Rd	mm	6-10	6-10	6-10	6-10	6-10
Packing unit	pc(s)	25	25	25	25	25

Roof Conductor Holders for ridge and hip tiles

Roof conductor holders to fix air-termination conductors at the ridge

FIRSTsnap

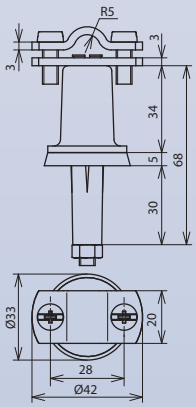
to be attached on the ridge clamp in case of dry ridge, with DEHNsnap conductor holder, loose conductor leading



Part No.		204 029	204 039
Material of roof conductor holder		StSt	StSt
Height of conductor holder	mm	16	16
Material of conductor holder		plastic	plastic
Colour of conductor holder		grey	brown
Conductor holder support Rd	mm	8	8
Packing unit	pc(s)	50	50

Two-screw cleat with clamp bush

for tiled, slated and corrugated sheet roofs, with weather resistant clamp bush, fixed conductor leading



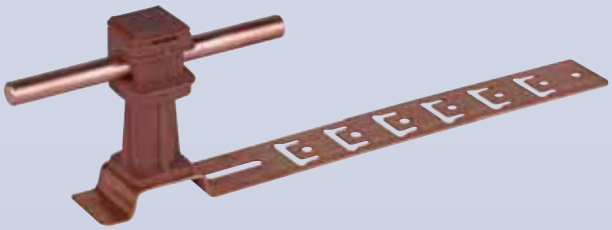
Part No.		216 000
Material of roof conductor holder		plastic
Bore	mm	Ø12
Material of conductor holder		St/tZn
Conductor holder support Rd	mm	7-10
Conductor holder support Fl	mm	20
Packing unit	pc(s)	25

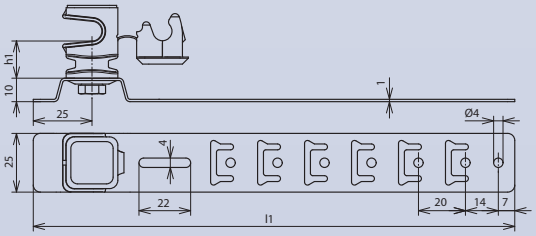
Roof Conductor Holders with embossed brace for roof surfaces

Roof conductor holders for fixing of air-termination conductors and down conductors

UNIsnap

with preformed bending points for hooking at the tiles or battens, with DEHNsnap conductor holder, loose conductor leading



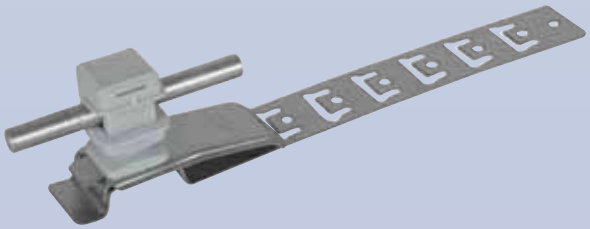


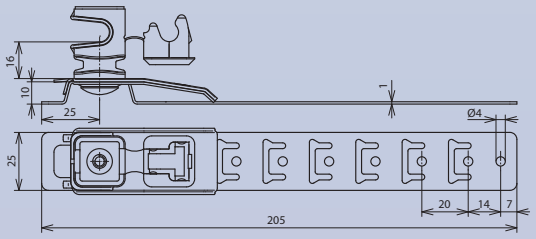
Part No.		204 149	204 921	204 147	204 159	204 157	204 169	204 179
Material of roof conductor holder		StSt	StSt	StSt / gal Cu	StSt	StSt / gal Cu	StSt	StSt
Length of brace (l1)	mm	205	205	205	335	335	475	205
Height of conductor holder (h1)	mm	16	16	16	16	16	16	36
Material of conductor holder		plastic	plastic	plastic	plastic	plastic	plastic	plastic
Colour of conductor holder		grey	brown	brown	grey	brown	grey	grey
Conductor holder support Rd	mm	8	8	8	8	8	8	8
Packing unit	pc(s)	50	50	50	50	50	50	50

Part No.		204 924	204 177	204 189	204 925	204 187	204 199	204 197
Material of roof conductor holder		StSt	StSt / gal Cu	StSt	StSt	StSt / gal Cu	StSt	StSt / gal Cu
Length of brace (l1)	mm	205	205	335	335	335	475	475
Height of conductor holder (h1)	mm	36	36	36	36	36	36	36
Material of conductor holder		plastic	plastic	plastic	plastic	plastic	plastic	plastic
Colour of conductor holder		brown	brown	grey	brown	brown	grey	brown
Conductor holder support Rd	mm	8	8	8	8	8	8	8
Packing unit	pc(s)	50	50	50	50	50	50	50

UNIsnap with clamping part

with preformed bending points for hooking at tiles or battens and additional clamping part e.g. for slated roofs, with DEHNsnap conductor holder, loose conductor leading

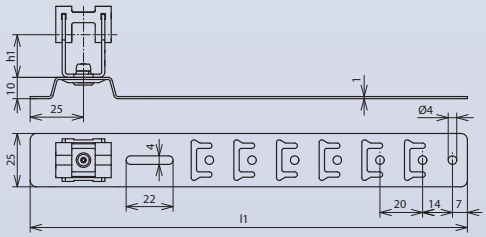


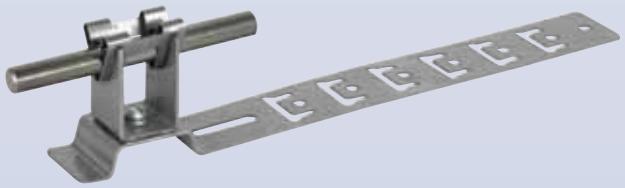


Part No.		204 089
Material of roof conductor holder		StSt
Length of brace (l1)	mm	205
Height of conductor holder (h1)	mm	16
Material of conductor holder		plastic
Colour of conductor holder		grau
Conductor holder support Rd	mm	8
Packing unit	pc(s)	50

UNIgrip

with preformed bending points for hooking at tiles or battens, with DEHNgrip conductor holder, loose conductor leading



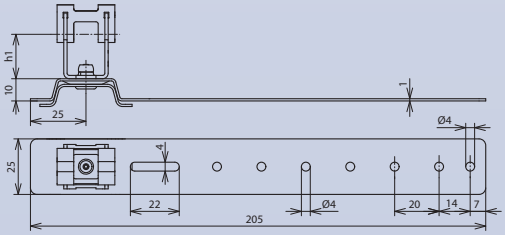


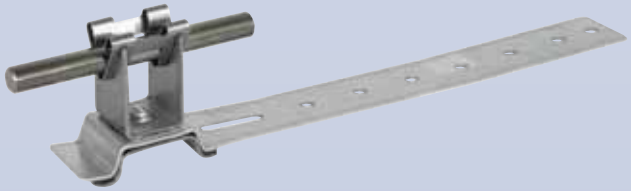
Part No.		206 209	206 207	206 219	206 217	206 229
Material of roof conductor holder		StSt	Cu	StSt	Cu	StSt
Length of brace (l1)	mm	205	205	335	335	475
Height of conductor holder (h1)	mm	20	20	20	20	20
Material of conductor holder		StSt	Cu	StSt	Cu	StSt
Conductor holder support Rd	mm	8	8	8	8	8
Packing unit	pc(s)	50	50	50	50	50

Part No.		206 227	206 309	206 319	206 329
Material of roof conductor holder	Cu	StSt	StSt	StSt	
Length of brace (l1)	mm	475	205	335	475
Height of conductor holder (h1)	mm	20	32	32	32
Material of conductor holder		Cu	StSt	StSt	StSt
Conductor holder support Rd	mm	8	8	8	8
Packing unit	pc(s)	50	50	50	50

DEHNgrip with Alu base brace

for easy adjustment to interlocking tiles, with DEHNgrip conductor holder, loose conductor leading

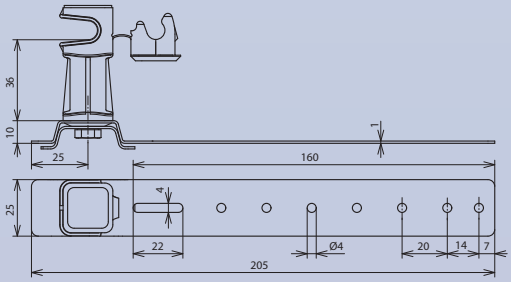


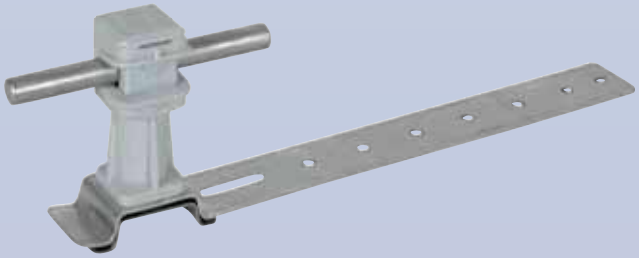


Part No.		206 170	206 171
Material of roof conductor holder		Al	Al
Length of brace (l1)	mm	205	205
Height of conductor holder (h1)	mm	20	32
Material of conductor holder		StSt	StSt
Conductor holder support Rd	mm	8	8
Packing unit	pc(s)	50	50

DEHNsnap with Alu base brace

for easy adjustment to interlocking tiles, DEHNsnap conductor holder, loose conductor leading





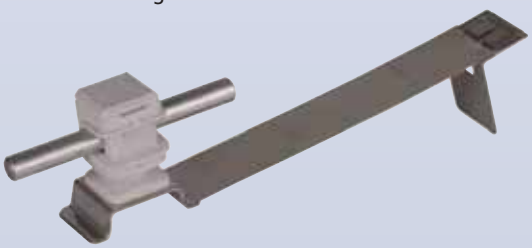
Part No.		204 170	204 171
Material of roof conductor holder		Al	Al
Length of brace (l1)	mm	205	205
Height of conductor holder (h1)	mm	36	36
Material of conductor holder		plastic	plastic
Colour of conductor holder		grey	brown
Conductor holder support Rd	mm	8	8
Packing unit	pc(s)	50	50

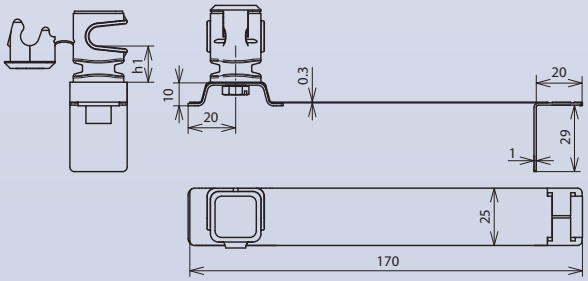
Roof Conductor Holders with angled flexible brace for roof surfaces

Roof conductor holder for mounting at the roof tiles with flexible brace made of thin StSt (0.3 mm), adjustable to interlocking tiles

FLEXIsnap

loose conductor leading

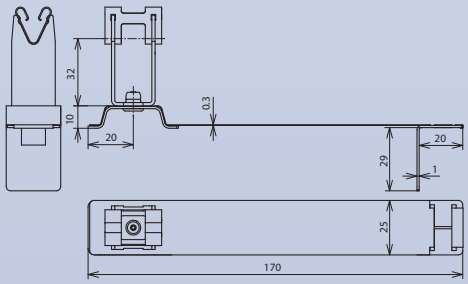




Part No.		204 935	204 936	204 937	204 938
Material of roof conductor holder		StSt	StSt	StSt	StSt
Length of brace	mm	170	170	170	170
Height of conductor holder (h1)	mm	16	16	36	36
Material of conductor holder		plastic	plastic	plastic	plastic
Colour of conductor holder		grey	brown	grey	brown
Conductor holder support Rd	mm	8	8	8	8
Packing unit	pc(s)	50	50	50	50

FLEXIgrip

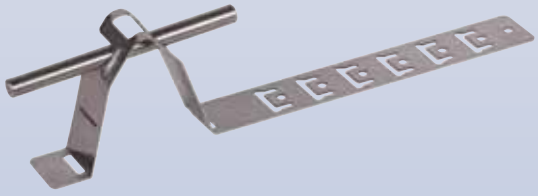
loose conductor leading

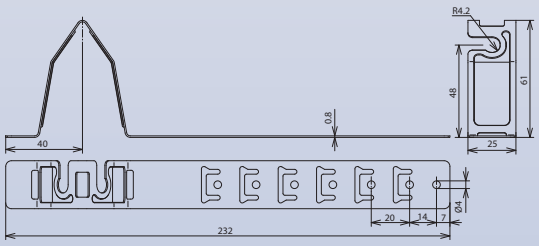


Part No.		204 949	204 957
Material of roof conductor holder		StSt	StSt
Length of brace	mm	170	170
Height of conductor holder (h1)	mm	32	32
Material of conductor holder		StSt	StSt / gal Cu
Conductor holder support Rd	mm	8	8
Packing unit	pc(s)	50	50

Roof Conductor Holder DEHNspann with embossed brace for roof surfaces

Roof conductor holder for fixing air-termination conductors and down conductors on the roof surface
For inserting the wire just press the limbs together and it will be fixed due to the characteristics of the used spring steel.





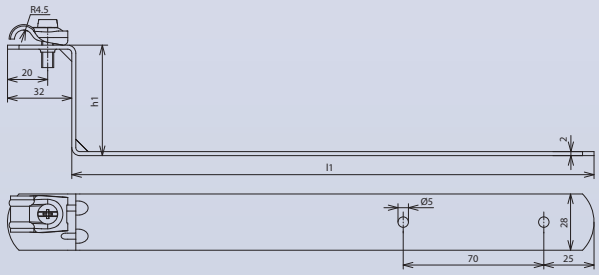
Part No.		206 509
Material of roof conductor holder		StSt
Brace length	mm	222
Height of conductor holder	mm	50
Conductor holder support Rd	mm	8
Packing unit	pc(s)	50

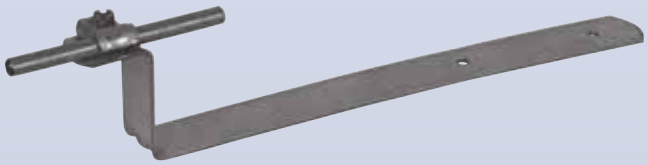
Roof Conductor Holders with brace for roof surfaces

Roof conductor holder for insertion at tiled, slated and roofing felt roofs

Straight design

with DEHNQUICK conductor holder, fixed conductor leading

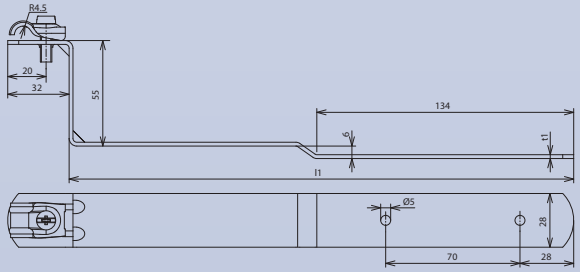


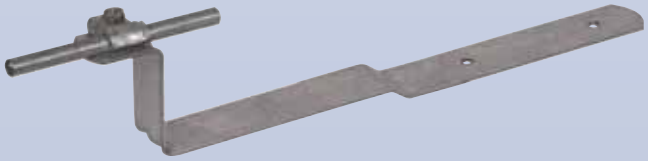


Part No.		202 040	202 902	202 037	202 003	202 008
Material of roof conductor holder		St/tZn	StSt	Cu	St/tZn	St/tZn
Height of brace (h1)	mm	55	55	55	70	70
Length of brace (l1 / t1)	mm	260 / 2	260 / 1	260 / 2	160 / 2	420 / 2
Material of conductor holder		St/tZn	StSt	Cu	St/tZn	St/tZn
Conductor holder support Rd	mm	6-10	6-10	6-10	6-10	6-10
Packing unit	pc(s)	50	50	50	50	50

Cranked design

with DEHNQUICK conductor holder, for conductors Rd 6-10 mm, fixed conductor leading





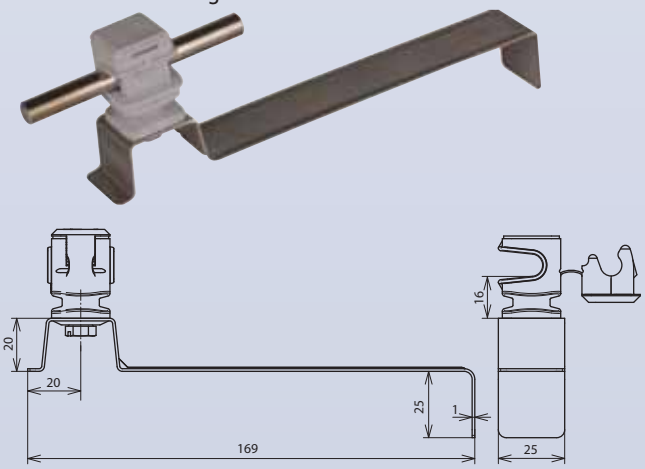
Part No.		202 010	202 901	202 017
Material of roof conductor holder		St/tZn	StSt	Cu
Height of brace (h1)	mm	55	55	55
Length of brace (l1 / t1)	mm	260 / 2	260 / 1	260 / 2
Material of conductor holder		St/tZn	StSt	Cu
Conductor holder support Rd	mm	6-10	6-10	6-10
Packing unit	pc(s)	50	50	50

Roof Conductor Holders with angled brace for roof surfaces

Roof conductor holders to be hooked at the roof tiles

with DEHNsnap conductor holder

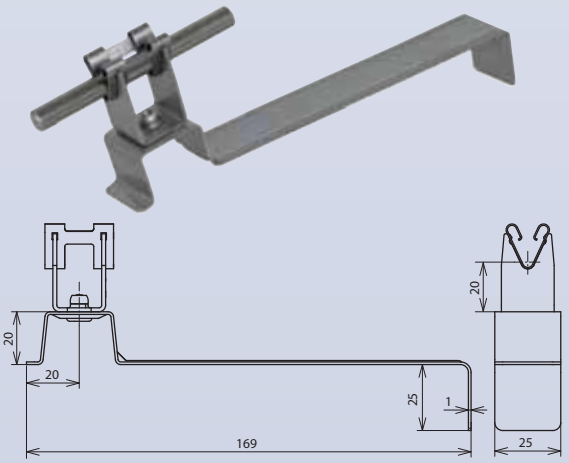
loose conductor leading



Part No.		204 359
Material of roof conductor holder	StSt	
Length of brace (l1)	mm	169
Height of conductor holder	mm	16
Material of conductor holder		plastic
Colour of conductor holder		grau
Conductor holder support Rd	mm	8
Packing unit	pc(s)	50

with DEHNgrip conductor holder

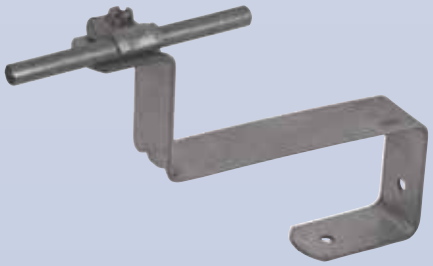
loose conductor leading

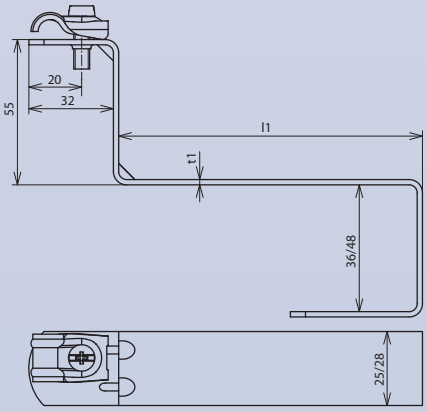


Part No.		206 357	206 359
Material of roof conductor holder		Cu	StSt
Length of brace (l1)	mm	169	169
Height of conductor holder	mm	20	20
Material of conductor holder		Cu	StSt
Conductor holder support Rd	mm	8	8
Packing unit	pc(s)	50	50

with DEHNQUICK conductor holder

for hooking at the roof tiles or battens, fixed conductor leading length or crosswise

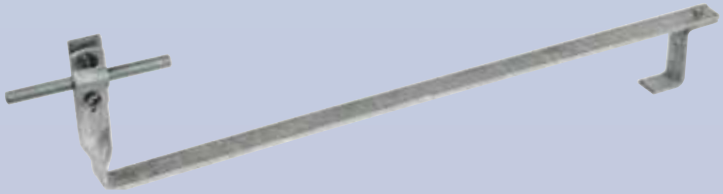


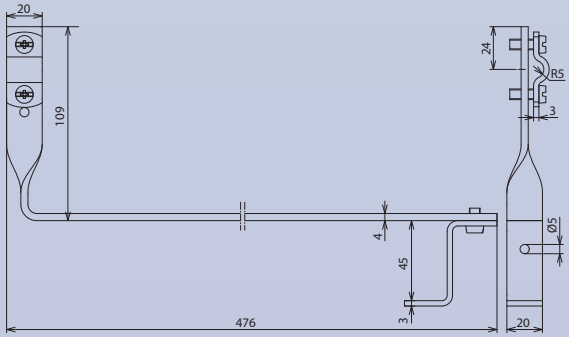


Part No.		202 050	202 080
Material of roof conductor holder		St/tZn	St/tZn
Length of brace (l1)	mm	115 / (48)	410 / (36)
Material of conductor holder		St/tZn	St/tZn
Conductor holder support Rd	mm	6-10	6-10
Packing unit	pc(s)	25	50

with two-screw cleat

for hooking at the roof battens, fixed conductor leading





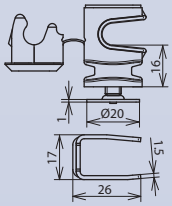
Part No.		223 000
Material of roof conductor holder		St/tZn
Length of brace (l1)	mm	410
Material of conductor holder		St/tZn
Conductor holder support Rd	mm	7-10
Packing unit	pc(s)	25

Roof Conductor Holders with clamping device for roof surfaces

Roof conductor holder for the fixing of air-termination conductors and down conductors

PLATTENsnap

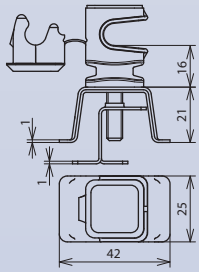
for fixing at overlapping constructions, with DEHNsnap conductor holder, loose conductor leading



Part No.		204 069	204 079
Material of roof conductor holder		StSt	StSt
Clamping range	mm	4-6	4-6
Height of conductor holder	mm	16	16
Material of conductor holder		plastic	plastic
Colour of conductor holder		grey	brown
Conductor holder support Rd	mm	8	8
Packing unit	pc(s)	50	50

ZIEGELsnap

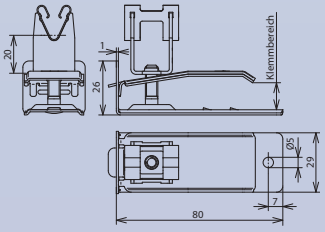
for fixing between flat tiles (pantiles) and plates, with DEHNsnap conductor holder, loose conductor leading



Part No.		204 049	204 059
Material of roof conductor holder		StSt	StSt
Clamping range	mm	4-16	4-16
Height of conductor holder	mm	16	16
Material of conductor holder		plastic	plastic
Colour of conductor holder		grey	brown
Conductor holder support Rd	mm	8	8
Packing unit	pc(s)	50	50

DEHNgrip for bitumen shingles

as well as for roof and wall plates, loose conductor leading



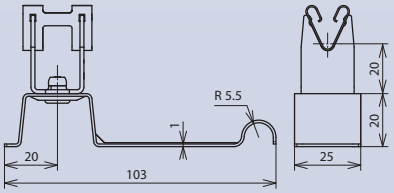
Part No.		206 389	206 399
Material of roof conductor holder		StSt	StSt
Clamping range	mm	2-8	8-18
Height of conductor holder	mm	20	20
Material of conductor holder		StSt	StSt
Conductor holder support Rd	mm	8	8
Packing unit	pc(s)	50	50

Roof Conductor Holders with preformed brace for roof surfaces

Roof conductor holder for hooking into the roof tile grooves

for hooking into the bottom groove with DEHNgrip conductor holder

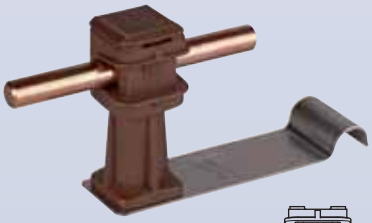
loose conductor leading

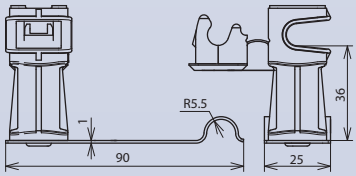


Part No.		206 349
Material of roof conductor holder		StSt
Length of brace	mm	103
Height of conductor holder (h1)	mm	20
Material of conductor holder		StSt
Conductor holder support Rd	mm	8
Packing unit	pc(s)	50

for hooking into the bottom groove with DEHNsnap conductor holder

loose conductor leading

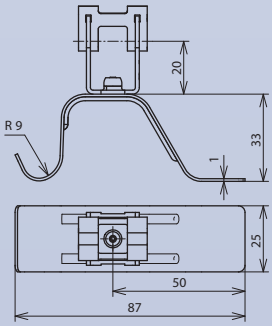




Part No.		204 229	204 239
Material of roof conductor holder		StSt	StSt
Length of brace	mm	90	90
Height of conductor holder (h1)	mm	36	36
Material of conductor holder		plastic	plastic
Colour of conductor holder		grey	brown
Conductor holder support Rd	mm	8	8
Packing unit	pc(s)	50	50

for hooking into the top groove with DEHNgrip conductor holder

loose conductor leading

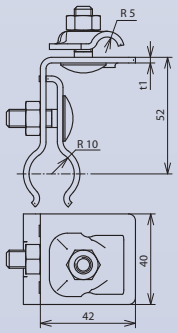


Part No.		206 369
Material of roof conductor holder		StSt
Length of brace	mm	87
Height of conductor holder (h1)	mm	20
Material of conductor holder		StSt
Conductor holder support Rd	mm	8
Packing unit	pc(s)	50

Roof Conductor Holders for metal roofs

Roof conductor holders additional air-termination systems to be fixed on metal roofs
Using two of the roof conductor holders (clamps / clamping frames) tested for the corresponding roof profile provides a lightning current carrying capacity of 100 kA (10/350 µs).

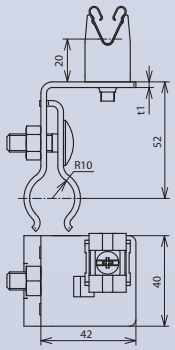
for roofing with round standing seam, with clamping frame



Part No.		223 010	223 040
Material of roof conductor holder		StSt	Al
Material thickness (t1)	mm	2.5	3
Clamping range	mm	Ø20	Ø20
Type of conductor holder		clamping frame	clamping frame
Material of conductor holder		StSt	Al
Conductor holder support Rd	mm	6-10	6-10
Conductor leading		fixed	fixed
Screw	mm	M8x25	M8x25
Material screw/nut		StSt	StSt
Standard		EN 50164-1	EN 50164-1
Packing unit	pc(s)	50	50

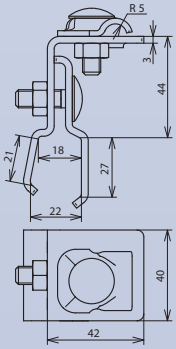
for roofing with round standing seam, with DEHNgrip

loose conductor leading



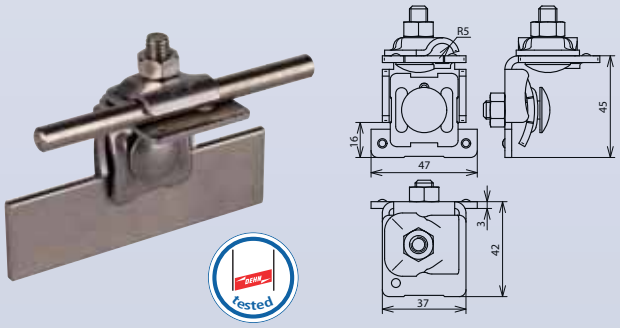
Part No.		223 011	223 041
Material of roof conductor holder		StSt	Al
Material thickness (t1)	mm	2.5	3
Clamping range	mm	Ø20	Ø20
Type of conductor holder		DEHNgrip	DEHNgrip
Height of conductor holder	mm	20	20
Material of conductor holder		StSt	StSt
Conductor holder support Rd	mm	8	8
Conductor leading		loose	loose
Screw	mm	M8x25	M8x25
Material screw/nut		StSt	StSt
Packing unit	pc(s)	50	50

for roofing with clamping seam (e.g. RIB ROOF Speed 500 by Zambelli)



Part No.		223 070
Material of roof conductor holder		Al
Material thickness (t1)	mm	3
Clamping range	mm	approx. 18/22
Type of conductor holder		clamping frame
Material of conductor holder		Al
Conductor holder support Rd	mm	6-10
Conductor leading		fixed
Screw	mm	M8x25
Material screw/nut		StSt
Standard		EN 50164-1
Packing unit	pc(s)	50

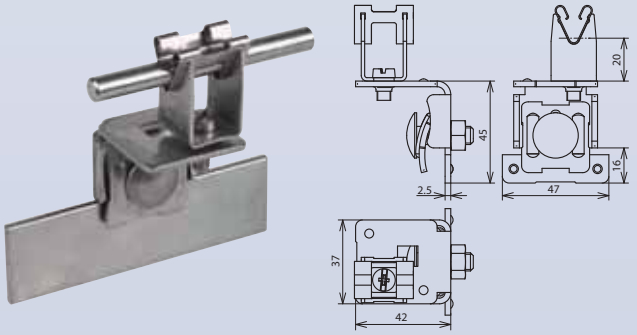
for roofing with standing seam, with clamping frame



Part No.		365 059
Material of roof conductor holder		StSt
Material thickness (t1)	mm	3
Clamping range	mm	0.7-8
Type of conductor holder		clamping frame
Material of conductor holder		StSt
Conductor holder support Rd	mm	6-10
Conductor leading		fixed
Screw	mm	M8x25
Material screw/nut		StSt
Standard		EN 50164-1
Packing unit	pc(s)	50

for roofing with standing seam, with DEHNgrip

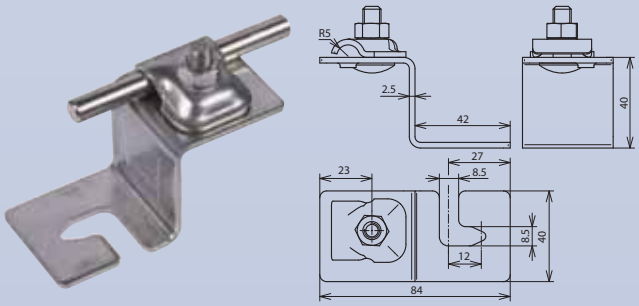
loose conductor leading



Part No.		223 031
Material of roof conductor holder		StSt
Material thickness (t1)	mm	2.5
Clamping range	mm	0.7-8
Type of conductor holder		DEHNgrip
Height of conductor holder	mm	20
Material of conductor holder		StSt
Conductor holder support Rd	mm	8
Conductor leading		loose
Screw	mm	M8x25
Material screw/nut		StSt
Packing unit	pc(s)	50

for roofs with trapezoidal sheeting, with clamping frame

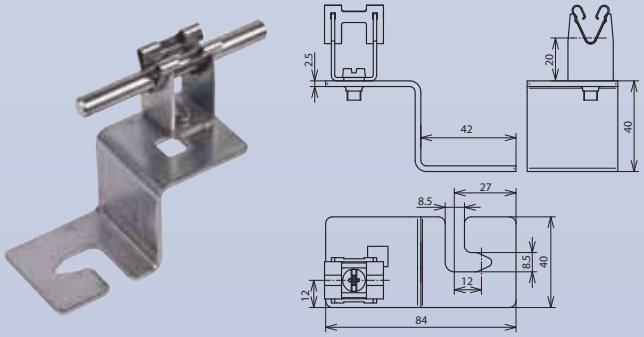
for hooking into the fixing screws of the roof



Part No.		223 020
Material of roof conductor holder		StSt
Material thickness (t1)	mm	2.5
Type of conductor holder		clamping frame
Material of conductor holder		StSt
Conductor holder support Rd	mm	6-10
Conductor leading		fixed
Standard		EN 50164-1
Packing unit	pc(s)	50

for roofs with trapezoidal sheeting, with DEHNgrip

for hooking into the fixing screws of the roof, loose conductor leading



Part No.		223 021
Material of roof conductor holder		StSt
Material thickness (t1)	mm	2.5
Type of conductor holder		DEHNgrip
Height of conductor holder	mm	20
Material of conductor holder		StSt
Conductor holder support Rd	mm	8
Conductor leading		loose
Packing unit	pc(s)	50

Roof Conductor Holders with adhesive pad

Roof conductor holders for the installation of air-termination systems e.g. on trapezoidal sheet metal roofing

The conductor holders can be used for plane (unstructured) surfaces such as metal roofs / metal surfaces.
The conductor holders will be adhesively bonded at the roof (remove the protective film from the pad).

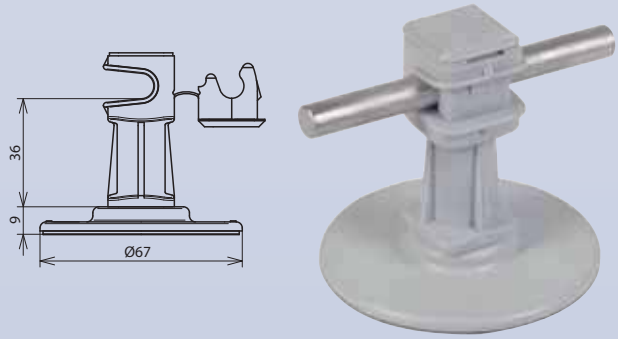
Note: Installation instructions No. 1473 shall be followed!

The adherend has to be cleaned with the special cleaning liquid (Part No. 297 199) according to the instructions.

One litre of this liquid is sufficient for cleaning of approx. 1000 spots.
The roof conductor holders shall be installed at a temperature of ≥ +15 °C.

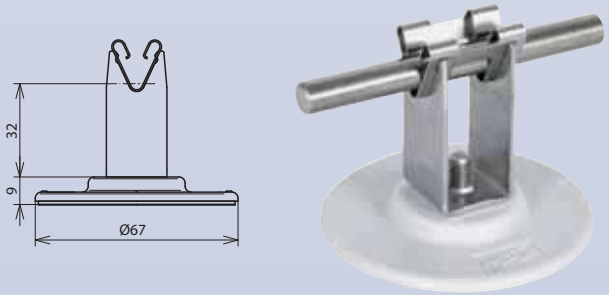
Robust, weather-resistant and UV stabilized type, halogen-free

with DEHNsnap



Part No.		297 110
Material of roof conductor holder		plastic
Colour of roof conductor holder		grey
Material of conductor holder CH		plastic
Conductor holder support Rd	mm	8
Height of conductor holder	mm	36
Colour of conductor holder		grey
Conductor leading		loose
Dimension	mm	Ø67
Packing unit	pc(s)	50

with DEHNgrip



Part No.		297 120
Material of roof conductor holder		plastic
Colour of roof conductor holder		grey
Material of conductor holder CH		StSt
Conductor holder support Rd	mm	8
Height of conductor holder	mm	32
Conductor leading		loose
Dimension	mm	Ø67
Packing unit	pc(s)	50

Accessory for Roof Conductor Holders with adhesive pad

Special cleanser

Clean the spot thoroughly with a cloth. One litre of this liquid is sufficient for approx. 500 to 1000 spots to be cleaned.

Mind the instructions for use on the bottle.

Dangerous goods regulations allow for transportation only in Germany and Austria. Alternatively use ISOPROPYL ALCOHOL 99,1 to 99,9% (CAS - NO. 67-63-0).

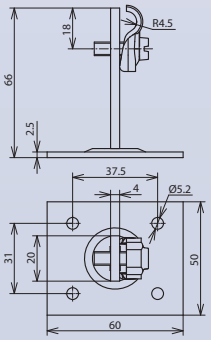
Part No.		297 199
Cleanness		99.1 - 99.9 %
Packing unit	l	1

Roof Conductor Holders for flat roofs with fixing bores

Roof conductor holders for the installation of air-termination systems on flat roofs and walls

Type St/tZn small

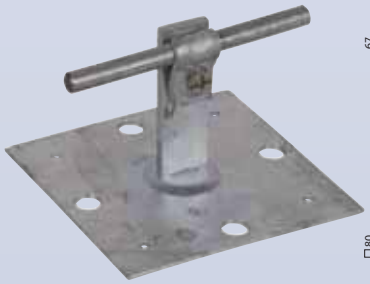
with DEHNQUICK conductor holder, fixed conductor leading, height up to conductor mid 60 mm

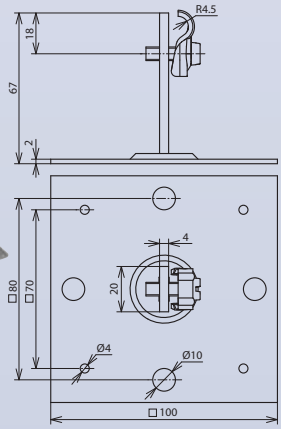


Part No.		202 030
Material of roof conductor holder		St/tZn
Dimension	mm	50x60
Fixing	mm	[4x] Ø5.2
Material of roof conductor holder		St/tZn
Conductor holder support Rd	mm	6-10
Packing unit	pc(s)	50

Type St/tZn large

with DEHNQUICK conductor holder, fixed conductor leading, height up to conductor mid 60 mm

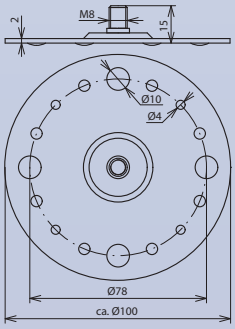




Part No.		202 060
Material of roof conductor holder		St/tZn
Dimension	mm	100x100
Fixing	mm	[4x] Ø4 / [4x] Ø10
Material of roof conductor holder		St/tZn
Conductor holder support Rd	mm	6-10
Packing unit	pc(s)	50

Type St/tZn large and round

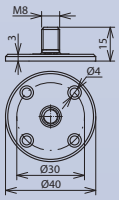
plate with threaded bolt M8, e.g. for DEHNsnap or DEHNhold for application e.g. at roofing felt, concrete, steel and brickwork



Part No.		297 015
Material of roof conductor holder		St/tZn
Dimension	mm	approx. Ø100
Fixing	mm	[4x] Ø4 / [4x] Ø10
Packing unit	pc(s)	25

Type Plastic small

plate with threaded bolt M8, e.g. for DEHNsnap or DEHNhold for application e.g. at roofing felt, concrete, steel and brickwork



Part No.		297 025
Material of roof conductor holder		plastic
Colour		grey
Dimension	mm	Ø40
Fixing	mm	[4x] Ø4
Packing unit	pc(s)	100

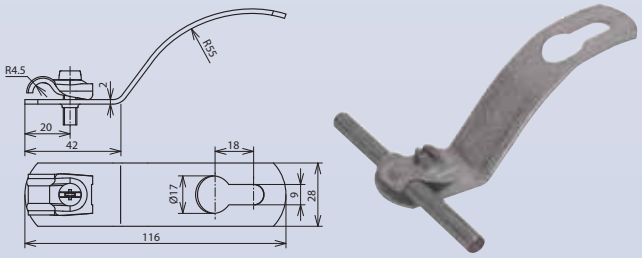
Roof Conductor Holders for corrugated sheet roofing

Roof conductor holders for the installation of conductors on the ridge and on the roof surface

Corrugations 177 mm (profile 5) and 130 mm (profile 8)

for corrugated sheet roofing profile 5 with DEHNQUICK

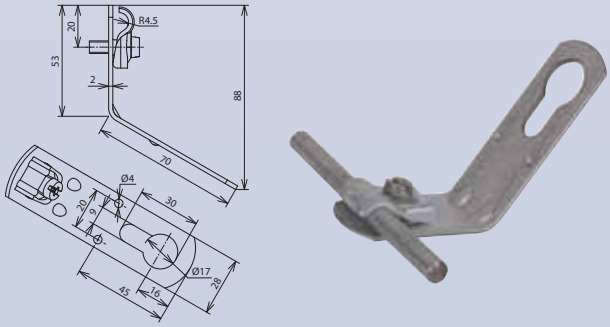
for installation on the roof surface



Part No.		202 005
Material of roof conductor holder		St/tZn
Type of conductor holder		DEHNQUICK
Material of conductor holder		St/tZn
Conductor holder support Rd	mm	6-10
Conductor leading		fixed
Packing unit	pc(s)	50

for corrugated sheet roofing profile 5 and profile 8 with DEHNQUICK

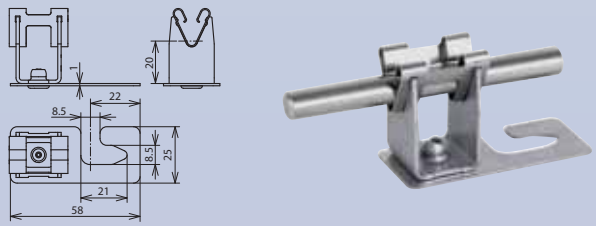
for the installation of the ridge conductors and conductors on the roof surface, angled type



Part No.		202 015
Material of roof conductor holder		St/tZn
Type of conductor holder		DEHNQUICK
Material of conductor holder		St/tZn
Conductor holder support Rd	mm	6-10
Conductor leading		fixed
Packing unit	pc(s)	50

for corrugated sheet roofing profile 5 and profile 8 with DEHNgrip

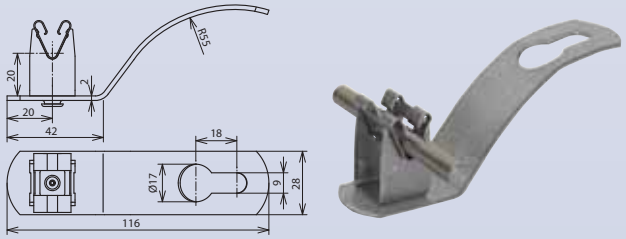
for the installation of the ridge conductors and conductors on the roof surface, straight type



Part No.		206 339
Material of roof conductor holder		StSt
Type of conductor holder		DEHNgrip
Height of conductor holder	mm	20
Material of conductor holder		StSt
Conductor holder support Rd	mm	8
Conductor leading		loose
Packing unit	pc(s)	50

for corrugated sheet roofing profile 5 with DEHNgrip

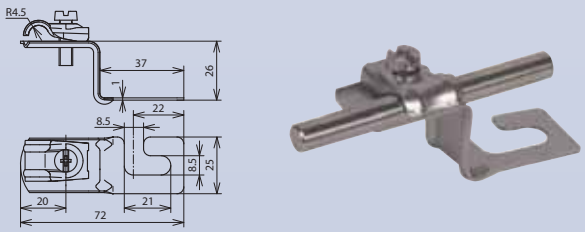
for installation on the roof surface



Part No.		206 105
Material of roof conductor holder		St/tZn
Type of conductor holder		DEHNgrip
Height of conductor holder	mm	20
Material of conductor holder		StSt
Conductor holder support Rd	mm	8
Conductor leading		loose
Packing unit	pc(s)	50

for corrugated sheet roofing profile 5 and profile 8 with DEHNQUICK

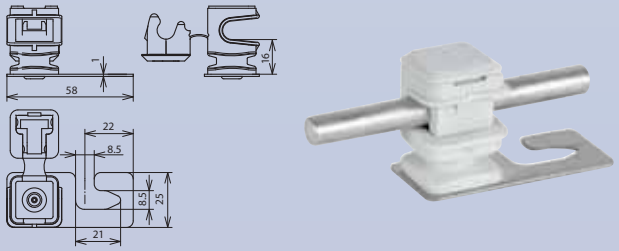
For corrugated roof sheetings, profile 5 and profile 8, for installation of ridge conductors and conductors in roof surfaces, angled unit



Part No.		202 906
Material of roof conductor holder		StSt
Type of conductor holder		DEHNQUICK
Material of conductor holder		StSt
Conductor holder support Rd	mm	6-10
Conductor leading		fixed
Packing unit	pc(s)	50

for currugated sheet roofing profile 5 and profile 8 with DEHNsnap

for the installation of the ridge conductors and conductors on the roof surface, straight type



Part No.		204 906	204 916
Material of roof conductor holder		StSt	StSt
Type of conductor holder		DEHNsnap	DEHNsnap
Height of conductor holder	mm	16	16
Material of conductor holder		plastic	plastic
Colour of conductor holder		grey	brown
Conductor holder support Rd	mm	8	8
Conductor leading		loose	loose
Packing unit	pc(s)	50	50

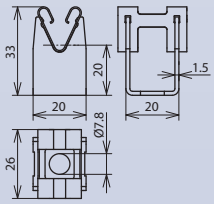
DEHNgrip® Conductor Holders

screwless StSt holder system with loose conductor leading

Easy installation:
– just push down the conductor

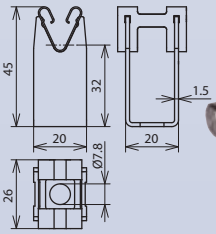
Advantages:
– conductor is fixed in the DEHNgrip
– no further screwing required

Height 20 mm



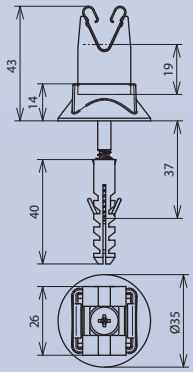
Part No.		207 019	207 009
Thread of conductor holder		M6	
Bore of conductor holder	mm		Ø7.8
Material of conductor holder		StSt	StSt
Conductor holder support Rd	mm	8	8
Packing unit	pc(s)	50	50

Height 32 mm



Part No.		207 039	207 029
Thread of conductor holder		M6	
Bore of conductor holder	mm		Ø7.8
Material of conductor holder		StSt	StSt
Conductor holder support Rd	mm	8	8
Packing unit	pc(s)	50	50

Height 20 mm premounted with screw, plastic base (grey) and dowel



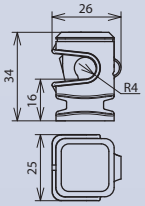
Part No.		207 109
Bore of conductor holder	mm	Ø7.8
Material of conductor holder		StSt
Conductor holder support Rd	mm	8
Screw	mm	5x50
Plastic dowel	mm	Ø8x40
Packing unit	pc(s)	50

plastic holder system with loose conductor leading

easy mounting:
– insert conductor laterally
– press down cap (self-locking)

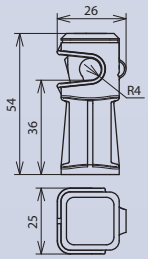
Advantages:
– conductor is held in a massive recess in the base body, thus no strain on the latch
– double cap locking (open with tool)
– straight loose conductor leading
– robust and weather-resistant design
– UV stabilized, halogen-free

Height 16 mm with female thread



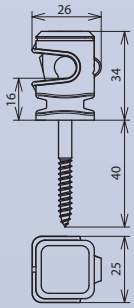
Part No.		204 001	204 007	204 002	204 017
Thread of conductor holder		M6	M6	M8	M8
Material of conductor holder		plastic	plastic	plastic	plastic
Colour of conductor holder		grey	brown	grey	brown
Conductor holder support Rd	mm	8	8	8	8
Packing unit	pc(s)	100	50	50	100

Height 36 mm with female thread



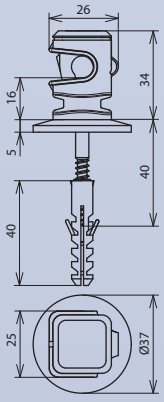
Part No.		204 003	204 027	204 004	204 037
Thread of conductor holder		M6	M6	M8	M8
Material of conductor holder		plastic	plastic	plastic	plastic
Colour of conductor holder		grey	brown	grey	brown
Conductor holder support Rd	mm	8	8	8	8
Packing unit	pc(s)	100	100	50	50

Height 16 mm with screw



Part No.		204 006
Thread of conductor holder		M8
Material of conductor holder		plastic
Colour of conductor holder		grey
Conductor holder support Rd	mm	8
Screw	mm	5x50
Packing unit	pc(s)	50

Height 16 mm premounted with screw, cover plate and dowel



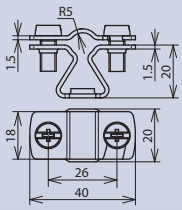
Part No.		204 120
Thread of conductor holder		M8
Material of conductor holder		plastic
Colour of conductor holder		grey
Conductor holder support Rd	mm	8
Screw	mm	5x50
Plastic dowel	mm	Ø8x40
Packing unit	pc(s)	50

DEHNhold Conductor Holders

Conductor holder for the fixing of round conductors with slotted cleat, for fixed conductor leading

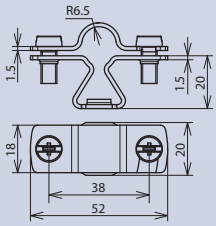
For use with different materials e.g. Al, StSt, St/tZn and Cu

with female thread



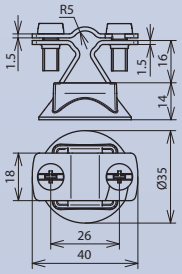
Part No.		274 110	274 117
Material of conductor holder		StSt	StSt / gal Cu
Conductor holder support Rd	mm	8-10	8-10
Conductor holder support Fl	mm	20	20
Height of conductor holder	mm	20	20
Thread of conductor holder		M8	M8
Packing unit	pc(s)	50	50

with female thread e.g. for round wire with plastic coating



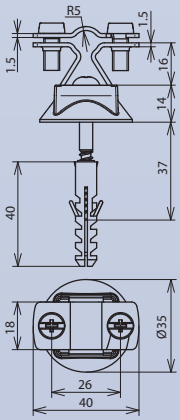
Part No.		274 113
Material of conductor holder		StSt
Conductor holder support Rd	mm	13
Height of conductor holder	mm	20
Thread of conductor holder		M8
Packing unit	pc(s)	50

with female thread premounted with plastic base



Part No.		274 150
Material of conductor holder		StSt
Conductor holder support Rd	mm	8-10
Conductor holder support Fl	mm	20
Height of conductor holder	mm	20
Thread of conductor holder		M8
Packing unit	pc(s)	50

with female thread premounted with screw, plastic base and dowel

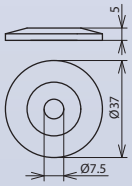


Part No.		274 160	274 167
Material of conductor holder		StSt	StSt / gal Cu
Conductor holder support Rd	mm	8-10	8-10
Conductor holder support Fl	mm	20	20
Height of conductor holder	mm	20	20
Thread of conductor holder		M8	M8
Plastic base		grey	brown
Screw	mm	5x50	5x50
Plastic dowel	mm	Ø8x40	Ø8x40
Packing unit	pc(s)	50	50

Cover Plates and Plastic Bases

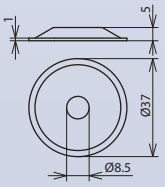
Cover plate and plastic base as an intermediate element for screwable / snap-on conductor holders and rod holders

Plastic cover plates



Part No.		276 006	276 007
Height	mm	5	5
Diameter	mm	37	37
Material		plastic	plastic
Colour		grey	brown
Type		UV stabilized	UV stabilized
Packing unit	pc(s)	100	100

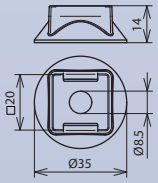
StSt cover plate



Part No.		276 009
Height	mm	5
Diameter	mm	37
Material		StSt
Packing unit	pc(s)	100

Plastic bases

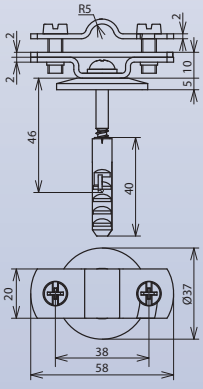
for snapping onto the conductor holders DEHNgrip and DEHNhold



Part No.		276 016	276 017
Height	mm	10	10
Diameter	mm	35	35
Material		plastic	plastic
Colour		grey	brown
Type		UV stabilized	UV stabilized
Packing unit	pc(s)	100	100

Conductor Holder with cleat – flat design

two-screw cleat with screws M6, for round and flat conductors

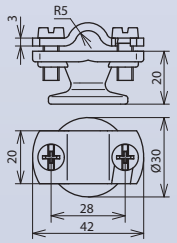


Part No.		286 819
Conductor holder support Rd	mm	7-10
Conductor holder support Fl	mm	30
Height of conductor holder	mm	10
Material of conductor holder		StSt
Screw	mm	5x50
Plastic dowel	mm	Ø8x50
Packing unit	pc(s)	50

Conductor Holders with cleat and flange

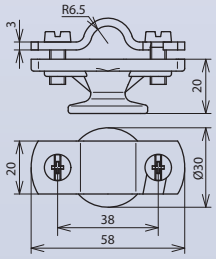
Complete unit with flange for fixed conductor leading

with female thread



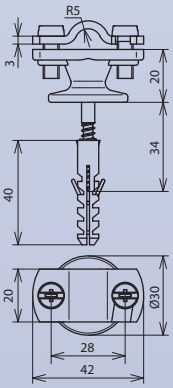
Part No.		275 110
Conductor holder support Rd	mm	7-10
Thread of conductor holder		M8
Height of conductor holder	mm	20
Material of cleat		St/tZn
Material of base part		ZDC
Packing unit	pc(s)	50

with female thread e.g. for round wire with plastic coating



Part No.		275 113
Conductor holder support Rd	mm	13
Thread of conductor holder		M8
Height of conductor holder	mm	20
Material of cleat		St/tZn
Material of base part		ZDC
Packing unit	pc(s)	50

with female thread premounted with screw and dowel



Part No.		275 160
Conductor holder support Rd	mm	7-10
Thread of conductor holder		M8
Height of conductor holder	mm	20
Material of cleat		St/tZn
Material of base part		ZDC
Screw	mm	5x50
Plastic dowel	mm	Ø8x40
Packing unit	pc(s)	50

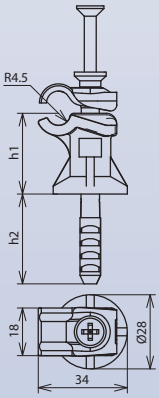
DEHNfix® Conductor Holders

Two-in-one system (fixing of holder and conductor) with conductor holder DEHNQUICK, fixed conductor leading, UV stabilized

Easy mounting:
- just prebore
- put in holder with inserted conductor
- fix with a few hammer blows

Advantages:
- cleat, spacer and dowel form a single unit
- premounted, ready for driving in

only suitable for massive stones or concrete

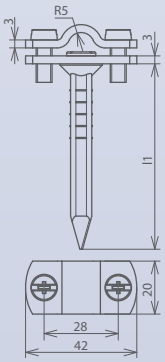


Part No.		250 000	250 001	250 007
Material of cleat		St/tZn	StSt	Cu
Material of base part		plastic	plastic	plastic
Colour of conductor holder		grey	grey	brown
Conductor holder support Rd	mm	6-10	6-10	6-10
Striking dowel	mm	75/30	75/30	75/30
Packing unit	pc(s)	50	50	50

Conductor Holders with cleat and pin

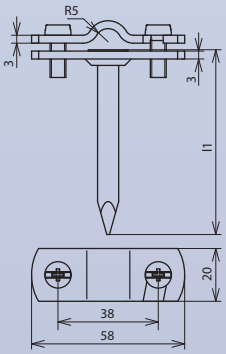
two-screw cleat with screws M6, for round and flat conductors

with square pin



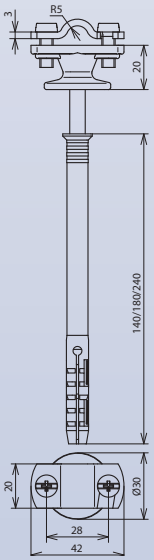
Part No.		260 708	260 108	260 158	260 109	260 187
Conductor holder support Rd	mm	7-10	7-10	7-10	7-10	7-10
Conductor holder support Fl	mm	20	20	20	20	20
Material of cleat		St/tZn	St/tZn	St/tZn	StSt	Cu
Material of base part		St/tZn	St/tZn	St/tZn	StSt	Cu / StSt
Fixing (l1)	mm	square pin 70	square pin 100	square pin 150	square pin 100	square pin 100
Packing unit	pc(s)	50	50	50	50	50

with loose round pin



Part No.		262 070	262 100
Conductor holder support Rd	mm	7-10	7-10
Conductor holder support Fl	mm	20	20
Material of cleat		St/tZn	St/tZn
Material of base part		St/tZn	St/tZn
Fixing (l1)	mm	round pin 70	round pin 100
Packing unit	pc(s)	50	50

Conductor Holders for external thermal insulation composite systems



Conductor holders for fixing of down conductors at walls with external thermal insulation composite system

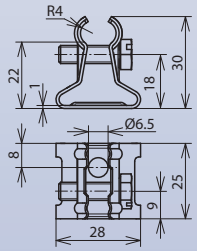
two-screw cleat with screws M6, fixed conductor leading

Part No.		273 740	273 741	273 742
Thickness of insulating material	mm	approx. 60	approx. 110	approx. 130
Bore depth	mm	approx. 150	approx. 190	approx. 250
Conductor holder support Rd	mm	7-10	7-10	7-10
Material of base part		ZDC	ZDC	ZDC
Material of cleat		St/tZn	St/tZn	St/tZn
Height of conductor holder	mm	20	20	20
Screw of dowel	mm	(TX40) 7x140	(TX40) 7x180	(TX40) 7x240
Packing unit	pc(s)	50	50	50

Conductor Holder with claw

Conductor holder for wall mounting with locking screw M6,
fixed conductor leading

Part No.		273 019
Bore Ø	mm	6.5
Material of conductor holder		StSt
Conductor holder support Rd	mm	6-10
Height of conductor holder	mm	22
Screw	mm	M6x20
Material of screw		StSt
Packing unit	pc(s)	50

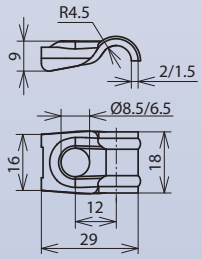


Conductor Holder Cleats

Conductor holders for the installation of round conductors e.g. flush-mounted or wall-mounted (under the thermal insulation composite system)

DEHNQUICK

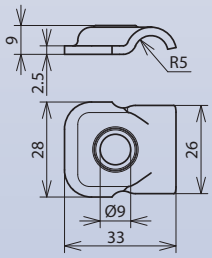
single-screw cleat with flexible clamping range and fixed conductor leading



Part No.		202 000	202 001	202 169
Material of conductor holder		St/tZn	StSt	StSt
Conductor holder support Rd	mm	6-10	6-10	6-10
Bore Ø	mm	8.5	8.5	6.5
Packing unit	pc(s)	50	50	100

Clamping frame

single-screw cleat for clamping frames with flexible clamping range and fixed conductor leading

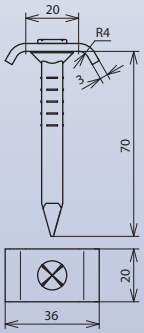


Part No.		390 110	390 119
Material of conductor holder		St/tZn	StSt
Conductor holder support Rd	mm	6-10	6-10
Bore Ø	mm	9	9
Packing unit	pc(s)	100	100

Conductor Holder for flush mounting

Conductor holder with clamping plate for nailing

Part No.		260 118
Conductor holder support Rd	mm	6-10
Material of conductor holder		St/tZn
Conductor leading		fixed/loose
Fixing	mm	square pin 70
Clamping plate	mm	36x20x3
Packing unit	pc(s)	50

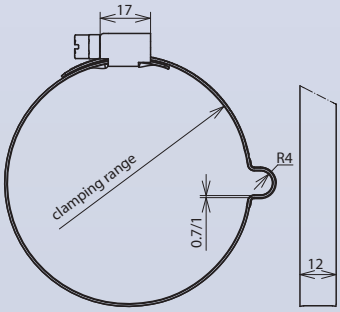


Conductor holders for the installation of down conductors at downpipes with fixed conductor leading

All types are suitable also for plastic downpipes.

Type PPS

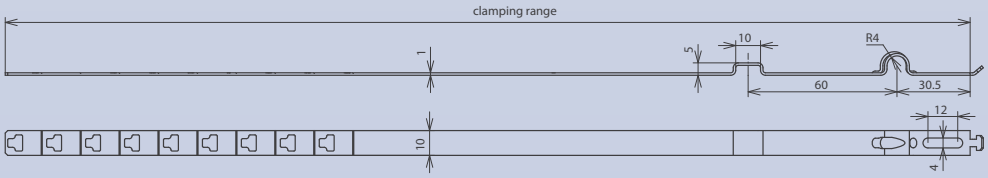
with worm drive and bead



Part No.		200 079	200 077	200 089	200 087
Clamping range ∅ pipe	mm	80-100	80-100	100-120	100-120
Conductor holder support Rd	mm	8	8	8	8
Material of conductor holder		StSt	StSt / gal Cu	StSt	StSt / gal Cu
Screw	mm	screw with worm drive SW7	screw with worm drive SW7	screw with worm drive SW7	screw with worm drive SW7
Material of grip head/screw		StSt	StSt / gal Cu	StSt	StSt / gal Cu
Packing unit	pc(s)	50	50	50	50

Type PS

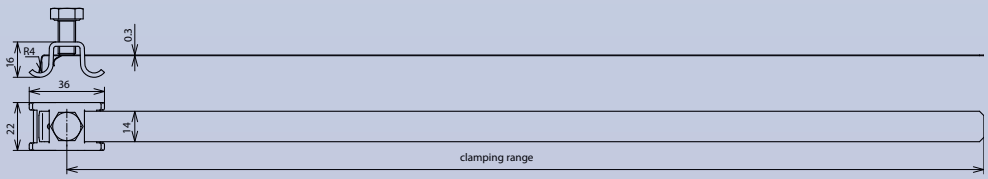
screwless, with embossments for tongs



Part No.		200 069	200 067	200 059	200 057
Clamping range ∅ pipe	mm	80-120 in steps of 5 mm	80-120 in steps of 5 mm	100	100
Conductor holder support Rd	mm	8	8	8	8
Material of conductor holder		StSt	Cu	StSt	Cu
Packing unit	pc(s)	25	25	25	25

Type PV

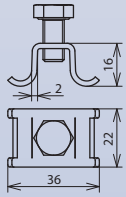
adjustable, with clamping screw M8



Part No.		200 029	200 039	200 027
Clamping range ∅ pipe	mm	50-120	50-150	50 -120
Conductor holder support Rd	mm	6-8	6-8	6-8
Material of conductor holder		StSt	StSt	Cu/bronze
Screw	mm	(SW13) M8x16	(SW13) M8x16	(SW13) M8x16
Material of grip head/screw		StSt	StSt	StSt
Packing unit	pc(s)	10	10	10

Separate grip head

for combination with endless tensioning strap (Part No. 540 931)



Part No.		540 930
Conductor holder support Rd	mm	6-8
Material of conductor holder		StSt
Screw	mm	(SW13) M8x16
Material of grip head/screw		StSt
Packing unit	pc(s)	25

Endless tensioning strap

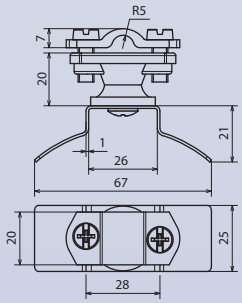
for cutting to length with sheet shears

Part No.		540 931
Material of conductor holder		StSt
Dimension of strap (l x w x d)	mm	...x14x0.3
Length	m	50
Packing unit	pc(s)	1

Plastic Conductor Holders for downpipes

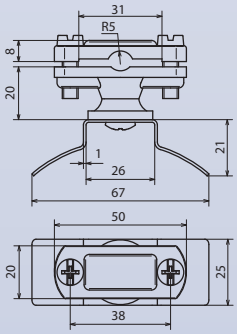
Plastic conductor holders for the insulated fixing of earth entries at metal downpipes
allows for measuring without detaching
holder with clamping part for tensioning strap fixing (dimension 14x0.3 mm)

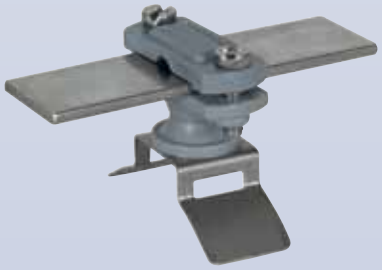
for round conductors



Part No.		275 711
Material of conductor holder		PA
Material of clamping part		StSt
Conductor holder support Rd	mm	6-11
Packing unit	pc(s)	50

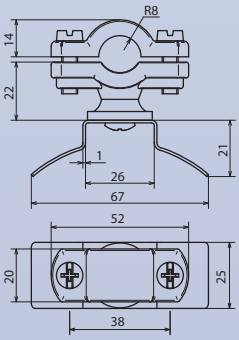
for flat strips or round conductors

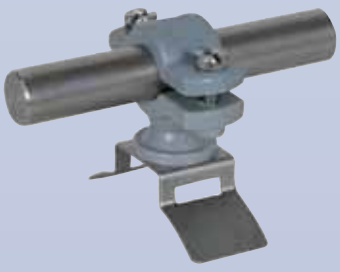




Part No.		275 730
Material of conductor holder		PA
Material of clamping part		StSt
Conductor holder support Rd	mm	6-11
Conductor holder support Fl	mm	30
Packing unit	pc(s)	50

for earth entry rods

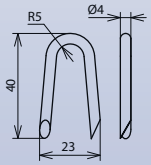




Part No.		275 716
Material of conductor holder		PA
Material of clamping part		StSt
Conductor holder support Rd	mm	16
Packing unit	pc(s)	50

Staples

Staples for fixing conductors e.g. at wooden masts etc.

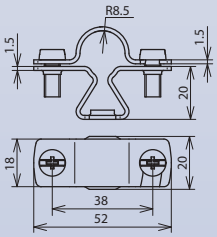


Part No.		538 010
Material of conductor holder		St/tZn
Conductor holder support Rd	mm	6-10
Conductor leading		fixed/loose
Packing unit	pc(s)	500

Rod Holders DEHNhold

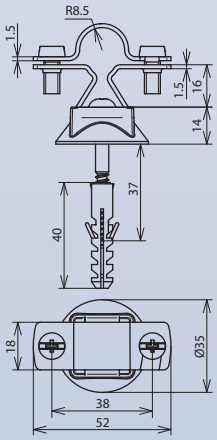
Rod holders for the fixing of air-termination rods and earth entry rods, with slotted cleat, fixed conductor leading for use with different materials e.g. Al, StSt, St/tZn and Cu

with female thread



Part No.		274 116
Material of conductor holder		StSt
Conductor holder support Rd	mm	16
Height of conductor holder	mm	20
Thread of conductor holder		M8
Packing unit	pc(s)	50

premounted with screw, plastic base and dowel

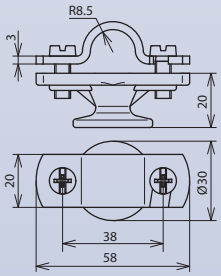


Part No.		274 260
Material of conductor holder		StSt
Conductor holder support Rd	mm	16
Height of conductor holder	mm	20
Thread of conductor holder		M8
Screw	mm	5x50
Plastic dowel	mm	Ø8x40
Packing unit	pc(s)	50

Rod Holders with cleat and flange

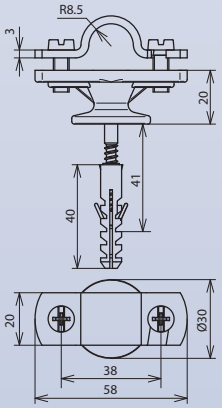
Complete unit with flange for the installation of air-termination rods and earth entry rods, fixed conductor leading

with female thread



Part No.		275 116
Conductor holder support Rd	mm	16
Thread of conductor holder		M8
Height of conductor holder	mm	20
Material of cleat		St/tZn
Material of base part		ZDC
Packing unit	pc(s)	50

premounted with screw and dowel

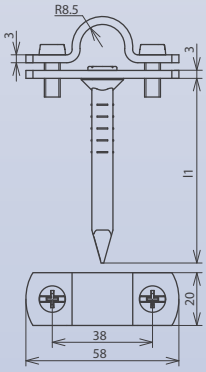


Part No.		275 260
Conductor holder support Rd	mm	16
Thread of conductor holder		M8
Height of conductor holder	mm	20
Material of cleat		St/tZn
Material of base part		ZDC
Screw	mm	5x50
Plastic dowel	mm	Ø8x40
Packing unit	pc(s)	50

Rod Holders with cleat and pin

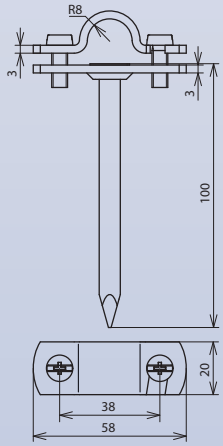
two-screw cleat with screws M6 for air-termination rods and earth entry rods, fixed conductor leading

with pin



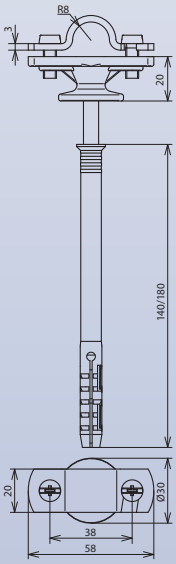
Part No.		260 106	260 156
Material of cleat		St/tZn	St/tZn
Material of base part		St/tZn	St/tZn
Conductor holder support Rd	mm	16	16
Fixing (l1)	mm	square pin 100	square pin 150
Packing unit	pc(s)	50	25

with loose round pin



Part No.		262 110
Material of cleat		St/tZn
Material of base part		St/tZn
Conductor holder support Rd	mm	16
Fixing (l1)	mm	round pin 100
Packing unit	pc(s)	50

Rod Holder for external thermal insulation composite systems

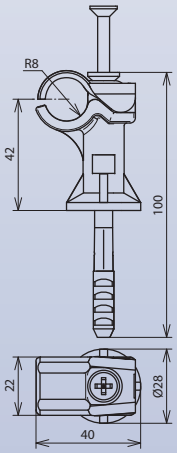


two-screw cleat with screws M6

Rod holder with flange (ZDC) and plastic dowel Ø10 mm

Part No.		273 730	273 731
Thickness of insulating material	mm	approx. 60	approx. 110
Depth of bore	mm	approx. 150	approx. 190
Material of cleat		St/tZn	St/tZn
Material o base part		ZDC	ZDC
Height of conductor holder	mm	20	20
Conductor holder support Rd	mm	16	16
Screw/dowel	mm	(TX40) 7x140	(TX40) 7x180
Packing unit	pc(s)	50	50

Rod Holders DEHNfix®



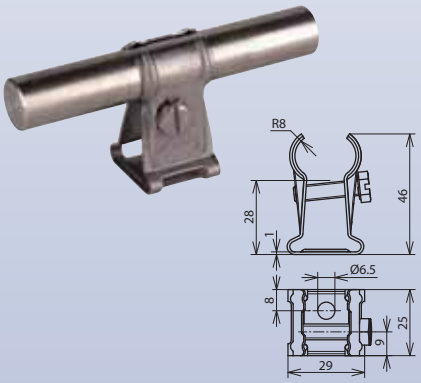
Holder system with two functions (fixing of holder and of conductor), fixed conductor leading

only suitable for massive stones or concrete

height 42 mm, bore depth 60 mm, bore Ø8 mm

Part No.		252 000	252 009
Material of cleat		St/tZn	StSt
Material of base part		plastic	plastic
Colour of conductor holder		grey	grey
Conductor holder support Rd	mm	16	16
Impact dowel	mm	100/60	100/60
Packing unit	pc(s)	50	50

Rod Holder with claw



Rod holder for wall mounting with fixing screw M6, fixed conductor leading

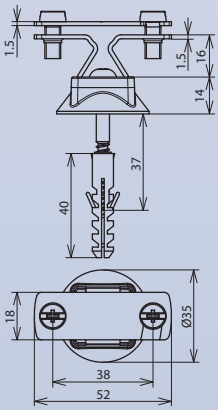
Part No.		275 019
Bore Ø	mm	6.5
Material of conductor holder		StSt
Height of conductor holder	mm	28
Conductor holder support Rd	mm	13-16
Screw	mm	M6x25
Material of screw		StSt
Packing unit	pc(s)	50

Flat Strip Holders DEHNhold

Flat strip holders for the fixing of flat conductors with slotted cleat, fixed conductor leading

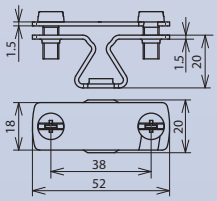
for use with different materials e.g. Al, StSt, St/tZn and Cu

premounted with screw, plastic base and dowel



Part No.		274 230
Material of conductor holder		StSt
Conductor holder support Fl	mm	30x3.5
Conductor holder support Rd	mm	6
Height of conductor holder	mm	20
Thread of conductor holder		M8
Screw	mm	5x50
Plastic dowel	mm	Ø8x40
Packing unit	pc(s)	50

with female thread

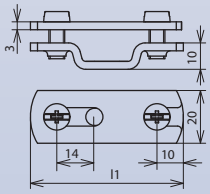


Part No.		274 030
Material of conductor holder		StSt
Conductor holder support Fl	mm	30x3.5
Conductor holder support Rd	mm	6
Height of conductor holder	mm	20
Thread of conductor holder		M8
Packing unit	pc(s)	50

Flat Strip Holders with cleat – flat design

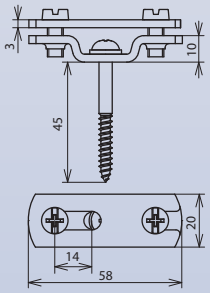
two-screw cleat with screws M6

with slot (6.5x16 mm)



Part No.		284 030	284 040
Height of conductor holder	mm	10	10
Conductor holder support Fl	mm	30x3.5	40x4-5
Material of conductor holder		St/tZn	St/tZn
Dimension (l1)	mm	58	70
Packing unit	pc(s)	100	100

with slot (6.5x16 mm) and premounted wood screw

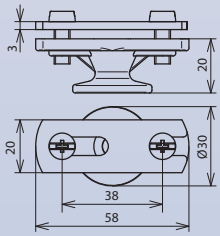


Part No.		286 030	286 139
Height of conductor holder	mm	10	10
Conductor holder support Fl	mm	30x3.5	30x3.5
Material of conductor holder		St/tZn	StSt
Screw	mm	5x50	5x50
Dimension (l1)	mm	58	58
Packing unit	pc(s)	50	50

Flat Strip Holders with cleat and flange

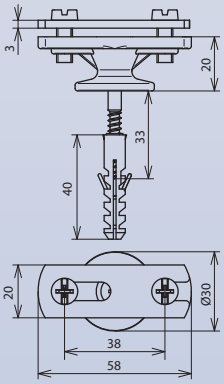
Complete unit with flange for the installation of strip conductors

with female thread



Part No.		275 030
Conductor holder support Fl	mm	30x30.5
Thread of conductor holder		M8
Height of conductor holder	mm	20
Material of cleat		St/tZn
Material of base part		ZDC
Packing unit	pc(s)	50

with female thread, premounted with screw and dowel



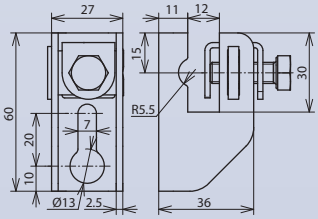
Part No.		275 230
Conductor holder support Fl	mm	30x3.5
Thread of conductor holder		M8
Height of conductor holder	mm	20
Material of cleat		St/tZn
Material of base part		ZDC
Screw	mm	5x50
Plastic dowel	mm	Ø8x40
Packing unit	pc(s)	50

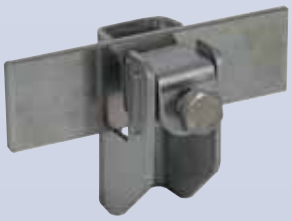
Flat Strip Holders with thrust piece

Flat strip holder for wall mounting

Thrust piece with screw M8 for the installation of strip conductor up to 11 mm and round conductor 6-10 mm

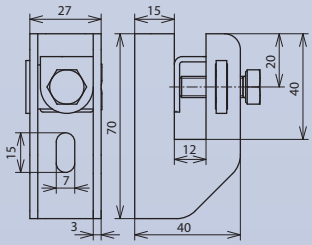
Wall distance 11 mm





Part No.		277 230	277 237	277 239
Material of conductor holder		St/tZn	Cu	StSt
Wall distance	mm	11	11	11
Fixing	mm	Ø13 und 7x20	Ø13 und 7x20	Ø13 und 7x20
Slot width	mm	12	12	12
Screw	mm	M8x25	M8x25	M8x25
Material of screw		StSt	StSt	StSt
Packing unit	pc(s)	25	25	25

Wall distance 15 mm

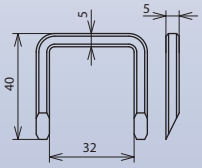


Part No.		277 240
Material of conductor holder		St/tZn
Wall distance	mm	15
Fixing	mm	7x15
Slot width	mm	12
Screw	mm	M8x25
Material of screw		StSt
Packing unit	pc(s)	25

Staples for flat strips

Staples for fixing strip conductors e.g. at wooden masts etc.

Part No.		538 030
Material of conductor holder		St/tZn
Conductor holder support Fl	mm	30
Conductor leading		fixed/loose
Packing unit	pc(s)	300



Dowels for Rigid Foam Plates

Dowels for use with rigid foam plates for the fixing of conductor holders and rod holders at external thermal insulation composite systems as well as of flat strip holders

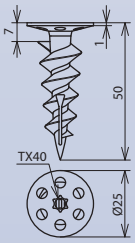
drive in with star drive screw driver (TX40)

for use with wood screws ∅4.5 mm

This dowel is only suitable for the fixing of conductor holders, if there is no risk of any additional tensile forces acting on the down conductor.

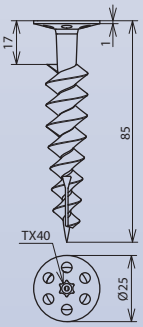
More details in installation instructions No. 1459.

Short design



Part No.		200 600
Material		PA
Thickness of insulating material	mm	60
Length of anchoring depth	mm	50
Working load of Styrofoam PS20	N	35
Working load of rigid foam plates	N	60
Packing unit	pc(s)	50

Long design

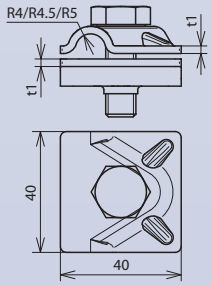


Part No.		200 601
Material		PA
Thickness of insulating material	mm	100
Length of anchoring depth	mm	85
Working load of Styrofoam PS20	N	60
Working load of rigid foam plates	N	85
Packing unit	pc(s)	50

Multipurpose connecting clamp for universal use as a cross clamp, T clamp and parallel clamp; two-part

with hexagon screw

and thread in the base part

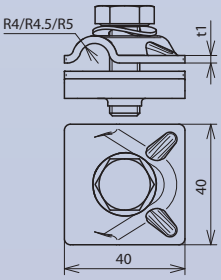


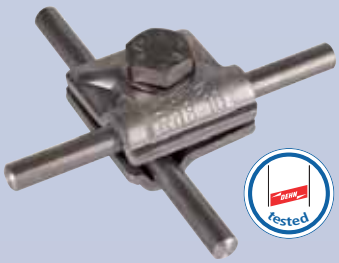
Part No.		390 050	390 051	390 059	390 057	391 050	391 059	390 079
Material of clamp		St/tZn	Al	StSt	Cu	St/tZn	StSt	StSt (V4A)
Clamping range Rd	mm	8-10	8-10	8-10	8	10	10	8-10
Material thickness (t1 / t2)	mm	2.5	3.0	2.5	3.0	2.5	2.5	2.5
Screw	mm	T⬢ M10x30	T⬢ M10x30	T⬢ M10x30	T⬢ M10x30	T⬢ M10x35	T⬢ M10x35	T⬢ M10x35
Material of screw/nut		St/Zn	StSt	StSt	StSt	St/Zn	StSt	StSt (V4A)
Standard		EN 50164-1	EN 50164-1	EN 50164-1	EN 50164-1	EN 50164-1	EN 50164-1	EN 50164-1
Short-circuit current (50 Hz) (1 s; ≤ 300 °C)	kA	5.2						1.4
Packing unit	pc(s)	50	50	50	50	50	50	50

Part No. 390 079 with StSt (V4A) also for underground application

with hexagon screw and spring washer

thread in the base part

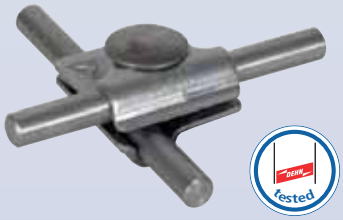


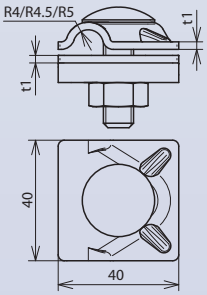


Part No.		390 550	390 551	390 559	390 557	391 550	391 559
Material of clamp		St/tZn	Al	StSt	Cu	St/tZn	StSt
Clamping range Rd	mm	8-10	8-10	8-10	8	10	10
Material thickness (t1 / t2)	mm	2.5	3.0	2.5	3.0	2.5	2.5
Screw	mm	T⬢ M10x30	T⬢ M10x30	T⬢ M10x30	T⬢ M10x30	T⬢ M10x35	T⬢ M10x35
Material of screw/nut		St/Zn	StSt	StSt	StSt	St/Zn	StSt
Standard		EN 50164-1	EN 50164-1	EN 50164-1	EN 50164-1	EN 50164-1	EN 50164-1
Packing unit	pc(s)	50	50	50	50	50	50

with truss head screw

screw with rotation locking (square hole in the upper part)



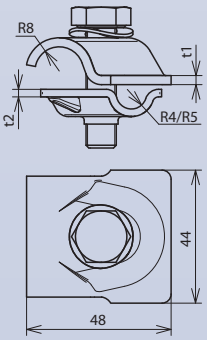


Part No.		390 060	390 061	390 067	391 060	391 069
Material of clamp		St/tZn	Al	Cu	St/tZn	StSt
Clamping range Rd	mm	8-10	8-10	8	10	10
Material thickness (t1 / t2)	mm	2.5	3.0	3.0	2.5	2.5
Screw	mm	M10x35	M10x35	M10x35	M10x35	M10x35
Material of screw/nut		St/tZn	St/tZn	StSt	St/tZn	StSt
Standard		EN 50164-1	EN 50164-1	EN 50164-1	EN 50164-1	EN 50164-1
Packing unit	pc(s)	50	50	50	50	50

Type of MV clamp St/tZn Part No. 390 060 with StSt screw Part No. 390 060/S Id. No. 045137 upon request

with hexagon screw and spring washer for air-termination rods

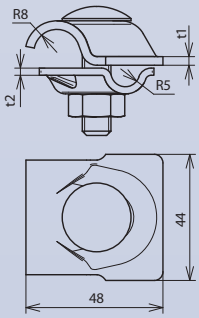
with thread in the base part



Part No.		392 050	392 059
Material of clamp		St/tZn	StSt
Clamping range Rd	mm	8-10/16	8-10/16
Material thickness (t1 / t2)	mm	3.0/2.5	3.0/2.5
Screw	mm	M10x40	M10x40
Material of screw/nut		St/Zn	StSt
Standard		EN 50164-1	EN 50164-1
Packing unit	pc(s)	50	50

with truss head screw for air-termination rods

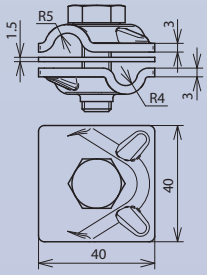
screw with rotation locking (square hole in the upper part)



Part No.		392 060	392 069
Material of clamp		St/tZn	StSt
Clamping range Rd	mm	8-10/16	8-10/16
Material thickness (t1 / t2)	mm	3.0/2.5	3.0/2.5
Screw	mm	M10x40	M10x40
Material of screw/nut		St/Zn	StSt
Standard		EN 50164-1	EN 50164-1
Packing unit	pc(s)	50	50

Bimetallic MV clamp

for the connection of conductors made of different materials, with intermediate plate (Cupal) and threaded base part

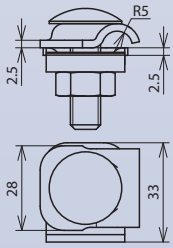


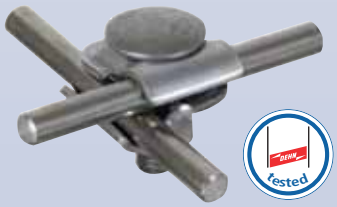
Part No.		390 657
Material of clamp		Cu / Al
Clamping range Rd	mm	8
Material thickness (t1 / t2)	mm	8-10
Screw	mm	M10x30
Material of screw/nut		StSt
Packing unit	pc(s)	50

MMV Clamps

Mini multipurpose connecting clamp for universal use as a cross clamp, T clamp and parallel clamp, with rotation locking

MMV Clamp

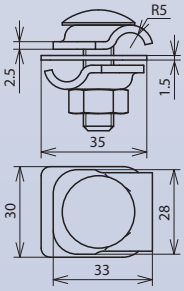




Part No.		390 250	390 257	390 259
Material of clamp		St/tZn	Cu	StSt
Clamping range Rd	mm	6-8	6-8	6-8
Material thickness	mm	2.5	2.5	2.5
Screw	mm	M10x35	M10x35	M10x35
Material of screw/nut		St/tZn	StSt	StSt
Standard		EN 50164-1	EN 50164-1	EN 50164-1
Packing unit	pc(s)	50	50	50

Bimetallic MMV Clamp

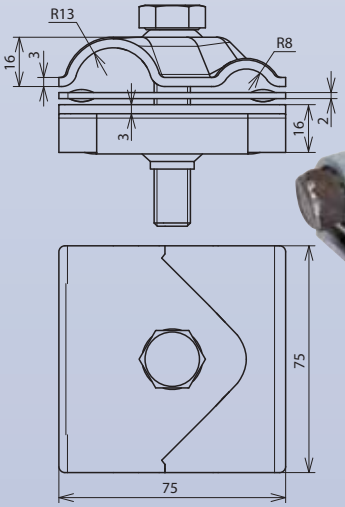
for the connection of conductors made of different materials, with intermediate plate (Cupal)

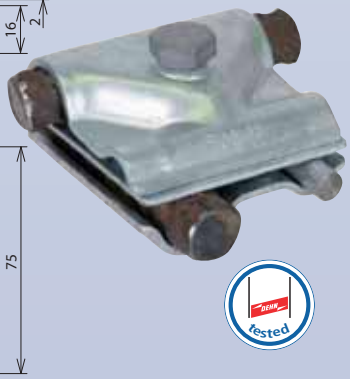


Part No.		390 267
Material of clamp		Cu / St/tZn
Clamping range Rd	mm	6-8
Material thickness	mm	6-8
Screw	mm	M10x35
Material of screw/nut		StSt
Standard		EN 50164-1
Packing unit	pc(s)	50

MAXI MV Clamps

Maxi multipurpose connecting clamp for universal use as a cross clamp, T clamp and parallel clamp;
three-part, with thread in the base part

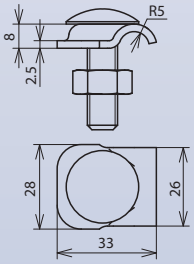




Part No.		308 041	308 040
Material of clamp		St/tZn	St/bare
Clamping range Rd	mm	8-16 / 15-25	8-16 / 15-25
Material thickness	mm	3.0 / 2.0	3.0 / 2.0
Screw	mm	M12x65	M12x65
Material of screw		St/tZn	St/bare
Standard		EN 50164-1	EN 50164-1
Short-circuit current (50 Hz) (1 s; ≤ 300 °C)	kA	6.2	6.2
Approval			UL467B
Packing unit	pc(s)	20	20
Stock No.		5999-12-362-1557	

Clamping Frame Variants

Claming frame variants for example as terminal with end piece for constructions or downpipe clamps
clamping frame with square hole 11 mm and truss head screw



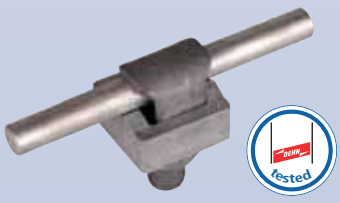
Part No.		390 150	390 157	390 159
Material of clamp		St/tZn	Cu	StSt
Clamping range Rd	mm	6-10	6-10	6-10
Material thickness	mm	2.5	2.5	2.5
Screw	mm	M10x35	M10x35	M10x35
Material of screw/nut		St/tZn	StSt	StSt
Standard		EN 50164-1	EN 50164-1	EN 50164-1
Packing unit	pc(s)	100	100	100

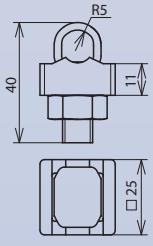
KS Connectors

Clamping screw connector for lightning current carrying capable connection of round conductors e.g. to flat profiles, downpipe clamps or other parts of the lightning protection system

one-part St/tZn

with screw and nut M10

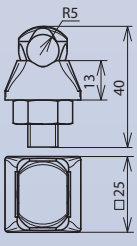




Part No.		301 000	301 010
KS screw		St/tZn	St/tZn
Material of clamp		ZDC	ZDC
Clamping range Rd	mm	7-10	7-10
Type			+ spring washer
Material of nut		St/tZn	St/tZn
Standard		EN 50164-1	EN 50164-1
Packing unit	pc(s)	100	100

one-part Cu

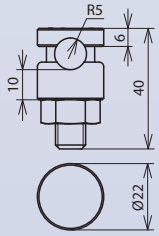
with screw and nut M10

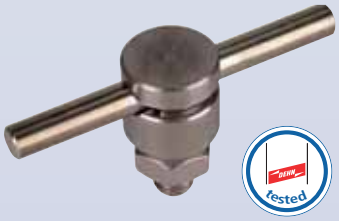


Part No.		301 007	301 017
KS screw		Cu	Cu
Material of clamp		RCB	RCB
Clamping range Rd	mm	6-10	6-10
Connection (single-wire/multi-wire)	mm^2	25 - 70	25 - 70
Type			+ spring washer
Material of nut		StSt	StSt
Standard		EN 50164-1	EN 50164-1
Packing unit	pc(s)	100	100

one-part StSt

with screw and nut M10

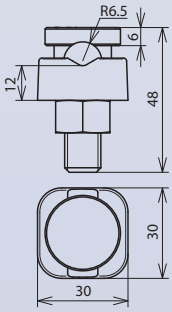


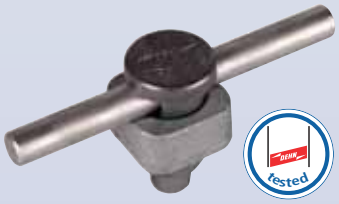


Part No.		301 009	301 019
KS screw		StSt	StSt
Material of clamp		StSt	StSt
Clamping range Rd	mm	6-10	6-10
Connection (single-wire/multi-wire)	mm²	25 - 70	25 - 70
Type			+ spring washer
Material of nut		StSt	StSt
Standard		EN 50164-1	EN 50164-1
Packing unit	pc(s)	100	100

heavy design

with screw and nut M12

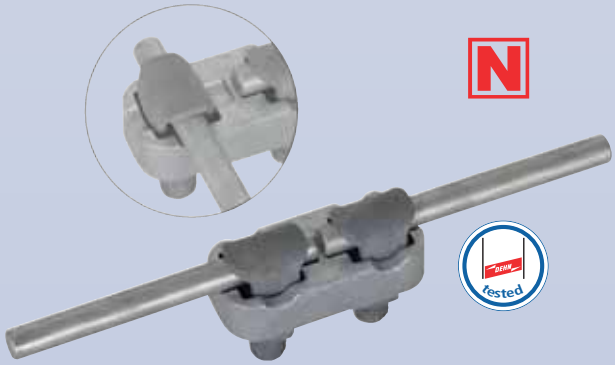


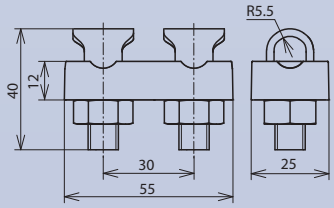


Part No.		300 002	300 017
KS screw		St/tZn	Cu
Material of clamp		MCI	RCB
Clamping range Rd	mm	8-12.5	8-12.5
Connection (single-wire/multi-wire)	mm²	50 - 95	50 - 95
Material of nut		St/tZn	Cu
Standard		EN 50164-1	EN 50164-1
Packing unit	pc(s)	25	25

two-part distance 30 mm

with screw and nut M10, distance 30 mm

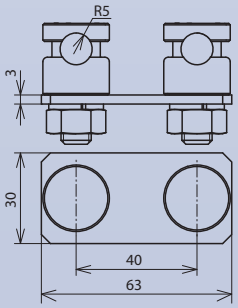




Part No.		302 010
KS screw		St/tZn
Material of clamp		Zamak
Clamping range Rd	mm	7-10
Material of nut		St/tZn
Standard		EN 50164-1
Packing unit	pc(s)	50

two-part distance 40 mm

with screw and nut M10, distance 40 mm

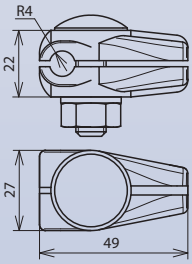


Part No.		301 229
KS screw		StSt
Material of clamp		StSt
Clamping range Rd	mm	6-10
Type		+ spring washer
Material of nut		StSt
Standard		EN 50164-1
Packing unit	pc(s)	1

connection of round conductors
for T arrangement and longitudinal arrangement

EST connector

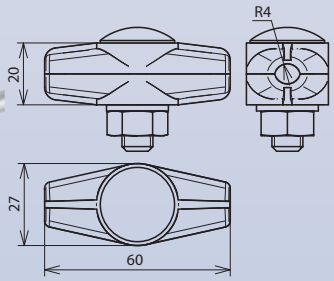
one-screw T connector



Part No.		310 008
Material of clamp		ZDC
Clamping range Rd	mm	8
Screw	mm	M10x35
Material of screw/nut		StSt
Standard		EN 50164-1
Packing unit	pc(s)	50

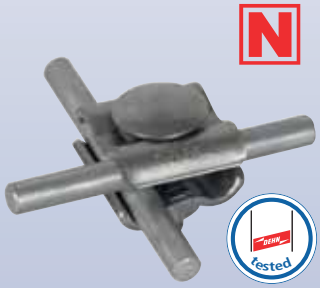
ES connectors

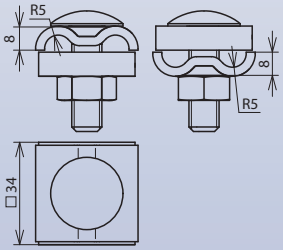
one-screw connectors for longitudinal arrangement



Part No.		309 008	309 087
Material of clamp		ZDC	RCB
Clamping range Rd	mm	8	8
Screw	mm	M10x35	M10x35
Material of screw/nut		StSt	StSt
Standard		EN 50164-1	EN 50164-1
Packing unit	pc(s)	50	50

Universal Connector



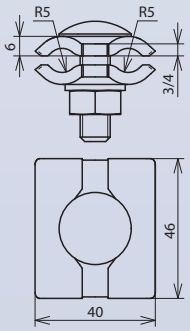


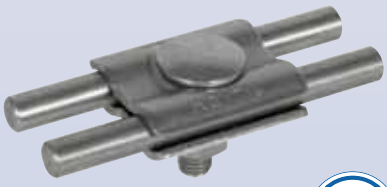
connection of round conductors for cross connections, T connections, parallel connections and double conductor connections

Part No.		315 119
Material of clamp		StSt
Clamping range Rd	mm	8-10
Screw	mm	M10x35
Material of screw/nut		StSt
Standard		EN 50164-1
Packing unit	pc(s)	50

connection of two conductors in parallel arrangement

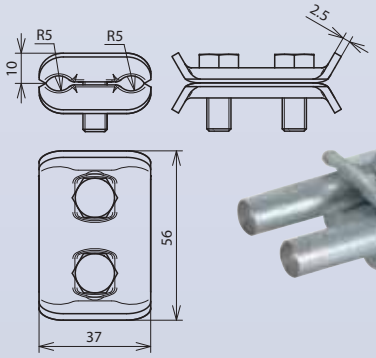
for equal diameters with one screw

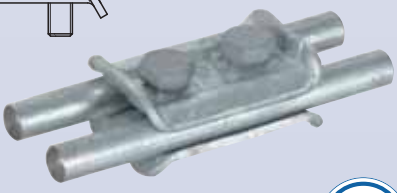




Part No.		306 020	306 029
Material of clamp		St/tZn	StSt (V4A)
Clamping range Rd/Rd	mm	7-10	7-10
Screw	mm	M10x35	M10x35
Material of screw/nut		St/tZn	StSt (V4A)
Standard		EN 50164-1	EN 50164-1
Short-circuit current (50 Hz)			
(1 s; ≤ 300 °C)	kA		2.9
Packing unit	pc(s)	50	50

for equal diameters with two screws

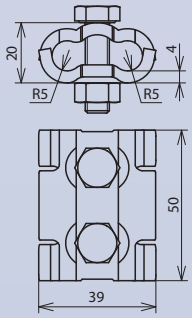




Part No.		307 000	307 007
Material of clamp		St/tZn	Cu
Clamping range Rd/Rd	mm	7-10	7-10
Screw	mm	M8x20	M8x20
Material of screw/nut		St/tZn	StSt
Standard		EN 50164-1	EN 50164-1
Military name		VG 96953 T06 D0002	
Packing unit	pc(s)	50	50
Stock No.		5999-12-158-2303	

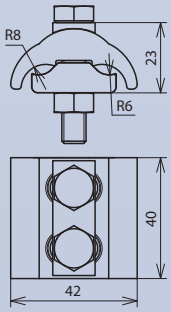
for different diameters 4-10 mm

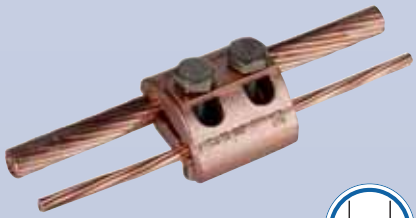
Part No.		305 000	305 007
Material of clamp		St/tZn	Cu
Clamping range Rd/Rd	mm	4-10	4-10
Screw	mm	M8x30	M8x30
Material of screw/nut		St/tZn	StST
Standard		EN 50164-1	EN 50164-1
Short-circuit current (50 Hz)			
(1 s; ≤ 300 °C)	kA		13.6
Packing unit	pc(s)	50	50



for different cable diameters small

specified short-circuit current is valid for 70 mm² Cu cable

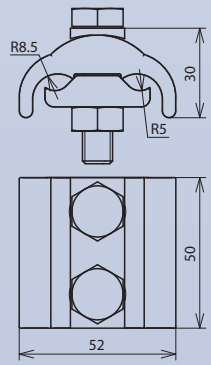


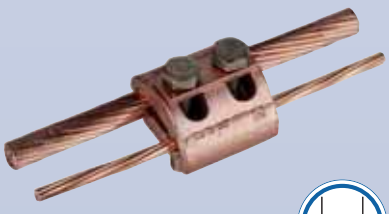


Part No.		306 100
Material of clamp		Cu
Clamping range Rd/Rd	mm	5-12.5
Clamping range		
(stranded or cable)	mm²	16-95
Screw	mm	M8x45
Material of screw/nut		StSt
Standard		EN 50164-1
Short-circuit current (50 Hz)		
(1 s; ≤ 300 °C)	kA	13.6
Packing unit	pc(s)	25

for different cable diameters large

specified short-circuit current is valid for 70 mm² Cu cable



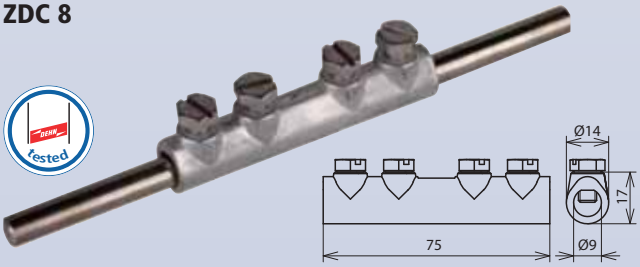


Part No.		306 101
Material of clamp		Cu
Clamping range Rd/Rd	mm	5-16
Clamping range		
(stranded or cable)	mm²	16-150
Screw	mm	M10x50
Material of screw/nut		StSt
Standard		EN 50164-1
Short-circuit current (50 Hz)		
(1 s; ≤ 300 °C)	kA	13.6
Packing unit	pc(s)	25

Connecting Sleeves

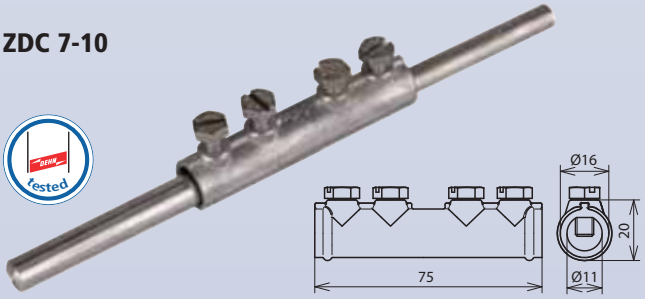
Connecting sleeves for longitudinal connection of two round conductors with four screws M6

ZDC 8



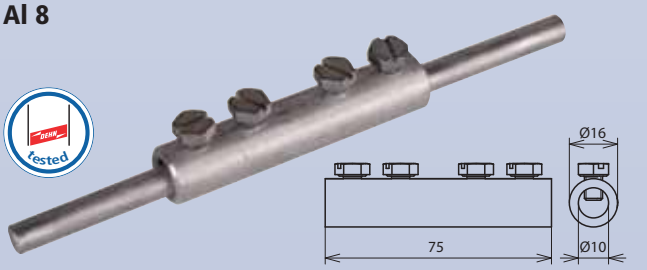
Part No.		385 203
Material of clamp		ZDC
Clamping range Rd	mm	8
Screw	mm	M6x10
Material of screw/nut		StSt
Standard		EN 50164-1
Packing unit	pc(s)	50

ZDC 7-10



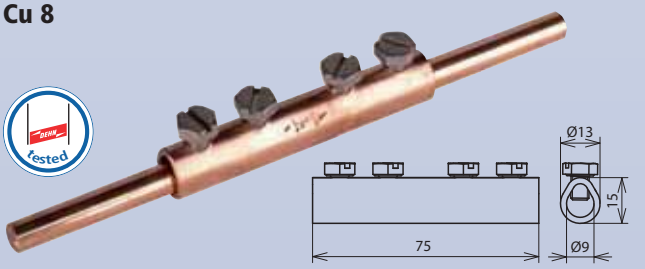
Part No.		385 202
Material of clamp		ZDC
Clamping range Rd	mm	7-10
Screw	mm	M6x12
Material of screw/nut		StSt
Standard		EN 50164-1
Packing unit	pc(s)	50

Al 8



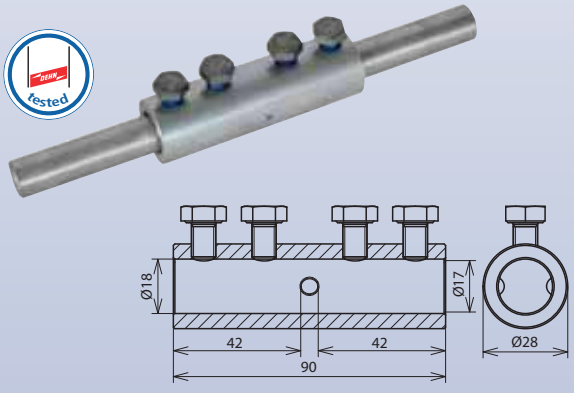
Part No.		385 213
Material of clamp		Al
Clamping range Rd	mm	8
Screw	mm	M6x8
Material of screw/nut		StSt
Standard		EN 50164-1
Packing unit	pc(s)	50

Cu 8



Part No.		385 207
Material of clamp		Cu
Clamping range Rd	mm	8
Screw	mm	M6x8
Material of screw/nut		StSt
Standard		EN 50164-1
Packing unit	pc(s)	50

Connecting Sleeve for Air-termination Rods



Connecting sleeve with tongues (stop) for jointing air-termination rods to greater lengths (transport length)

Using the connecting sleeve requires an additional fixing of the air-termination rod above the sleeve.

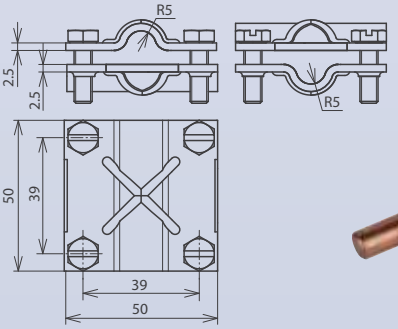
Part No.		385 216
Material		Al
Clamping range Rd / Rd	mm	16 / 16
Screw	mm	M8x12
Material of screw		StSt
Outer Ø	mm	28
Standard		EN 50164-1
Packing unit	pc(s)	10

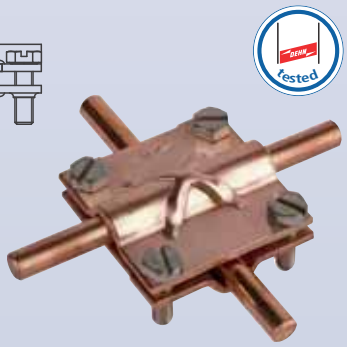
Cross Units for aboveground connections

Cross units for aboveground connection of conductors in cross arrangement and T arrangement

without intermediate plate

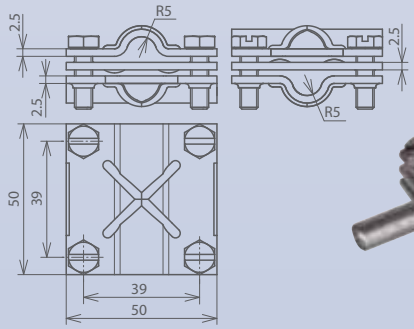
Part No.		314 300	314 307
Material of clamp		St/tZn	Cu
Clamping range Rd / Rd	mm	8-10 / 8-10	8-10 / 8-10
Clamping range Rd / Fl	mm	8-10 / 30	8-10 / 30
Clamping range Fl / Fl	mm	30 / 30	30 / 30
Screw	mm	M6x20	M6x20
Material of screw		StSt	StSt
Dimension (l x w x d)	mm	50x50x2.5	50x50x2.5
Standard		EN 50164-1	EN 50164-1
Packing unit	pc(s)	50	50

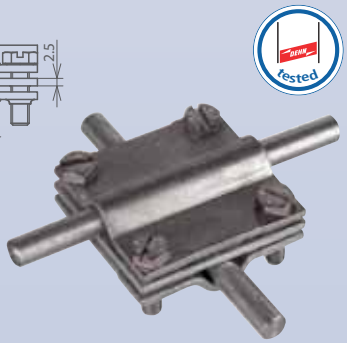




with intermediate plate

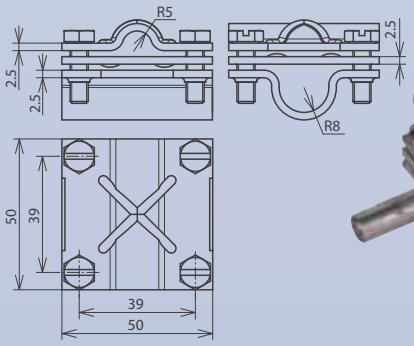
Part No.		314 310
Material of clamp		St/tZn
Clamping range Rd / Rd	mm	8-10 / 8-10
Clamping range Rd / Fl	mm	8-10 / 30
Clamping range Fl / Fl	mm	30 / 30
Screw	mm	M6x20
Material of screw		StSt
Dimension (l x w x d)	mm	50x50x2.5
Standard		EN 50164-1
Packing unit	pc(s)	50

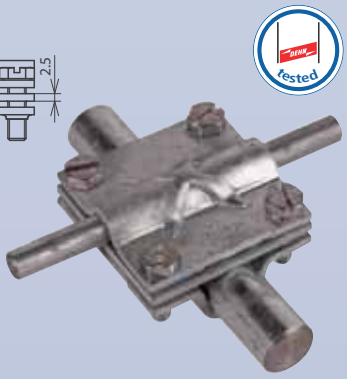




with intermediate plate e.g. for air-termination rods

Part No.		316 163	316 167
Material of clamp		St/tZn	Cu
Clamping range Rd / Rd	mm	16 / 8-10	16 / 8-10
Clamping range Rd / Fl	mm	16 / 30	16 / 30
Screw	mm	M6x20	M6x20
Material of screw		StSt	StSt
Dimension (l x w x d)	mm	50x50x2.5	50x50x2.5
Standard		EN 50164-1	EN 50164-1
Packing unit	pc(s)	25	25



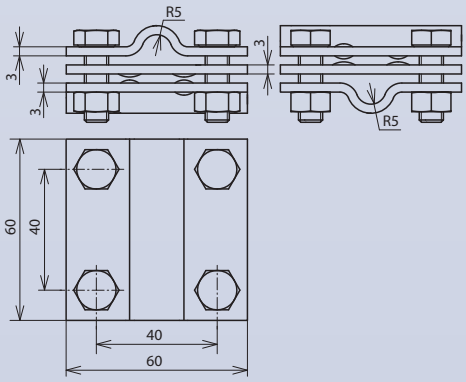


Cross Units for aboveground and underground connections

Cross units for aboveground and underground connection of conductors in cross arrangement and T arrangement

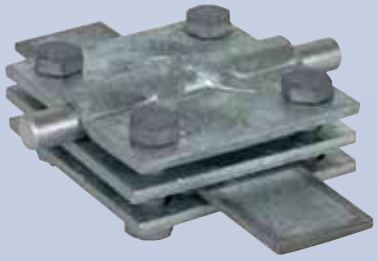
Type StSt (V4A) especially for Fl 30 mm and Rd 8-10 mm with intermediate plate (dimension 60x60 mm) Part No. 319 209/S Id.No. 040332 available on request

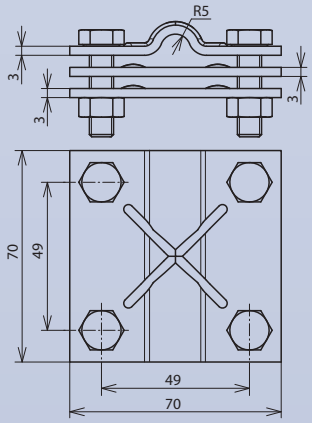
with intermediate plate for round and flat conductors



Part No.		319 201	319 207	319 209
Material of clamp		St/tZn	Cu	StSt (V4A)
Clamping range Rd / Rd	mm	8-10 / 8-10	8-10 / 8-10	8-10 / 8-10
Clamping range Rd / Fl	mm	8-10 / 30	8-10 / 30	8-10 / 30
Clamping range Fl / Fl	mm	30 / 30	30 / 30	30 / 30
Clamping range (stranded/cable)	mm^2		50-70	50-70
Screw	mm	M8x25	M8x25	M8x25
Material of screw/nut		St/tZn	StSt	StSt (V4A)
Dimension (l x w x d)	mm	60x60x3	60x60x4	60x60x3
Standard		EN 50164-1	EN 50164-1	EN 50164-1
Short-circuit current (50 Hz) (1 s; ≤ 300 °C)	kA	14	29	7
Packing unit	pc(s)	25	25	25

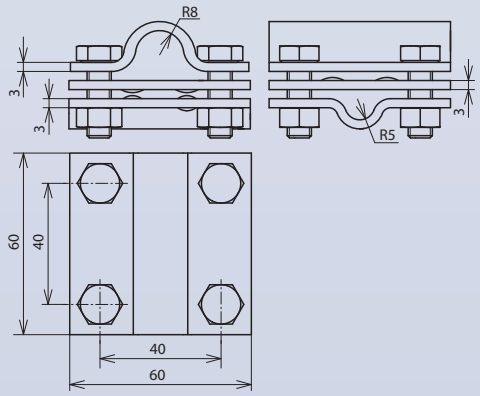
with intermediate plate for round and flat conductors up to 40 mm





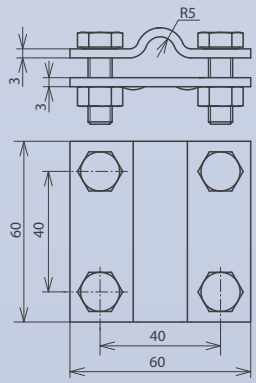
Part No.		321 045	321 047	319 229
Material of clamp		St/tZn	Cu	StSt (V4A)
Clamping range Rd / Rd	mm			7-10 / 7-10
Clamping range Rd / Fl	mm	8-10 / 30-40	8-10 / 30-40	7-10 / 30-40
Clamping range Fl / Fl	mm	30-40 / 30-40	30-40 / 30-40	30-40 / 30-40
Clamping range (stranded/cable)	mm^2		50-70	35-70
Screw	mm	M8x30	M8x30	M8x30
Material of screw/nut		St/tZn	StSt	StSt (V4A)
Dimension (l x w x d)	mm	70x70x3	70x70x3	70x70x3
Standard		EN 50164-1	EN 50164-1	EN 50164-1
Short-circuit current (50 Hz) (1 s; ≤ 300 °C)	kA	12.6	35.1	5.0
Packing unit	pc(s)	25	25	25

with intermediate plate for earth entries/air-termination rods



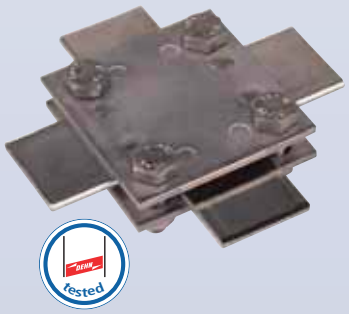
Part No.		319 202	319 219
Material of clamp		St/tZn	StSt (V4A)
Clamping range Rd / Rd	mm	8-10 / 16	8-10 / 16
Clamping range Rd / Fl	mm	16 / 30	16 / 30
Clamping range (stranded/cable)	mm²		50-70
Screw	mm	T⬢ M8x25	T⬢ M8x25
Material of screw/nut		St/tZn	StSt (V4A)
Dimension (l x w x d)	mm	60x60x3	60x60x3
Standard		EN 50164-1	EN 50164-1
Packing unit	pc(s)	25	25

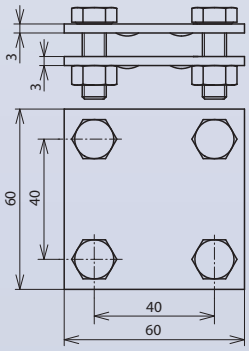
without intermediate plate for round and flat conductors



Part No.		318 201	318 207	318 209	318 251	318 219
Material of clamp		St/tZn	Cu	StSt (V4A)	St/tZn	StSt (V4A)
Clamping range Rd / Rd	mm				8-10 / 8-10	8-10 / 8-10
Clamping range Rd / Fl	mm	8-10 / 30	8-10 / 30	8-10 / 30	8-10 / 30	8-10 / 30
Clamping range Fl / Fl	mm	30 / 30	30 / 30	30 / 30	30 / 30	30 / 30
Clamping range (stranded/cable)	mm²		50-70	50-70		50-70
Screw	mm	T⬢ M8x25	T⬢ M8x25	T⬢ M8x25	T⬢ M8x25	T⬢ M8x25
Material of screw/nut		St/tZn	StSt	StSt (V4A)	St/tZn	StSt (V4A)
Dimension (l x w x d)	mm	60x60x3	60x60x4	60x60x3	60x60x3	60x60x3
Standard		EN 50164-1	EN 50164-1	EN 50164-1	EN 50164-1	EN 50164-1
Short-circuit current (50 Hz)						
(1 s; ≤ 300 °C)	kA	14	29	7.0	14	7
Packing unit	pc(s)	25	25	25	25	25

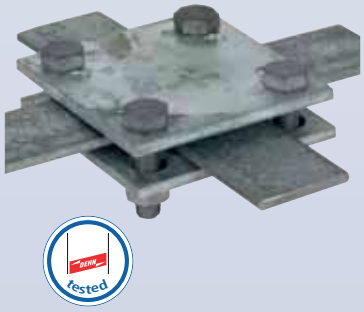
without intermediate plate for two flat conductors

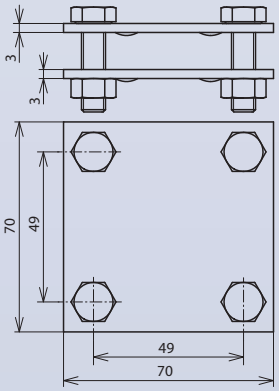




Part No.		318 033	318 233
Material of clamp		St/tZn	StSt (V4A)
Clamping range Fl / Fl	mm	30 / 30	30 / 30
Screw	mm	M8x25	M8x25
Material of screw/nut		St/tZn	StSt (V4A)
Dimension (l x w x d)	mm	60x60x3	60x60x3
Standard		EN 50164-1	EN 50164-1
Short-circuit current (50 Hz)			
(1 s; ≤ 300 °C)	kA	7.35	7.0
Packing unit	pc(s)	25	25

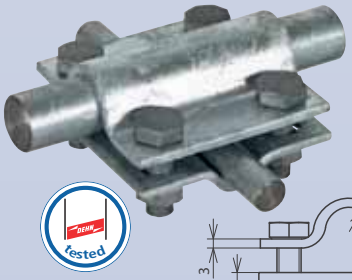
without intermediate plate for two flat conductors up to 40 mm

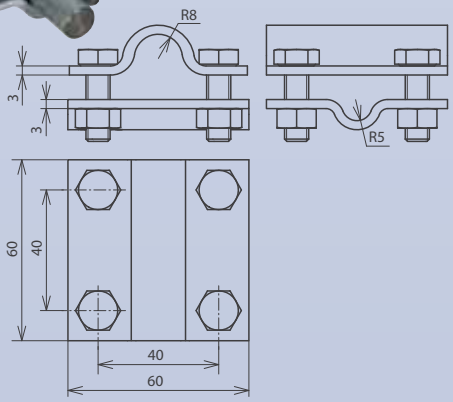




Part No.		320 044
Material of clamp		St/tZn
Clamping range Fl / Fl	mm	30-40 / 30-40
Screw	mm	M8x30
Material of screw/nut		St/tZn
Dimension (l x w x d)	mm	70x70x3
Standard		EN 50164-1
Short-circuit current (50 Hz)		
(1 s; ≤ 300 °C)	kA	12.6
Packing unit	pc(s)	25

without intermediate plate for earth entries/air-termination rods



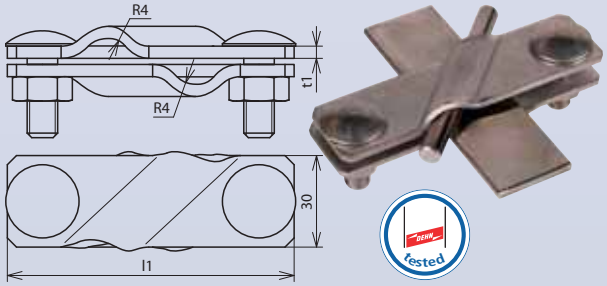


Part No.		318 252
Material of clamp		St/tZn
Clamping range Rd / Rd	mm	8-10 / 16
Clamping range Rd / Fl	mm	16 / 30
Screw	mm	M8x25
Material of screw/nut		St/tZn
Dimension (l x w x d)	mm	60x60x3
Standard		EN 50164-1
Packing unit	pc(s)	25

SV Clamps for aboveground and underground connections

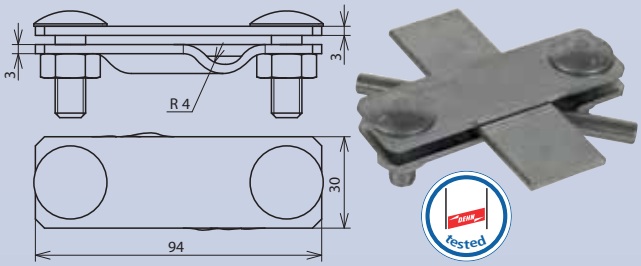
SV clamps for cross connections and T connections,
screw with rotation locking thread shaft

for flat and round conductors



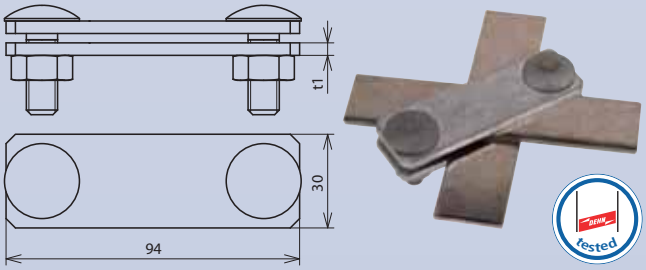
Part No.		308 220	308 229	308 320	308 329
Material of clamp		St/tZn	StSt (V4A)	St/tZn	StSt (V4A)
Clamping range Rd / Rd	mm	7-10 / 7-10	7-10 / 7-10	7-10 / 7-10	7-10 / 7-10
Clamping range Rd / Fl	mm	7-10 / 30	7-10 / 30	7-10 / 30-40	7-10 / 30-40
Clamping range Fl / Fl	mm	30 / 30	30 / 30	30-40 /30-40	30-40 /30-40
Screw	mm	M10x30	M10x30	M10x30	M10x30
Material of screw/nut		St/tZn	StSt (V4A)	St/tZn	StSt (V4A)
Dimension (l1 x t1)	mm	94x4	94x3	108x4	108x3
Standard		EN 50164-1	EN 50164-1	EN 50164-1	EN 50164-1
Short-circuit current (50 Hz)					
(1 s; ≤ 300 °C)	kA	7.3	3.2	9.6	3.2
Packing unit	pc(s)	25	25	25	25

for one flat and one round conductor



Part No.		308 249
Material of clamp		StSt (V4A)
Clamping range Rd / Fl	mm	7-10 / 30
Screw	mm	M10x30
Material of screw/nut		StSt (V4A)
Dimension (l1 x t1)	mm	94x3
Standard		EN 50164-1
Packing unit	pc(s)	25

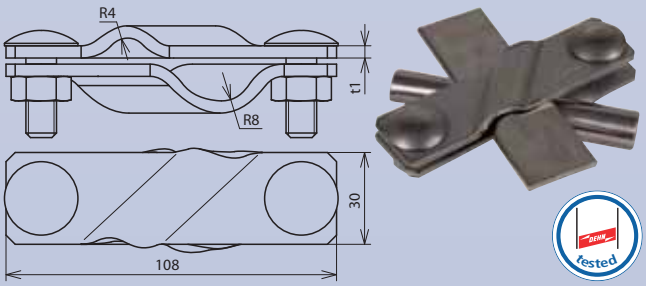
for flat conductors



Part No.		308 230	308 239
Material of clamp		St/tZn	StSt (V4A)
Clamping range Fl / Fl	mm	30 / 30	30 / 30
Screw	mm	M10x30	M10x30
Material of screw/nut		St/tZn	StSt (V4A)
Dimension (l1 x t1)	mm	94x4	94x3
Standard		EN 50164-1	EN 50164-1
Short-circuit current (50 Hz)			
(1 s; ≤ 300 °C)	kA	8.2	3.9
Packing unit	pc(s)	25	25

for flat conductors, round conductors and earth entry rods

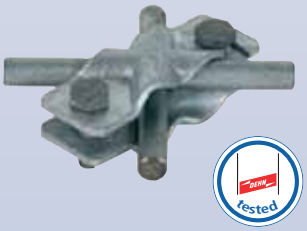
Part No.		308 330
Material of clamp		St/tZn
Clamping range Rd / Rd	mm	7-10 / 16
Clamping range Rd / Fl	mm	16 / 30-40
Screw	mm	M10x30
Material of screw/nut		St/tZn
Dimension (l1 x t1)	mm	108x4
Standard		EN 50164-1
Packing unit	pc(s)	25

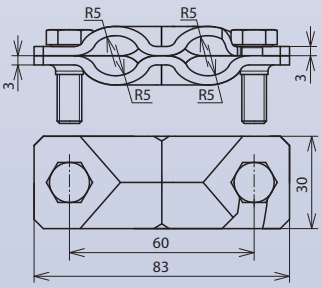


SVP Clamps for aboveground and underground connections

SVP clamps for cross connection and parallel connection
with slotted upper part (no need to remove the screws)

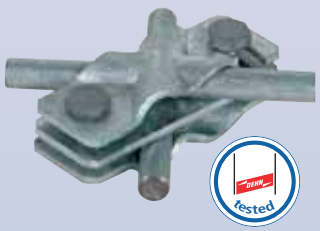
without intermediate plate

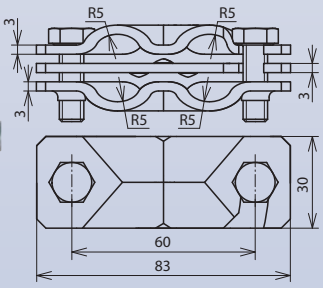




Part No.		308 060
Material of clamp		St/tZn
Clamping range Rd / Rd	mm	8-10 / 8-10
Clamping range Rd / Fl	mm	8-10 / 30
Clamping range Fl / Fl	mm	30 / 30
Screw	mm	M8x25
Material of screw		St/tZn
Standard		EN 50164-1
Packing unit	pc(s)	50

with intermediate plate (slotted)

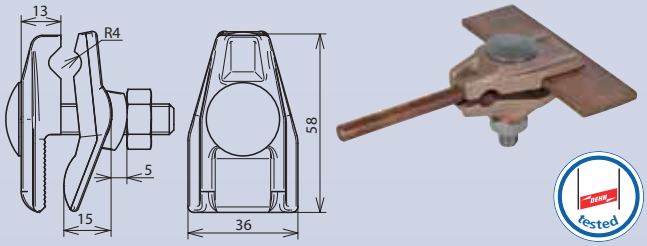




Part No.		308 070
Material of clamp		St/tZn
Clamping range Rd / Rd	mm	8-10 / 8-10
Clamping range Rd / Fl	mm	8-10 / 30
Clamping range Fl / Fl	mm	30 / 30
Screw	mm	M8x25
Material of screw		St/tZn
Standard		EN 50164-1
Packing unit	pc(s)	50

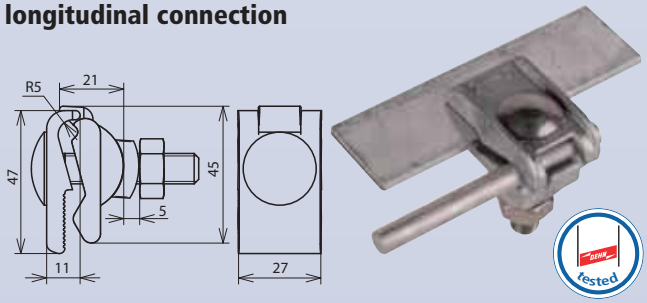
Clamps for the connection to steel constructions and steel sheets

longitudinal or cross connection



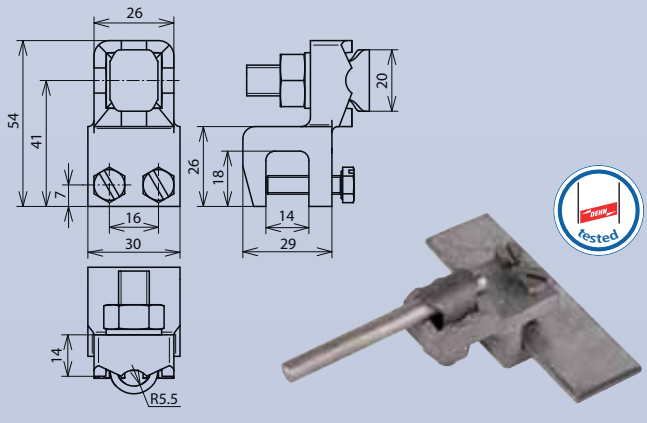
Part No.		371 009	371 007
Clamping range	mm	0.4-12	0.4-12
Material of clamp		MCI/tZn	RCB
Clamping range Rd	mm	7-10	7-10
Screw	mm	M10x50	M10x50
Material of screw/nut		StSt	StSt
Standard		EN 50164-1	EN 50164-1
Packing unit	pc(s)	20	20

longitudinal connection



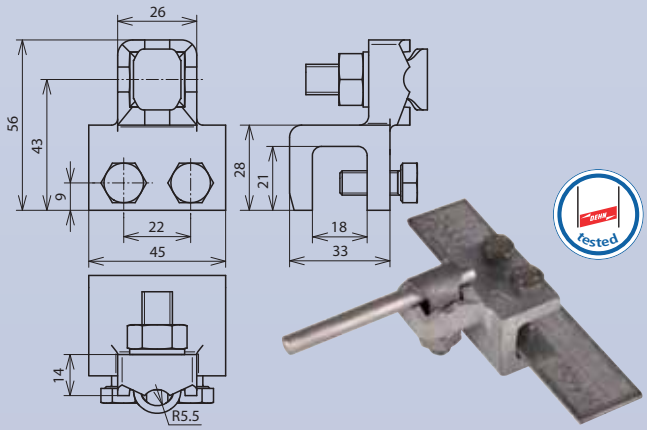
Part No.		371 008
Clamping range	mm	0.4-12
Material of clamp		MCI/tZn
Clamping range Rd	mm	4-10
Screw	mm	M10x50
Material of screw/nut		StSt
Standard		EN 50164-1
Packing unit	pc(s)	50

longitudinal or cross connection with KS screw



Part No.		370 014
Clamping range	mm	1-12
Material of clamp		MCI/tZn
Clamping range Rd	mm	7-10
Screw	mm	M6x25
Material of screw/nut		StSt
Standard		EN 50164-1
Packing unit	pc(s)	25

longitudinal or cross connection with KS screw



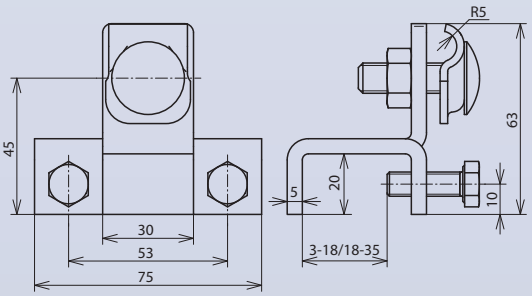
Part No.		370 018
Clamping range	mm	8-18
Material of clamp		MCI/tZn
Clamping range Rd	mm	7-10
Screw	mm	M8x20
Material of screw/nut		StSt
Standard		EN 50164-1
Packing unit	pc(s)	25

Terminal Clamps for Steel Girders

Terminal clamps for the connection to steel constructions, heavy design

Type vertical with clamping frame

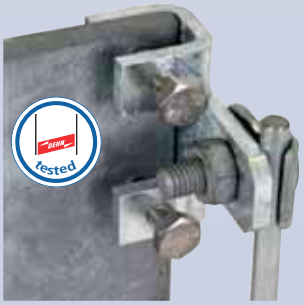
longitudinal or cross connection with clamping frame

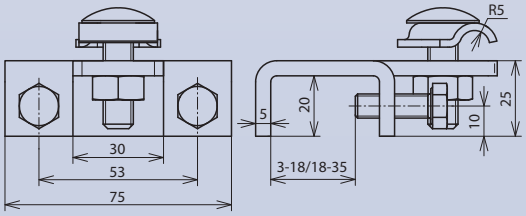


Part No.		372 110	372 119	372 140	372 149
Clamping range	mm	3-18	3-18	18-35	18-35
Material of clamp		St/tZn	StSt	St/tZn	StSt
Clamping range Rd	mm	6-10	6-10	6-10	6-10
Screw	mm	M8x25	M8x25	M8x25	M8x25
Material of screw/nut		StSt	StSt	StSt	StSt
Standard		EN 50164-1	EN 50164-1	EN 50164-1	EN 50164-1
Packing unit	pc(s)	25	25	25	25

Type horizontal with clamping frame

longitudinal or cross connection with clamping frame

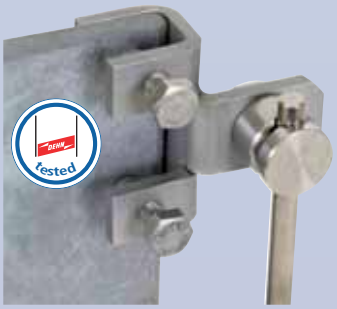


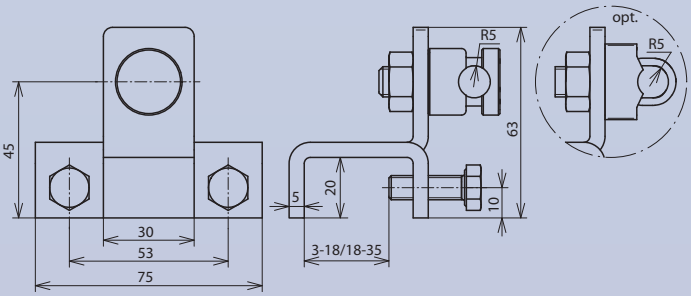


Part No.		372 210	372 219	372 240	372 249
Clamping range	mm	3-18	3-18	18-35	18-35
Material of clamp		St/tZn	StSt	St/tZn	StSt
Clamping range Rd	mm	6-10	6-10	6-10	6-10
Screw	mm	M8x25	M8x25	M8x25	M8x25
Material of screw/nut		StSt	StSt	StSt	StSt
Standard		EN 50164-1	EN 50164-1	EN 50164-1	EN 50164-1
Packing unit	pc(s)	25	25	25	25

Type vertical with KS connector

longitudinal or cross connection with KS connector

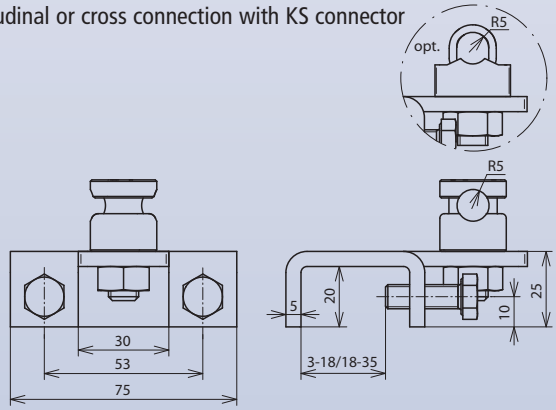


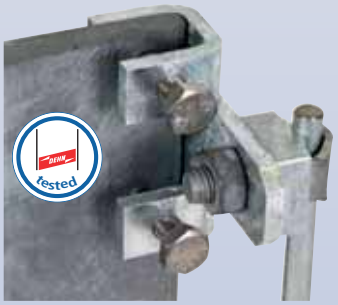


Part No.		372 120	372 129	372 150	372 159
Clamping range	mm	3-18	3-18	18-35	18-35
Material of clamp		St/tZn	StSt	St/tZn	StSt
Clamping range Rd	mm	7-10	6-10	7-10	6-10
Screw	mm	M8x25	M8x25	M8x25	M8x25
Material of screw/nut		StSt	StSt	StSt	StSt
Standard		EN 50164-1	EN 50164-1	EN 50164-1	EN 50164-1
Packing unit	pc(s)	25	25	25	25

Type horizontal with KS connector

longitudinal or cross connection with KS connector





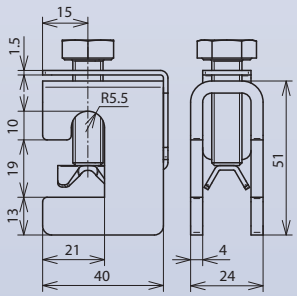
Part No.		372 220	372 229	372 250	372 259
Clamping range	mm	3-18	3-18	18-35	18-35
Material of clamp		St/tZn	StSt	St/tZn	StSt
Clamping range Rd	mm	7-10	6-10	7-10	6-10
Screw	mm	M8x25	M8x25	M8x25	M8x25
Material of screw/nut		StSt	StSt	StSt	StSt
Standard		EN 50164-1	EN 50164-1	EN 50164-1	EN 50164-1
Packing unit	pc(s)	25	25	25	25

Terminal Clamps with Thrust Piece

Terminal clamps with thrust piece for the connection to steel constructions and steel sheets with single-screw technique

Small design

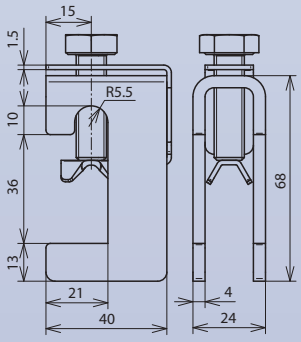
longitudinal or cross connection



Part No.		372 018	372 019
Clamping range	mm	5-18	5-18
Material of clamp		St/tZn	StSt
Clamping range Rd	mm	6-10	6-10
Screw	mm	M10x35	M10x35
Material of screw/nut		StSt	StSt
Standard		EN 50164-1	EN 50164-1
Packing unit	pc(s)	25	25

Large design

longitudinal or cross connection

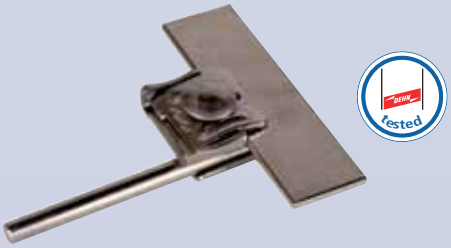


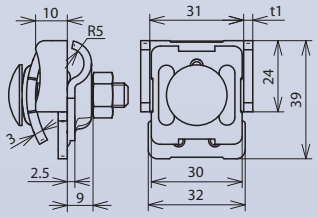
Part No.		372 035	372 039
Clamping range	mm	18-35	18-35
Material of clamp		St/tZn	StSt
Clamping range Rd	mm	6-10	6-10
Screw	mm	M10x35	M10x35
Material of screw/nut		StSt	StSt
Standard		EN 50164-1	EN 50164-1
Packing unit	pc(s)	25	25

Clamps for connecting conductors to flanges of the same or other materials

with clamping frame

longitudinal or crosswise conductor leading

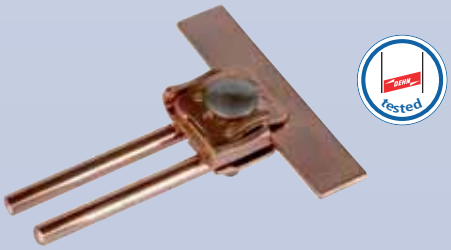


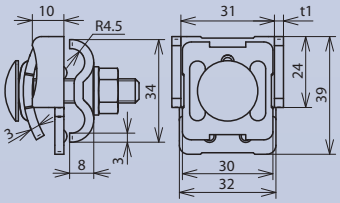


Part No.		365 030	365 031	365 037	365 039
Clamping range of flange	mm	0.7-8	0.7-8	0.7-8	0.7-8
Material of clamp		St/tZn	Al	Cu	StSt
Material thickness (t1)	mm	3	3	3	2.5
Clamping range Rd	mm	6-10	6-10	6-10	6-10
Screw	mm	M8x35	M8x35	M8x35	M8x35
Material of screw/nut		StSt	StSt	StSt	StSt
Standard		EN 50164-1	EN 50164-1	EN 50164-1	EN 50164-1
Packing unit	pc(s)	50	50	50	50

with double cleat

longitudinal or crosswise conductor leading

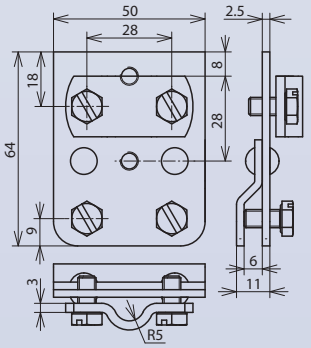


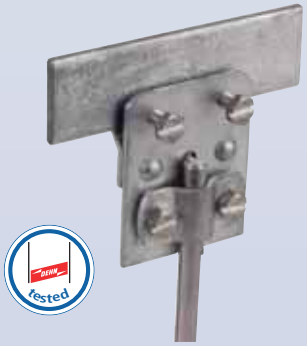


Part No.		365 010	365 017	365 019
Clamping range of flange	mm	0.7-8	0.7-8	0.7-8
Material of clamp		St/tZn	Cu	StSt
Material thickness (t1)	mm	3	3	2.5
Clamping range Rd	mm	8-10	8-10	6-10
Screw	mm	M8x40	M8x40	M8x40
Material of screw/nut		StSt	StSt	StSt
Standard		EN 50164-1	EN 50164-1	EN 50164-1
Packing unit	pc(s)	50	50	50

with two-screw cleat

longitudinal or crosswise conductor leading



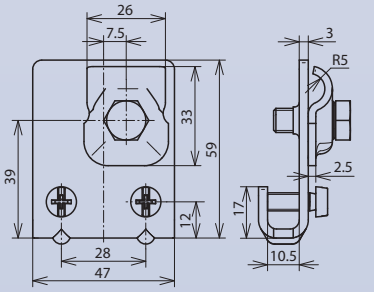


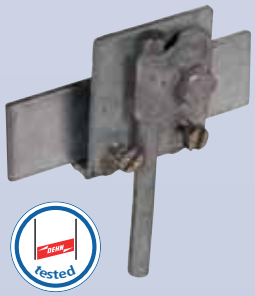
Part No.		251 002	251 027
Clamping range of flange	mm	0.7-5	0.7-5
Material of clamp		St/tZn	Cu
Material thickness (t1)	mm	2.5	2.5
Clamping range Rd	mm	7-10	7-10
Screw	mm	M6x12	M6x12
Material of screw/nut		StSt	StSt
Standard		EN 50164-1	EN 50164-1
Packing unit	pc(s)	50	50

with clamping frame for hooking at seams

close to the roof or wall surface

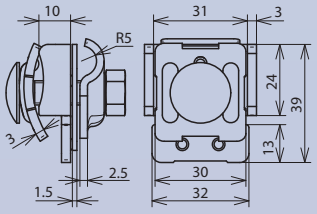
longitudinal and crosswise conductor leading

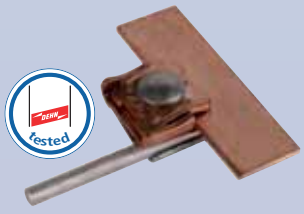




Part No.		365 020	365 027
Clamping range of flange	mm	0.7-10	0.7-10
Material of clamp		St/tZn	Cu
Material thickness (t1)	mm	3	3
Clamping range Rd	mm	6-10	6-10
Screw	mm	M6x16 / M8x20	M6x16 / M8x20
Material of screw/nut		StSt	StSt
Standard		EN 50164-1	EN 50164-1
Packing unit	pc(s)	50	50

Type bimetallic
for seams Cu with intermediate plate (Cupal)

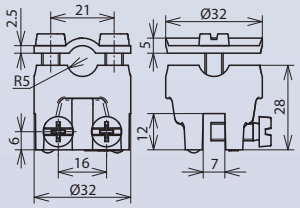


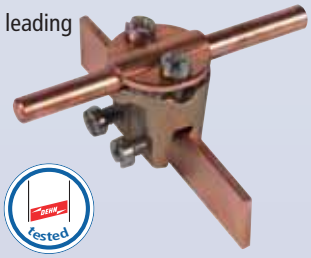


Part No.		365 117
Clamping range of flange	mm	0,7-8
Material of clamp		St/tZn / Cu
Clamping range Rd	mm	6-10
Screw	mm	M8x35
Material of screw/nut		StSt
Standard		EN 50164-1
Packing unit	pc(s)	50

with two-screw cleat e.g. for standing seams

longitudinal or crosswise conductor leading



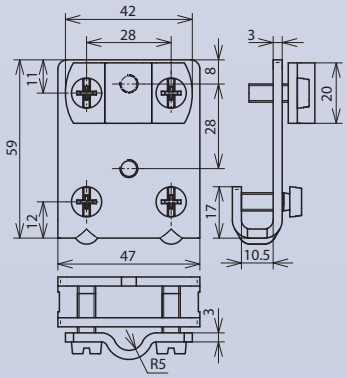


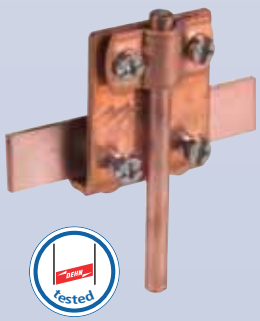
Part No.		365 000	365 007
Clamping range of flange	mm	0.7-6	0.7-6
Material of clamp		ZDC	RCB
Clamping range Rd	mm	7-10	7-10
Screw	mm	M6x16	M6x16
Material of screw/nut		StSt	StSt
Standard		EN 50164-1	EN 50164-1
Packing unit	pc(s)	50	50

with two-screw cleat for hooking at seams

close to roof or wall

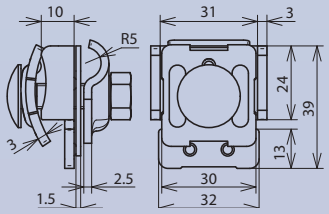
longitudinal and crosswise conductor leadingl

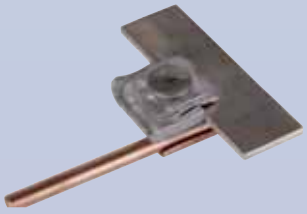




Part No.		365 040	365 047
Clamping range of flange	mm	0.7-10	0.7-10
Material of clamp		St/tZn	Cu
Material thickness (t1)	mm	3	3
Clamping range Rd	mm	7-10	7-10
Screw	mm	M6x16	M6x16
Material of screw/nut		StSt	StSt
Standard		EN 50164-1	EN 50164-1
Packing unit	pc(s)	50	50

Type bimetallic
for seams St/tZn with intermediate plate (Cupal)





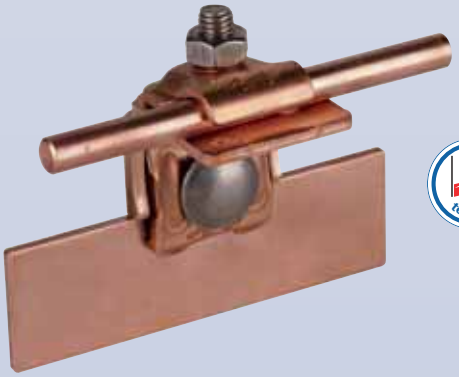
Part No.		365 127
Clamping range of flange	mm	0,7-8
Material of clamp		Cu / St/tZn
Clamping range Rd	mm	6-10
Screw	mm	M8x35
Material of screw/nut		StSt
Packing unit	pc(s)	50

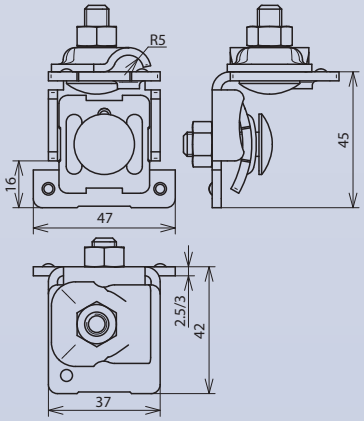
Saddle Clamps with enlarged contact surface

Clamps for connecting conductors with seams
enlarged contact surface

Type angled

longitudinal or cross connection

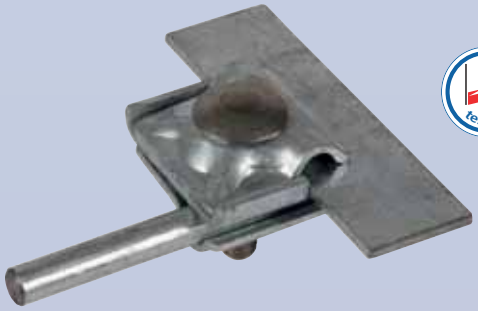


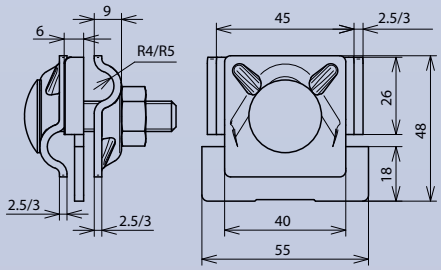


Part No.		365 050	365 051	365 057	365 059
Clamping range of seam	mm	0.7-8	0.7-8	0.7-8	0.7-8
Material of clamp		St/tZn	Al	Cu	StSt
Clamping range Rd	mm	6-10	6-10	6-10	6-10
Screw	mm	M8x25	M8x25	M8x25	M8x25
Material of screw/nut		StSt	StSt	StSt	StSt
Material thickness (t1 / t2)	mm	3/3	3/3	3/3	2.5/2.5
Standard		EN 50614-1	EN 50614-1	EN 50614-1	EN 50614-1
Packing unit	pc(s)	50	50	50	50

Type straight

longitudinal or crosswise connection



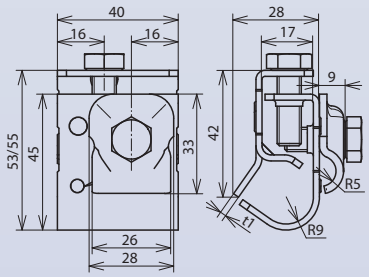


Part No.		365 220	365 221	365 227	365 229
Clamping range of seam	mm	0.7-10	0.7-10	0.7-10	0.7-10
Material of clamp		St/tZn	Al	Cu	StSt
Clamping range Rd	mm	8-10	8-10	8-10	8-10
Screw	mm	M10x45	M10x45	M10x45	M10x45
Material of screw/nut		StSt	StSt	StSt	StSt
Material thickness (t1 / t2)	mm	3/2.5	3/3	3/3	2.5/2.5
Standard		EN 50614-1	EN 50614-1	EN 50614-1	EN 50614-1
Packing unit	pc(s)	50	50	50	50

Clamps for connecting conductors to gutters of the same or of different materials

with clamping frame

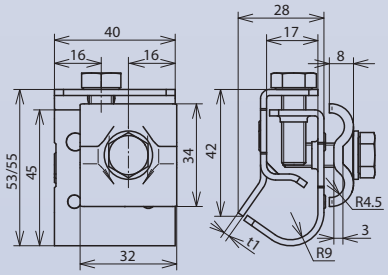
longitudinal or crosswise conductor leading



Part No.		339 060	339 061	339 067	339 069
Clamping range of bead	mm	16-22	16-22	16-22	16-22
Material of clamp		St/tZn	Al	Cu	StSt
Clamping range Rd	mm	6-10	6-10	6-10	6-10
Material of cleat		St/tZn	Al	Cu	StSt
Width / material thickness (t1)	mm	40	40 / 3	40 / 2	40 / 2
Screw	mm	M8x20/25	M8x20/25	M8x20/25	M8x20/25
Material of screw		St/tZn	StSt	StSt	StSt
Standard		EN 50164-1	EN 50164-1	EN 50164-1	EN 50164-1
Packing unit	pc(s)	25	25	25	25

with double cleat

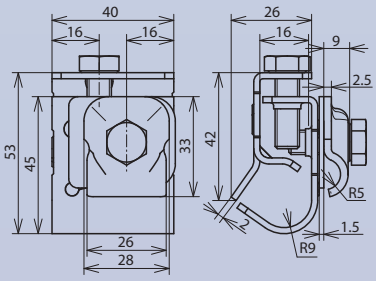
longitudinal or crosswise conductor leading



Part No.		339 050	339 051	339 057	339 059
Clamping range of bead	mm	16-22	16-22	16-22	16-22
Material of clamp		St/tZn	Al	Cu	StSt
Clamping range Rd	mm	8-10	8-10	8-10	8-10
Material of cleat		St/tZn	StSt	Cu	StSt
Width / material thickness (t1)	mm	40 / 2	40 / 3	40 / 2	40 / 2
Screw	mm	M8x20/25	M8x20/25	M8x20/25	M8x20/25
Material of screw		St/tZn	StSt	StSt	StSt
Standard		EN 50164-1	EN 50164-1	EN 50164-1	EN 50164-1
Packing unit	pc(s)	25	25	25	25

Type bimetallic for gutters Cu

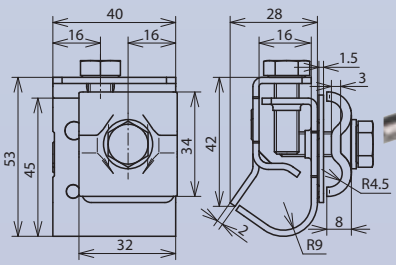
with clamping frame (St/tZn) and intermediate plate (Cupal)

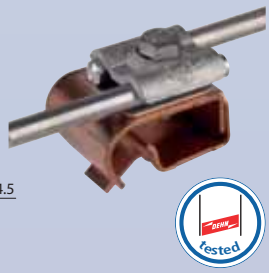


Part No.		339 167
Clamping range of bead	mm	16-22
Material of clamp		Cu / St/tZn
Clamping range Rd	mm	6-10
Screw	mm	M8x20
Material of screw		StSt
Standard		EN 50164-1
Packing unit	pc(s)	25

Type bimetallic for gutters Cu

with double cleat (St/tZn) and intermediate plate (Cupal)

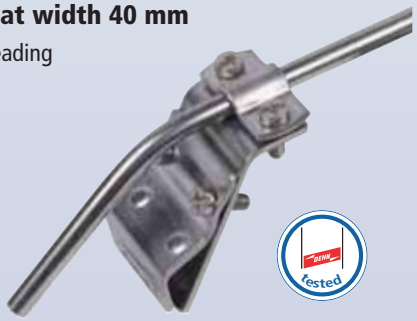


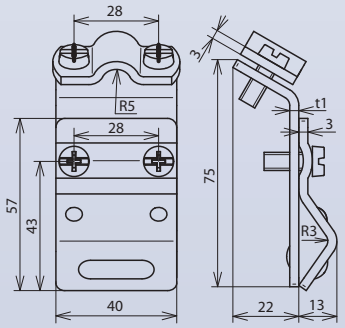


Part No.		339 157
Clamping range of bead	mm	16-22
Material of clamp		Cu / St/tZn
Clamping range Rd	mm	8-10
Screw	mm	M8x25
Material of screw		StSt
Standard		EN 50164-1
Packing unit	pc(s)	25

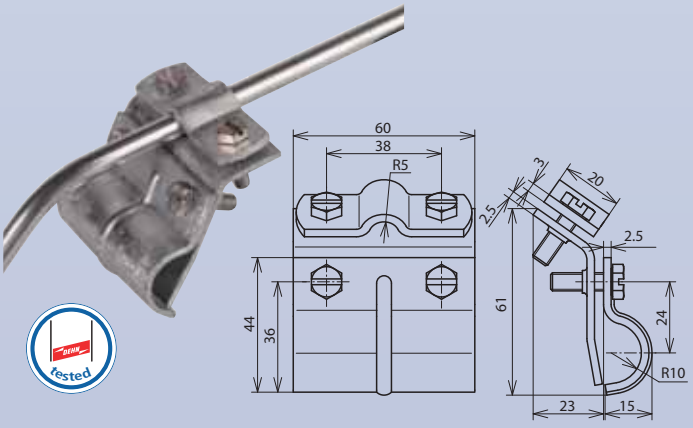
with two-screw cleat width 40 mm

longitudinal conductor leading





Part No.		338 000	338 001	338 007	338 009
Clamping range of bead	mm	13-25	13-25	13-25	13-25
Material of clamp		St/tZn	Al	Cu	StSt
Clamping range Rd	mm	7-10	7-10	7-10	7-10
Material of cleat		St/tZn	Al	Cu	StSt
Width / material thickness (t1)	mm	40 / 3	40 / 3	40 / 3	40 / 2,5
Screw	mm	M6x16 / M6x10	M6x16	M6x16 / M6x10	M6x16
Material of screw		StSt	StSt	StSt	StSt
Standard		EN 50164-1	EN 50164-1	EN 50164-1	EN 50164-1
Packing unit	pc(s)	25	25	25	25



with two-screw cleat width 60 mm

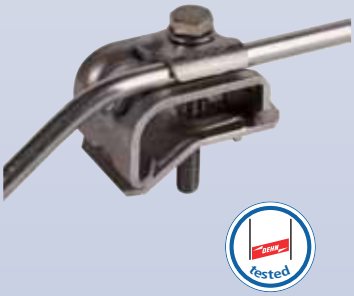
longitudinal conductor leading

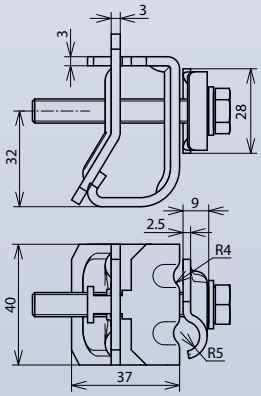
Part No.		339 010
Clamping range of bead	mm	13-25
Material of clamp		St/tZn
Clamping range Rd	mm	7-10
Material of cleat		St/tZn
Width / material thickness (t1)	mm	60 / 2,5
Screw	mm	M6x20
Material of screw		StSt
Standard		EN 50164-1
Packing unit	pc(s)	25

Gutter Clamps in single-screw technique

Clamps for connecting conductors to gutters

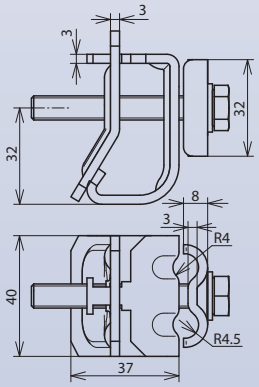
with clamping frame





Part No.		339 100	339 101
Clamping range of bead	mm	16-22	16-22
Material of clamp		St/tZn	Al
Clamping range Rd	mm	8-10	8-10
Width	mm	40	40
Screw	mm	M8x60	M8x60
Material of screw		StSt	StSt
Standard		EN 50164-1	EN 50164-1
Packing unit	pc(s)	25	25

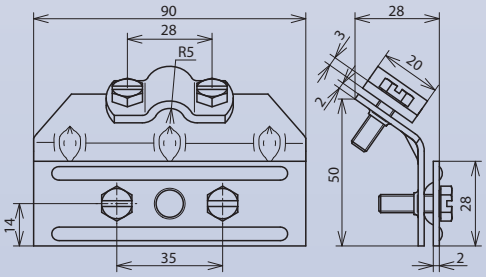
with double cleat

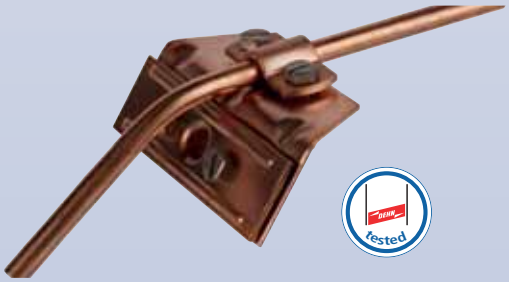


Part No.		339 110	339 111
Clamping range of bead	mm	16-22	16-22
Material of clamp		St/tZn	Al
Clamping range Rd	mm	8-10	8-10
Width	mm	40	40
Screw	mm	M8x60	M8x60
Material of screw		StSt	StSt
Standard		EN 50164-1	EN 50164-1
Packing unit	pc(s)	25	25

Gutter Board Clamps

Clamps for connecting conductors to gutter boards, longitudinal connection with two-screw cleat



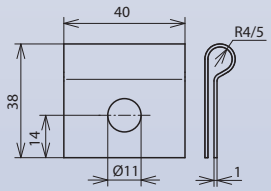


Part No.		343 000	343 007
Clamping range	mm	3-13	3-13
Material of clamp		St/tZn	Cu
Width	mm	90	90
Clamping range Rd	mm	7-10	7-10
Screw	mm	M6x20	M6x20
Material of screw		StSt	StSt
Standard		EN 50164-1	EN 50164-1
Packing unit	pc(s)	25	25

Clamping Bushes

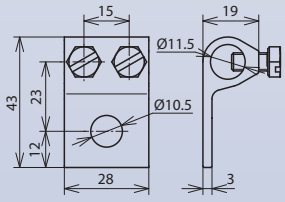
Clamping bushes for connecting conductors to construction parts

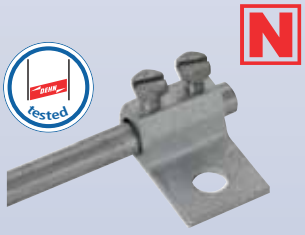
with bore



Part No.		345 008	345 010
Clamping range Rd	mm	8	10
Material		St/tZn	St/tZn
Fixing bore Ø	mm	11	11
Packing unit	pc(s)	100	100

with screws



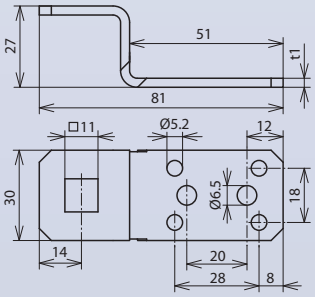


Part No.		347 205
Clamping range Rd	mm	7-10
Material		Al
Fixing bore Ø	mm	10,5
Screw	mm	M6x12
Material of screw		StSt
Standard		EN 50164-1
Packing unit	pc(s)	100

Terminal brackets for connecting metal sheaths by blind rivets or screws

with square hole

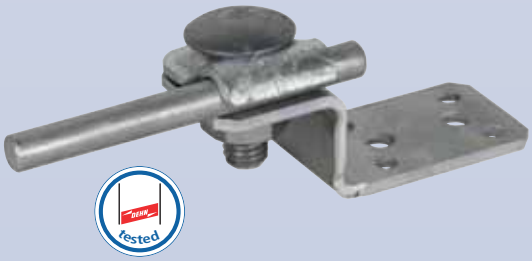
dimension 11x11 mm (e.g. for KS connector M10), longitudinal or crosswise connection

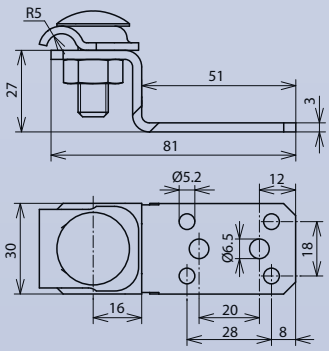


Part No.		377 005	377 017	377 009
Material of bracket		Al	Cu	StSt
Material thickness (t1)	mm	3	2	2.5
Fixing	mm	[4x] Ø5.2 / [2x] Ø6.5	[4x] Ø5.2 / [2x] Ø6.5	[4x] Ø5.2 / [2x] Ø6.5
Standard		EN 50164-1	EN 50164-1	EN 50164-1
Packing unit	pc(s)	50	50	50

with clamping frame

for conductors Rd 6-10 mm, longitudinal or crosswise connection

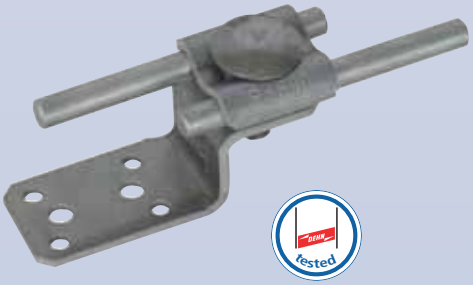


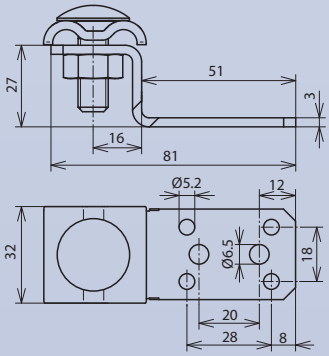


Part No.		377 100
Material of bracket		Al
Material thickness (t1)	mm	3
Fixing	mm	[4x] Ø5.2 / [2x] Ø6.5
Material of clamping frame		St/tZn
Screw	mm	M10x30
Material of screw/nut		StSt
Standard		EN 50164-1
Packing unit	pc(s)	50

with double cleat

for conductors Rd 8-10 mm, longitudinal or crosswise connection

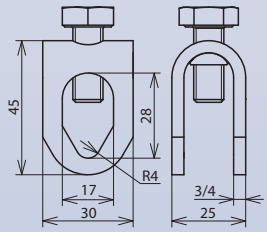




Part No.		377 200
Material of bracket		Al
Material thickness (t1)	mm	3
Fixing	mm	[4x] Ø5.2 / [2x] Ø6.5
Material of double cleat		Al
Screw	mm	M10x30
Material of screw/nut		StSt
Standard		EN 50164-1
Packing unit	pc(s)	50

Rod Clamps

Rod clamps for connecting air-termination rods to conductors
for longitudinal connection of all conductor materials
for cross connection (crosswise arrangement) only of St/tZn and StSt

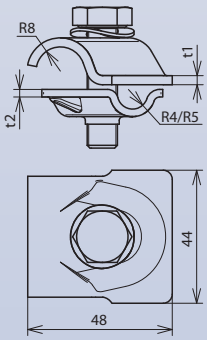


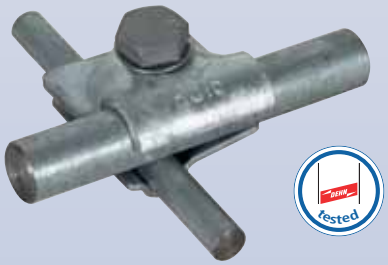
Part No.		380 020	380 029
Material of clamp		St/tZn	StSt
Clamping range Rd / Rd	mm	8-10 / 16	8-10 / 16
Screw	mm	M10x25	M10x25
Material of screw		St/tZn	StSt
Standard		EN 50164-1	EN 50164-1
Packing unit	pc(s)	50	50

MV Clamps for Air-termination Rods

Multi-purpose connecting clamp for universal use as a cross clamp, T clamp and parallel clamp, two-part

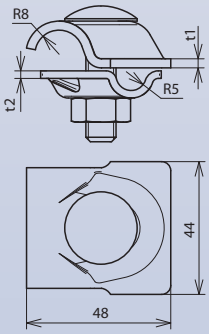
with hexagon screw, spring washer and thread in the base part

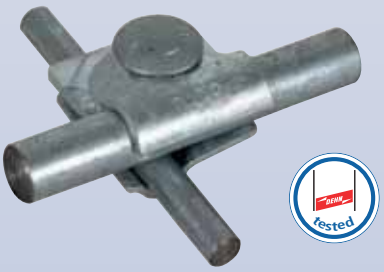




Part No.		392 050	392 059
Material of clamp		St/tZn	StSt
Clamping range Rd	mm	8-10/16	8-10/16
Material thickness (t1 / t2)	mm	3/2.5	3/2.5
Screw	mm	M10x40	M10x40
Material of screw/nut		St/Zn	StSt
Standard		EN 50164-1	EN 50164-1
Packing unit	pc(s)	50	50

with truss head screw and rotation locking



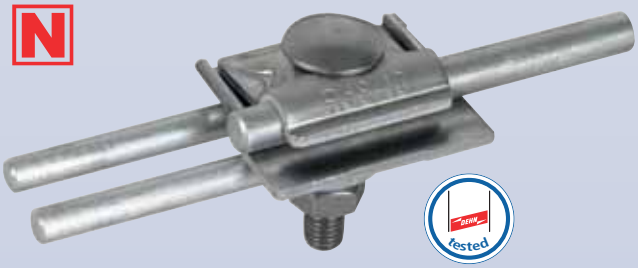


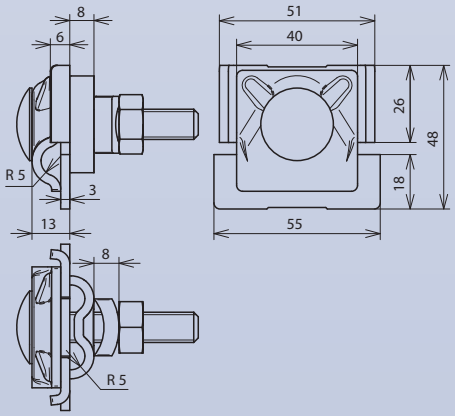
Part No.		392 060	392 069
Material of clamp		St/tZn	StSt
Clamping range Rd	mm	8-10/16	8-10/16
Material thickness (t1 / t2)	mm	3/2.5	3/2.5
Screw	mm	M10x40	M10x40
Material of screw/nut		St/Zn	StSt
Standard		EN 50164-1	EN 50164-1
Packing unit	pc(s)	50	50

– for connecting air-termination rods/spikes with one or two conductors
– with special pressure disk for longitudinal and crosswise connection
– connection of two conductors provides a better distribution of the lightning current, thus the separation distance can be reduced

for air-termination spike 10 mm

with truss head screw, disk, nut and double cleat

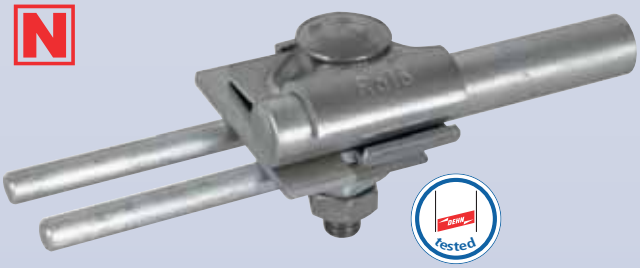


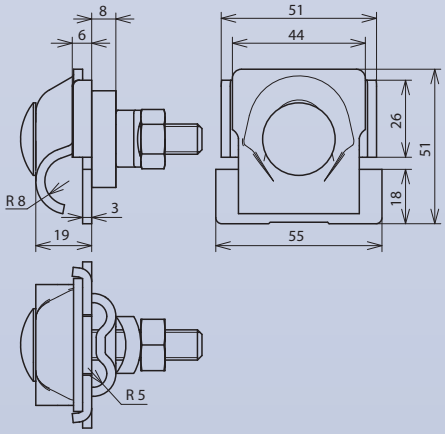


Part No.		380 110
Material of clamp		Al
Clamping range of air-termination spike	mm	8-10
Clamping range Rd	mm	2x 8-10
Screw	mm	M10x55
Material of screw/nut		StSt
Material of pressure disk		St/tZn
Standard		EN 50164-1
Packing unit	pc(s)	50

for air-termination rod 16 mm

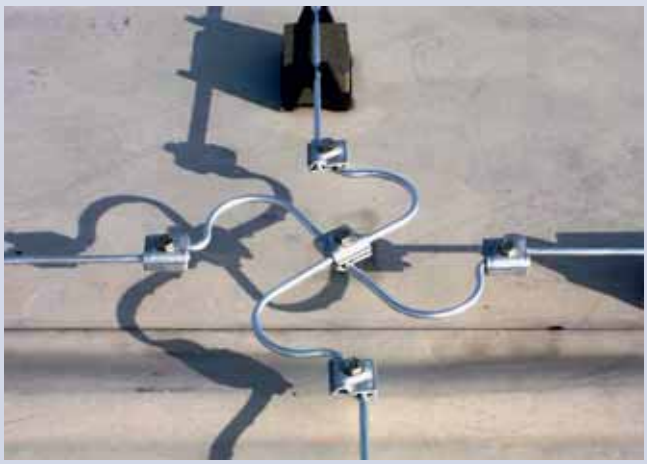
with truss head screw, disk, nut and double cleat





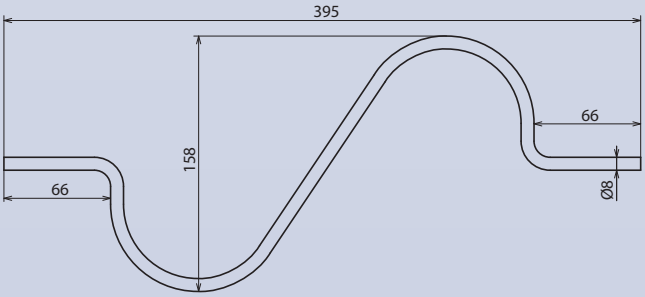
Part No.		380 116
Material of clamp		Al
Clamping range of air-termination rod	mm	16
Clamping range Rd	mm	2x 8-10
Screw	mm	M10x55
Material of screw/nut		StSt
Material of pressure disk		St/tZn
Standard		EN 50164-1
Packing unit	pc(s)	50

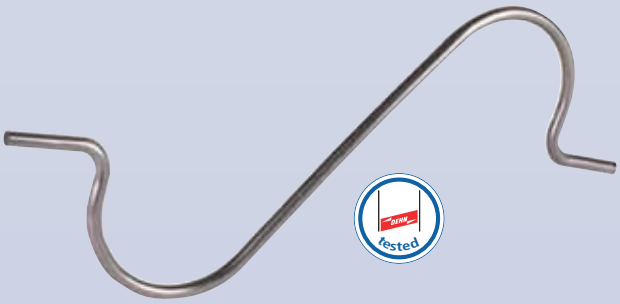
Expansion pieces for temperature-related length compensation of longer conductors (requires loose conductor leading in the holders)



Round design

for connection e.g. with MV clamp (Part No. 390 051)

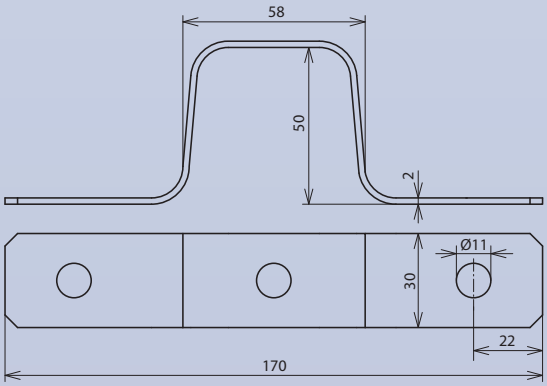




Part No.		374 011
Material		Al
Dimension	mm	Ø8
Length	mm	approx. 395
Standard		EN 50164-(1+2)
Packing unit	pc(s)	25

Flat design

for connection e.g. with KS connector (Part No. 301 000)
Note: At crossing points two expansion pieces may be connected with one screw M10x20 mm and nut.

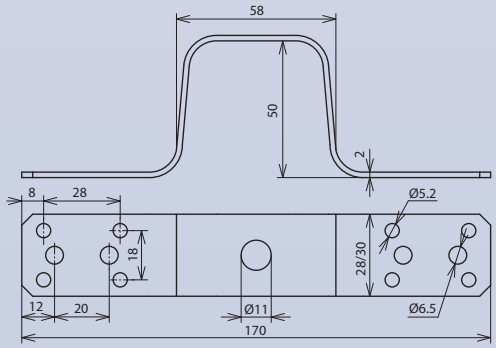


Part No.		374 020
Material		Al
Dimension	mm	30x2
Length	mm	170
Fixing	mm	[2x] Ø11
Central bore Ø	mm	11
Standard		EN 50164-1
Packing unit	pc(s)	50

Bridging brackets for connecting and joining of metal sheaths for riveting or screwing

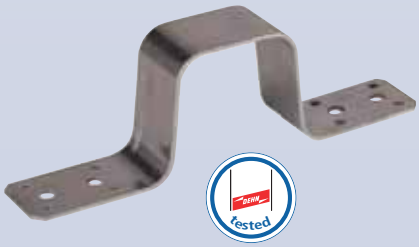
Application notes:
According to DIN EN 62305-3 Suppl. 1 to be fixed on both sides with four StSt rivets Ø5 mm for connecting of material thickness ≥ 0.5 mm or two StSt tapping screws Ø6.3 mm at a material thickness of ≥ 2 mm

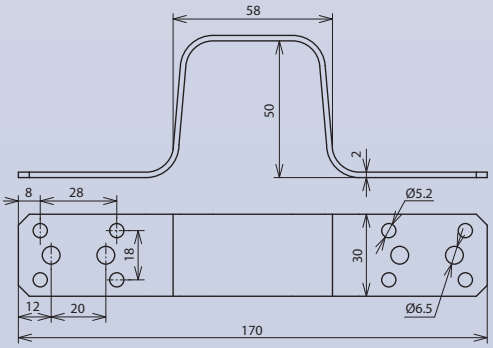
Short design with central bore



Part No.		377 006	377 027
Material		Al	Cu
Dimension	mm	30x2	28x2
Length	mm	170	170
Fixing	mm	[8x] Ø5.2 / [4x] Ø6.5	[8x] Ø5.2 / [4x] Ø6.5
Central bore Ø	mm	11	11
Standard		EN 50164-1	EN 50164-1
Packing unit	pc(s)	50	50

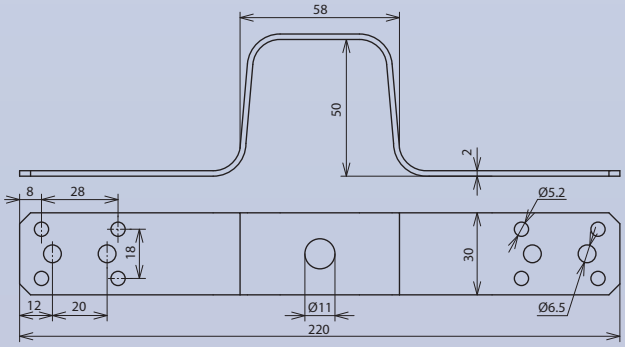
Short design without central bore





Part No.		377 016
Material		Al
Dimension	mm	30x2
Length	mm	170
Fixing	mm	[8x] Ø5.2 / [4x] Ø6.5
Standard		EN 50164-1
Packing unit	pc(s)	50

Long design with central bore

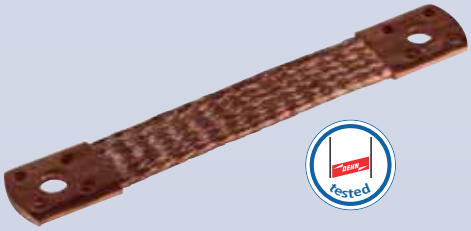


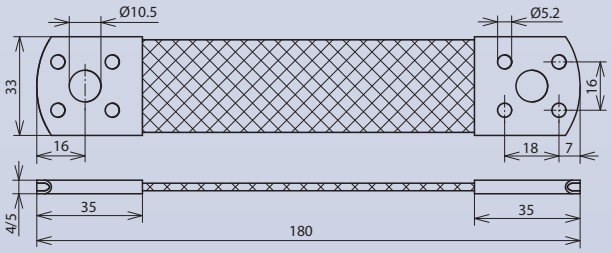
Part No.		377 026
Material		Al
Dimension	mm	30x2
Length	mm	220
Fixing	mm	[8x] Ø5.2 / [4x] Ø6.5
Central bore Ø	mm	11
Standard		EN 50164-1
Packing unit	pc(s)	50

Bridging braids for connecting metal sheaths (riveting or screwing) or as expansion compensation piece for round wires
connection e.g. with by KS connector Part No. 301 019

Application notes:
According to DIN EN 62305-3 Suppl. 1 to be fixed on both sides with four StSt rivets Ø5 mm for connecting of material thickness ≥ 0.5 mm or two StSt tapping screws Ø6.3 mm at a material thickness of ≥ 2 mm

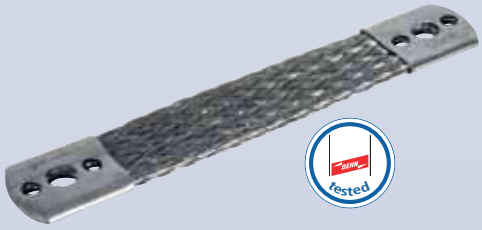
Short design

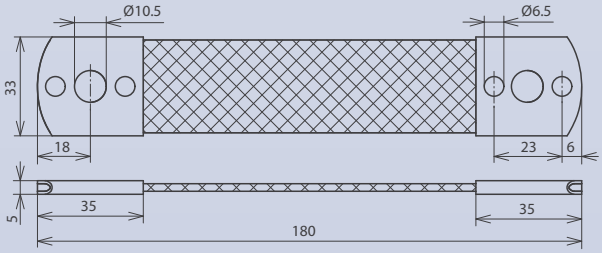




Part No.		377 015	377 007
Material		Al	Cu
Length	mm	180	180
Cross section	mm²	50	50
Fixing	mm	[8x] Ø5.2 / [2x] Ø10.5	[8x] Ø5.2 / [2x] Ø10.5
Fixing possibility		blind rivets/screws	blind rivets/screws
Standard		EN 50164-1	EN 50164-1
Packing unit	pc(s)	10	10

Short design for fixing with drilling screws

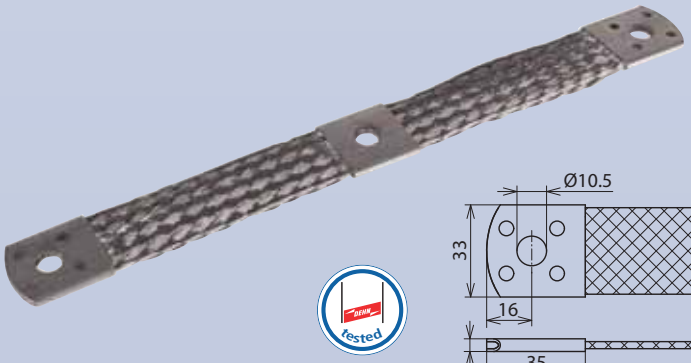


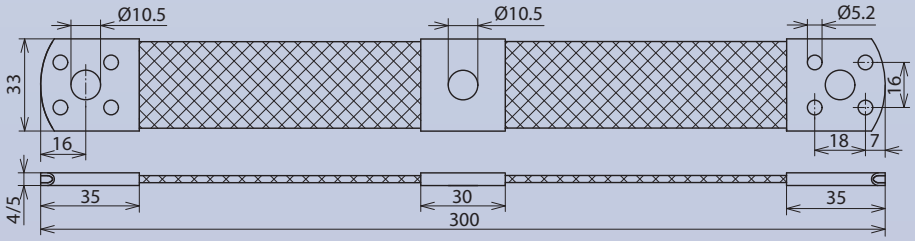


Part No.		377 045
Material		Al
Length	mm	180
Cross section	mm²	50
Fixing	mm	[4x] Ø6.5 / [2x] Ø10.5
Fixing possibility		drilling screws/screws
Standard		EN 50164-1
Packing unit	pc(s)	100

Long design with central bore

Note: At crossing points two bridging braids can be connected with a screw M10x20 mm and nut.



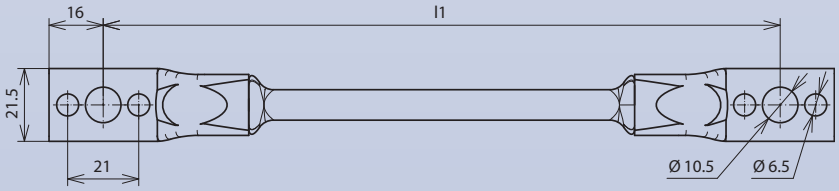


Part No.		377 115	377 107
Material		Al	Cu
Length	mm	300	300
Cross section	mm²	50	50
Fixing	mm	[8x] Ø5.2 / [3x] Ø10.5	[8x] Ø5.2 / [3x] Ø10.5
Central bore Ø	mm	10.5	10.5
Fixing possibility		blind rivets/screws	blind rivets/screws
Standard		EN 50164-1	EN 50164-1
Packing unit	pc(s)	10	10

Bridging Cables

Bridging cables for connecting/bridging of metal sheaths by screwing or as expansion compensation piece for round wires
connection e.g. with KS connector Part No. 301 019

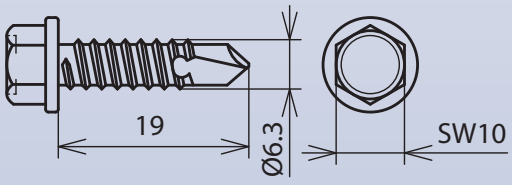
Application notes:
According to DIN EN 62305-3 Suppl.1 to be used on both sides two rivets Ø6 mm made of StSt shall be used for connecting material of thickness ≥ 0.5 mm or two StSt tapping screws Ø6.3 mm for connecting material of thickness ≥ 2 mm



Part No.		377 210	377 310	377 410	377 510
Length (l1)	mm	200	300	400	500
Material of cable lug		Al	Al	Al	Al
Material of cable		Cu	Cu	Cu	Cu
Cross section	mm²	16	16	16	16
Fixing	mm	[4x] Ø6.5 / [2x] Ø10.5	[4x] Ø6.5 / [2x] Ø10.5	[4x] Ø6.5 / [2x] Ø10.5	[4x] Ø6.5 / [2x] Ø10.5
Insulation		rubber EM5 black	rubber EM5 black	rubber EM5 black	rubber EM5 black
Standard		EN 50164-1	EN 50164-1	EN 50164-1	EN 50164-1
Packing unit	pc(s)	10	10	10	10

Drilling Screw

Drilling screw self-tapping with hexagon head and collar for connecting bridging brackets or cables with the metal capped parapet (at materials > 2 mm thick)



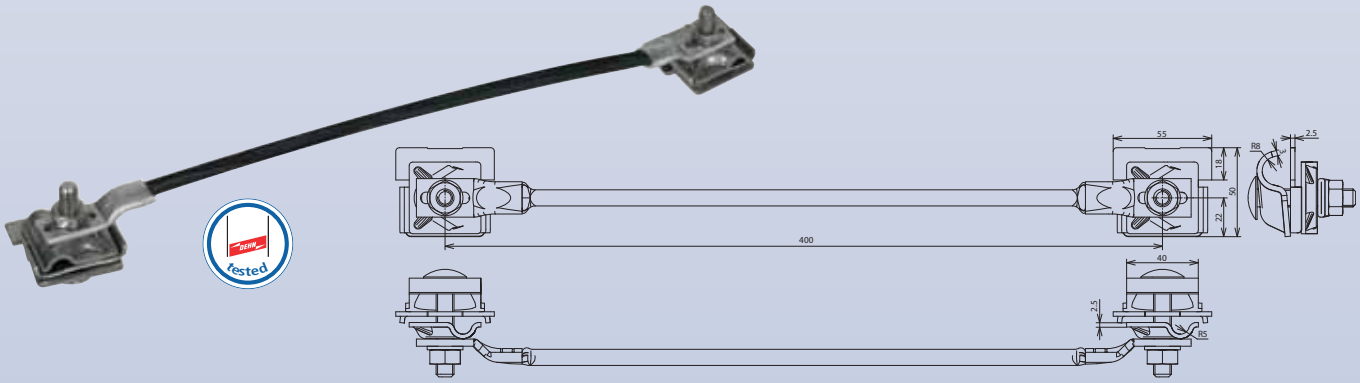
Part No.		528 619
Material		StSt
Dimension	mm	6.3x19
Head		SW 10
Standard		DIN 7504
Packing unit	pc(s)	200

Bridging Cable with Saddle Clamps

Bridging cable with saddle clamps for connecting or bridging of metal sheaths (e.g. metal cappings of roof parapet segments) without boring Impurity due to bore chippings thus can be avoided.

With one cleat each e.g. for connecting to the air-termination system and for installing of air-termination spikes (Rd 8-10 mm)

applicable at parapet capping seams angled 0°-45° and up to max. 18 mm long

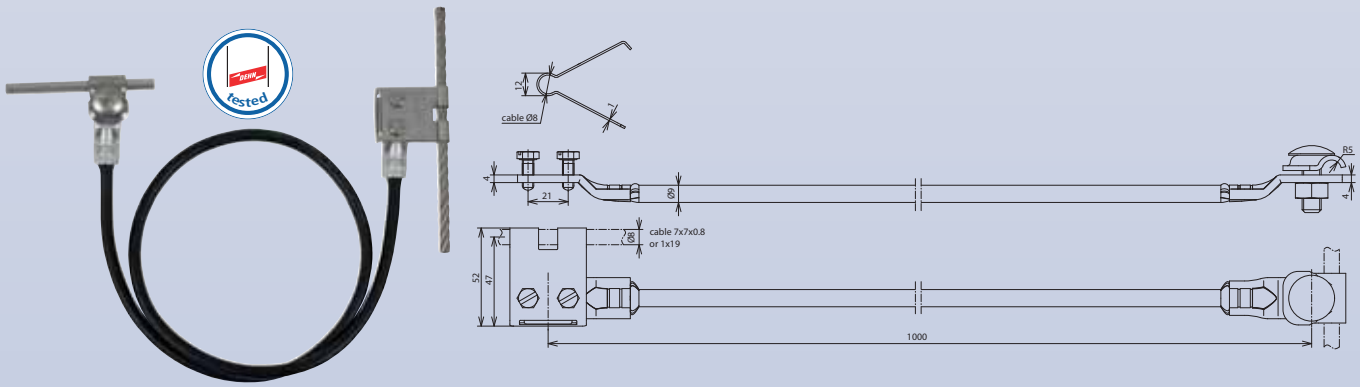


Part No.		365 419
Clamping range of seam	mm	0.7-10
Material of saddle clamps		StSt
Length	mm	200
Material of cable		Cu
Cross section	mm²	16
Standard		EN 50164-1
Packing unit	pc(s)	5

Connecting Set for Safety Rope System

System for connecting the safety rope systems on roofs with the air-termination system
with premounted connection lug for the safety rope (Ø8 mm) and clamping frame (Rd 6-10 mm)

More details in installation instructions No. 1732



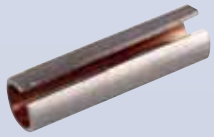
Part No.		365 519
Clamping range of connection lug	mm	8 (design 7x7/7x19)
Material of connection lug		StSt
Clamping range of clamping frame	mm	Rd 6-10
Material of clamping frame		StSt
Length	mm	1000
Material of rope		Cu
Cross section	mm²	16
Temperature range	°C	-40 to +80
Type of cable		flexible
Insulation		rubber EM5 black
Standard		EN 50164-1
Packing unit	pc(s)	1

Cupal Sleeves

Sleeves for corrosion-resistant connection between steel or aluminium and copper

for attaching to cut conductors

Note: Rd 8 mm = 50 mm²



Part No.		562 250	562 035	562 050	562 135	562 150
Material outside		Al	Al	Al	Cu	Cu
Material inside		Cu	Cu	Cu	Al	Al
Cross section	mm²	25	35	50	35	50
Length	mm	29	32	40	32	40
Packing unit	pc(s)	100	100	100	100	100

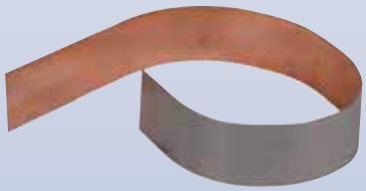
for attaching to uncut conductors

Note: Rd 8 mm = 50 mm²

Part No.		562 001	562 101
Material outside		Al	Cu
Material inside		Cu	Al
Cross section	mm²	50	50
Length	mm	60	60
Packing unit	pc(s)	100	100

Cupal Sheets

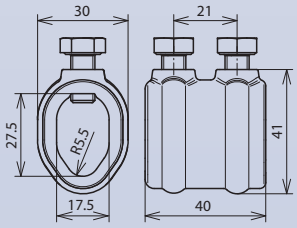
Metal strips for corrosion-resistant connection between steel or aluminium and copper

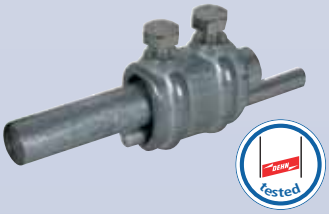


Part No.		562 440	562 460
Material		Al / Cu	Al / Cu
Dimension (l x w x d)	mm	500x40x0.5	500x60x0.5
Packing unit	pc(s)	1	1

Disconnecting sleeves for connecting down conductors to the earth entries

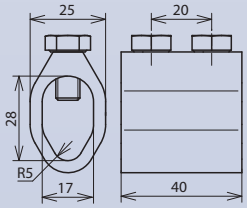
Open design for earth entry rods

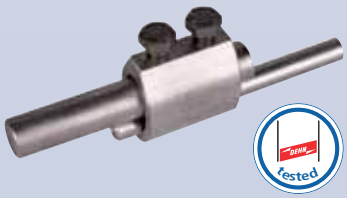




Part No.		450 000	450 007
Material		ZDC	RCB
Clamping range Rd / Rd	mm	7-10 / 16	7-10 / 16
Screw	mm	M8x16	M8x16
Material of screw		StSt	StSt
Standard		EN 50164-1	EN 50164-1
Packing unit	pc(s)	50	50

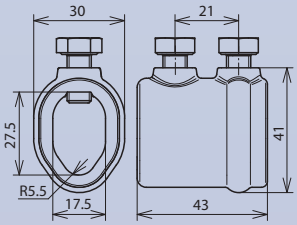
Open design for earth entry rods

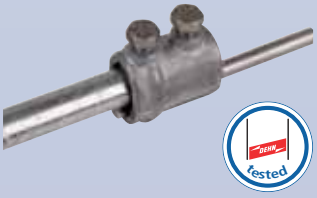




Part No.		450 001
Material		Al
Clamping range Rd / Rd	mm	8-10 / 16
Screw	mm	M8x16
Material of screw		StSt
Standard		EN 50164-1
Packing unit	pc(s)	50

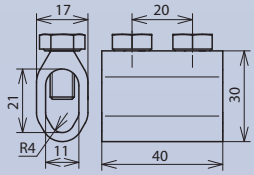
Closed design for earth entry rods

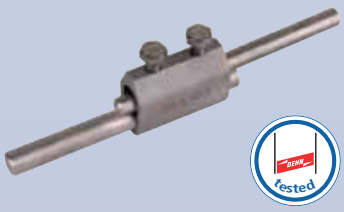




Part No.		450 011
Material		ZDC
Clamping range Rd / Rd	mm	7-10 / 16
Screw	mm	M8x16
Material of screw		StSt
Standard		EN 50164-1
Packing unit	pc(s)	50

Open design for wires



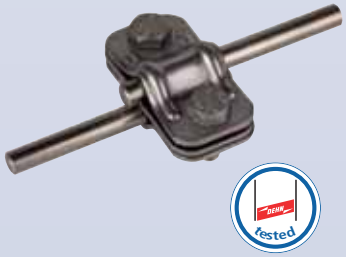


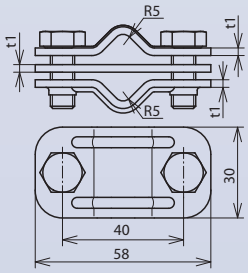
Part No.		450 101
Material		Al
Clamping range Rd / Rd	mm	8-10 / 8
Screw	mm	M8x16
Material of screw		StSt
Standard		EN 50164-1
Packing unit	pc(s)	50

UNI Disconnecting Clamps

Disconnecting clamps for connecting down conductors to the earth entries

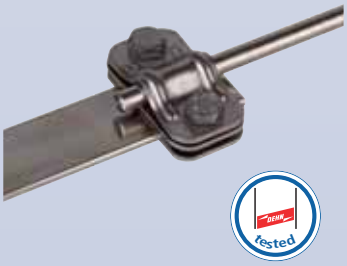
with intermediate plate for two round conductors

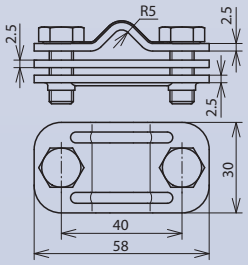




Part No.		459 129	459 127
Material		StSt	Cu
Clamping range Rd / Rd	mm	8-10 / 8-10	8-10 / 8-10
Screw	mm	M8x20	M8x20
Material of screw		StSt	StSt
Screw distance	mm	40	40
Material thickness (t1)	mm	2.5	3
Standard		EN 50164-1	EN 50164-1
Packing unit	pc(s)	50	50

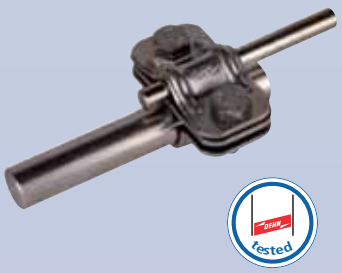
with intermediate plate for round and flat conductor

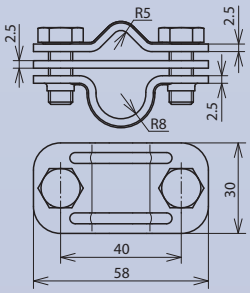




Part No.		459 139
Material		StSt
Clamping range Rd / Fl	mm	8-10 / 30
Screw	mm	M8x20
Material of screw		StSt
Screw distance	mm	40
Material thickness (t1)	mm	2.5
Standard		EN 50164-1
Packing unit	pc(s)	50

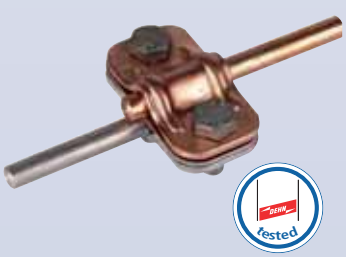
with intermediate plate for earth entry rods

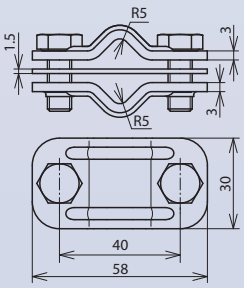




Part No.		459 119
Material		StSt
Clamping range Rd / Rd	mm	8-10 / 16
Screw	mm	M8x20
Material of screw		StSt
Screw distance	mm	40
Material thickness (t1)	mm	2.5
Standard		EN 50164-1
Packing unit	pc(s)	50

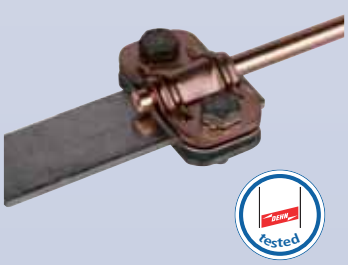
Type bimetallic for two round conductors Cu and St/tZn or StSt (V4A)

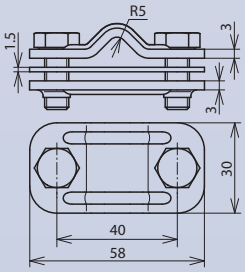




Part No.		460 517
Material		Cu / St/tZn
Clamping range Rd / Rd	mm	8-10 / 8-10
Screw	mm	M8x20
Material of screw		StSt
Screw distance	mm	EN 50164-1
Packing unit	pc(s)	50

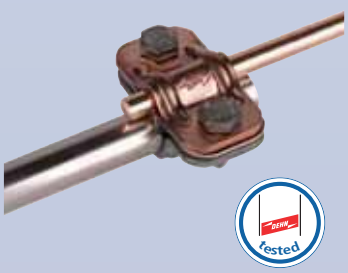
Type bimetallic for round conductor Cu and flat conductor St/tZn or StSt (V4A)

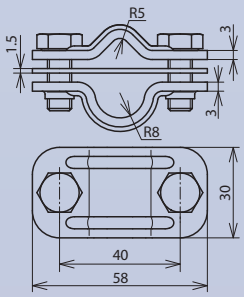




Part No.		460 557
Material		Cu / St/tZn
Clamping range Rd / Fl	mm	8-10 / 30
Screw	mm	M8x20
Material of screw		StSt
Standard		EN 50164-1
Packing unit	pc(s)	50

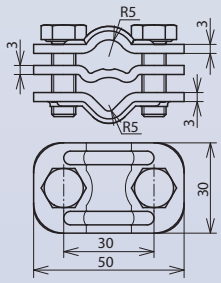
Type bimetallic for round conductor Cu and earth entry rod St/tZn or StSt (V4A)

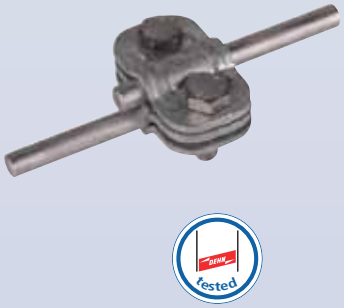




Part No.		460 507
Material		Cu / St/tZn
Clamping range Rd / Rd	mm	8-10 / 16
Screw	mm	M8x20
Material of screw		StSt
Standard		EN 50164-1
Packing unit	pc(s)	50

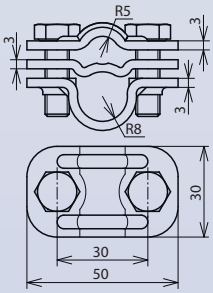
with intermediate plate for two round conductors, small design

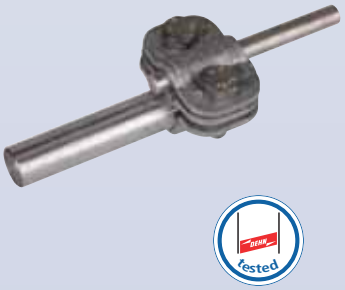




Part No.		459 003
Material		St/tZn
Clamping range Rd / Rd	mm	7-10 / 7-10
Screw	mm	M8x25
Material of screw		StSt
Distance of screws	mm	30
Material thickness (t1)	mm	3
Standard		EN 50164-1
Packing unit	pc(s)	50

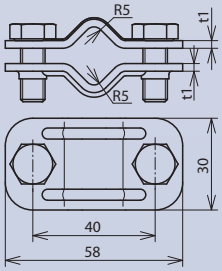
with intermediate plate for earth entry rods, small design

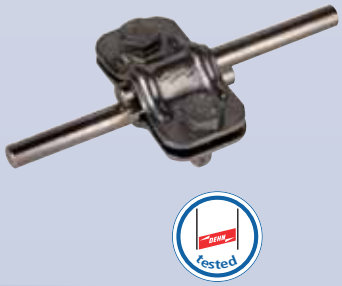




Part No.		459 000
Material		St/tZn
Clamping range Rd / Rd	mm	7-10 / 16
Screw	mm	M8x25
Material of screw		StSt
Distance of screws	mm	30
Material thickness (t1)	mm	3
Standard		EN 50164-1
Packing unit	pc(s)	50

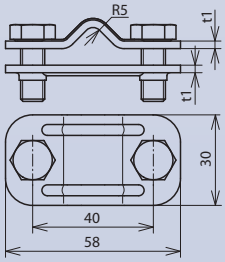
without intermediate plate for two round conductors

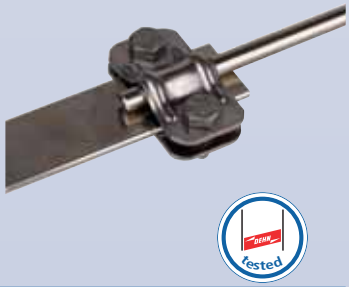




Part No.		459 029	459 020
Material		StSt	St/tZn
Clamping range Rd / Rd	mm	8-10 / 8-10	8-10 / 8-10
Screw	mm	M8x20	M8x20
Material of screw		StSt	StSt
Distance of screws	mm	40	40
Material thickness (t1)	mm	2.5	3
Standard		EN 50164-1	EN 50164-1
Packing unit	pc(s)	50	50

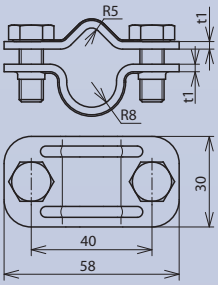
without intermediate plate for round and flat conductor

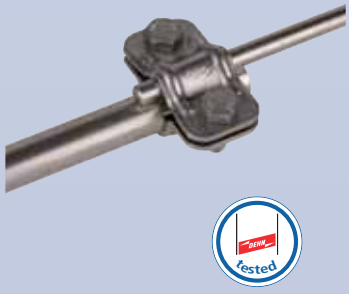




Part No.		459 039	459 030
Material		StSt	St/tZn
Clamping range Rd / Fl	mm	8-10 / 30	8-10 / 30
Screw	mm	M8x20	M8x20
Material of screw		StSt	StSt
Distance of screws	mm	40	40
Material thickness (t1)	mm	2.5	3
Standard		EN 50164-1	EN 50164-1
Packing unit	pc(s)	50	50

without intermediate plate for earth entry rods

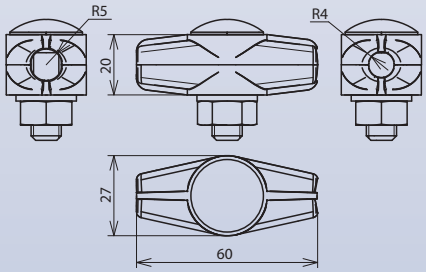




Part No.		459 019	459 010
Material		StSt	St/tZn
Clamping range Rd / Rd	mm	8-10 / 16	8-10 / 16
Screw	mm	M8x20	M8x20
Material of screw		StSt	StSt
Distance of screws	mm	40	40
Material thickness (t1)	mm	2.5	3
Standard		EN 50164-1	EN 50164-1
Packing unit	pc(s)	50	50

ES Disconnecting Clamp

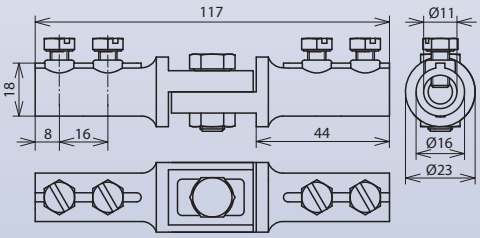
Single-screw design for connecting down conductors to earth entries



Part No.		463 010
Material		ZDG
Clamping range Rd / Rd	mm	8 / 10
Screw	mm	M10x30
Material of screw/nut		StSt
Standard		EN 50164-1
Packing unit	pc(s)	50

Disconnecting Clamp – Austrian Standard

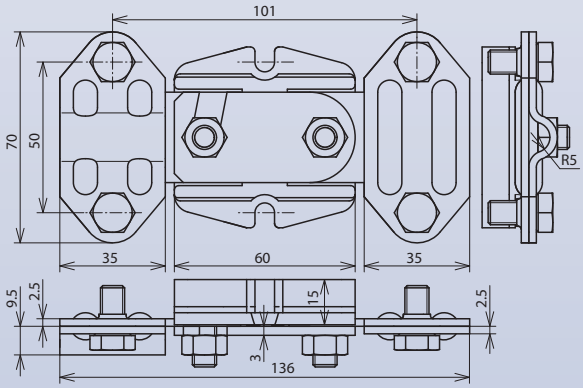
Disconnecting clamp with connecting screw
for round conductors



Part No.		460 213
Material		ZDC
Clamping range Rd / Rd	mm	7-10 / 7-10
Screw	mm	M6x12 / M8x25
Material of screw/nut		StSt
Standard		EN 50164-1
Packing unit	pc(s)	50

FIX Test Joint

Test joint with insulating piece and disconnetion lug



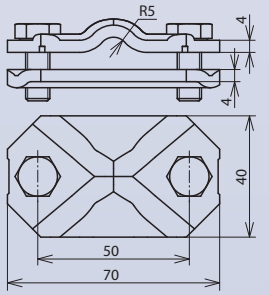
Part No.		453 100
Material		St/tZn
Clamping range Rd / Fl	mm	8-10 / 30-40
Screw	mm	M8x16/M8x20
Material of screw/nut		StSt
Insulating piece		plastic grey
Standard		EN 50164-1
Packing unit	pc(s)	10

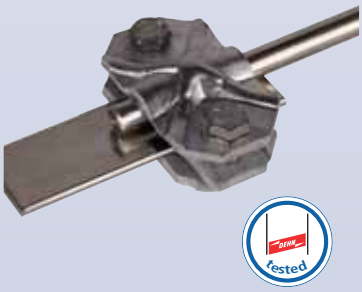
tpye for conductors Rd 8-10 and Rd 8-10 upon request

Connecting / Disconnecting Clamps

Two-part or three-part connection system with thread in the base part

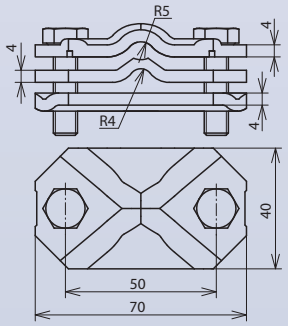
two-part for round and flat conductors

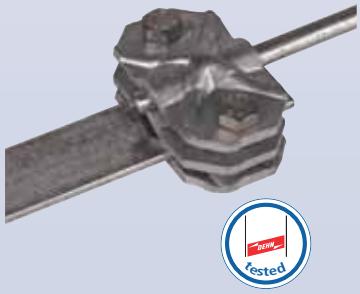




Part No.		454 100	454 107
Material		St/tZn	Cu
Clamping range Rd / Fl	mm	7-10 / 30-40	7-10 / 30-40
Screw	mm	M8x20	M8x20
Material of screw		StSt	StSt
Standard		EN 50164-1	EN 50164-1
Packing unit	pc(s)	25	25

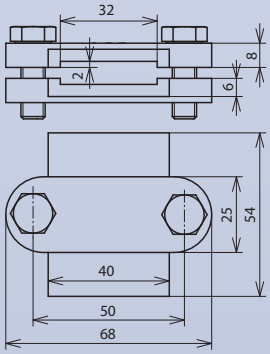
three-part (with intermediate plate) for round and flat conductors

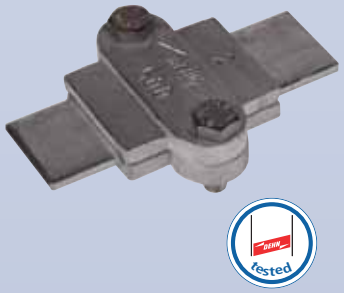




Part No.		454 000
Material		St/tZn
Clamping range Rd / Fl	mm	5-10 / 30-40
Screw	mm	M8x30
Material of screw		StSt
Standard		EN 50164-1
Packing unit	pc(s)	25

two-part for two flat conductors

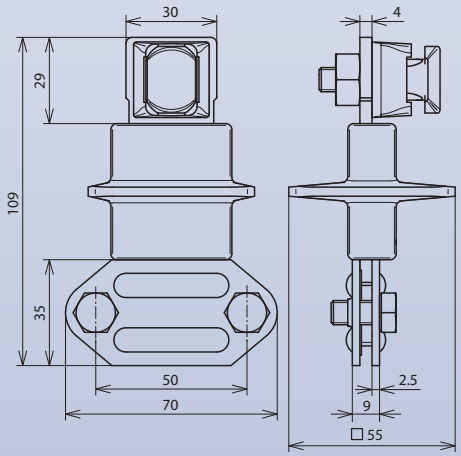




Part No.		455 000
Material		MCI/tZn
Clamping range Fl / Fl	mm	30 / 30
Screw	mm	M8x25
Material of screw		StSt
Standard		EN 50164-1
Packing unit	pc(s)	25

Bimetallic Isolating Clamp with Shield

Bimetallic type for joining conductors made of different materials



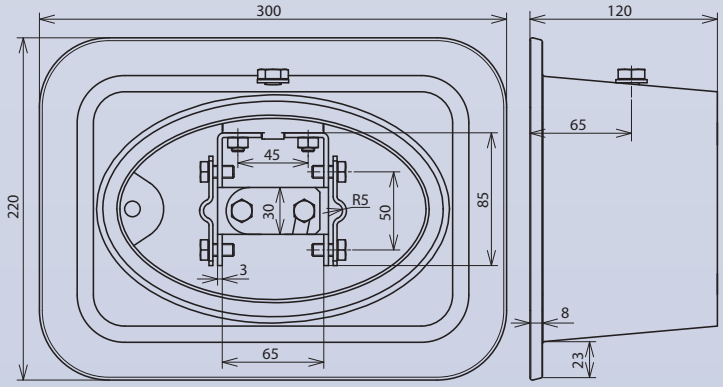
Part No.		460 147
Material		Cu / St/tZn
Clamping range Rd / Fl	mm	6-10 / 30-40
Screw	mm	M8x16
Material of screw		StSt
Shield		P (grey)
Standard		EN 50164-1
Packing unit	pc(s)	10

Test joint boxes for underfloor mounting to disconnect the down conductor from the earth-termination system for measuring purposes

More details in installation instructions No. 1718

Type GCI – with integrated, easily accessible test joint

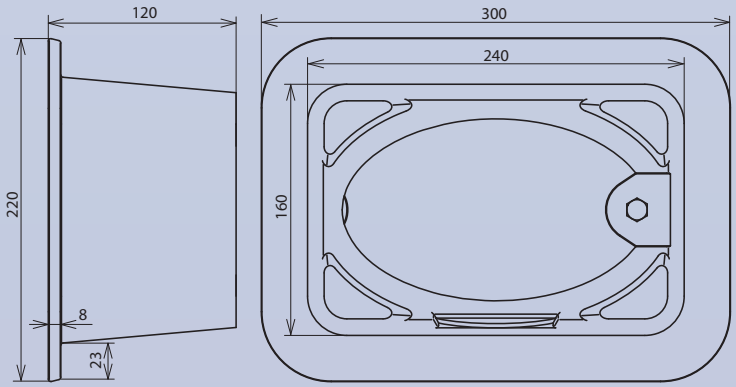
detachable with a key, including terminal for the down conductor and the earthing conductor, without bottom



Part No.		549 001
Material		GCI
Colour		black (varnished)
Dimension (l x w x h)	mm	240x160x120
Clamping range Rd / Fl	mm	7-10 / 30-40
Standard		EN 50164-5
Max. permissible load	kg/cm²	40
Material of test joint		StSt
Packing unit	pc(s)	1

Type GCI – without test joint

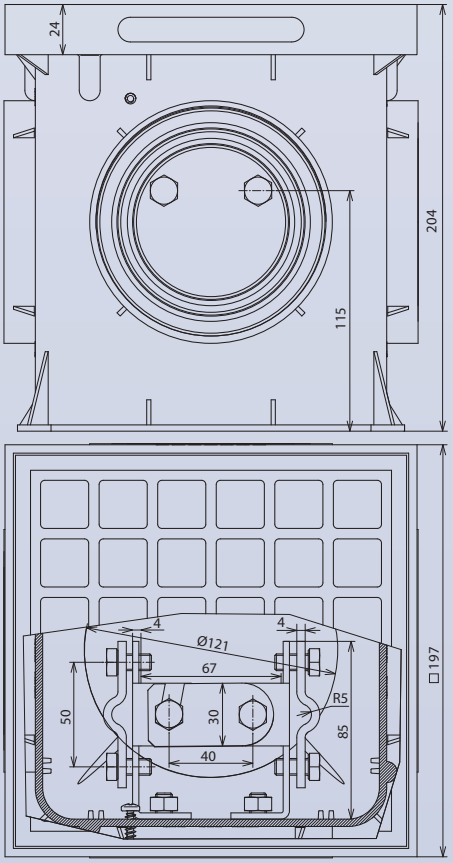
without bottom



Part No.		549 000
Material		GCI
Colour		black (varnished)
Dimension (l x w x h)	mm	240x160x120
Standard		EN 50164-5
Max. permissible load	kg/cm²	40
Packing unit	pc(s)	1

Type Plastic – with integrated, easily accessible test joint

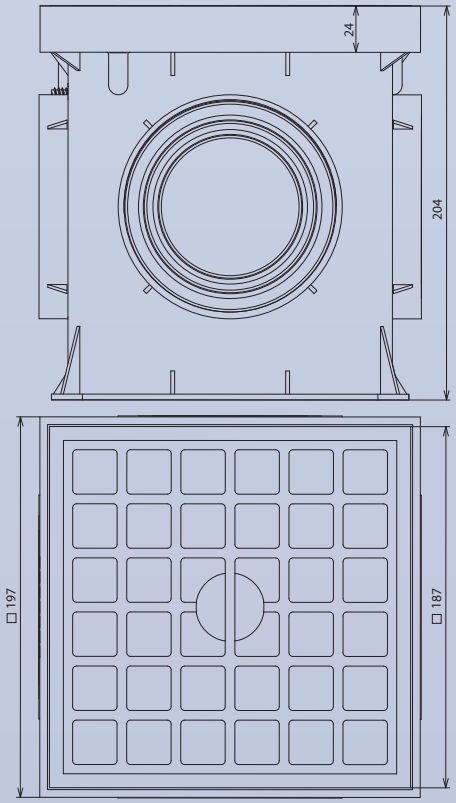
detachable with a key, with integrated terminal for the connection of the down conductor and earthing conductor, open at the bottom



Part No.		549 050
Material		plastic
Colour		grey
Dimension (l x w x h)	mm	197x197x204
Clamping range Rd / Fl	mm	7-10 / 30-40
Standard		EN 50164-5
Max. permissible load	kg/cm²	15
Material of test joint		StSt
Packing unit	pc(s)	1

Type Plastic – without test joint

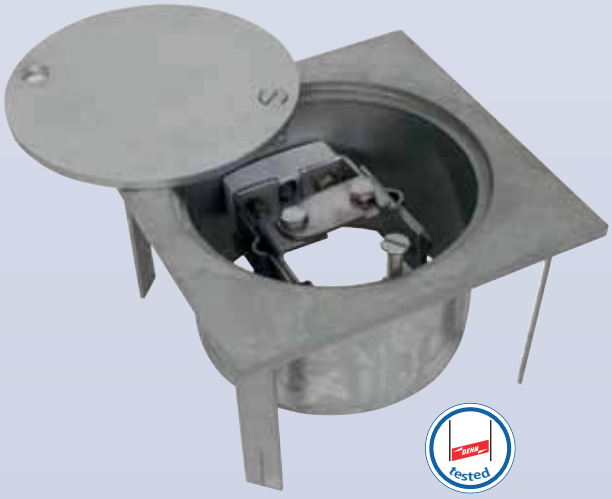
open at the bottom

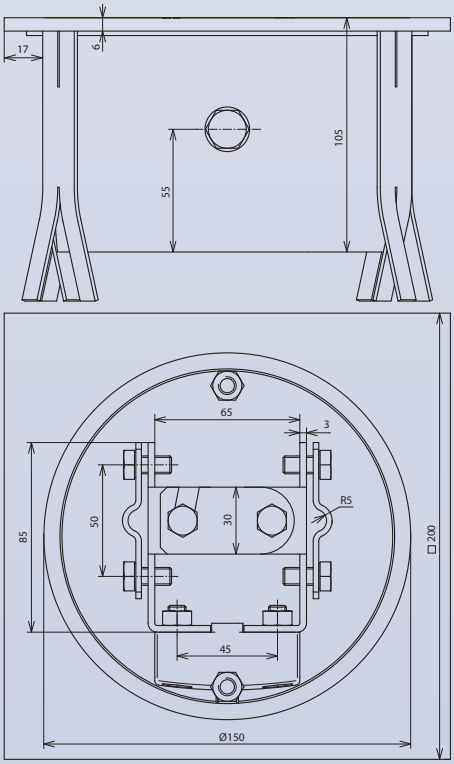


Part No.		549 051
Material		plastic
Colour		grey
Dimension (l x w x h)	mm	197x197x204
Standard		EN 50164-5
Max. permissible load	kg/cm²	15
Packing unit	pc(s)	1

Type StSt – with integrated, easily accessible test joint

detachable with a key, with integrated terminal for the connection of the down conductor and earthing conductor, open at the bottom (without bottom)

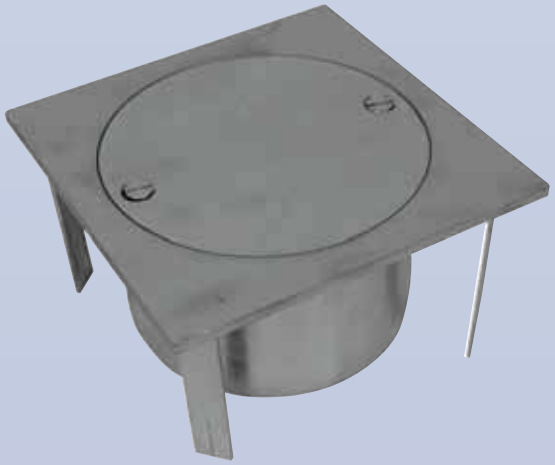


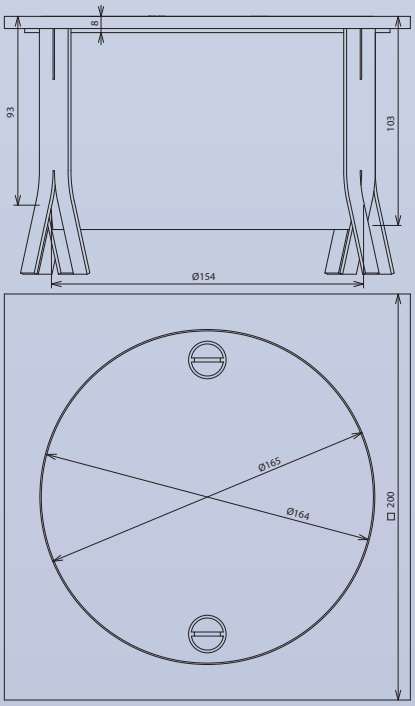


Part No.		549 090
Material		StSt
Dimension (l x w x h)	mm	200x200x103
Clamping range Rd / Fl	mm	7-10 / 30-40
Standard		EN 50164-5
Max. permissible load	kg/cm²	40
Material of test joint		StSt
Packing unit	pc(s)	1

Type StSt – without test joint

open at the bottom





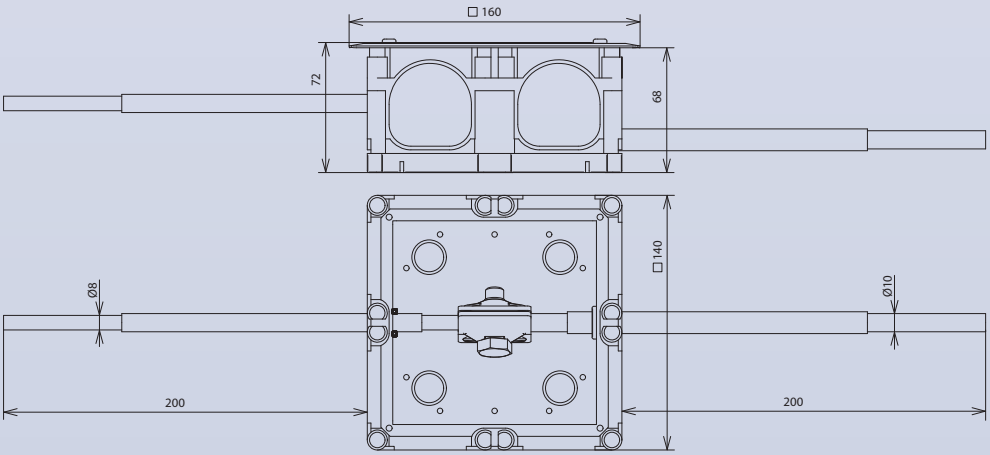
Part No.		549 091
Material		StSt
Dimension (l x w x h)	mm	200x200x103
Standard		EN 50164-5
Max. permissible load	kg/cm²	40
Packing unit	pc(s)	1

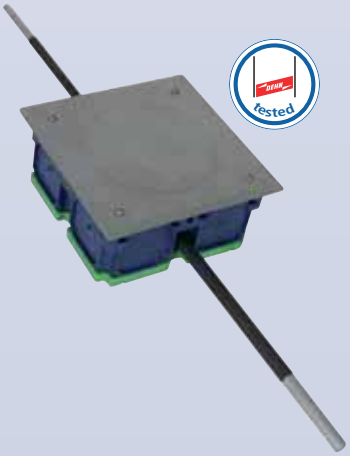
Test joint boxes for flush mounting and for concrete structures
with integrated test joint
with symbol for concrete constructions

More details on application and installation in instructions No. 1020

with rigid terminal lugs

Rd 8 and Rd 10 mm, approx. 200 mm long (insulated)

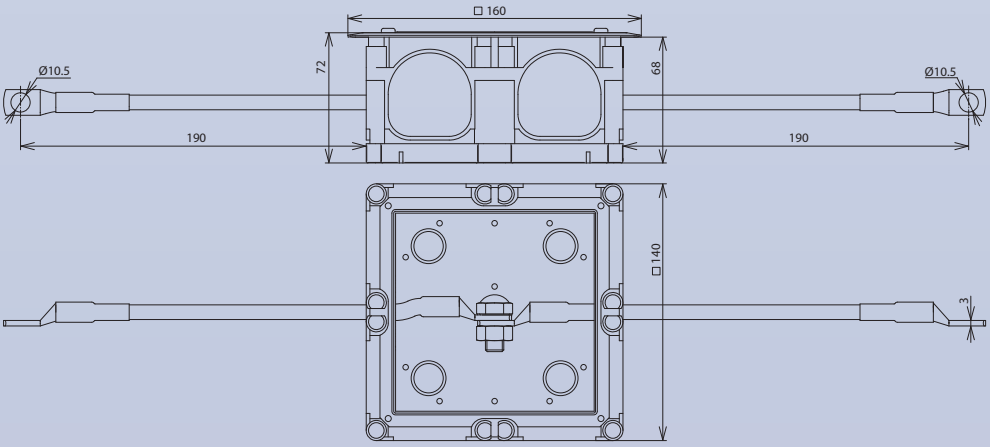


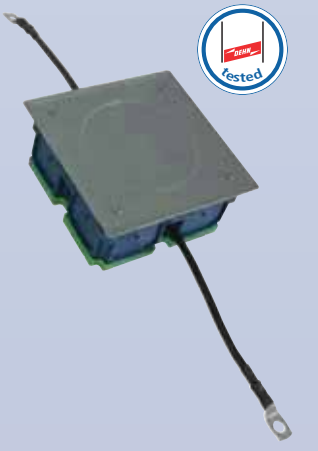


Part No.		476 010
Material of box		plastic
Dimension of box (l x w x h)	mm	140x140x68
Material of cover		StSt
Dimension of cover (l x w)	mm	160x160
Standard		EN 50164-(1+2)
Packing unit	pc(s)	1

with flexible terminal conductors

made of Cu (16 mm²) and cable lug made of Cu/gal Sn (bore (10.5 mm)



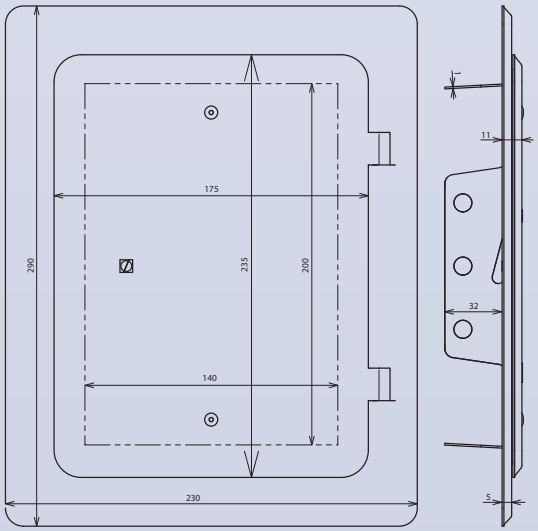


Part No.		476 016
Material of box		plastic
Dimension of box (l x w x h)	mm	140x140x68
Material of cover		StSt
Dimension of cover (l x w)	mm	160x160
Standard		EN 50164-(1+2)
Packing unit	pc(s)	1

Inspection doors for flush-mounted test joints

Type StSt with square spanner

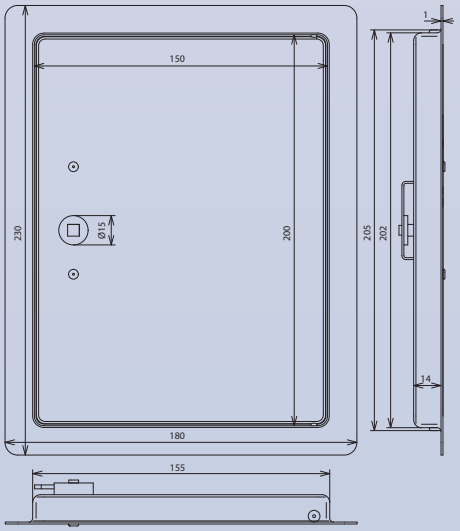
for screw-mounting (bores ∅8-10 mm), with detachable door



Part No.		476 020
Material		StSt
Mounting dimensions (l x w)	mm	200x140
Dimension (l x w)	mm	290x230
Packing unit	pc(s)	1

Type St/tZn with square spanner

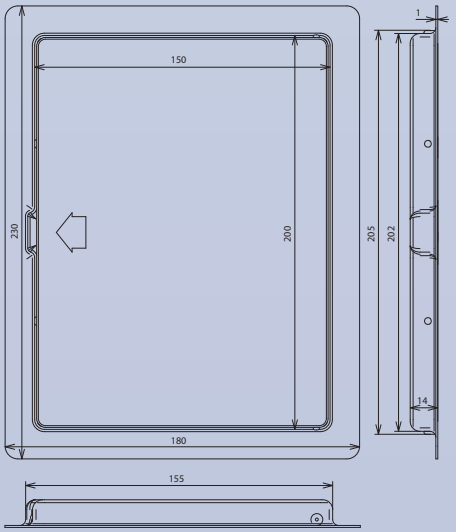
for immuring/plastering, with claws (length 60 mm, distance 100 mm)



Part No.		476 001
Material		St/tZn
Mounting dimensions (l x w)	mm	205x155
Dimension (l x w)	mm	230x180
Packing unit	pc(s)	10

Type St/tZn with snap lock

light design for immuring/plastering, with claws (length 60 mm, distance 100 mm)



Part No.		476 100
Material		St/tZn
Mounting dimensions (l x w)	mm	205x155
Dimension (l x w)	mm	230x180
Packing unit	pc(s)	10

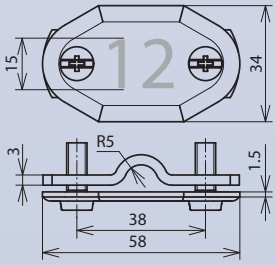
Number Plates

Number plates for marking the test joints

Number plates with company logo upon request

with embossed number for round / flat conductors

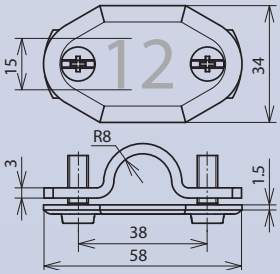
state the numbers required when placing your order



Part No.		480 005
Material		Al
Clamping range Rd / Fl	mm	7-10 / 30
Screw	mm	M6x16
Material of screw		StSt
Packing unit	pc(s)	1

with embossed number for earth entry rods

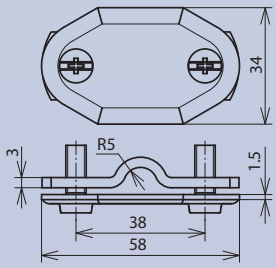
state the numbers required when placing your order



Part No.		480 006
Material		Al
Clamping range Rd / Fl	mm	16 / - -
Screw	mm	M6x16
Material of screw		StSt
Packing unit	pc(s)	1

without number for round / flat conductors

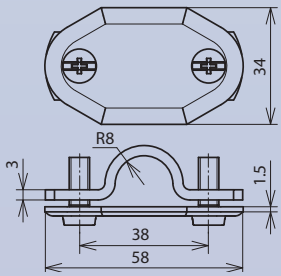
for on-site labelling with punch-type numbers 0-9, size 10 mm
(punch-type numbers upon request)



Part No.		480 003
Material		Al
Clamping range Rd / Fl	mm	7-10 / 30
Screw	mm	M6x16
Material of screw		StSt
Packing unit	pc(s)	50

without number for earth entry rods

for on-site labelling with punch-type numbers 0-9, size 10 mm
(punch-type numbers upon request)

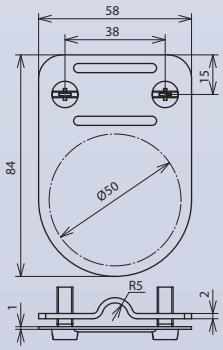


Part No.		480 004
Material		Al
Clamping range Rd / Fl	mm	16 / - -
Screw	mm	M6x16
Material of screw		StSt
Packing unit	pc(s)	50

Supports for VDB Test Badge

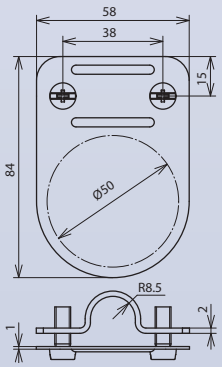
Supports for the test badge to be fixed at the down conductor or the earth entry

for round / flat conductors



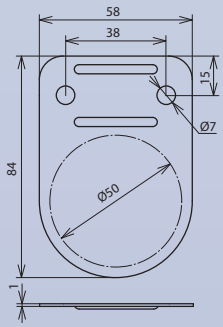
Part No.		480 113
Material		StSt
Clamping range Rd / Fl	mm	7-10 / 30
Screw	mm	M6x16
Material of screw		StSt
Material of cleat		StSt
Dimension (l x w x d)	mm	84x58x1
Packing unit	pc(s)	50

for earth entry rods



Part No.		480 114
Material		StSt
Clamping range Rd / Fl	mm	16 / - -
Screw	mm	M6x16
Material of screw		StSt
Material of cleat		StSt
Dimension (l x w x d)	mm	84x58x1
Packing unit	pc(s)	50

without cleat

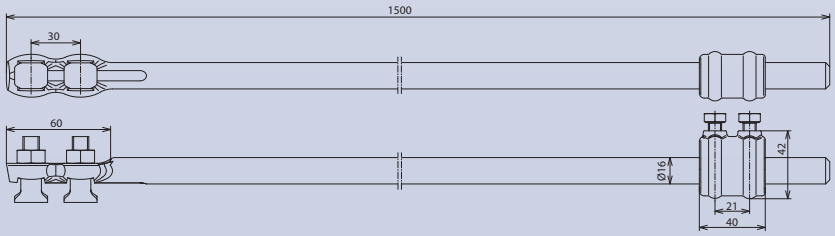


Part No.		480 110
Material		StSt
Dimension (l x w x d)	mm	84x58x1
Packing unit	pc(s)	50

Complete set with disconnecting sleeve and terminal clamps (KS screws)

Type St/tZn

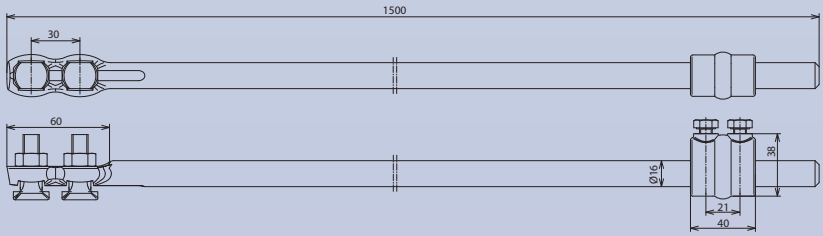
with disconnecting sleeve (Part No. 450 000) and KS screws (Part No. 300 000)



Part No.		480 150
Material		St/tZn
Standard		EN 50164-(1+2)
Length	mm	1500
Connection KS screw Rd	mm	7-10
Connection sleeve Rd / Rd	mm	7-10 / 16
Packing unit	pc(s)	1

Type Cu

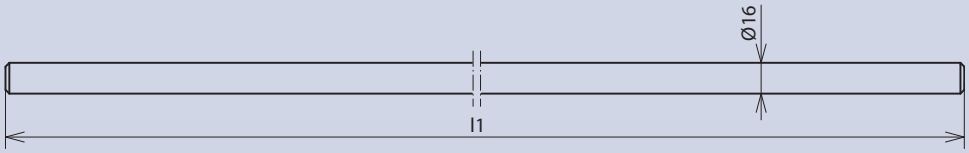
with disconnecting sleeve (Part No. 450 007) and KS screws (Part No. 300 007)



Part No.		480 157
Material		Cu
Standard		EN 50164-(1+2)
Length	mm	1500
Connection KS screw Rd	mm	6-10
Connection sleeve Rd / Rd	mm	7-10 / 16
Packing unit	pc(s)	1

Earth entry rods for connecting the down conductors to the earth-termination system

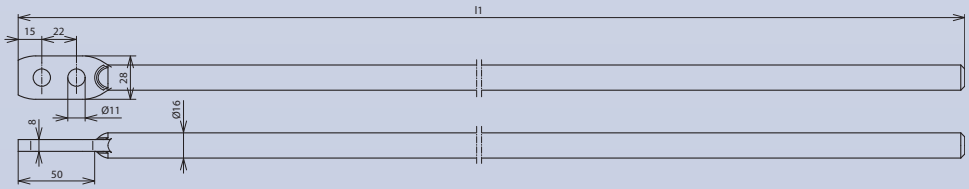
chamfered on both sides



Part No.		483 150	483 200	104 903	104 905	104 906
Material		St/tZn	St/tZn	StSt (V4A)	StSt (V4A)	StSt (V4A)
Standard		EN 50164-2	EN 50164-2	EN 50164-2	EN 50164-2	EN 50164-2
Diameter	mm	16	16	16	16	16
Length (l1)	mm	1500	2000	1000	1500	2000
Packing unit	pc(s)	10	10	10	10	10

with forged flat tab

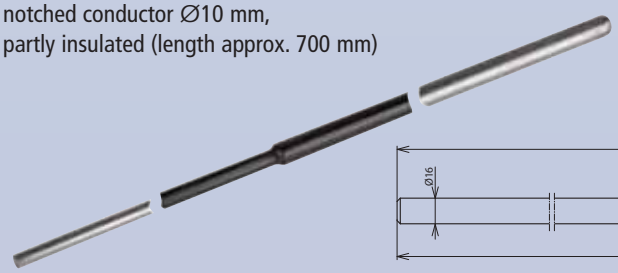
bores [2x] Ø11 mm

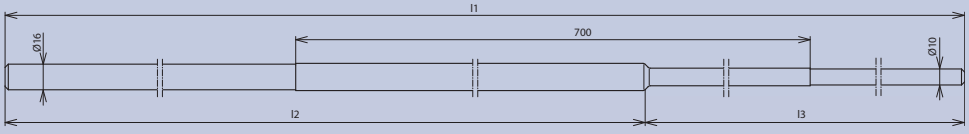


Part No.		101 150
Material		St/tZn
Standard		EN 50164-2
Diameter	mm	16
Length (l1)	mm	1500
Bore distance	mm	22
Packing unit	pc(s)	10

tapered

notched conductor Ø10 mm,
partly insulated (length approx. 700 mm)



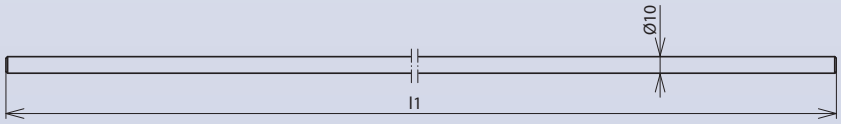


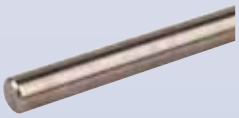
Part No.		480 018	480 019	480 020	480 021
Material		St/tZn	St/tZn	St/tZn	St/tZn
Standard		EN 50164-2	EN 50164-2	EN 50164-2	EN 50164-2
Diameter	mm	16/10	16/10	16/10	16/10
Length (l1)	mm	1500	1750	2000	2500
Partial length Ø16 mm (l2)	mm	1000	750	1000	1500
Partial length Ø10 mm (l3)	mm	500	1000	1000	1000
Packing unit	pc(s)	10	10	10	10

Terminal Lugs straightened

Terminal lugs straightened, for connecting down conductors to the earth-termination system, made of corrosion-resistant stainless steel StSt (V4A)
Other dimensions available on request

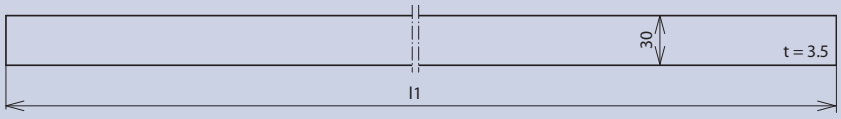
Round wires

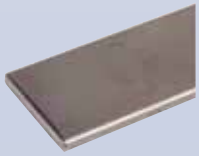




Part No.		860 115	860 130
Material		StSt (V4A)	StSt (V4A)
Length (l1)	mm	1500	3000
Dimension	mm	Ø10	Ø10
Cross section	mm²	78	78
Material No.		1.4571	1.4571
Standard		EN 50164-2	EN 50164-2
Packing unit	pc(s)	1	1

Flat strips





Part No.		860 215	860 230
Material		StSt (V4A)	StSt (V4A)
Length (l1)	mm	1500	3000
Dimension	mm	30x3.5	30x3.5
Cross section	mm²	105	105
Material No.		1.4571	1.4571
Standard		EN 50164-2	EN 50164-2
Packing unit	pc(s)	1	1

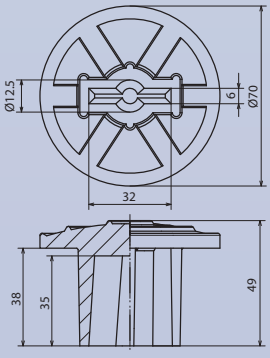
Accessory for Terminal Lugs straightened

Protective Cap for Terminal Lugs

to be attached on round wires or strips

as striking marking (as required according to DIN 18014) and accident prevention during the construction phase

Part No.		478 099
Material		PVC
Diameter	mm	70
Support Fl	mm	30x3.5
Support Rd	mm	10
Colour		green/yellow
Packing unit	pc(s)	20



Fixed earthing terminals as corrosion-free connection

- of the down-conductor system e.g. to the reinforcement of buildings
- to the earth-termination system for the protective equipotential bonding and/or the functional equipotential bonding
- measuring point for the transient or resistance test

Following minimum lengths of the screws with double thread M10 and M12 shall be minded:

35 mm of M10 (thread length 40 mm)

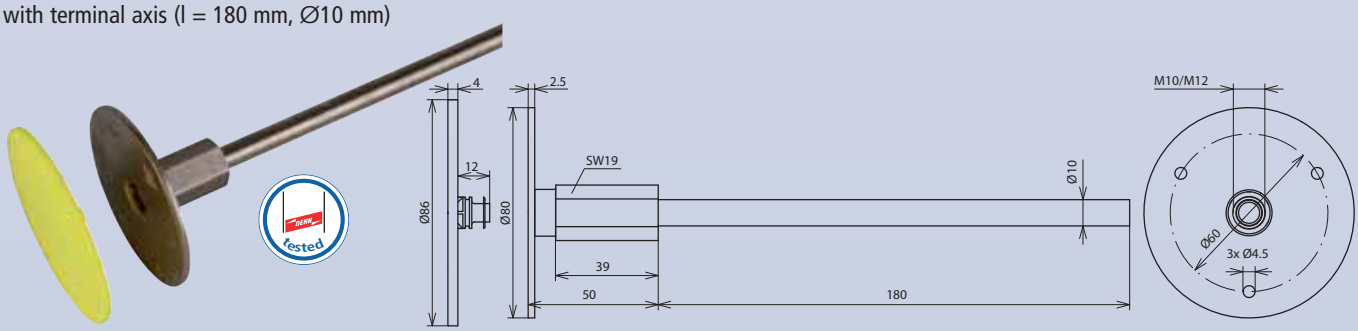
15 mm of M12 (thread length 20 mm)

- connection possibilities at the terminal axis with cross unit e.g. Part No. 319 201 or connecting clamp e.g. Part No. 308 025 for the reinforcement
- connection possibility for equipotential bonding bar e.g. end pieces Part No. 390 499
- connection possibility for flat conductors at the terminal plate (front) or without terminal axis (back), e.g. terminal clamp Part No. 478 141 or 478 129
- terminal axis screwed-in or press-fitted
- snap-on (yellow) plastic cover and sealed with pressure tested O-ring (test pressure 0.5 bar)

More details on use and installation in installation instructions No. 1476.

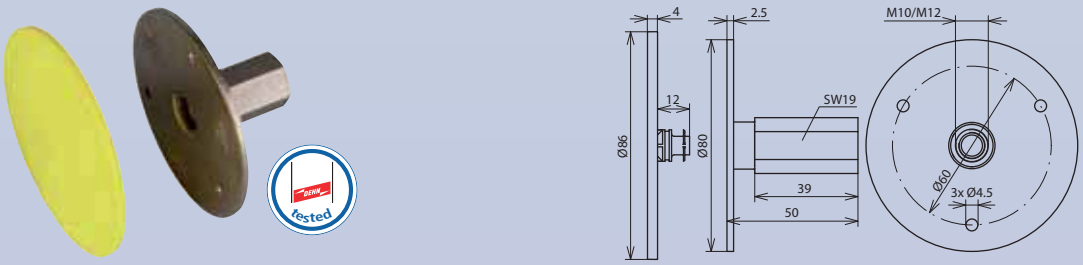
Type M

with terminal axis (l = 180 mm, ∅10 mm)



Part No.		478 011	478 019
Terminal thread		M10 / M12	M10 / M12
Material of plate		StSt (V4A)	StSt (V4A)
Material of axis		St/tZn	StSt
Terminal plate ∅	mm	80	80
Short-circuit current (50 Hz) (1 s; ≤ 300 °C)	kA	6.5	3.4
Standard		EN 50164-1	EN 50164-1
Packing unit	pc(s)	10	10

Type M without terminal axis



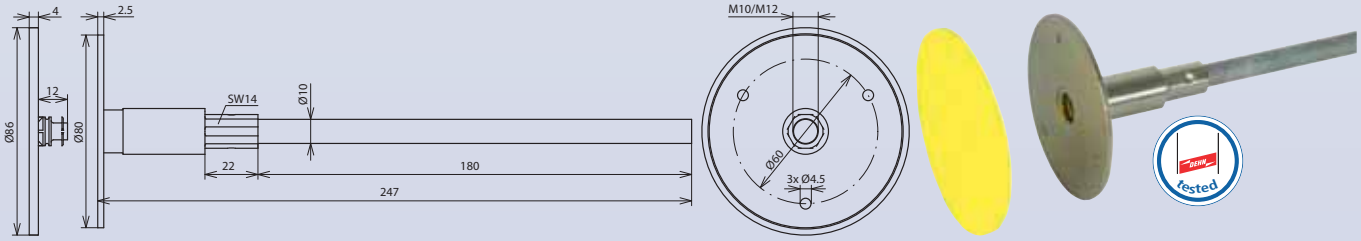
Part No.		478 012
Terminal thread		M10 / M12
Material of plate		StSt (V4A)
Terminal plate ∅	mm	80
Short-circuit current (50 Hz) (1 s; ≤ 300 °C)	kA	9
Standard		EN 50164-1
Packing unit	pc(s)	10

specified short-circuit current applies for the connection with copper cable lug

Fixed Earthing Terminals

Type M press-fitted

terminal axis (l = 180 mm, ∅10 mm)

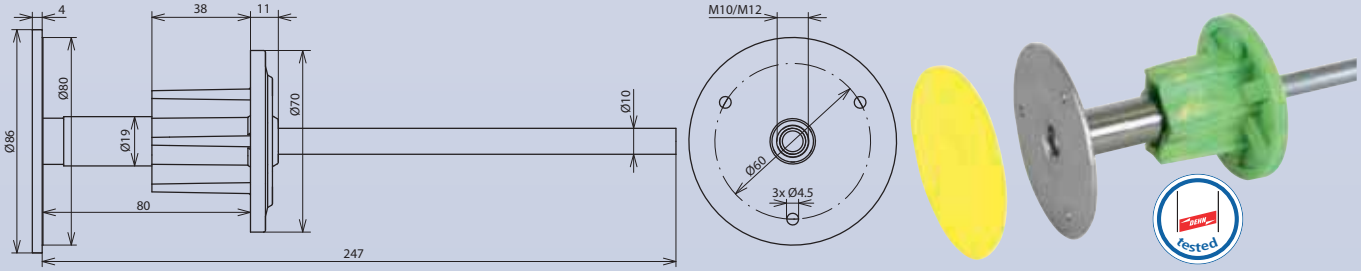


Part No.		478 041	478 049
Terminal thread		M10 / M12	M10 / M12
Material of plate		StSt (V4A)	StSt (V4A)
Material of axis		St/tZn	StSt
Terminal plate ∅	mm	80	80
Short-circuit current (50 Hz) (1 s; ≤ 300 °C)	kA	5.8	3.4
Standard		EN 50164-1	EN 50164-1
Packing unit	pc(s)	10	10

Part No. 478 049 with UL certification

Type M press-fitted with additional water barrier

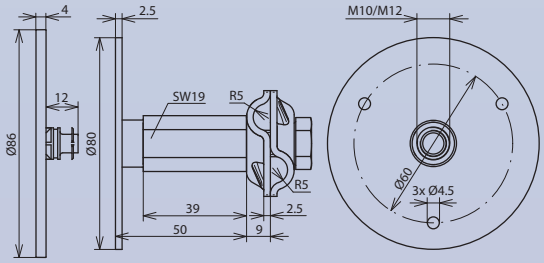
against penetration of water along the axis into the wall
(tested with 5 bar compressed air according to EN 50164-5 and 1 bar pressure water)



Part No.		478 051
Terminal thread		M10 / M12
Material of plate		StSt (V4A)
Material of axis		St/tZn
Terminal plate ∅	mm	80
Short-circuit current (50 Hz) (1 s; ≤ 300 °C)	kA	6.5
Standard		EN 50164-1
Packing unit	pc(s)	1

Type M with MV clamp

for round conductors 8-10 mm, design requiring little space in the shuttering

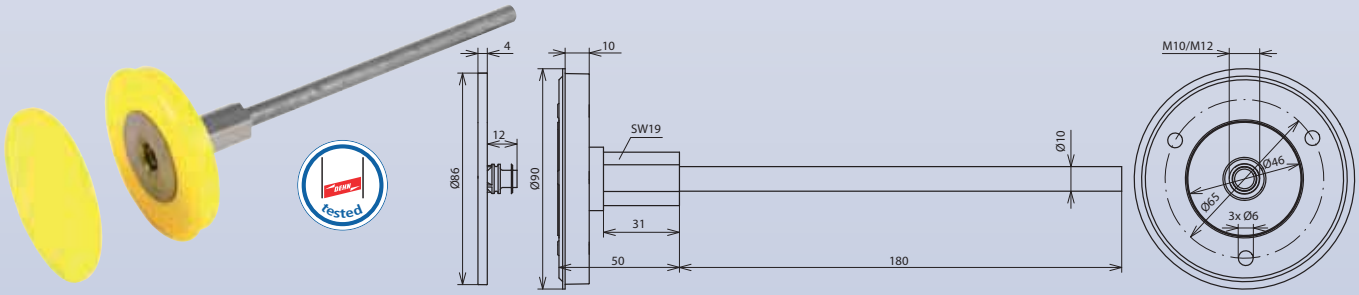


Part No.		478 112
Terminal thread		M10 / M12
Material of plate		StSt (V4A)
Terminal plate ∅	mm	80
Short-circuit current (50 Hz) (1 s; ≤ 300 °C)	kA	5.5
Standard		EN 50164-1
Packing unit	pc(s)	10

Fixed Earthing Terminals

Type K

with plastic ring and terminal axis (l = 180 mm, ∅10 mm)



Part No.		478 200
Terminal thread		M10 / M12
Material of plate		StSt (V4A)
Material of axis		St/tZn
Terminal plate ∅	mm	46
Short-circuit current (50 Hz) (1 s; ≤ 300 °C)	kA	6.5
Standard		EN 50164-1
Packing unit	pc(s)	10

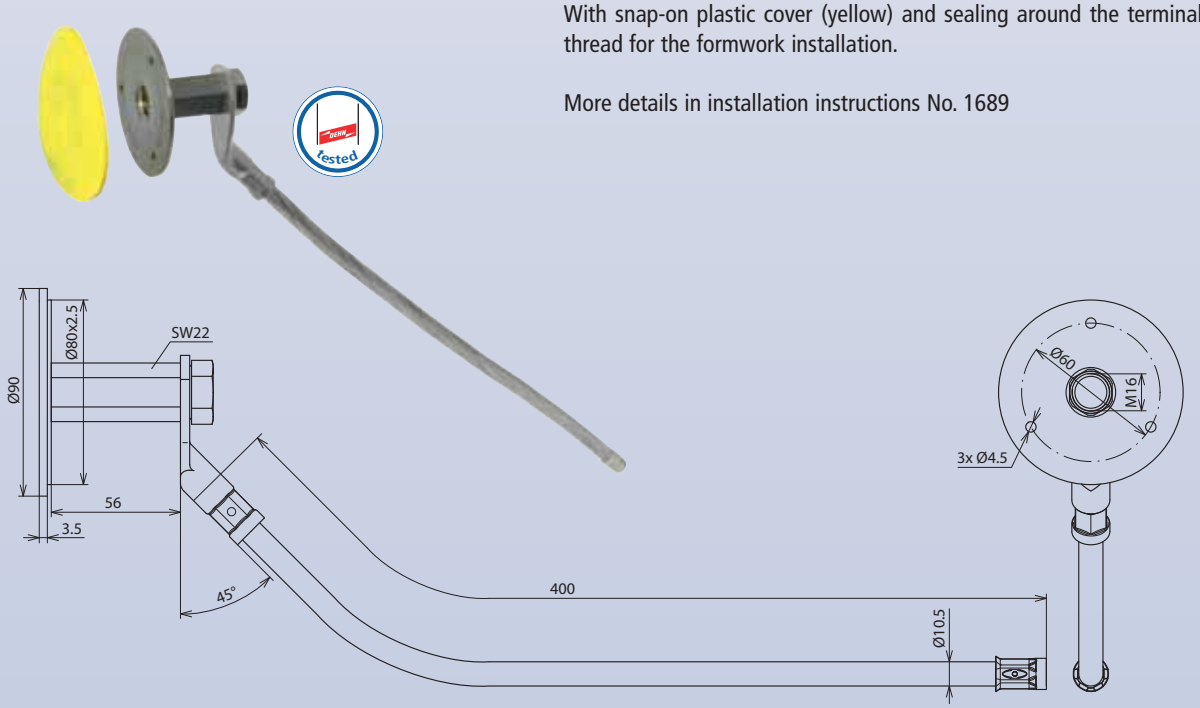
Fixed Earthing Terminal M16

Fixed earthing terminal with terminal thread M16 for higher current loadings (50 Hz), e.g. for connecting the ring equipotential bonding system with the earth-termination systems of power plants having a nominal a.c. voltage over 1 kV (transformer earthing).

The terminal cable can be connected e.g. with a cross unit (Part No. 318 207/318 209) to the further components of the earth-termination system, or to the reinforcement with the corresponding clamps.

With snap-on plastic cover (yellow) and sealing around the terminal thread for the formwork installation.

More details in installation instructions No. 1689



Part No.		478 027
Terminal thread		M16
Material of plate		StSt (V4A)
Material of cable		Cu/gal Sn
Cross section of terminal cable	mm²	70
Length of terminal cable	mm	400
Diameter of terminal cable	mm	10.5
Terminal plate ∅	mm	80
Standard		EN 50164-1
Short-circuit current (50 Hz) (1 s; ≤ 300 °C)	kA	11
Packing unit	pc(s)	1

Connecting Clamps for Fixed Earthing Terminals and Reinforcement

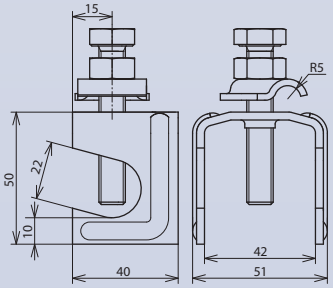
Clamps for connecting the reinforcement by clamping frame

for round conductors or fixed earthing terminals with simultanious fixing in the formwork

arrangement:

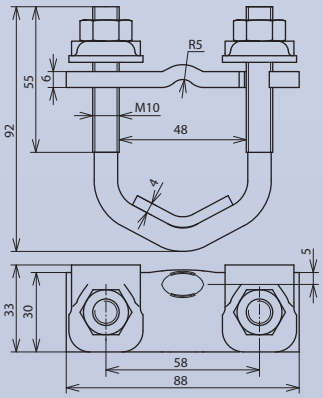
(II) = parallel
(+) = crosswise

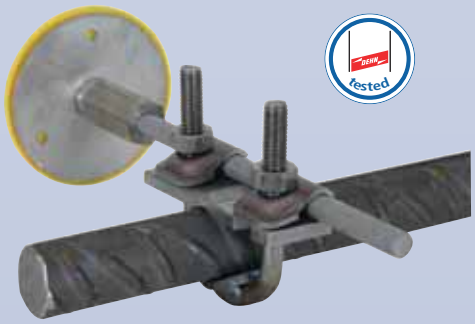
for small diameters



Part No.		308 035
Material		St/bare
Clamping range Rd / Rd	mm	(+/II) 6-22 / 6-10
Clamping range Rd / Fl	mm	(+) 6-22 / 40
Screw	mm	M10x60
Material of screw		St/bare
Standard		EN 50164-1
Short-circuit current (50 Hz) (1 s; ≤ 300 °C)	kA	1.0
Packing unit	pc(s)	25

U-clamp for large diameters





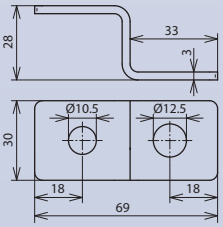
Part No.		308 046
Material		St/bare
Clamping range Rd / Rd	mm	(+/II) 16-48 / 6-10
Clamping range Rd / Fl	mm	(II) 16-48 / 30-40
Screw	mm	stirrup bolt M10x48
Material of screw		St/bare
Standard		EN 50164-1
Short-circuit current (50 Hz) (1 s; ≤ 300 °C)	kA	6.5
Packing unit	pc(s)	25

End pieces for screwing on the fixed earthing terminal (FET) for connecting e.g. an equipotential bonding bar or for connecting construction elements (e.g. steel girders or alike) by screwing or welding

Simple design

for universal use at terminals M10 and M12, e.g. at the fixed earthing terminal

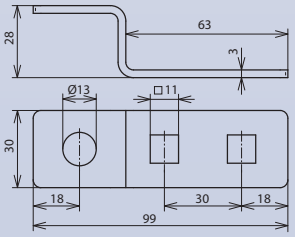
for connecting Rd e.g. with KS connector (Part No. 301 019), or for connecting Fl with screws and nuts M10 or M12



Part No.		390 499
Material		StSt
Bore Ø	mm	10.5/12.5
Packing unit	pc(s)	50

Design with square holes

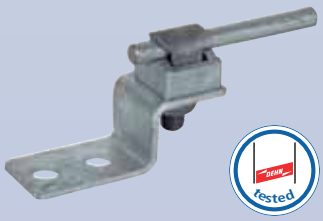
dimension 11x11 mm, for connecting Rd e.g. with KS connector (Part No. 301 019) or for connecting Fl with screws and nuts M10

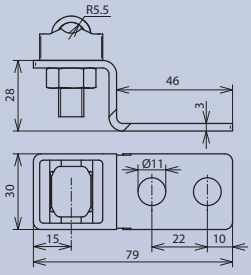


Part No.		390 479
Material		StSt
Distance of bores	mm	30
Bore Ø	mm	13
Packing unit	pc(s)	50

Design with bores and KS connector

with bores Ø11 mm

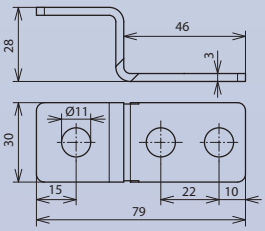




Part No.		363 010
Material		St/tZn
Distance of bores	mm	22
Bore Ø	mm	11
Clamping range Rd	mm	7-10
Standard		EN 50164-1
Packing unit	pc(s)	50

Design with bores

with bores Ø11 mm



Part No.		363 000
Material		St/tZn
Distance of bores	mm	22
Bore Ø	mm	11
Packing unit	pc(s)	50

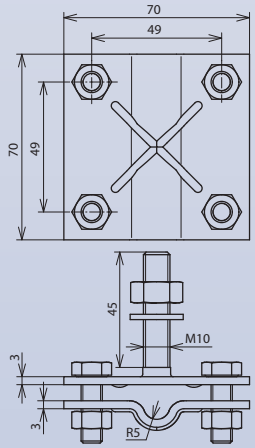
Terminal Clamps with threaded bolt

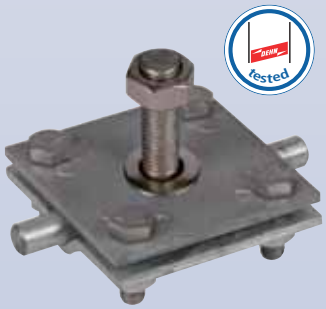
Terminal clamps with threaded bolt for connecting round and flat conductors to fixed earthing terminals
with thread M10/M12 (e.g. Part Nos. 478 011, 478 200)

also suitable for installation on the back side of the fixed earthing terminal without terminal axis e.g. for use with flat strip

terminal thread M10

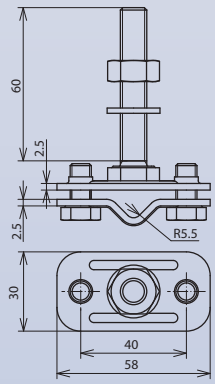
Heavy design





Part No.		478 141
Material of clamp		St/tZn
Clamping range Rd / Fl	mm	7-10 / 30-40
Material of bolt		StSt
Screw	mm	M10x45 / M8x25
Material of screw/nut		StSt
Dimension (l x w x d)	mm	70x70x3
Standard		EN 50164-1
Packing unit	pc(s)	10

Light design



Part No.		478 129
Material of clamp		StSt (V4A)
Clamping range Rd / Fl	mm	8-10 / 30
Material of bolt		StSt (V4A)
Screw	mm	M10x60 / M8x16
Material of screw/nut		StSt (V4A)
Dimension (l x w x d)	mm	58x30x2.5
Standard		EN 50164-1
Short-circuit current (50 Hz) (1 s; ≤ 300 °C)	kA	3.0
Packing unit	pc(s)	10

Earth Electrode Wall Bushings

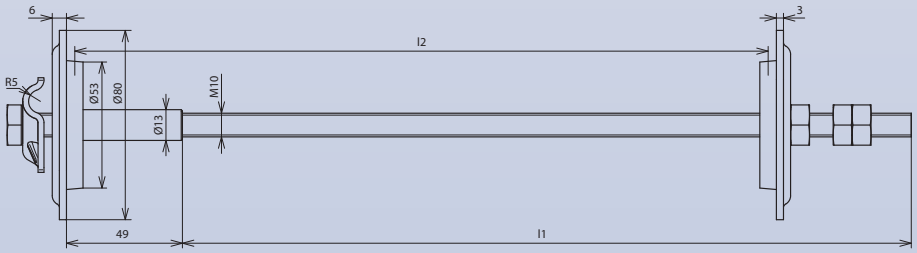
Wall bushings with MV clamp made of StSt (V4A) for round conductors 8-10 mm

For pressure-water-tight ducting of the earthing conductor/equipotential bonding conductor through walls and brickwork
with StSt threaded rod M10

Type for subsequent installation through bore ∅14 mm) or if necessary through the formwork spreading.
Pressure-water tested up to 1 bar which simulates conditions at an installation depth of 10 m and stagnant water.
The bushing is ready for connection with MV clamp and all earth contacting components are made of StSt (V4A).

Sealing is performed by the pressing of the neopren disks against the brickwork/wall (fixed and loose flange).
Installation can be implemented from inside. The threaded rod can be held by the lock nuts (inside) when tightening the screws.

More details in installation instructions No.1332



Part No.		478 410	478 430	478 450
Length of bushing (l2)	mm	100-300	300-500	500-700
Length of threaded rod (l1)	mm	308	508	708
Sealings		Neopren	Neopren	Neopren
Sealing disk ∅	mm	80	80	80
Material of disk		StSt (V4A)	StSt (V4A)	StSt (V4A)
Short-circuit current (50 Hz) (1 s; ≤ 300 °C)	kA	2.7	2.7	2.7
Standard		EN 50164-1	EN 50164-1	EN 50164-1
Packing unit	pc(s)	1	1	1

Pressure-water-tight Wall Bushings for White Tank

According to modern structural technology the basement of buildings shall be carried out as a white tank construction. The white tank design requires no additional sealing layer because base plate and outer walls are implemented as closed tank made of highly waterproof concrete according to EN 206-1 and DIN 1045-2. This concrete is characterized as waterproof or impervious concrete.
As the earthing material is covered with an at least 5 cm thick concrete layer (measure of protection against corrosion), there is no longer any humidity in the installation range, so the concrete has an insulating effect. Therefore an earth electrode has to be installed outside of the white tank. In case of new constructions this earth electrode usually will be installed in the blinding layer underneath the foundation plate. The effects of the modified composition of impervious concrete are described in DIN 18014 Fundamenterder – Allgemeine Planungsgrundlagen":2007-09 be (Title English: Foundation earth electrode – General planning criterial).
The ring earth electrode meshes under the foundation plates installed according to DIN 18014 have to be connected with the main earthing busbar (MEB) (previously: main equipotential bonding bar) of the building for equipotential bonding.

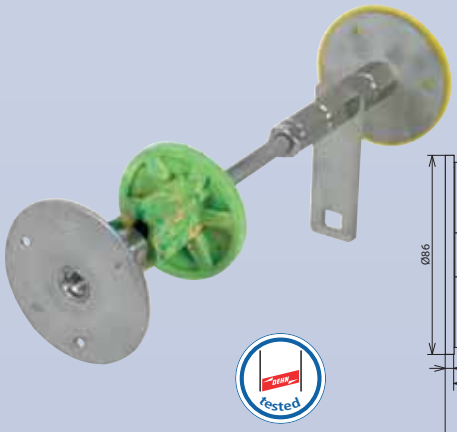
The electrical connection with the ring earth electrode also has to be water-tight. DEHN + SÖHNE has applied the requirements made for white tanks also to the water-tight wall bushing when developing the product. For that reason explicit care was taken in the development to configurate the component requirements as reality conform as possible. The specimen were encased into concrete (**Figure 1**) and then submitted to a pressure-water test. In regular construction technology installation sites in a depth of 10 m (e.g. underground car parks) are quite usual. Such terms of installtion was simulated for the specimen and a water pressure of 1 bar was imposed (**Figure 2**). After the required hardening period of the concrete, the specimen were subjected to a pressure water test and examined for watertightness during a 65 hours longterm test. Another challenge was the capillary attraction of bushings. The capillary effect means that liquids (e.g. water) spread quite differently in narrow gaps, cracks or tubes (capillaries) in fact they will literally be sucked or drawn into the building. Such fissures and cracks may arise during the hardening and the concurrent shrinking process of the concrete. Therefore a professional, competent and correct installation of the wall bushing in the formwork as described in detail in the installation instructions, is quite important.

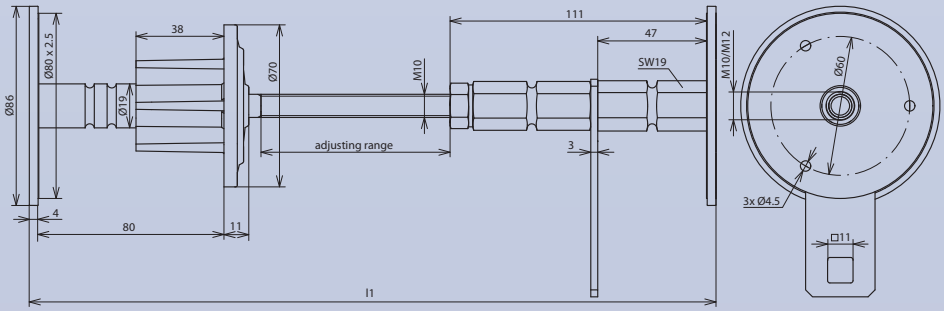
Figure 1: Wall bushing with formwork installation

Figure 2:
Set-up with terminal for the pressure-water test

- tested with 5 bar compressed air according to EN 50164-5
- Type for formwork installation with water barrier and double thread M10 / M12 for connection e.g. to the equipotential bonding bar
- adjustable according to wall thickness by thread M10 and lock nut
- the bushing thread may be cut to length if necessary
- including connecting piece (St/tZn dimension 30x4 mm) with square hole for connection with clamping frame at round conductors or cross unit at flat strips

More details in installation instructions No. 1654





Part No.		478 530	478 540	478 550
Material of plate		StSt (V4A)	StSt (V4A)	StSt (V4A)
Material of axis		St/tZn	St/tZn	St/tZn
Wall thickness (l1)	mm	220-300	300-400	400-500
Terminal thread		M10 / 12	M10 / 12	M10 / 12
Terminal plate ∅	mm	80	80	80
Standard		EN 50164-1	EN 50164-1	EN 50164-1
Short-circuit current (50 Hz) (1 s; ≤ 300 °C)	kA	4.1	4.1	4.1
Packing unit	pc(s)	1	1	1

Driving Options and Driving Depth of Earth Rods

Earth rods usually consist of composable single rods with a length of 1.5 m. Earth rods of DEHN + SÖHNE have a self-closing coupling with bore and tenon.
Advantage of this construction is that the coupling closes automatically during the driving process and thus a mechanically high-strength and electrically safe connection will be implemented. Additional work steps such as screwing are not necessary.
Impact tool of different kind is used to drive in the earth rods. Take into account that the driving should be carried out with a blow count of 1200 blows/min. A considerably higher blow count usually does not provide sufficient blow power so that the earth rod can not be hammered deeply enough. In case of too low blow frequencies as provided typically by compressed-air-operated impact tool, the blow power often is too high and the blow count too low.
The own weight of the impact tool should be ≥ 20 kg.

The driving depth of earth electrodes depends on various geological conditions. Light soil as can be met in coastal areas or in wetlands allow for driving depths of 30 m to 40 m.

On extremely heavy soil such as original sandy soil often only a depth of 12 m can be reached. In case of usual earth rods the soil will not extracted during the driving process but rather displaced by the penetrating earth rod. Thus the soil immediately around the earth rod will be compressed and a close electrical contact to the environment will be achieved. An earth rod with an outer diameter of 20 mm provides less displacement of the soil than an earth rod with 25 mm outer diameter. Experience has shown that in case of heavy soil earth rods with an outer diameter of 25 mm are the optimal solution with regard to maximum driving depth and resulting soil displacement.

A hammer frame such as Part No. 600 003 of DEHN + SÖHNE is recommended for use with eath rods to be driven into greater depths.
When using the hammer frame with attached impact tool, the blow power wil be constantly applied on the impact spot of the earth rod via the hammer insert. This can not be achieved when driving without hammer frame and a freehand guiding of the impact tool.

Recommended vibration hammers are listed below.

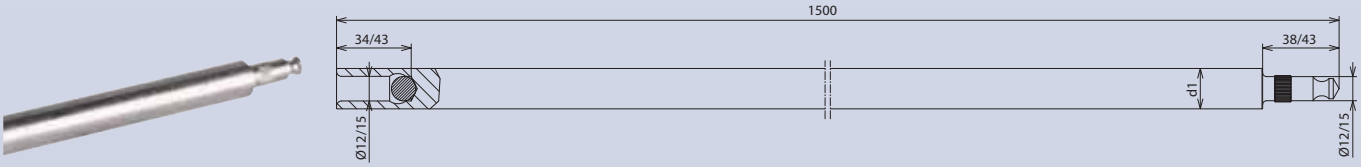
Earth rods for implementing earth-termination systems for down conductors or transformer stations

Features:
- no cross section thickening at the coupling point
- self-closing coupling
- resistant against corrosion
- easier storage and transport
- universal application according to local soil conditions
- constant resistance values
- easy driving by vibration hammer

More details in installation instructions No. 1014

Type S

with lead ball in the coupling



Part No.		620 150	619 157	625 150
Material		St/tZn	St / Cu	St/tZn
Standard		EN 50164-2		EN 50164-2
Rod length (l1)	mm	1500	1500	1500
Diameter (d1)	mm	20	20	25
Cu layer	mm		min. 0.3	
Short-circuit current (50 Hz) (1 s; ≤ 300 °C)	kA	7.9	7.9	12.3
Packing unit	pc(s)	6	6	6

Type Z

with triple knurled tenon (coupling with especially high tensile strength)

Part No.		620 101	620 151	625 101	625 151
Material		St/tZn	St/tZn	St/tZn	St/tZn
Standard		EN 50164-2	EN 50164-2	EN 50164-2	EN 50164-2
Rod length (l1)	mm	1000	1500	1000	1500
Diameter (d1)	mm	20	20	25	25
Short-circuit current (50 Hz) (1 s; ≤ 300 °C)	kA	7.9	7.9	12.3	12.3
Packing unit	pc(s)	6	6	6	6

Type AZ

with offset knurled tenon

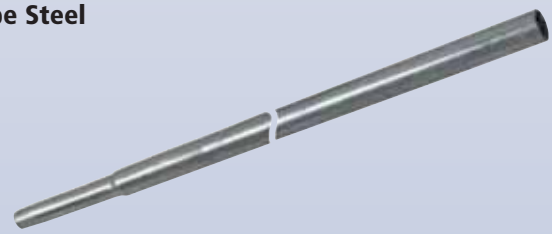
Part No.		620 902
Material		StSt (V4A)
Material No.		1.4571
Standard		EN 50164-2
Rod length (l1)	mm	1500
Diameter (d1)	mm	20
Short-circuit current (50 Hz) (1 s; ≤ 300 °C)	kA	4.2
Packing unit	pc(s)	6

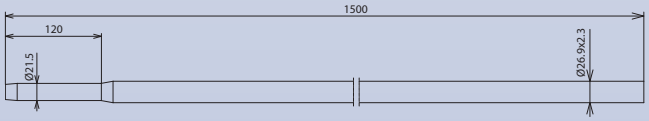
Tubular Earth Rods

light design for the installation of earth-termination systems for down conductors

More details in installation instructions No. 1515

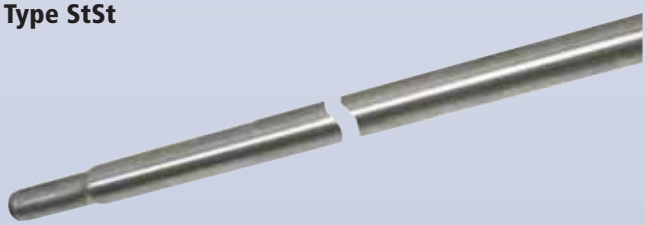
Type Steel

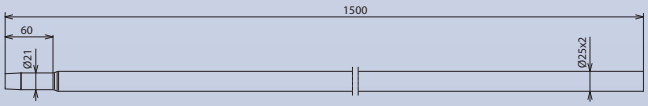




Part No.		640 150
Material		St/tZn
Standard		EN 50164-2
Rod length	mm	1500
Diameter	mm	27
Packing unit	pc(s)	6

Type StSt



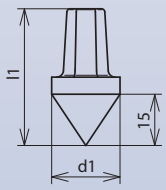


Part No.		649 150
Material		StSt (V4A)
Material No.		1.4571
Standard		EN 50164-2
Rod length	mm	1500
Diameter	mm	25
Packing unit	pc(s)	6

Impact Spikes

Impact spikes for driving the first earth rod

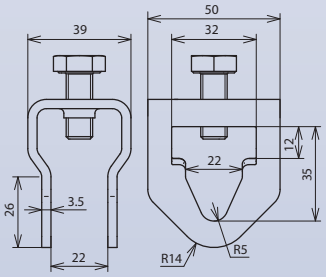
The impact spikes can be used for earth rods made of steel as well as StSt and they are also applicable for tubular earth rods.



Part No.		620 001	625 001
Material		MCI/tZn	MCI/tZn
Type		for earth rods Ø20 mm or tubular earth rods St/tZn Ø27 mm	for earth rods Ø25 mm or tubular earth rods StSt (V4A) Ø25 mm
Dimension (d1 x l1)	mm	20x40	25x45
Packing unit	pc(s)	100	50

Single-screw Terminal Clamps

Clamps for connecting round conductors, flat strips or cables to earth rods
suitable for cross and parallel connection

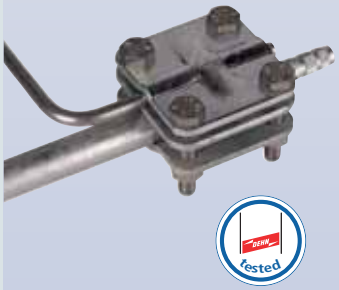


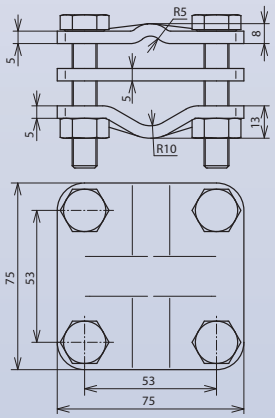
Part No.		630 120	630 129
Material		St/tZn	StSt (V4A)
Clamping range Rd / Fl	mm	10 / -30x4	10 / -30x4
Clamping range of cable	mm²	70	70
Type for earth rods	mm	∅20	∅20
Screw	mm	M10x25	M10x25
Material of screw		St/tZn	StSt (V4A)
Standard		EN 50164-1	EN 50164-1
Packing unit	pc(s)	25	25

Terminal Clamps

Clamps for cross and parallel connection of round conductors, flat strips or cables to earth rods

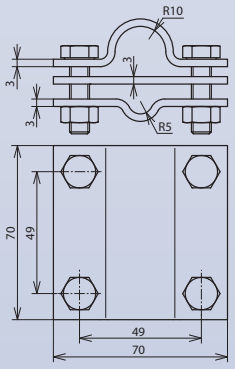
for earth rods Ø20-30 mm





Part No.		610 010
Material		St/tZn
Clamping range Rd / Fl	mm	8-12.5 / -40
Clamping range (stranded/cable)	mm²	50-95
Screw	mm	M10x55
Material of screw/nut		StSt
Standard		EN 50164-1
Short-circuit current (50 Hz)		
(1 s; ≤ 300 °C)	kA	18
Packing unit	pc(s)	20

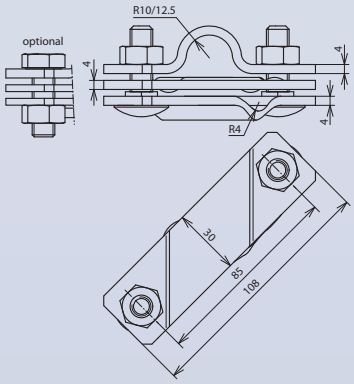
for earth rods Ø20 mm



Part No.		610 020
Material		StSt (V4A)
Clamping range Rd / Fl	mm	7-10 / -40
Clamping range (stranded/cable)	mm²	35-70
Screw	mm	M8x30
Material of screw/nut		StSt (V4A)
Standard		EN 50164-1
Short-circuit current (50 Hz)		
(1 s; ≤ 300 °C)	kA	8
Packing unit	pc(s)	25

Diagonal design

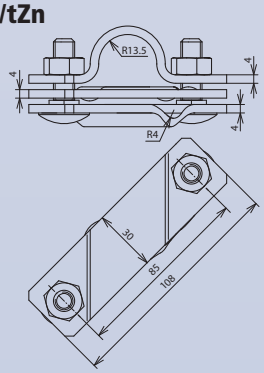
also for use with uncut earth conductors



Brackets for connecting round conductors, cables and flat strips to earth rods

Part No.		620 015	620 017	620 915	625 015	649 015
Material		St/tZn	Cu	StSt (V4A)	St/tZn	StSt (V4A)
Clamping range Rd / Fl	mm	7-10 / -40	7-10 / -40	7-10 / -40	7-10 / -40	7-10 / -40
Clamping range (stranded or cable)	mm^2		50-95	50-95		50-95
Type for earth rods	mm	Ø20	Ø20	Ø20	Ø25	Ø25
Screw	mm	M10x35	M10x30	M10x30	M10x35	M10x30
Material of screw/nut		St/tZn	StSt	StSt (V4A)	St/tZn	StSt (V4A)
Standard		EN 50164-1	EN 50164-1	EN 50164-1	EN 50164-1	EN 50164-1
Short-circuit current (50 Hz) (1 s; ≤ 300 °C)	kA	18	30	8	18	8
Packing unit	pc(s)	20	20	20	20	20

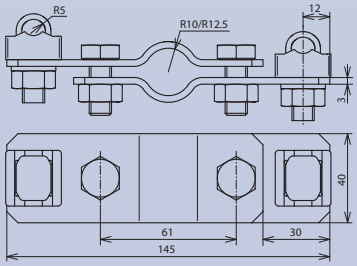
Diagonal design – especially for tubular earth rods St/tZn



also for use with uncut earth electrodes

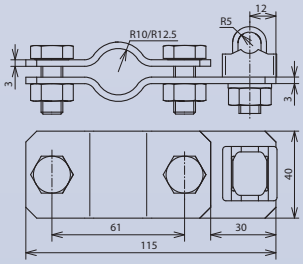
Part No.		640 015
Material		St/tZn
Clamping range Rd / Fl	mm	7-10 / -40
Type for earth rods	mm	Ø27
Screw	mm	M10x35
Material of screw/nut		St/tZn
Standard		EN 50164-1
Packing unit	pc(s)	20

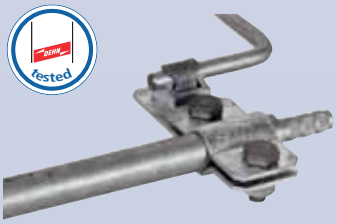
both-sided connection with KS connector (St/tZn)



Part No.		620 012	625 012
Material		St/tZn	St/tZn
Clamping range Rd / Fl	mm	7-10	7-10
Type for earth rods	mm	Ø20	Ø25
Screw	mm	M10x25	M10x25
Material of screw/nut		St/tZn	St/tZn
Standard		EN 50164-1	EN 50164-1
Packing unit	pc(s)	10	10

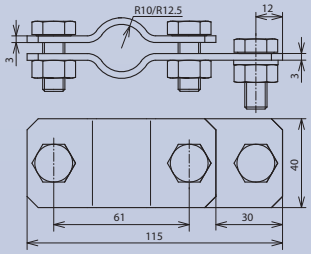
one-sided connection with KS connector





Part No.		620 011	625 011
Material		St/tZn	St/tZn
Clamping range Rd / Fl	mm	7-10	7-10
Type for earth rods	mm	Ø20	Ø25
Screw	mm	M10x25	M10x25
Material of screw/nut		St/tZn	St/tZn
Standard		EN 50164-1	EN 50164-1
Packing unit	pc(s)	20	20

one-sided connection with screw M10



Part No.		620 021	625 021
Material		St/tZn	St/tZn
Clamping range Rd / Fl	mm	- - / -40	- - / -40
Type for earth rods	mm	Ø20	Ø25
Screw	mm	M10x25	M10x25
Material of screw/nut		St/tZn	St/tZn
Standard		EN 50164-1	EN 50164-1
Short-circuit current (50 Hz) (1 s; ≤ 300 °C)	kA		7.9
Packing unit	pc(s)	20	20

List of recommended – Vibration Hammers

Recheck the type of supporting device for the vibration hammer and order accordingly.

Product	Type	Connection	Weight (without tool)	Blow count (per min.)	Blow power	Hammer Insert Part No.
Wacker Neuson	BH 23 petrol engine	round Ø27x80 mm	24.0 kg	1300	55 J	620 009 625 009
	BH 24 petrol engine		25.0 kg	1250	65 J	620 009 625 009
	BH 24 Low Vib petrol engine		25.0 kg	1350	55 J	620 009 625 009
	BH 30 petrol engine (no longer available)		27.4 kg	1270	47 J	620 005 625 005
	EH 23 Low Vib universal engine 230 V		22.4 kg	1280	50 J	620 009 625 009
	EH 25 asynchronous engine 230 V		25.0 kg	1275	70 J	620 009 625 009
	EH 22/400 electric engine 400 V		22.0 kg	1250	40 J	620 009 625 009
Atlas Copco	Cobra Combi (former 149) petrol engine	hexagon SW22x108 mm	25.0 kg	2500-2600	24 J	620 007 625 007
	CP Red Hawk (former Cobra Standard) petrol engine		23.0 kg	2600	24 J	620 007 625 007
	Cobra TT * petrol engine	hexagon SW32x160 mm	25.2 kg	720-1600	40 J	625 007/S Id. No. 46399
	Cobra PRO * (former MK1) petrol engine		25.2 kg	720-1440	60 J	625 007/S Id. No. 46399

Note:
The details of the DEHN + SÖHNE installation instructions Nr. 1014 for earth rods have to be considered!

* Hexagon SW 32x160 Part No. 625 007/S Id. No. 46399 (special design on request)

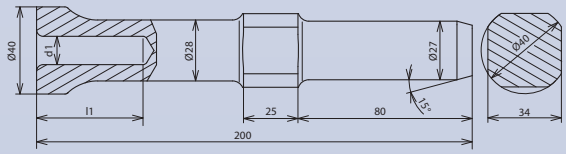
Hammer Inserts for Earth Rods

Hammer inserts for driving of earth rods with vibration hammer
for earth rods Types S + Z
Ø20 mm (tenon Ø12 mm Part No. 620...) or
Ø25 mm (tenon Ø15 mm Part No. 625...)

For Atlas Copco equipment several types of supports can be used. Please note when placing your order.

Design for other types of hammer available on request.

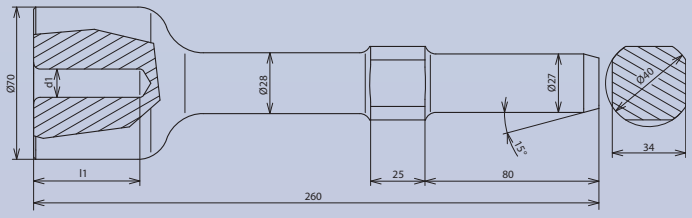
Design for Wacker equipment



Part No.		620 005	625 005
Type		EH 23/230, 22/400, BH 23 and BHF 30	EH 23/230, 22/400, BH 23 and BHF 30
Adapter		round Ø27x80 mm	round Ø27x80 mm
Material		St/bare	St/bare
Bore (d1 x l1)	mm	13x50	16x55
Length	mm	200	200
Packing unit	pc(s)	1	1

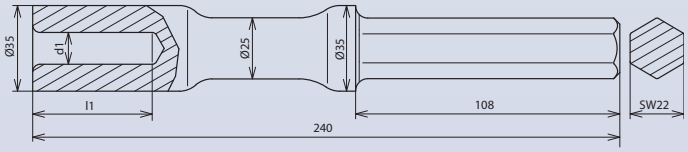
Special hammer insert for earth rods d=20 mm, StSt for Wacker equipment Part No. 620 005/S Id. No. 046377 upon request.

Heavy design for Wacker equipment



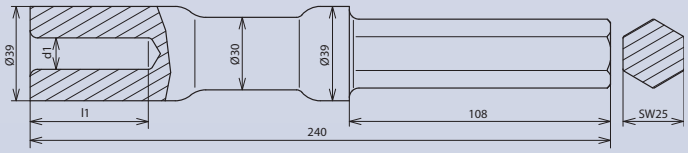
Part No.		620 009	625 009
Type		EH 23 Low Vib, BH 24 Low Vib, BH 23 and EH 25	EH 23 Low Vib, BH 24 Low Vib, BH 23 and EH 25
Adapter		round Ø27x80 mm	round Ø27x80 mm
Material		St/bare	St/bare
Bore (d1 x l1)	mm	13x50	16x55
Length	mm	260	260
Packing unit	pc(s)	1	1

Design for Atlas Copco SW 22 equipment



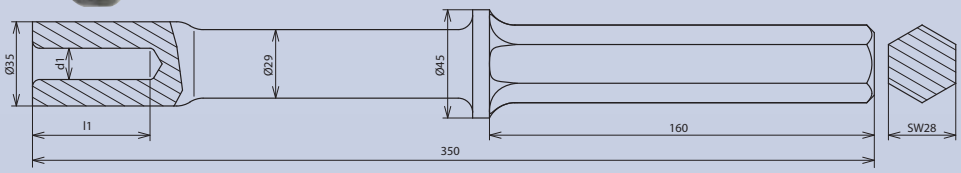
Part No.		620 007	625 007
Type		Cobra Combi, Cobra Standard	Cobra Combi, Cobra Standard
Adapter		hexagon SW22x108 mm	hexagon SW22x108 mm
Material		St/bare	St/bare
Bore (d1 x l1)	mm	13x50	16x55
Length	mm	240	240
Packing unit	pc(s)	1	1

Design for Atlas Copco SW 25 equipment



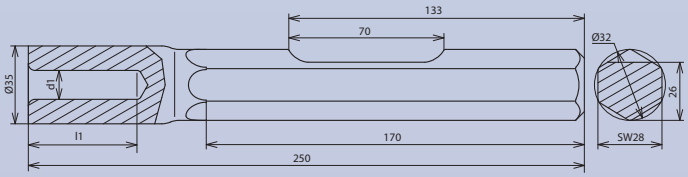
Part No.		620 008	625 008
Type		TEX 15 PE, 19 PE, 23 PE	TEX 15 PE, 19 PE, 23 PE
Adapter		hexagon SW25x108 mm	hexagon SW25x108 mm
Material		St/bare	St/bare
Bore (d1 x l1)	mm	13x50	16x55
Length	mm	240	240
Packing unit	pc(s)	1	1

Design for Atlas Copco SW 28 equipment



Part No.		620 019	625 019
Type		TEX 28 HE, 27 H, 15 PE, 19 PE, 23 PE, 22 PS	TEX 28 HE, 27 H, 15 PE, 19 PE, 23 PE, 22 PS
Adapter		hexagon SW28x160 mm	hexagon SW28x160 mm
Material		St/bare	St/bare
Bore (d1 x l1)	mm	13x50	16x55
Length	mm	350	350
Packing unit	pc(s)	1	1

Design for Bosch equipment

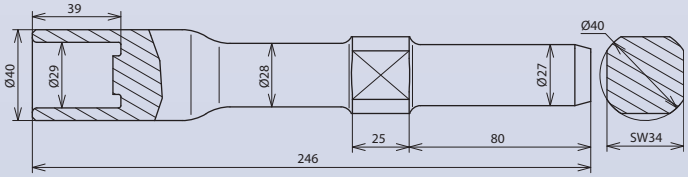


Part No.		620 029	625 029
Type		GSH 27	GSH 27
Adapter		hexagon SW28 (1 1/8'')	hexagon SW28 (1 1/8'')
Material		St/bare	St/bare
Bore (d1 x l1)	mm	13x50	16x55
Length	mm	250	250
Packing unit	pc(s)	1	1

Hammer Inserts for Tubular Earth Rods

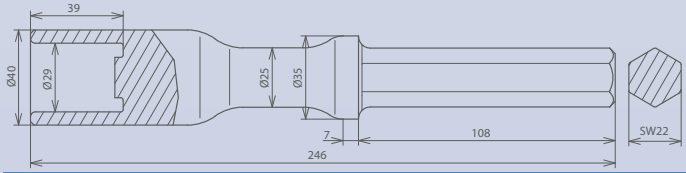
Hammer inserts for driving of tubular earth rods with vibration hammer
Design for other types of hammer upon request

Design for tubular earth rods Ø27 mm (St/tZn) Wacker equipment



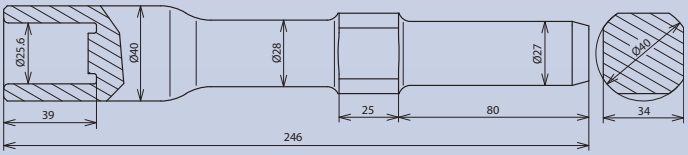
Part No.		649 005
Type		EH 22/400, 23/230, 24/042/200, BH 23 and BHF 30
Support		round Ø27x80 mm
Material		St/bare
Length	mm	246
Packing unit	pc(s)	1

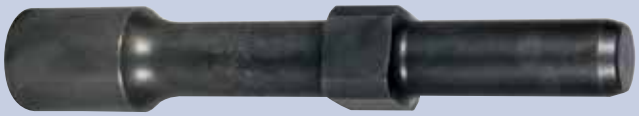
Design for tubualr earth rods Ø27 mm (St/tZn) Atlas Copco equipment



Part No.		649 007
Type		Cobra 149+248 and Cobra 120+130
Support		hexagon SW22x108 mm
Material		St/bare
Length	mm	246
Packing unit	pc(s)	1

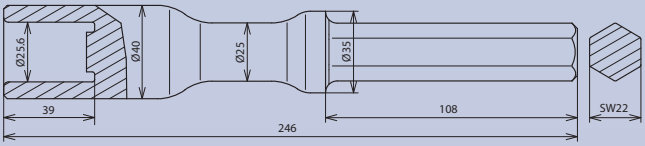
Design for tubualr earth rods Ø25 mm StSt (V4A) Wacker equipment





Part No.		648 005
Type		EH 22/400, 23/230, 24/042/200, BH 23 and BHF 30
Support		round Ø27x80 mm
Material		St/bare
Length	mm	246
Packing unit	pc(s)	1

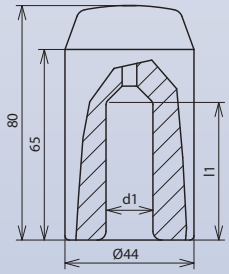
Design for tubular earth rods Ø25 mm StSt (V4A) Atlas Copco equipment



Part No.		648 007
Type		Cobra 149+248 and Cobra 120+130
Support		hexagon SW22x108 mm
Material		St/bare
Length	mm	246
Packing unit	pc(s)	1

Impact Heads

Impact heads for driving of earth rods with manual beetle



Part No.		620 002	625 002
Type of earth rod		types S + Z + AZ (Ø20 mm)	types S + Z (Ø25 mm)
Dimension (d1 x l1)	mm	13x42	16x47
Material		St/bare	St/bare
Packing unit	pc(s)	1	1

Hammer Frame

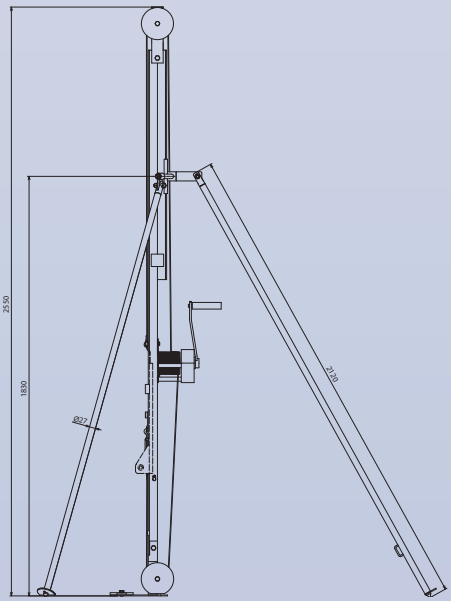
Hammer frame for driving of earth rods with a length of 1000 mm and 1500 mm with vibration hammer

The device features a solid and useful structure and is easily transportable.

The attached cable winch allows for safe hammer guiding.

The hammer frame will be delivered without hammer guiding rider. If the hammer guiding rider shall be mounted please state when ordering.

More information about working with the hammer frame (with list of spare parts) in the instructions for use No. 1171

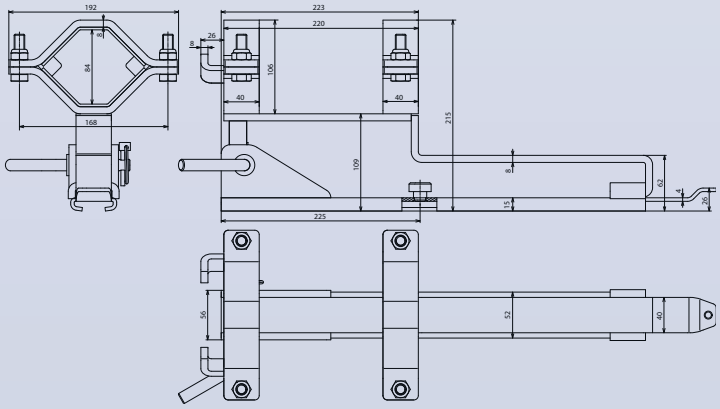


Part No.		600 003
Material		St/tZn
Height	mm	2550
Packing unit	pc(s)	1

Hammer Guiding Riders

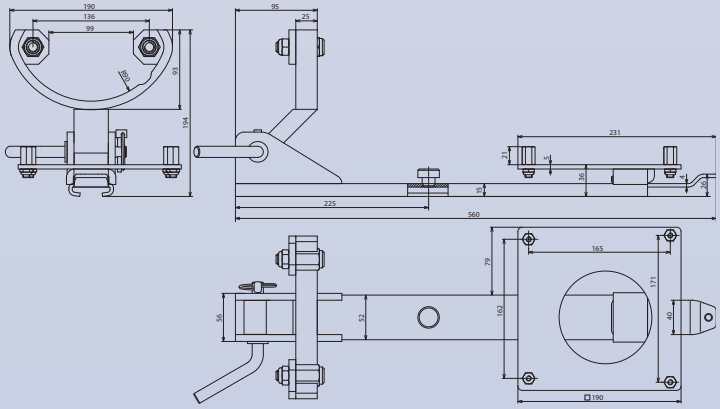
Hammer guiding riders for vibration hammers of the following manufacturers

Design for Wacker equipment



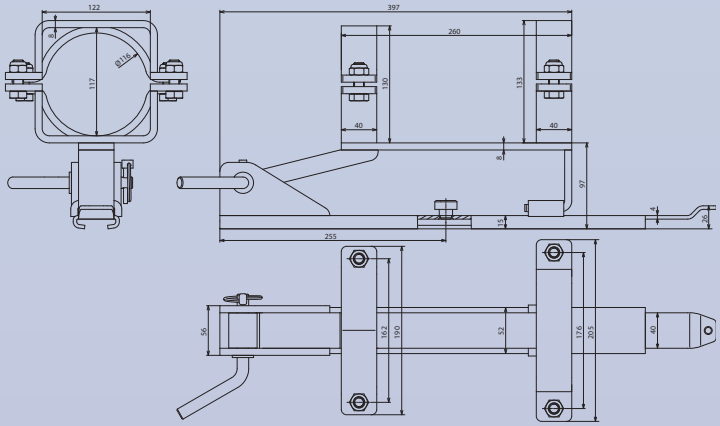
Part No.		600 035
Types		EH 23 Low Vib, EH 22/400, BH 24 Low Vib, BH 23, BHF 30 und EH 25
Material		St/tZn
Packing unit	pc(s)	1

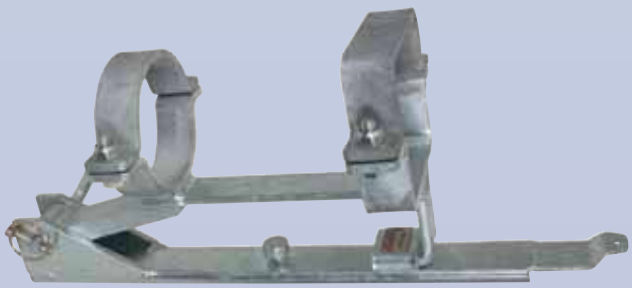
Design for Atlas Copco equipment



Part No.		600 029
Types		Cobra Combi, Cobra Standard
Material		St/tZn
Packing unit	pc(s)	1

Design for Bosch equipment



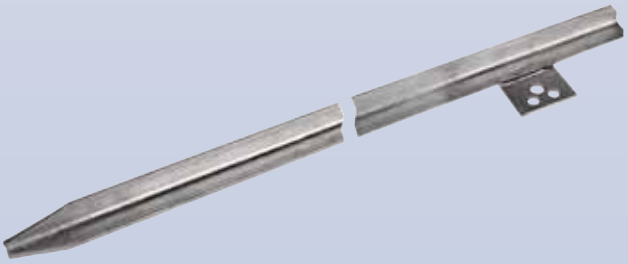


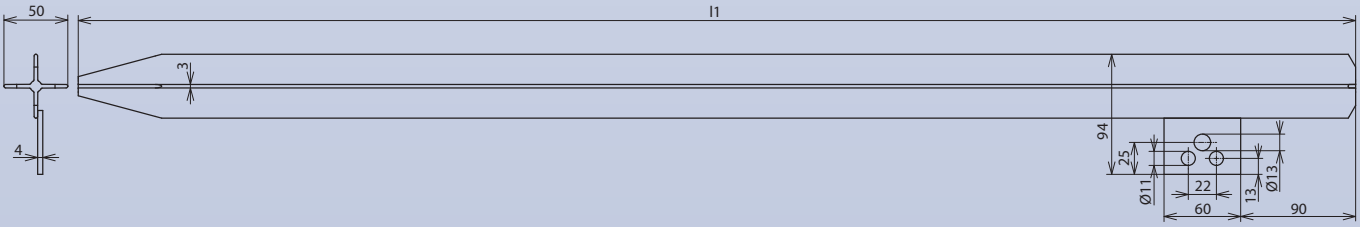
Part No.		600 050
Types		GSH 27
Material		St/tZn
Packing unit	pc(s)	1

Profiled Earth Rods

Profiled earth rods for the establishing of earth-termination systems e.g. for antennas or worksite distribution boards

Profile (50x50x3 mm), with connecting tab and bores, e.g. for KS connector





Part No.		635 100	635 150	635 200	635 250
Material		St/tZn	St/tZn	St/tZn	St/tZn
Standard		EN 50164-2	EN 50164-2	EN 50164-2	EN 50164-2
Length (l1)	mm	1000	1500	2000	2500
Bores Ø	mm	[2x] 11 / [1x] 13	[2x] 11 / [1x] 13	[2x] 11 / [1x] 13	[2x] 11 / [1x] 13
Packing unit	pc(s)	5	5	5	3

Connecting Clamps for Reinforcements

In accordance with the German standard DIN 18014: 2007-09 Fundamenterder – Allgemeine Planungsgrundlagen, foundation earth electrodes have to be connected with the foundation plate in distances of two meters. There are several methods to do this. Meanwhile the clamping connection has turned out as the most economic one, because it is a quick and easy.

In the current lightning protection standards it is required to use among others also the reinforcement steels as natural components of the down-conductor system. In the following a survey of the nominal and outer diameters as well as of the reinforcement steel cross sections according to DIN 1045-1:2001-07 (see **Figure 1**).

For the expedient clamping connection to be applicable also for reinforcement steels of larger diameters, DEHN + SÖHNE has developed special clamps.

They can be installed quickly and easily. As shown in **Figures 2** and **3** they can be used as connecting and fastening element for fixed earthing terminals as well.
Optionally also cable lugs for a flexible connection can be used with this new type of terminal clamp, as shown in **Figure 4**.

The already practice proven connecting clamp for T, cross and parallel connections has been equipped with an additional clamping frame. Thus, as **Figure 5** shows, both, the electrical contact between reinforcement steel and fixed earthing terminal and the mechanical fixing in the formwork is realised. This clamp may also be used for the T or cross connection of a round conductor.

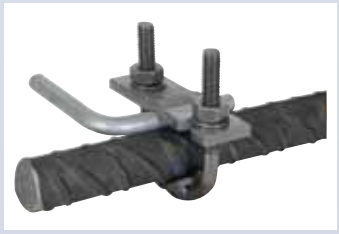


Figure 2:
U-clamp terminal
Part No. 308 045

Figure 3:
U-clamp terminal
Part No. 308 046

Figure 4:
U-clamp terminal with cable lug

Figure 5:
Connecting clamp
Part No. 308 035

The outer diameter including corrugation is approx. $d_A = 1.15 \times d_S$.

Nominal diameter d_s (mm)	6	8	10	12	14	16	20	25	28	32	40
Outer diameter incl. corrugation d_A (mm)	6.9	9.2	11.5	13.8	16.1	18.4	23	29	32	37	46
Nominal cross section (mm^2)	28.3	50.3	78.5	113.1	154	201	314	491	616	804	1257

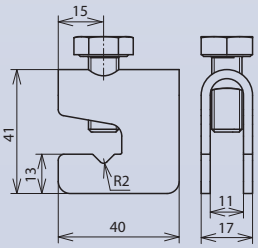
Figure 1: Diameters of reinforcement steels
Ref.: Bewehrungen von Stahlbetontragwerken nach DIN 1045-1:2001-07

Connecting Clamps for Reinforcements

Clamps for connecting concrete steel mats or reinforcements with round and flat conductors

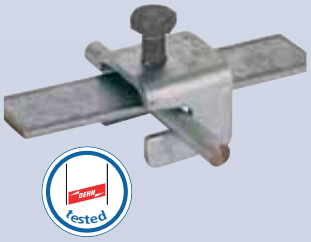
Arrangement:
(II) = parallel
(+) = crosswise

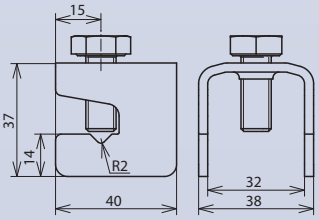
for T, cross and parallel connections



Part No.		308 025
Material		St/tZn
Clamping range Rd / Rd	mm	(+) 6-10 / 6-10
Clamping range Rd / Fl	mm	(+) 6-10 / 30
Clamping range Fl / Fl	mm	(II) 30 / 30
Screw	mm	M10x25
Material of screw		StSt
Standard		EN 50164-1
Short-circuit current (50 Hz)		
(1 s; ≤ 300 °C)	kA	9
Packing unit	pc(s)	50

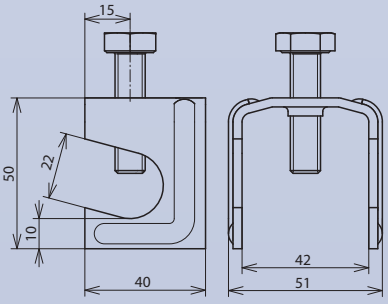
for T, cross and parallel connections





Part No.		308 026
Material		St/tZn
Clamping range Rd / Fl	mm	(+) 6-10 / 30
Clamping range Fl / Fl	mm	(+ / II) 30 / 30
Screw	mm	M10x25
Material of screw		St/tZn
Standard		EN 50164-1
Short-circuit current (50 Hz)		
(1 s; ≤ 300 °C)	kA	13
Packing unit	pc(s)	25

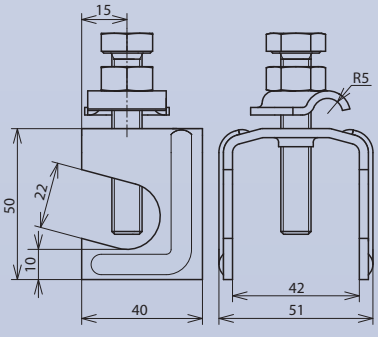
for T and cross connections



Part No.		308 030
Material		St/bare
Clamping range Rd / Fl	mm	(+) 6-22 / 40
Screw	mm	M10x40
Material of screw		St/bare
Standard		EN 50164-1
Short-circuit current (50 Hz)		
(1 s; ≤ 300 °C)	kA	1.0
Packing unit	pc(s)	25

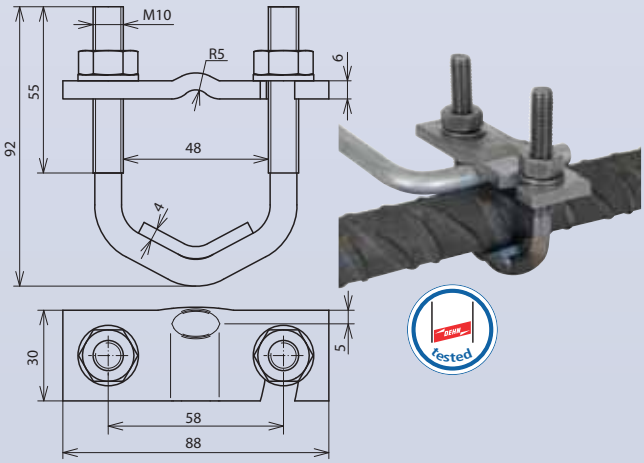
for T, cross and parallel connections with clamping frame

for flexible connection of round conductors or for fixed earthing terminals with simultaneous fixing in the formwork



Part No.		308 035
Material		St/bare
Clamping range Rd / Rd	mm	(+/II) 6-22 / 6-10
Clamping range Rd / Fl	mm	(+) 6-22 / 40
Screw	mm	M10x60
Material of screw		St/bare
Standard		EN 50164-1
Short-circuit current (50 Hz)		
(1 s; ≤ 300 °C)	kA	1.0
Packing unit	pc(s)	25

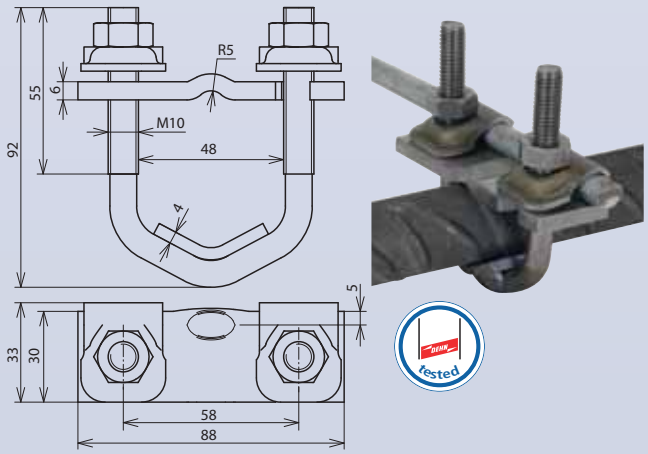
U-clamp terminal for large diameters



Part No.		308 045
Material		St/bare
Clamping range Rd / Rd	mm	(II) 16-48 / 6-10
Clamping range Rd / Fl	mm	(II) 16-48 / 30-40
Screw	mm	stirrup bolt M10x48
Material of screw		St/bare
Standard		EN 50164-1
Short-circuit current (50 Hz)		
(1 s; ≤ 300 °C)	kA	16
Packing unit	pc(s)	25

U-clamp terminal for large diameters with two additional clamping frames

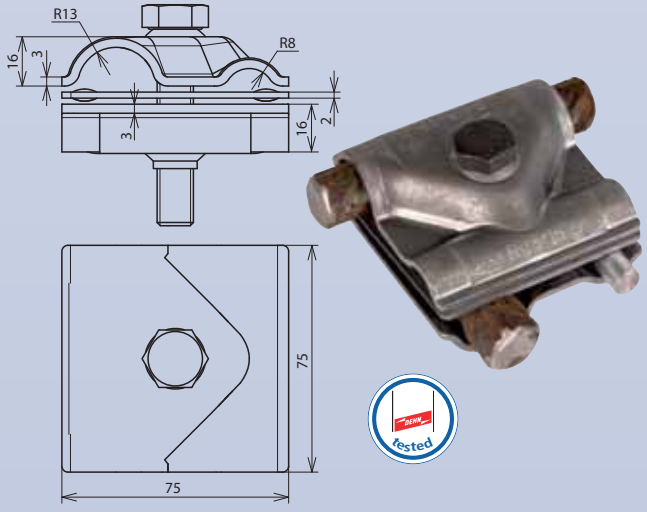
cross connections of round conductors (6-10 mm) or for the fixing with simultaneous connection of fixed earthing terminals



Part No.		308 046
Material		St/bare
Clamping range Rd / Rd	mm	(+/II) 16-48 / 6-10
Clamping range Rd / Fl	mm	(II) 16-48 / 30-40
Screw	mm	stirrup bolt M10x48
Material of screw		St/bare
Standard		EN 50164-1
Short-circuit current (50 Hz)		
(1 s; ≤ 300 °C)	kA	11
Packing unit	pc(s)	25

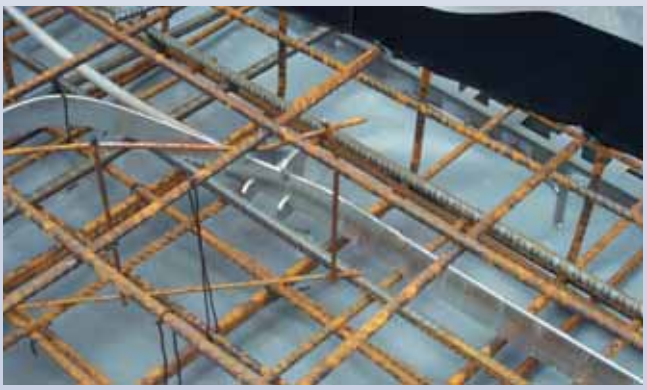
MAXI MV clamps

for T, cross and parallel connections



Part No.		308 041	308 040
Material		St/tZn	St/bare
Clamping range Rd / Rd	mm	(+ / II) 8-16 / 15-25	(+ / II) 8-16 / 15-25
Screw	mm	M12x65	M12x65
Material of screw		St/tZn	St/bare
Standard		EN 50164-1	EN 50164-1
Short-circuit current (50 Hz)			
(1 s; ≤ 300 °C)	kA	6.2	6.2
UL certification			UL467B
Packing unit	pc(s)	20	20
Stock No.		5999-12-362-1557	

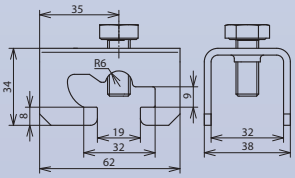
Connecting Clamps for Foundation Earth Electrodes



Clamps for connecting round and flat conductors in the concrete foundation

for T, cross and parallel connections, without having to thread the conductors

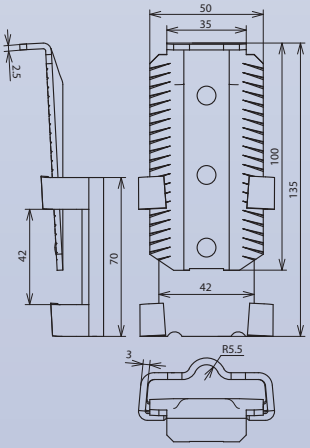
Arrangement: (II) = parallel (+) = crosswise



Part No.		308 120	308 129
Material		St/tZn	StSt
Clamping range Rd / Fl	mm	(+) 10 / 30	(+) 10 / 30
Clamping range Fl / Fl	mm	(+ / II) 30 / 30	(+ / II) 30 / 30
Screw	mm	M10x25	M10x25
Material of screw		St/tZn	StSt
Standard		EN 50164-1	EN 50164-1
Packing unit	pc(s)	25	25

Wedge Connector

Wedge connector with catch position for T, cross and parallel connections for use in concrete foundations

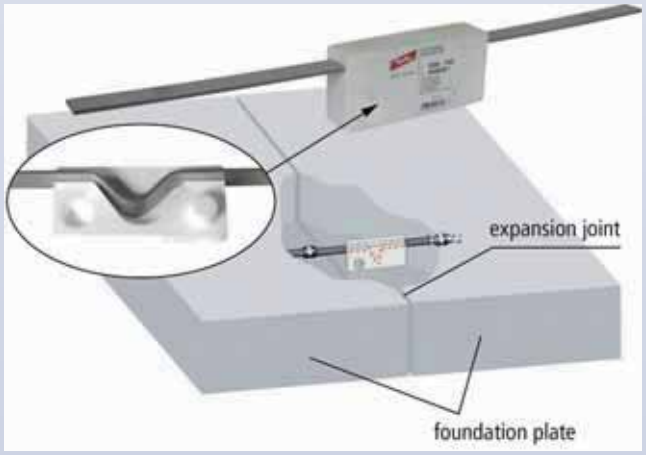


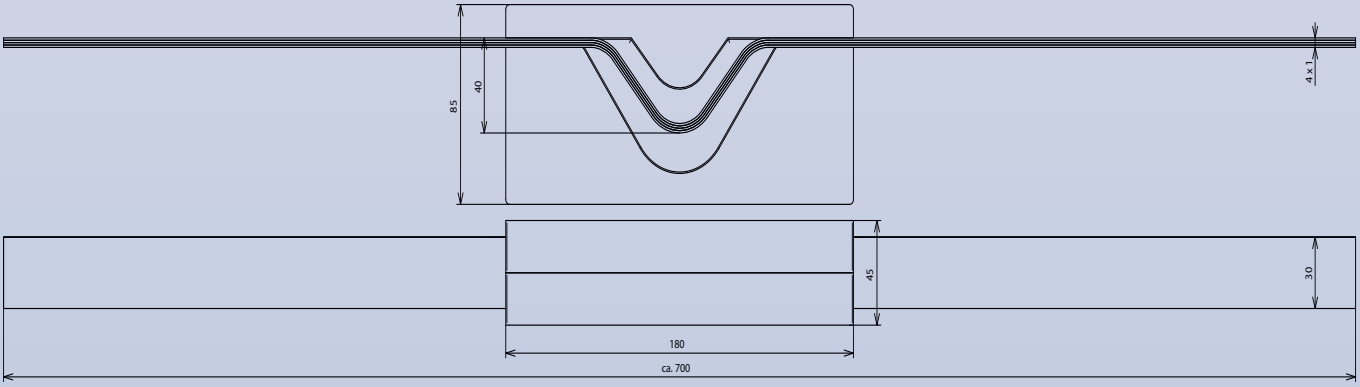
Part No.		308 001
Material		St/tZn
Clamping range Rd / Fl	mm	10 / 30x3.5-40x4
Clamping range Fl / Fl	mm	30x3.5-40x4 / 30x3.5-40x4
Material of wedge		St/tZn
Packing unit	pc(s)	25

Expansion Strap for Foundation Earth Electrodes

Expansion strap as foundation earth electrode jumper in extended foundations (several sections) at the expansion joints. The earth electrode no longer has to be led out of the base plate.

The expansion strap is designed for being embedded into the concrete base plate at the expansion joints, where the polystyrene block shall be set into the one section and the other end to be carried on in the next section.





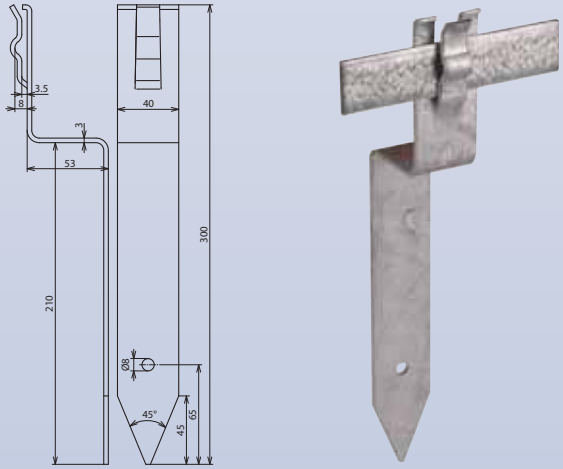
Part No.		308 150
Material of strap		StSt
Dimension of strap (l x w x d)	mm	approx. 700x30x(4x1)
Cross section	mm^2	120
Material of block		polystyrene
Dimension of block (l x w x d)	mm	180x85x45
Standard		EN 50164-2
Short-circuit current (50 Hz) (1 s; ≤ 300 °C)	kA	6
Packing unit	pc(s)	1

Spacers

Spacers for installing earth conductors in the foundation slab

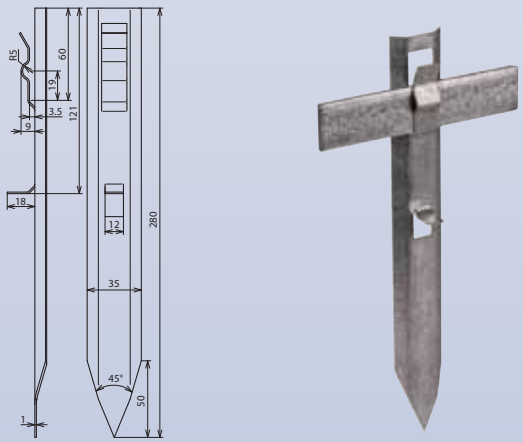
with safety lug which prevents coming loose of the conductor

Type angled and reinforced



Part No.		290 001
Material		St/tZn
Support Fl	mm	40
Support Rd	mm	8-10
Length	mm	300
Packing unit	pc(s)	25

Type straight



Part No.		290 002
Material		St/tZn
Support Fl	mm	40
Support Rd	mm	8-10
Length	mm	280
Packing unit	pc(s)	50

Method for the improvement and stabilisation of the earth electrode resistance

The highly swellable, powdery special clay has a high water binding capacity. Thus it provides a conductive enclosure for the earth electrode which has a positive effect concerning the earth electrode resistance.

The principle of the DEHNIT earthing method is to mix the fine-grained DEHNIT with water and sand and to enclose the earth electrode with this mixture. This conductive enclosure enlarges the earthing surface. Compared with the conventional earthing method without enclosure the DEHNIT method has three important pros:

– A low earthing resistance can be achieved even in case of a poor ground conductivity.
– With the enclosure the achieved earth-electrode resistance will be approx. 50 % lower and thus less earthing material is needed.
– The earth electrode resistance will be largely independent of temperature and weather fluctuations and remain constant for years (see **Figure 1**).

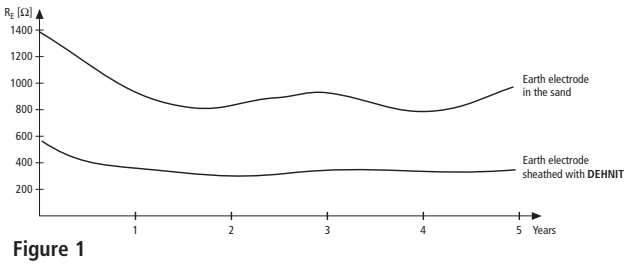


Figure 1

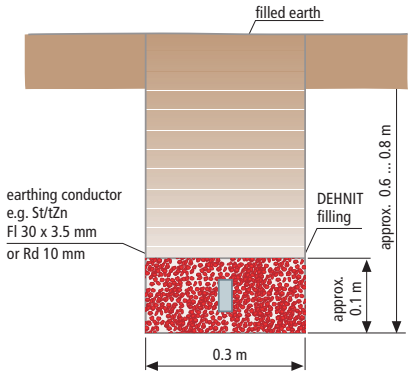


Figure 2

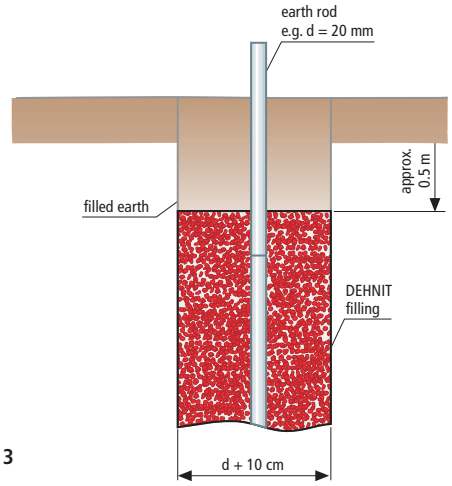


Figure 3

Proceeding instructions

For 1 m³ DEHNIT filling you need approx. 67 kg DEHNIT.

1. Surface earthing method

1.1 Excavate the duct for the earth conductor (approx. 0.6 ... 0.8 m deep).

1.2 Mix the DEHNIT (e.g. with a concrete mixer) as indicated:

5 parts of sand
1 part of DEHNIT
1/2 part of water

Mind the indicated sequence, otherwise heavy clodding is possible:

DEHNIT – sand – water

1.3 Fill this mixture into the duct to form a layer of approx. 5 cm.

1.4 Lay the straightened earth conductor directly on this DEHNIT layer.

1.5 Fill in another 5 cm layer of DEHNIT so that the earth conductor is completely enclosed.

1.6 Pound the filling mechanically or per foot.

1.7 Refill the earth excavation.

1.8 Make first resistance measuring of the earth-termination system.

Proceeding instructions

Following this procedure, usually 2 kg of DEHNIT is needed per running metre of duct for the earth conductor.

Part No.		573 000
Material		special clay
Mixing ratio		5 parts sand / 1 part DEHNIT / 0.5 parts water
Packing unit	kg	25

2. Procedure for earth rods

2.1 Drill a hole as deep as the length of the earth electrode with a diameter of at least 10 cm wider than the diameter (d) or the outer dimensions of the earth rod.

2.2 Mix DEHNIT according to 1.2.

2.3 Put the earth rod into the centre of the hole and fill the remaining space with DEHNIT. Pound every 0.5 m filling level. Finally refill the upper approx. 0.5 m with natural soil.

2.4 Make the first resistance measuring of the earth-termination system.

Proceeding instructions

Following this procedure, usually 0.84 kg of DEHNIT is needed per metre of earth rod depth (d = 20 mm).

The final earth electrode resistance will be achieved after about 3 – 4 months.

It is $^1/_2$ – $^1/_3$ of the value measured immediately after the filling with DEHNIT.

After this time the DEHNIT earth-termination system has an earth electrode resistance which is approx. 50 % lower than that of usual earth-termination systems without enclosure. This resistance value remains constant throughout years.

Equipotential Busbars K12 with Snap-on Terminals

Equipotential busbars for protective and funcitonal equipotential bonding and lightning equipotential bonding according to EN 62305-3

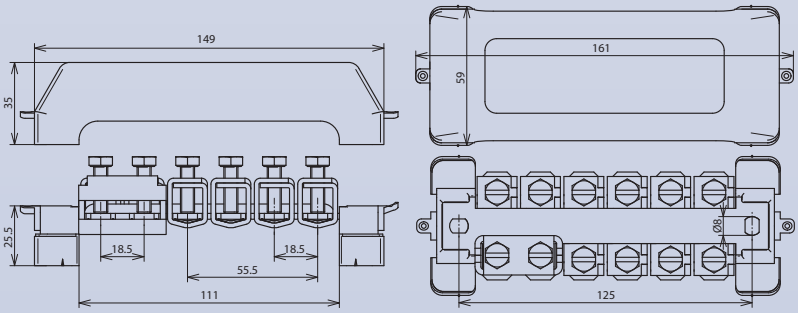
Type:
- tested according to DIN VDE 0618 Part 1
- CE mark
- Fixing frames and plastic cover grey or black (halogen-free)
- sealable / labelable cover
- snap-on terminals, St/gal Zn (loosely included)
- with 12 contact studs

Assignment:

for Rd one contact stud each
for Fl two contact studs each

Standard type

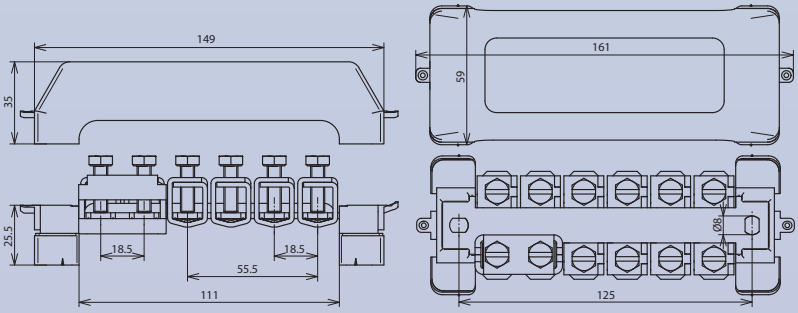
Terminals for:
10 conductors 2.5-95 mm² (solid/stranded) **or** Rd Ø10 mm
1 conductor Fl up to 30x4 mm



Part No.		563 200
Contact bar		Cu/gal Sn
Cross section	mm²	30
Fixing	mm	[2x] 6x8
Standard		EN 50164-1
Packing unit	pc(s)	1

UV stabilized type

Terminals for:
10 conductors 2.5-95 mm² (solid/stranded) **or** Rd Ø10 mm
1 conductor Fl up to 30x4 mm



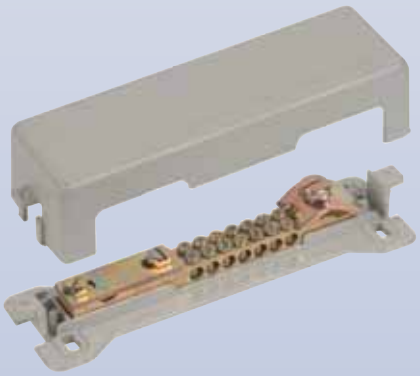
Part No.		563 201
Contact bar		Cu/gal Sn
Cross section	mm²	30
Fixing	mm	[2x] 6x8
Standard		EN 50164-1
Packing unit	pc(s)	1

Equipotential Busbar MS

Busbar for equipotential bonding

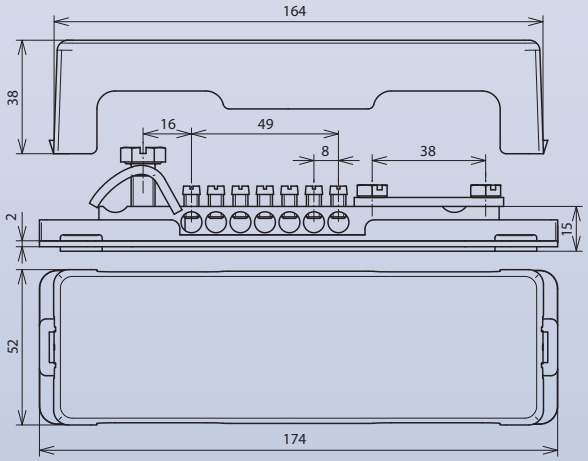
Terminals for:

7 conductors	2.5-16 mm²
1 conductor	Rd Ø7-10 mm
1 conductor Fl	up to 30x3.5 mm **or** Rd Ø8-10 mm



Design with

– plastic cover, grey



Part No.		563 050
Contact bar		Ms
Cross section	mm²	50
Fixing	mm	[4x] 6x10
Packing unit	pc(s)	1

Equipotential Busbars R15 with Terminal Block System / Kit

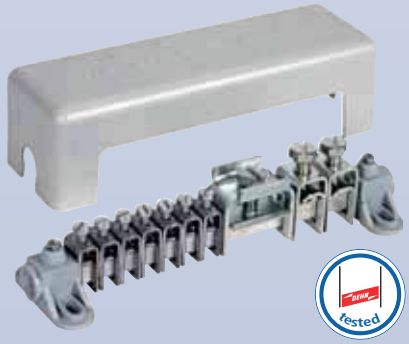
Equipotential busbars for protective and functional equipotential bonding and lightning equipotential bonding according to EN 62305-3

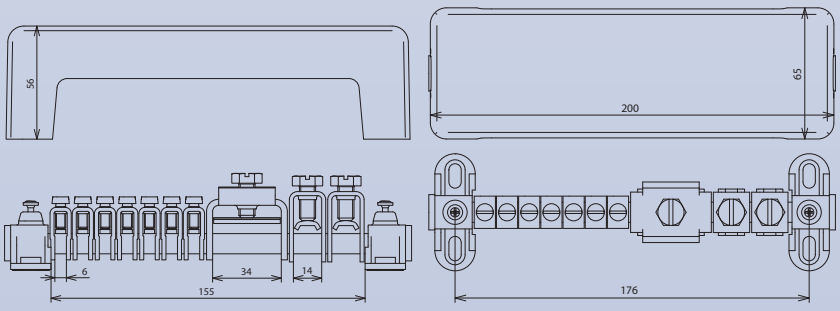
– tested according to DIN VDE 0609
– 15 modules
– grey plastic bar frames and cover (halogen-free)
– sealable / labelable cover
– terminal block St/gal Zn

Type A

Terminals for:

7 conductors	2.5-25 mm² (solid/stranded)
2 conductors	16-95 mm² **or** Rd Ø8-10 mm
1 conductor Fl	up to 30x4 mm



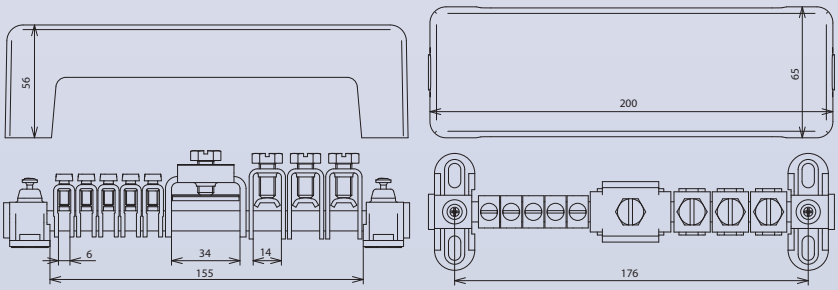


Part No.		563 010
Clamping bar		Ms/gal Sn
Cross section	mm²	100
Fixing	mm	[4x] 6x12
Standard		EN 50164-1
Packing unit	pc(s)	1

Type B

Terminals for:

5 conductors 2.5-25 mm² (solid/stranded)
3 conductors 16-95 mm² (solid/stranded) **or** Rd Ø8-10 mm
1 conductor Fl up to 30x4 mm

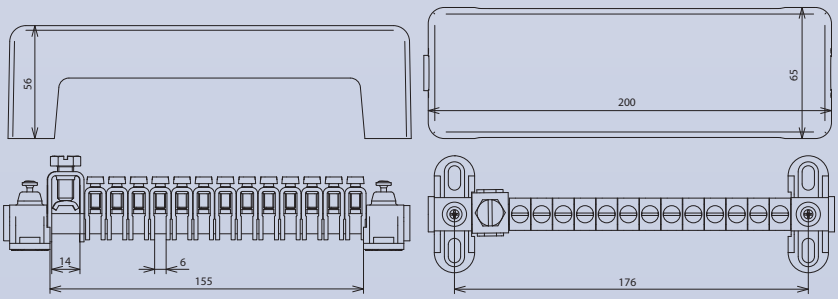


Part No.		563 020
Clamping bar		Ms/gal Sn
Cross section	mm²	100
Fixing	mm	[4x] 6x12
Standard		EN 50164-1
Packing unit	pc(s)	1

Type C

Terminals for:

13 conductors 2.5-25 mm² (solid/stranded)
1 conductor 16-95 mm² (solid/stranded) **or** Rd Ø8-10 mm



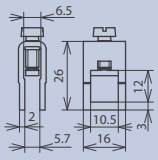
Part No.		563 030
Clamping bar		Ms/gal Sn
Cross section	mm²	100
Fixing	mm	[4x] 6x12
Standard		EN 50164-1
Packing unit	pc(s)	1

Accessories for Equipotential Busbars R15 with Terminal Block System / Kit

Terminal Block

for connection of:

1 conductor 2.5-25 mm² (solid/stranded)

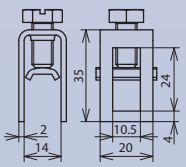


Part No.		563 011
Material		St/gal Zn
Modules		1
Standard		EN 50164-1
Packing unit	pc(s)	200

Terminal Block

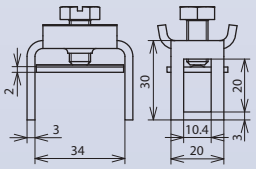
for connection of:

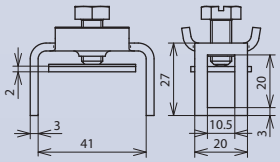
1 conductor 16-95 mm² (solid/stranded) **or** Rd Ø8-10 mm

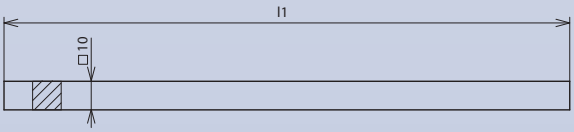


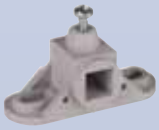
Part No.		563 013
Material		St/gal Zn
Modules		2
Standard		EN 50164-1
Packing unit	pc(s)	100

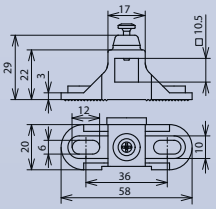
Accessories for Equipotential Busbars R15 with Terminal Block System / Kit

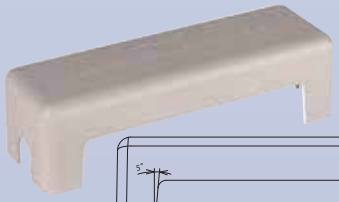


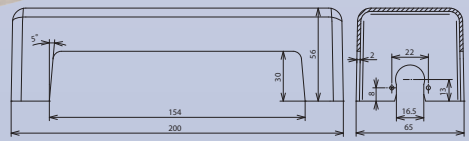












Terminal Block

for connection of:

1 conductor Fl up to 30x4 mm

Part No.		563 012
Material		St/gal Zn
Modules		4
Standard		EN 50164-1
Packing unit	pc(s)	25

Terminal Block

for connection of:

1 conductor Fl up to 40x5 mm

Part No.		563 019
Material		St/gal Zn
Modules		5
Standard		EN 50164-1
Packing unit	pc(s)	25

Clamping Bar

Part No.		563 016	563 017	563 018
Length (l1)	mm	198	398	798
Modules		15	30	60
Material		Ms/gal Sn	Ms/gal Sn	Ms/gal Sn
Cross section	mm²	100	100	100
Quantity of bar frames		2	4	8
Quantity of covers		1	2	4
Packing unit	pc(s)	10	10	10

Bar Frame

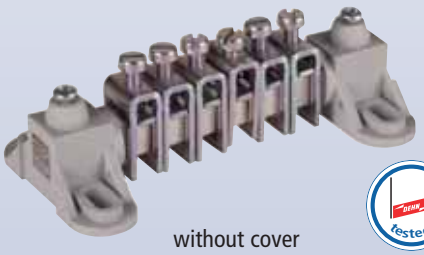
Part No.		563 014
Material		plastic
Colour		grey
Fixing	mm	[2x] 6x12
Packing unit	pc(s)	50

Cover

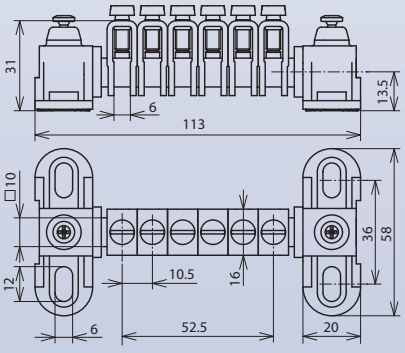
to snap on / labelable

Part No.		563 015
Material		plastic
Colour		grey
Modules		15
Packing unit	pc(s)	10

Equipotential Busbar with Miniature Terminal Block System



without cover



Equipotential busbars for protective and functional equipotential bonding in small systems

– tested according to DIN VDE 0609
– terminal block St/gal Zn

Terminals for:

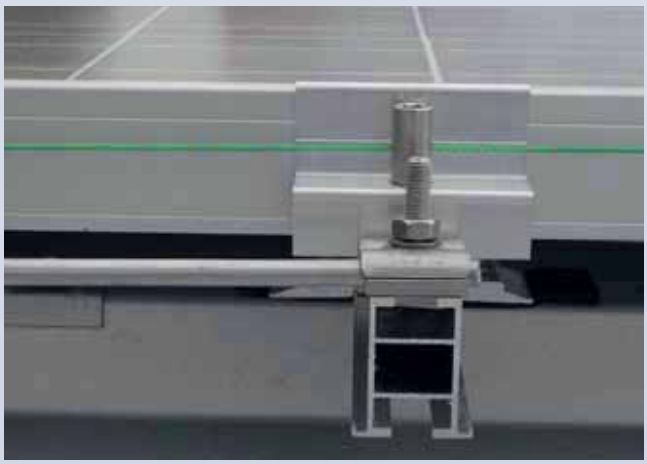
6 conductors 2.5-25 mm² (solid/stranded)

Part No.		563 105
Clamping bar		Ms/gal Sn
Cross section	mm²	100
Bar frames		plastic
Fixing	mm	[4x] 6x12
Standard		EN 50164-1
Packing unit	pc(s)	10

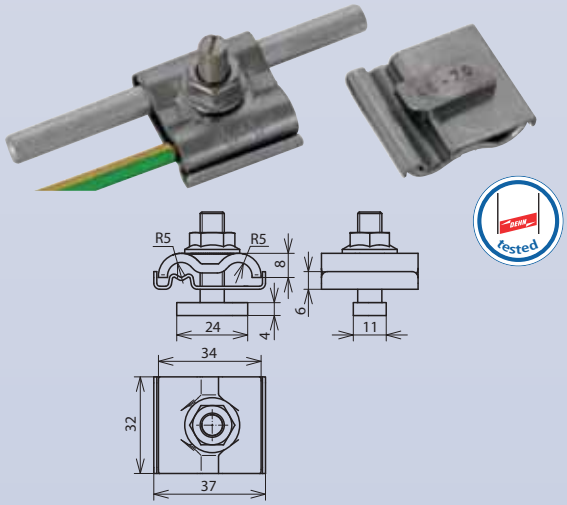
Earthing clamps for incorporating the mounting systems e.g. of PV systems into the functional equipotential bonding/functional earthing

The StSt contact plate (intermediate plate) allows for conductors of different materials such as Cu, Al, St/tZn and StSt to be connected with the usual mounting systems e.g. aluminium without risk of contact corrosion.

Easy and quick interconnection of the profiles e.g. by feed-through wiring is possible due to the double cleat design.

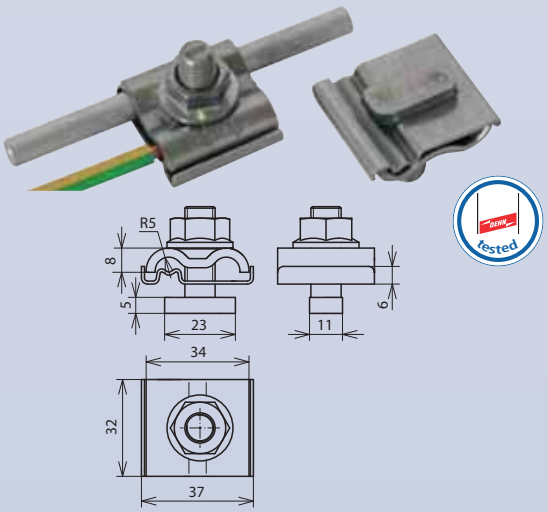


with screw M8 and locking nut



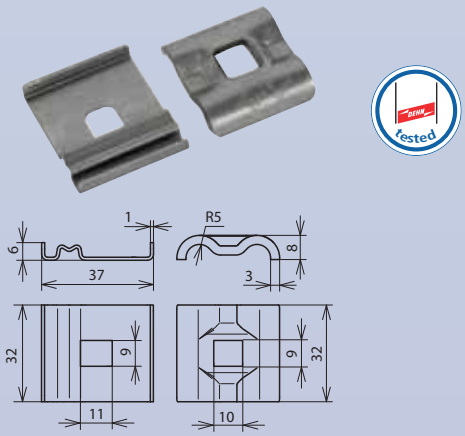
Part No.		540 250
Material of clamp		StSt
Clamping range Rd	mm	8-10
Connection (solid/stranded)	mm²	4-50
Screw	mm	hammer-head bolt M8x30
Material of screw/nut		StSt
Standard		EN 50164-1
Packing unit	pc(s)	50

with screw M10 and locking nut



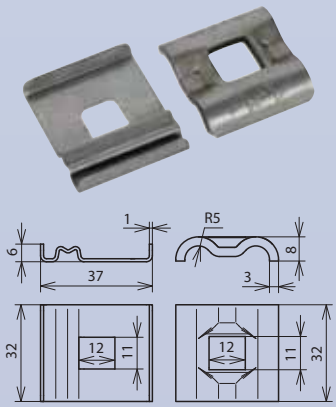
Part No.		540 260
Material of clamp		StSt
Clamping range Rd	mm	8-10
Connection (solid/stranded)	mm²	4-50
Screw	mm	hammer-head bolt M10x30
Material of screw/nut		StSt
Standard		EN 50164-1
Packing unit	pc(s)	50

without screws and nuts M8



Part No.		540 251
Material of clamp		StSt
Clamping range Rd	mm	8-10
Connection (solid/stranded)	mm²	4-50
Standard		EN 50164-1
Packing unit	pc(s)	10

without screws and nuts M10



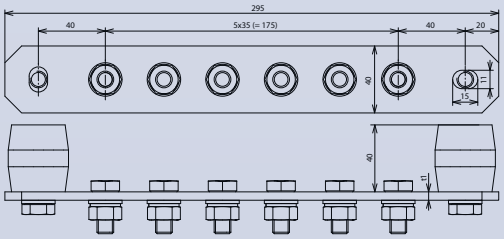
Part No.		540 261
Material of clamp		StSt
Clamping range Rd	mm	8-10
Connection (solid/stranded)	mm²	4-50
Standard		EN 50164-1
Packing unit	pc(s)	10

Equipotential busbars for the protective and functional equipotential bonding and lightning equipotential bonding according to EN 62305-3

also for use in potentially explosive atmospheres (screws are locked to prevent accidental loosening)

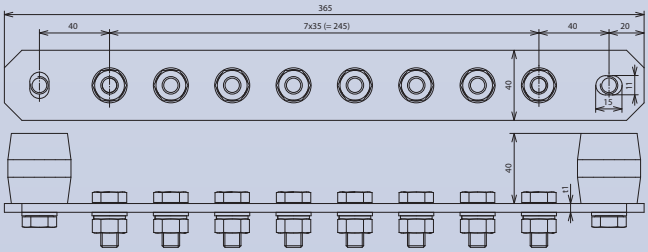
- with spring washer
- insulator UP (duroplastic, red) with thread M10
- UV stabilized and halogen-free

6 terminals



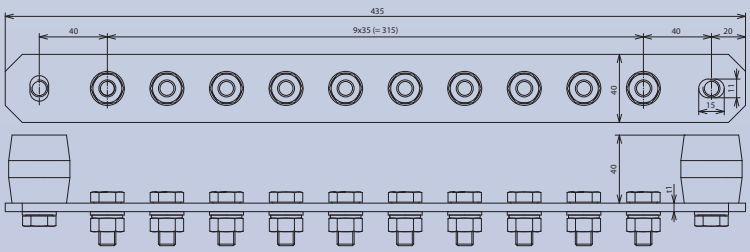
Part No.		472 207	472 209
Material		Cu	StSt
Dimension (l x w x t1)	mm	295x40x5	295x40x6
Cross section	mm²	200	240
Short-circuit current (50 Hz) (1 s; ≤ 300 °C)	kA	39	8.9
Screw	mm	M10x25	M10x25
Material of screw/nut		StSt	StSt
Material of insulator		UP	UP
Packing unit	pc(s)	1	1

8 terminals



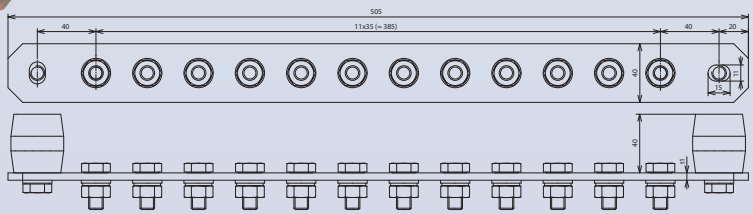
Part No.		472 227	472 229
Material		Cu	StSt
Dimension (l x w x t1)	mm	365x40x5	365x40x6
Cross section	mm²	200	240
Short-circuit current (50 Hz) (1 s; ≤ 300 °C)	kA	39	8.9
Screw	mm	M10x25	M10x25
Material of screw/nut		StSt	StSt
Material of insulator		UP	UP
Packing unit	pc(s)	1	1

10 terminals



Part No.		472 217	472 219
Material		Cu	StSt
Dimension (l x w x t1)	mm	435x40x5	435x40x6
Cross section	mm²	200	240
Short-circuit current (50 Hz) (1 s; ≤ 300 °C)	kA	39	8.9
Screw	mm	M10x25	M10x25
Material of screw/nut		StSt	StSt
Material of insulator		UP	UP
Packing unit	pc(s)	1	1

12 terminals

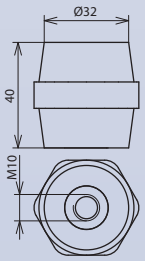


Part No.		472 237	472 239
Material		Cu	StST
Dimension (l x w x t1)	mm	505x40x5	505x40x6
Cross section	mm²	200	240
Short-circuit current (50 Hz) (1 s; ≤ 300 °C)	kA	39	8.9
Screw	mm	M10x25	M10x25
Material of screw/nut		StSt	StSt
Material of insulator		UP	UP
Packing unit	pc(s)	1	1

Accessories for Equipotential Busbars Industry Design

Insulator for EBB Industry Design

Part No.		472 210
Material		UP (Duroplast)
Terminal thread		M10 (length 12 mm)
Colour		red
Dimension (d x h)	mm	32x40
Packing unit	pc(s)	1

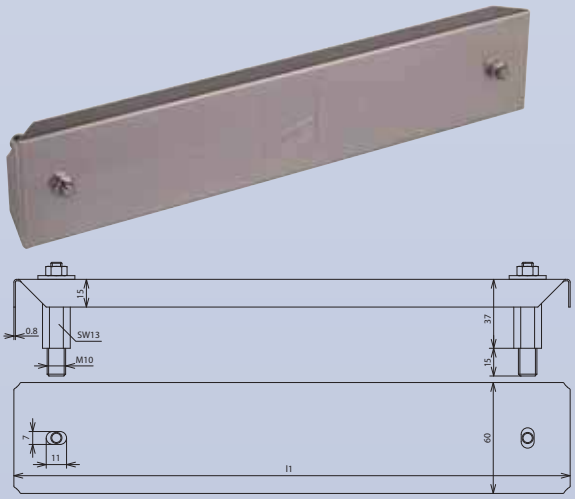


Cover for EBB Industry Design

Covers for EBB with insulators

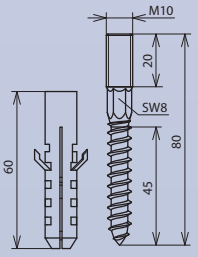
Part No.		472 279	472 269
Type of EBB		6 terminals	8 terminals
Dimension (l x w x d)	mm	301x60x0.8	371x60x0.8
Material		StSt	StSt
Spacer bolt		M10 / M6	M10 / M6
Material of screw/nut		StSt	StSt
Packing unit	pc(s)	1	1

Part No.		472 289	472 299
Type of EBB		10 terminals	12 terminals
Dimension (l x w x d)	mm	441x60x0.8	511x60x0.8
Material		StSt	StSt
Spacer bolt		M10 / M6	M10 / M6
Material of screw/nut		StSt	StSt
Packing unit	pc(s)	1	1



Fixing Set for EBB Industry Design

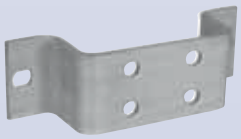
Part No.		472 201
Material of screw		St/tZn
Screw	mm	45 mm M10x20
Plastic dowel	mm	Ø12x60
Total length	mm	80
Packing unit	pc(s)	1



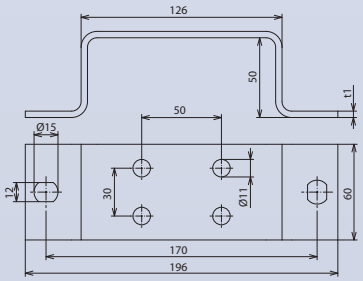
Earthing busbars for screwing or welding to steel structures, distance of bores 50 mm

Connection possibilities:
- flat strip with bore: with hexagon screws M10, nuts and spring washer
- flat strip (-40 mm) without bore: with cleat of disconnecting clamps e.g. Part No. 454 100
- round conductor: with KS connector e.g. Part No. 301 000 / 301 019 or with clamping frame e.g. Part No. 390 150

2x2 terminals

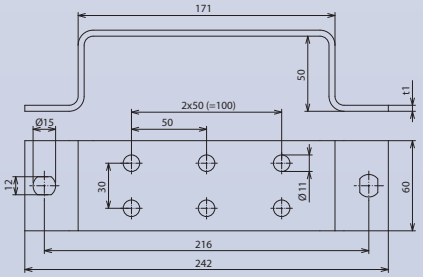


Part No.		472 023	472 109
Material		St/tZn	StSt
Cross section	mm²	240	300
Connection bores ∅	mm	11	11
Dimension (l x w x d1)	mm	196x60x4	196x60x5
Fixing	mm	[2x] 12x15	[2x] 12x15
Packing unit	pc(s)	1	1

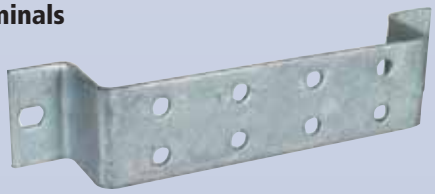


2x3 terminals

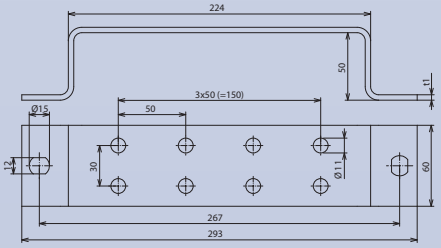
Part No.		472 022	472 119
Material		St/tZn	StSt
Cross section	mm²	240	300
Connection bores ∅	mm	11	11
Dimension (l x w x d1)	mm	242x60x4	242x60x5
Fixing	mm	[2x] 12x15	[2x] 12x15
Packing unit	pc(s)	1	1



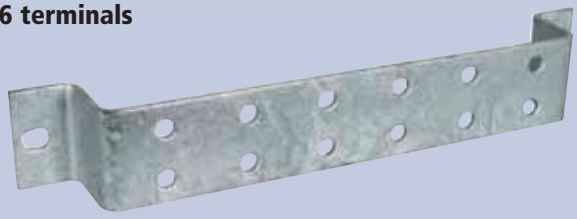
2x4 terminals



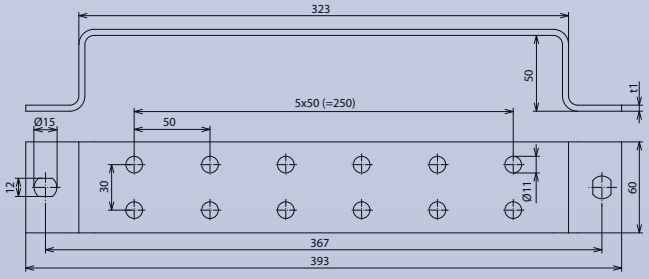
Part No.		472 024	472 129
Material		St/tZn	StSt
Cross section	mm²	240	300
Connection bores ∅	mm	11	11
Dimension (l x w x d1)	mm	293x60x4	293x60x5
Fixing	mm	[2x] 12x15	[2x] 12x15
Packing unit	pc(s)	1	1



2x6 terminals

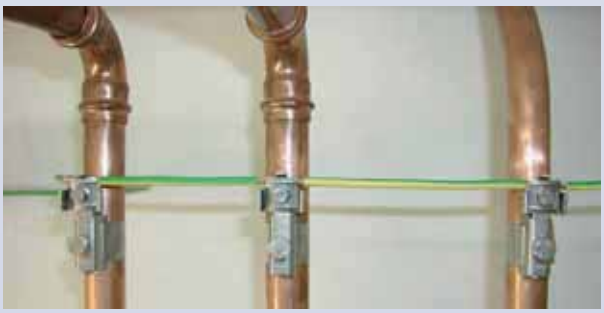


Part No.		472 021	472 139
Material		St/tZn	StSt
Cross section	mm²	240	300
Connection bores ∅	mm	11	11
Dimension (l x w x d1)	mm	393x60x4	393x60x5
Fixing	mm	[2x] 12x15	[2x] 12x15
Packing unit	pc(s)	1	1



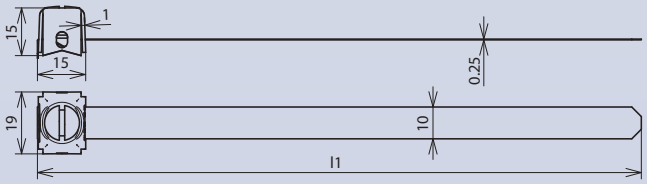
Earthing Pipe Clamps

Earthing pipe clamps for integrating pipes into the protective and functional equipotential bonding, with continuously adjustable tensioning strap

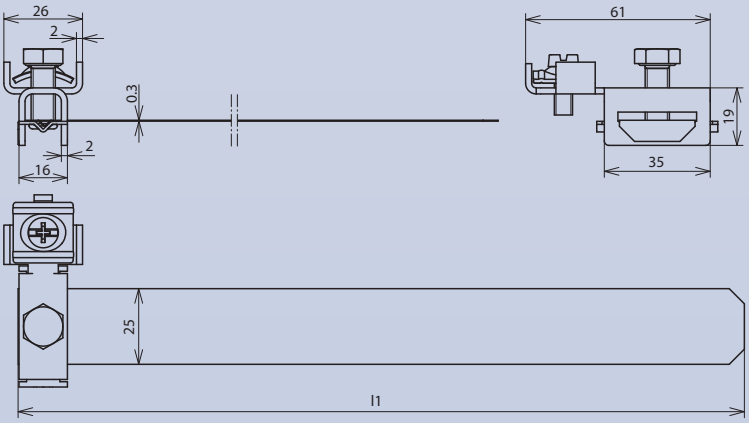


Mini type

one-wire connection, terminal cross section 2.5-6 mm²



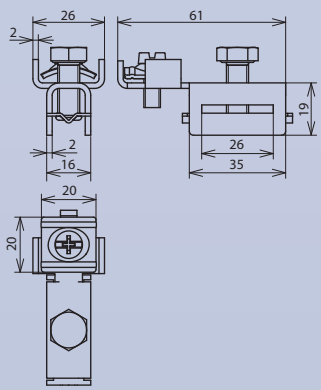
Part No.		540 001	540 002
Material of head		Ms/gal Sn	Ms/gal Sn
Material of strap		StSt	StSt
Clamping range of pipe	mm	13.5-48.3 ($^1/_4$ - 1$^1/_2$")	13.5-88.9 ($^1/_4$ - 3")
Screw	mm	M6x10	M6x10
Material of screw		St/gal Zn	St/gal Zn
Dimension of strap (l1 x w x d)	mm	190x10x0.25	325x10x0.25
Packing unit	pc(s)	20	20



Standard type

for one-wire or two-wire connection with feed-through wiring, terminal cross-section 4-25 mm²

Part No.		540 910	540 911	540 912
Material		StSt	StSt	StSt
Clamping range of pipe	mm	26.9-60.3 ($^3/_4$ - 2")	26.9-114.3 ($^3/_4$ - 4")	26.9-165 ($^3/_4$ - 6")
Screw	mm	M8x20 / M6x16	M8x20 / M6x16	M8x20 / M6x16
Material of screw		StSt	StSt	StSt
Dimension of strap (l1 x w x d)	mm	240x25x0.3	410x25x0.3	570x25x0.3
Packing unit	pc(s)	10	10	10



Separate grip head

for combination with endless tensioning strap (Part No. 540 901), terminal cross-section 4-25 mm²

Part No.		540 900
Material		StSt
Screw	mm	M8x20 / M6x16
Material of screw		StSt
Packing unit	pc(s)	50

Earthing Pipe Clamps

Endless tensioning strap

for cutting to length with sheet shear

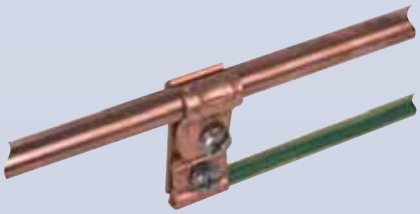
Part No.		540 901
Material		StSt
Dimension of strap (l1 x w x d)	mm	... x25x0.3
Length	m	100
Packing unit	pc(s)	1

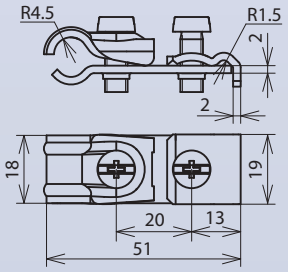
Earthing Pipe Clamps PA

Earthing pipe clamps for integrating pipes into the protective and functional equipotential bonding

with single-screw cleat

for copper pipes ∅8-10 mm

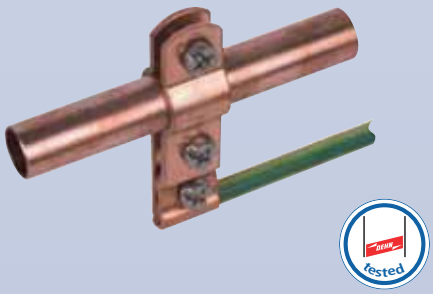


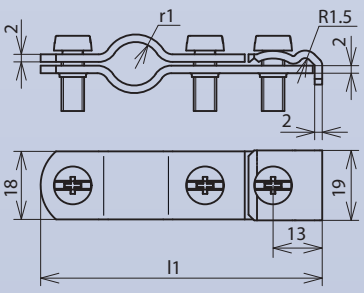


Part No.		409 007
Material		Cu
Clamping range of pipe ∅	mm	8-10
Terminal cross section	mm²	2.5-16
Screw	mm	M6x16
Material of screw		StSt
Dimension (l1 x r1)	mm	51x4.5
Packing unit	pc(s)	50

with two-screw cleat

for copper pipes according to DIN 2440 and DIN 2441





Part No.		409 147	409 387	409 127	409 347	409 107
Material		Cu	Cu	Cu	Cu	Cu
Clamping range of pipe ∅	mm	13.5 (1/4'')	17.2 (3/8'')	21.3 (1/2'')	26.9 (3/4'')	33,7 (1'')
Terminal cross section	mm²	2.5-16	2.5-16	2.5-16	2.5-16	2.5-16
Screw	mm	M6x16	M6x16	M6x16	M6x16	M6x16
Material of screw		StSt	StSt	StSt	StSt	StSt
Dimension (l1 x r1)	mm	74.4x6.8	79.2x8.4	84.4x10.6	89.5x13.4	94.5x16.8
Packing unit	pc(s)	25	25	25	25	25

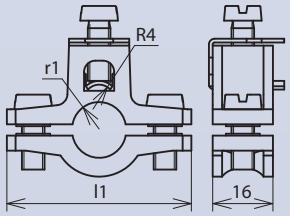
Earthing Pipe Clamps Lightning Protection

Earthing pipe clamps for integrating pipes into the lightning equipotential bonding according to EN 62305-3

The indicated clamping range data in mm refer to the outer diameter of the pipes, whereas the indicated inch data for the clamping range refer to the inner diameter (nominal width) of the pipes.

Type with screws M6

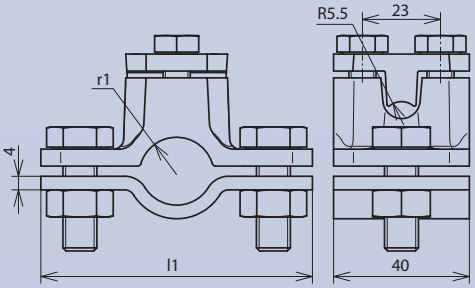
Terminal conductor cross section 4-25 mm²



Part No.		408 014	408 038	408 012	408 034	408 100	408 114	408 112
Clamping range of pipe Ø	mm	13.5 (1/4'')	17.2 (3/8'')	21.3 (1/2'')	26.9 (3/4'')	33.7 (1'')	42.4 (1 1/4'')	48.3 (1 1/2'')
Material		ZDC	ZDC	ZDC	ZDC	ZDC	ZDC	ZDC
Screw	mm	M6x16	M6x16	M6x16	M6x16	M6x16	M6x16	M6x16
Material of screw/nut		StSt	St/Zn	St/Zn	St/Zn	St/Zn	St/Zn	St/Zn
Dimension (l1 x r1)	mm	49x7	52.5x9	57x11	62.5x14	69x17.5	78x21.5	85x24.5
Standard		EN 50164-1	EN 50164-1	EN 50164-1	EN 50164-1	EN 50164-1	EN 50164-1	EN 50164-1
Packing unit	pc(s)	10	10	10	10	10	10	10

Type with screws M10

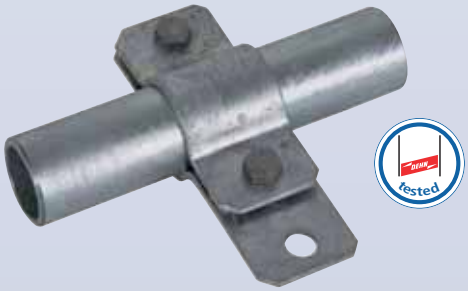
connection for Rd 4-10 mm or terminal conductor cross section of max. 70 mm²

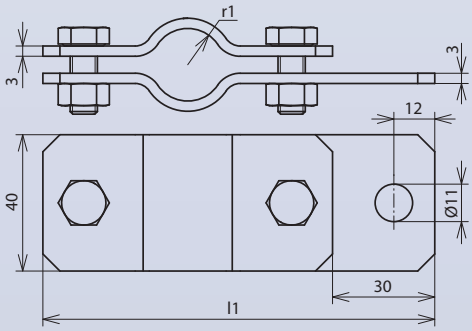


Part No.		407 012	407 034	407 100	407 114	407 112	407 200
Clamping range of pipe Ø	mm	21.3 (1/2'')	26.9 (3/4'')	33.7 (1'')	42.4 (1 1/4'')	48.3 (1 1/2'')	60.3 (2'')
Material		MCI / St/tZn	MCI / St/tZn	MCI / St/tZn	MCI / St/tZn	MCI / St/tZn	MCI / St/tZn
Screw	mm	M10x30 / M8x20	M10x30 / M8x20	M10x30 / M8x20	M10x30 / M8x20	M10x30 / M8x20	M10x30 / M8x20
Material of screw/nut		St/tZn	St/tZn	St/tZn	St/tZn	St/tZn	St/tZn
Dimension (l1 x r1)	mm	80x11	83x14	85x17.5	100x24.5	95x22	113x30.5
Standard		EN 50164-1	EN 50164-1	EN 50164-1	EN 50164-1	EN 50164-1	EN 50164-1
Packing unit	pc(s)	10	10	10	10	10	10

Type St/tZn with screws M8

St/tZn material thickness 3 mm
connection for Fl with screws and nuts M10, for Rd 7-10 mm e.g. KS connector Part No. 301 000 or clamping frame, Part No. 390 150



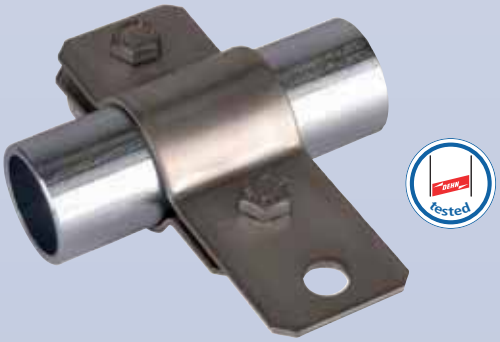


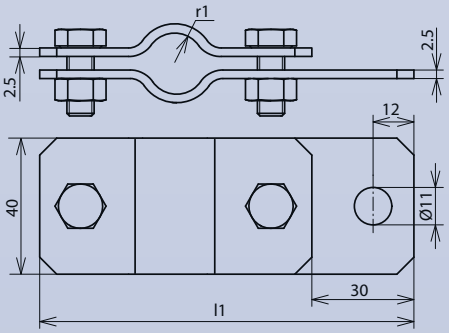
Part No.		410 038	410 012	410 034	410 100	410 114
Clamping range of pipe Ø	mm	17.2 (3/8'')	21.3 (1/2'')	26.9 (3/4'')	33,7 (1'')	42.4 (1 1/4'')
Material		St/tZn	St/tZn	St/tZn	St/tZn	St/tZn
Screw	mm	M8x20	M8x20	M8x20	M8x20	M8x20
Material of screw/nut		St/tZn	St/tZn	St/tZn	St/tZn	St/tZn
Dimension (l1 x r1)	mm	110x8.5	115x10.5	115x13.5	124x17	132.5x21
Standard		EN 50164-1	EN 50164-1	EN 50164-1	EN 50164-1	EN 50164-1
Packing unit	pc(s)	25	25	25	25	25

Part No.		410 112	410 134	410 200	410 212	410 300
Clamping range of pipe Ø	mm	48.3 (1 1/2'')	54.5 (1 3/4'')	60,3 (2'')	76.1 (2 1/2'')	88,9 (3'')
Material		St/tZn	St/tZn	St/tZn	St/tZn	St/tZn
Screw	mm	M8x20	M8x20	M8x20	M8x20	M8x20
Material of screw/nut		St/tZn	St/tZn	St/tZn	St/tZn	St/tZn
Dimension (l1 x r1)	mm	140.5x24	145x27.5	151x30	169x38	182.5x44.5
Standard		EN 50164-1	EN 50164-1	EN 50164-1	EN 50164-1	EN 50164-1
Packing unit	pc(s)	25	25	25	20	15

Type StSt with screws M8

StSt material thickness 2.5 mm
connection for Fl with screws and nuts M10, for Rd 7-10 mm e.g. KS connector Part No. 301 000 or clamping frame, Part No. 390 150





Part No.		410 309	410 319	410 329	410 339	410 349
Clamping range of pipe Ø	mm	17.2 (3/8'')	21.3 (1/2'')	26.9 (3/4'')	33,7 (1'')	42.4 (1 1/4'')
Material		StSt	StSt	StSt	StSt	StSt
Screw	mm	M8x20	M8x20	M8x20	M8x20	M8x20
Material of screw/nut		StSt	StSt	StSt	StSt	StSt
Dimension (l1 x r1)	mm	110.5x8.5	114.5x10.5	115.5x13.5	124x17	132.5x21
Standard		EN 50164-1	EN 50164-1	EN 50164-1	EN 50164-1	EN 50164-1
Packing unit	pc(s)	25	25	25	25	25

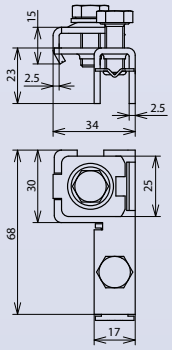
Part No.		410 359	410 369	410 379	410 389	410 399
Clamping range of pipe Ø	mm	48.3 (1 1/2'')	54.5 (1 3/4'')	60,3 (2'')	76.1 (2 1/2'')	88,9 (3'')
Material		StSt	StSt	StSt	StSt	StSt
Screw	mm	M8x20	M8x20	M8x20	M8x20	M8x20
Material of screw/nut		StSt	StSt	StSt	StSt	StSt
Dimension (l1 x r1)	mm	140.5x24	145x27.5	151x30	169x38	182.5x44.5
Standard		EN 50164-1	EN 50164-1	EN 50164-1	EN 50164-1	EN 50164-1
Packing unit	pc(s)	25	25	25	20	15

Separate grip head

for combination with endless tensioning strap (Part No. 540 901)

Connection for:

1 conductor Rd Ø10 mm
or
1-2 conductors Rd Ø6-8 mm **or** 4-50 mm² (solid/stranded)



Part No.		540 110
Material		StSt
Screw	mm	M8x20
Material of screw		StSt
Standard		EN 50164-1
Packing unit	pc(s)	50

Endless tensioning strap

for cutting to length e.g. with sheet shear

Part No.		540 901
Material		StSt
Dimension of strap (l1 x w x d)	mm	...x25x0.3
Length	m	100
Packing unit	pc(s)	1

Pipe clamps for lightning current carrying capable connection e.g. of antenna poles and for lightning equipotential bonding according to EN 62305-3

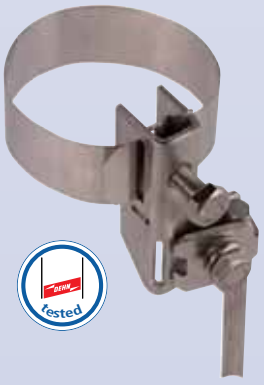
with adjustable tensioning strap for connecting one or two conductors and for feed-through wiring

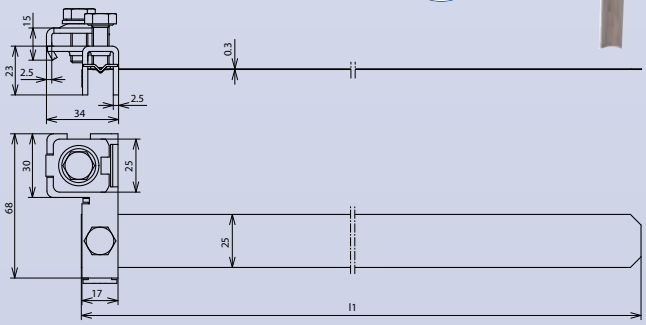
lightning current tested according to EN 50164-1 up to 100 kA (10/350)

Pipe clamps for antennas – complete set

Connection for:

1 conductor Rd 10 mm
or
1-2 conductors Rd Ø6-8 mm **or** 4-50 mm² (solid/stranded)





Part No.		540 103	540 100
Material		StSt	StSt
Clamping range of pipe	mm	26.9-88.9 (3/4 - 3'')	26.9-165 (3/4 - 6'')
Screw	mm	M8x20	M8x20
Material of screw		StSt	StSt
Dimension of strap (l1 x w x d)	mm	330x25x0.3	570x25x0.3
Standard		EN 50164-1	EN 50164-1
Military name		VG 96953 T05 B0001	VG 96953 T05 B0002
Packing unit	pc(s)	10	10
Stock No.			5975-12-120-7744

Pipe Clamp Lightning Protection with Tines

Pipe clamp for incorporating surface coated pipes into the lightning equipotential bonding according to EN 62305-3

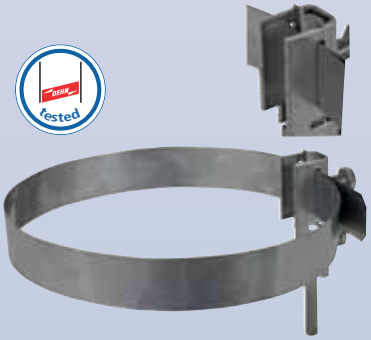
applicable for surface coatings (e.g. varnished or powder-coated) up to a layer thickness of 0.2 mm

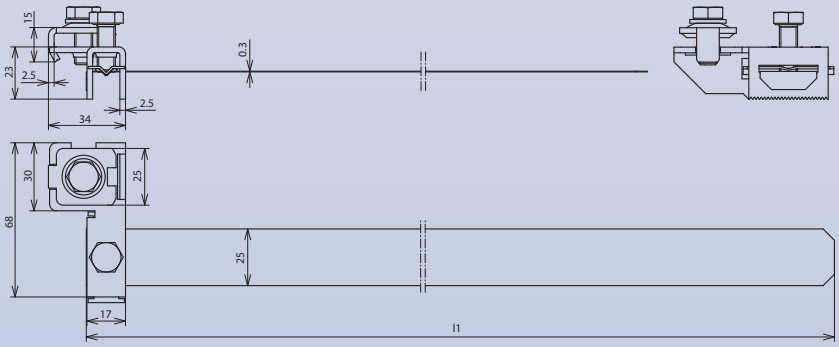
special tines for piercing the surface coating and hence provide the necessary contact

lightning current tested according to EN 50164-1 with 50 kA (10/350 µs)

Connection for:

1 conductor Rd ∅10 mm
or
1-2 conductors Rd ∅6-8 mm **or** 4-50 mm² (solid/stranded)



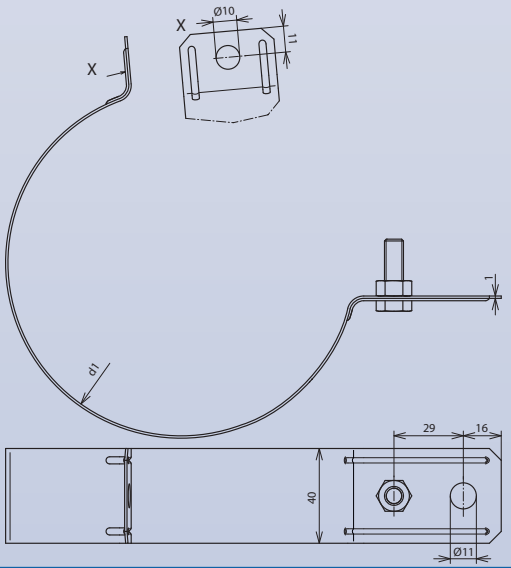


Part No.		540 200
Material		StSt
Clamping range of pipe ∅	mm	26,9-165 (3/4 - 6")
Screw	mm	M8x20
Material of screw		StSt
Dimension of strap (l1 x w x d)	mm	570x25x0.3
Standard		EN 50164-1
Packing unit	pc(s)	10

Downpipe Clamps

Pipe clamps for lightning equipotential bonding connection of downpipes according to EN 62305-3

connection possibilities for Rd e.g. with KS connector Part No. 301 000 or with clamping frame Part No. 390 150 (according to material)

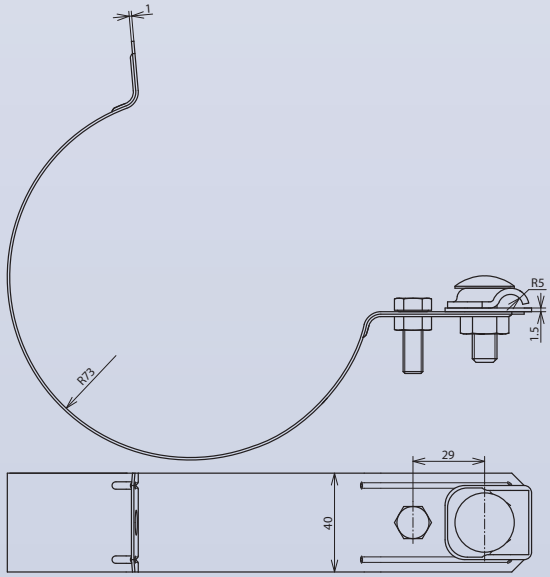


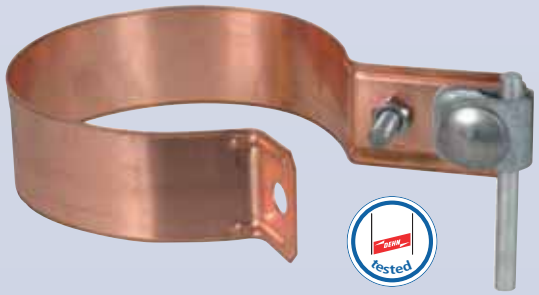
for fixed pipe diameters

Part No.		420 100	420 120	420 107	420 127
Material		St/tZn	St/tZn	Cu	Cu
Clamping range of pipe ∅ (d1)	mm	100	120	100	120
Bore ∅	mm	11	11	11	11
Screw	mm	M8x25	M8x25	M8x25	M8x25
Material of screw/nut		StSt	StSt	StSt	StSt
Standard		EN 50164-1	EN 50164-1	EN 50164-1	EN 50164-1
Packing unit	pc(s)	50	50	50	50

Type bimetallic

for the connection of conductors made of St with downpipe clamps made of Cu, with clamping frame St/tZn and intermediate plate (Cupal)

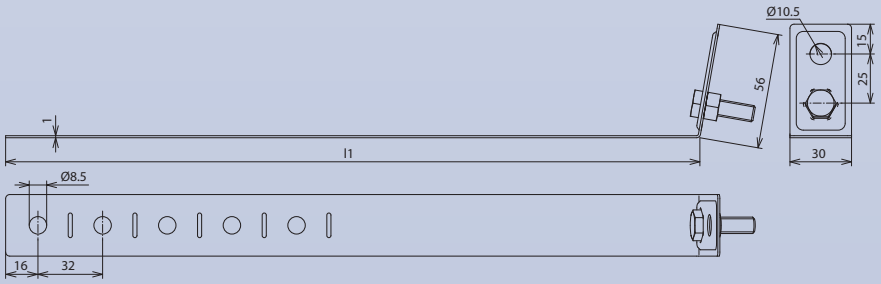


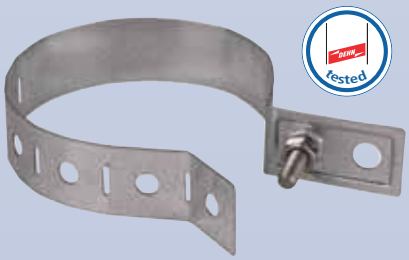


Part No.		420 207
Material		Cu / St/tZn
Clamping range of pipe Ø (d1)	mm	100
Clamping range Rd	mm	6-10
Screw	mm	M8x25 / M10x30
Material of screw/nut		StSt
Standard		EN 50164-1
Packing unit	pc(s)	50

Type RV adjustable

with additional screw-retaining thread insert of the fixing screw and markings, predetermined bending points as well as stamped-on cutting aids





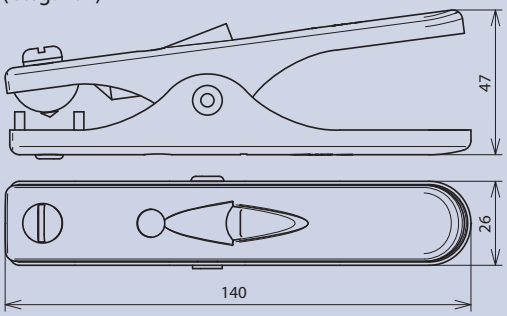
Part No.		423 010	423 011	423 017	423 019	423 020	423 021	423 027	423 029
Material		St/tZn	Al	Cu	StSt	St/tZn	Al	Cu	StSt
Clamping range of pipe Ø (d1)	mm	60-100	60-100	60-100	60-100	60-150	60-150	60-150	60-150
Length (l1)	mm	337	337	337	337	494	494	494	494
Bore Ø	mm	10,5	10.5	10.5	10.5	10.5	10.5	10.5	10.5
Screw	mm	M8x25	M8x25	M8x25	M8x25	M8x25	M8x25	M8x25	M8x25
Material of screw/nut		StSt	StSt	StSt	StSt	StSt	StSt	StSt	StSt
Standard		EN 50164-1	EN 50164-1	EN 50164-1	EN 50164-1	EN 50164-1	EN 50164-1	EN 50164-1	EN 50164-1
Packing unit	pc(s)	50	50	50	50	50	50	50	50

– for connection of fuel lorries, aircraft etc.
– for static discharge
– for application in explosion-hazard areas

More details in installation instructions No. 1530

Small design

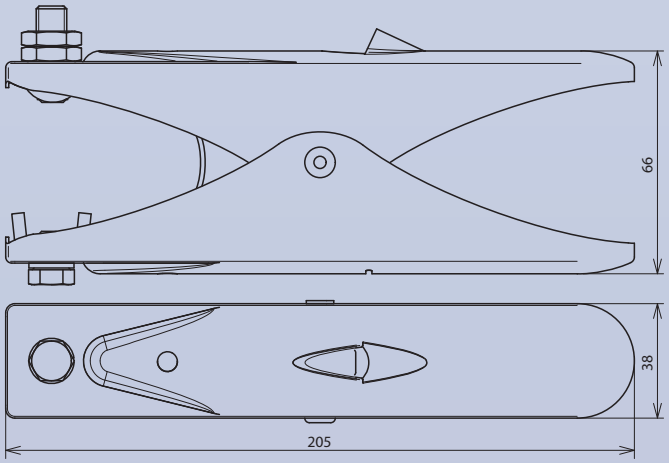
brass jaw with steel tips (Material No. 1.4104) and copper contact clip;
Terminal: panhead screw with slot or with enclosed crimping cable lug 25 mm² – M6 (Cu/gal Sn)



Part No.		546 025	546 002
Material of tongs		St/gal Zn	StSt
Clamping range	mm	up to Ø16 / up to 13	up to Ø16 / up to 13
Length	mm	140	140
Terminal screw	mm	M6x12	M6x12
Material of screw		StSt	StSt
Packing unit	pc(s)	1	1

Large design

brass jaw without steel tips and copper contact clip;
Terminal: threaded bolt with nut



Part No.		546 000	546 001
Material of tongs		St/gal Zn	StSt
Clamping range	mm	up to Ø55 / up to 45	up to Ø55 / up to 45
Length	mm	205	205
Terminal nut		M10	M10
Material of screw		StSt	StSt
Packing unit	pc(s)	1	1

50 Hz Ampacity of Conductors and Connection Components

Electrical installations are an implementation of interacting equipment powered by different electrical systems as there are

- high-voltage technology (HV systems)
- medium voltage technology (MV systems)
- low-voltage technology (LV systems)
- information technology (IT systems)

Basis for a reliable interaction of the different systems is a common earth-termination system and a common equpotential bonding system. It is important that all conductors, clamps and connectors are specified for the various applications.

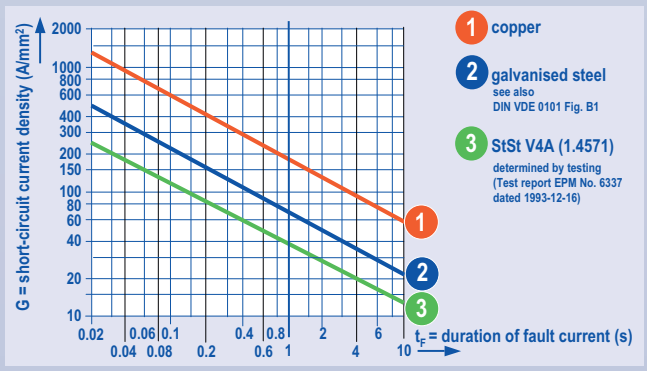
For buildings with integrated transformers, standards and guidelines concerning power plants with nominal voltages over 1 kV have to be considered.

Conductor materials and connection components for use in HV, MV and LV systems have to comply with the requirements arising in case of 50 Hz currents. Due to the prospective short-circuit currents (50 Hz) the cross sections of the earth electrode material for the various systems / buildings have to be especially determined. Currents of short-circuits to earth (standard requirement double short-circuit to earth current I''_{kEE}) must not lead to inadmissible heating of the components.

If the distribution network operator (DNO) does not have special requirements, the standard requirements concerning the fault current duration (duration of disconnection) of one second and the maximum permissible temperature of 300 °C are taken as a basis for the used materials of earthing conductors and connection components / clamps. Decisive factors for the selection of the earthing conductor cross section are the material and the current density G (in A/mm²) in relation to the fault current duration.

The diagram shows the permissible 50 Hz short-circuit current density (G) for the conductor materials copper, steel and high-alloy steel (stainless steel V4A material No. 1.4571). Detailed values of the short-circuit current (I_k) at a current flow duration of 1 s on the earthing conductors, earth rods and various connection components / clamps are indicated in the main catalogue lightning protection or in the product data sheets (www.dehn.de – product data).

Ring equipotential bonding



Ampacity of earth electrode materials

In the following a calculaton of the short-circuit current to earth showing how to design the earth conductor:

Version 1
A 3-pole short-circuit current specified by the system operator e.g. $I''_{k3} \approx 15000$ A

Version 2
Calculation of a theoretical worst case asssuming that the supplying voltage will not fail (remains constant).

The short-circuit voltage (u_k) is used to determine the max. 3-pole short-circuit current. The 3-pole short-circuit current I''_{k3} is the max. 3-pole short-circuit current at the transformer regardless of an impedance on the fault site (Z = 0).

In the calculation exemplarily a transformer with the following data is considered:

Nominal capacity of the transformer S = 630 kVA

Nominal voltage on low-voltage side U = 400 V

Short-circuit voltage u_k = 6.05 %

Design for short-circuit
Linear conversion for the short-circuit voltage (worst case):

$$I''_{k3} = \frac{S}{\sqrt{3} \bullet U \bullet u_k}$$

$$I''_{k3} = \frac{630 \bullet 10^3 \text{ VA}}{\sqrt{3} \bullet 400 \text{ V} \bullet 0.0605} \approx 15000 \text{ A}$$

The worst case of a double short-circuit to earth in a system shall be assumed for the dimensioning of the cross section of an earthing conductor / earthing bus conductor. Therefore earth-termination systems shall be designed for the double short-circuit current to earth (I''_{kEE}).

$$I''_{kEE} = 0.85 \bullet I''_{k3}$$

$$I''_{kEE} = 0.85 \bullet 15000 \text{ A} \approx 12750 \text{ A}$$

A factor of 85 % for the dimensioning of the short-circuit current to earth on the basis of the 3-pole short-circuit current to earth results from the German standard DIN VDE 0101 „Starkstromanlagen mit Wechselspannungen über 1 kV".

The earthing conductor/the protective equipotential bonding conductor is to be dimensioned for the double short-circuit current to earth I''_{kEE} up to the transformer directly.

If via the earthing conductor/protective equipotential bonding conductor to the transformer, the short-circuit current to earth distributes in the mesh of a system (earthing bus conductor or intermeshed earth-termination system), it can be assumed that the current will distribute at the nodal point into two directions. The asymmetry in the intermeshing of the earth-termination system can be assumed with a sufficient accuracy to be 65 %. The short-circuit current to earth which has to be taken into account for this earth-termination system (earthing bus conductor or intermeshed earth-termination system) is specified as $I''_{kEE\ (branch)}$ in our example.

$$I''_{kEE\ (branch)} = 0.65 \bullet I''_{kEE}$$

$$I''_{kEE\ (branch)} = 0.65 \bullet 12750 \text{ A} \approx 8300 \text{ A}$$

A current of $I''_{kEE\ (branch)}$ = 8300 A therefore is taken as basis for the dimensioning of the cross section of this earth-termination system in the example shown.

Determination of the resulting cross section
The cross section of a conductor results from the material and the disconnecting time. In the German standard VDE 0101 the maximum short-circuit current density G [A/mm²] is specified for different materials (see VDE 0101 Figure B1).

Time	St/tZn	Copper	StSt (V4A)
0.3 s	129 A/mm²	355 A/mm²	70 A/mm²
0.5 s	100 A/mm²	275 A/mm²	55 A/mm²
1 s	70 A/mm²	195 A/mm²	37 A/mm²
3 s	41 A/mm²	122 A/mm²	21 A/mm²
5 s	31 A/mm²	87 A/mm²	17 A/mm²

Table: Short-circuit current density G

The determined current now is divided by the current density G of the respective material and the assigned disconnecting time and the minimum cross section A_{min} of the conductor will be determined.

$$A_{min} = \frac{I''_{kEE\ /\ (branch)}}{G} \quad [\text{mm}^2]$$

With the cross section calculated, the conductor may be selected. Always the next largest nominal cross section will be taken.

Legend:

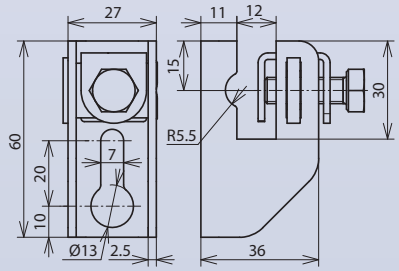
S	nominal capacity	[VA]
U	nominal voltage (low voltage)	[V]
u_k	short-circuit voltage	[%]
I_k	short-circuit current	[A]
I''_{k3}	3-pole short-circuit current	[A]
I''_{kEE}	double short-circuit current to earth	[A]
G	short-circuit current density	[A/mm²]
A_{min}	minimum cross section	[mm²]

Flat Strip Holders with thrust piece

Flat strip holder for wall mounting

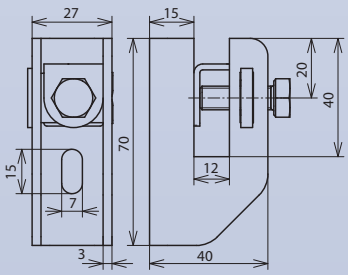
Thrust piece with screw M8 for the installation of strip conductor up to 11 mm and round conductor 6-10 mm

Wall distance 11 mm



Part No.		277 230	277 237	277 239
Material of conductor holder		St/tZn	Cu	StSt
Wall distance	mm	11	11	11
Fixing	mm	Ø13 und 7x20	Ø13 und 7x20	Ø13 und 7x20
Slot width	mm	12	12	12
Screw	mm	M8x25	M8x25	M8x25
Material of screw		StSt	StSt	StSt
Packing unit	pc(s)	25	25	25

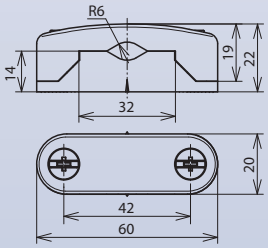
Wall distance 15 mm



Part No.		277 240
Material of conductor holder		St/tZn
Wall distance	mm	15
Fixing	mm	7x15
Slot width	mm	12
Screw	mm	M8x25
Material of screw		StSt
Packing unit	pc(s)	25

Conductor Holder

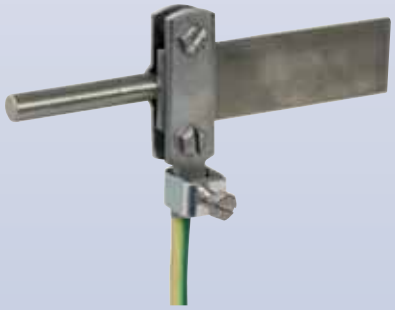
Conductor holder for installing round and flat conductors for equipotential bonding e.g. in transformer stations, processor rooms
insulated conductor holder

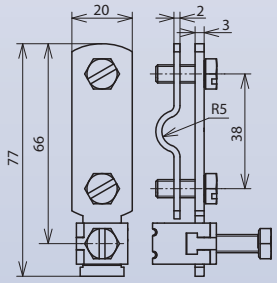


Part No.		277 130
Conductor holder support Rd / Fl	mm	6-13 / 30x4
Fixing	mm	Ø10 and 6x19
Material		plastic
Colour		grey
Screw	mm	M6x16
Material of screw		StSt
Packing unit	pc(s)	50

Terminal Clamp

Clamp for universal connection to the ring equipotential bonding for St/tZn, copper or stainless steel (StSt)

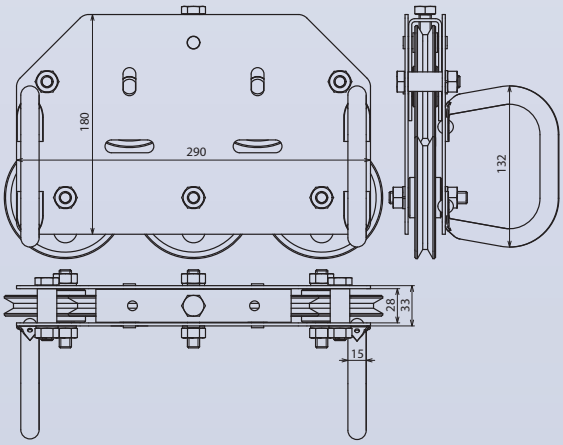




Part No.		563 169
Conductor holder support Rd / Fl	mm	Ø8-10 / 30x3 bis 11
Material		StSt
Terminal cross section	mm^2	2.5-95
Short-circuit current (50 Hz) (1 s; ≤ 300 °C)	kA	3
Screw	mm	M6x16/20
Material of screw		StSt
Packing unit	pc(s)	50

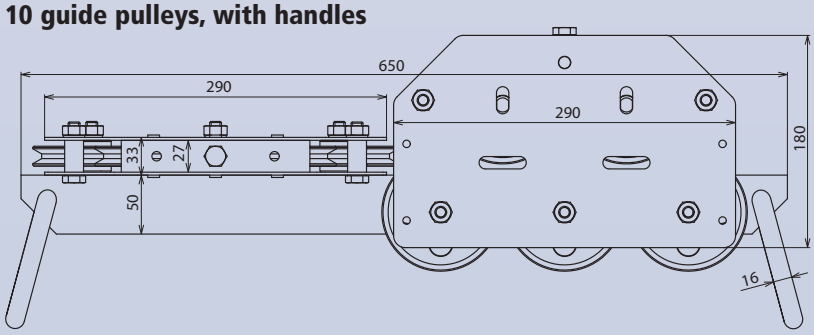
Wire straighteners for round conductors made of different materials (medium-hard)

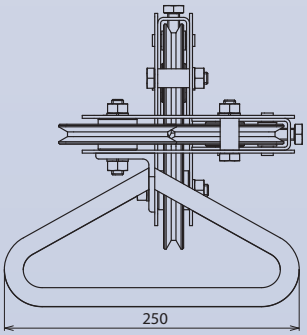
5 guide pulleys, with handles

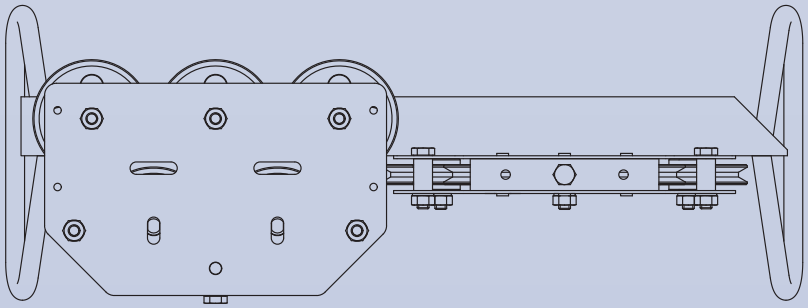


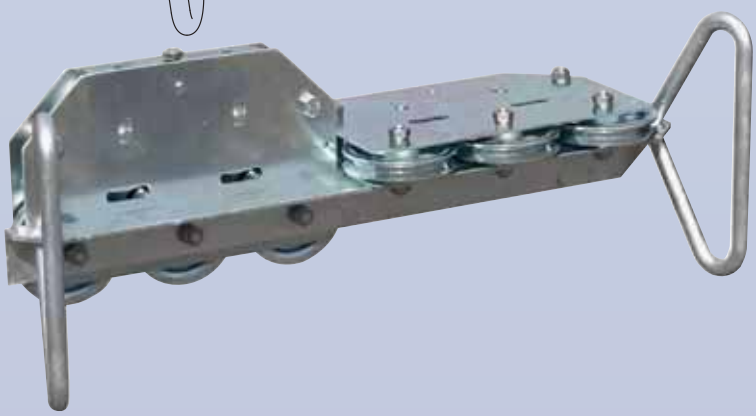
Part No.		597 004
Material		St/gal Zn
Support Rd	mm	7-10
Material of guide pulleys		MCI/gal Zn
Dimension (l x w)	mm	approx. 180x290
Packing unit	pc(s)	1

10 guide pulleys, with handles





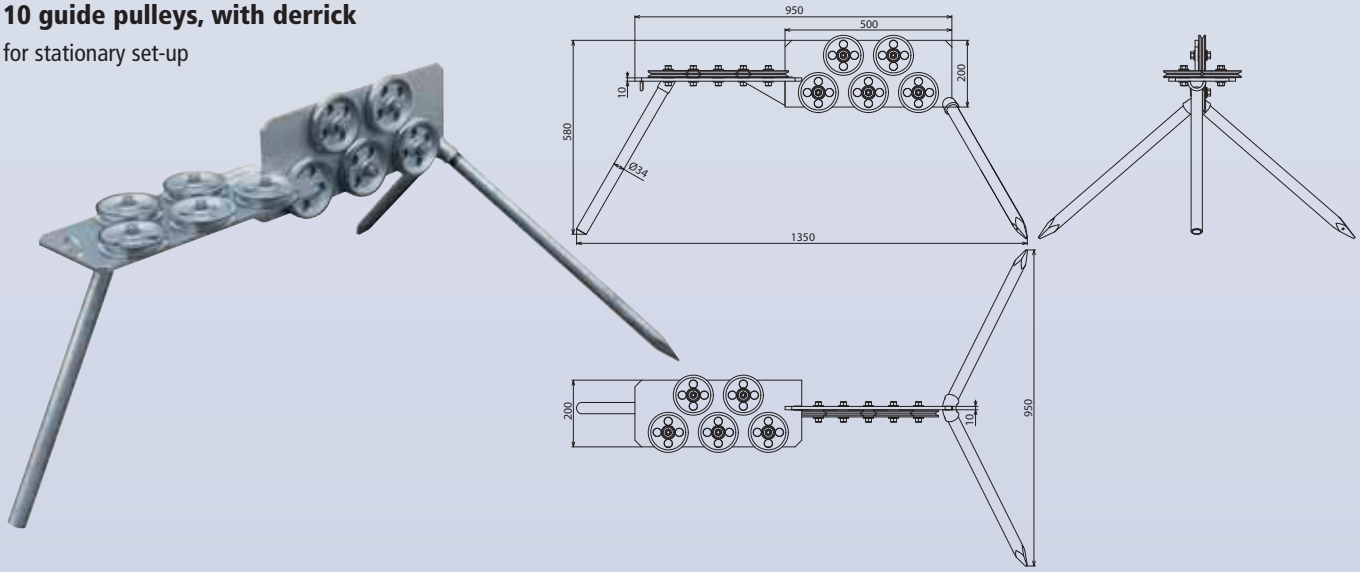




Part No.		597 005
Material		St/gal Zn
Support Rd	mm	7-10
Material of guide pulleys		MCI/gal Zn
Dimension (l x w)	mm	approx. 650x180
Packing unit	pc(s)	1

10 guide pulleys, with derrick

for stationary set-up

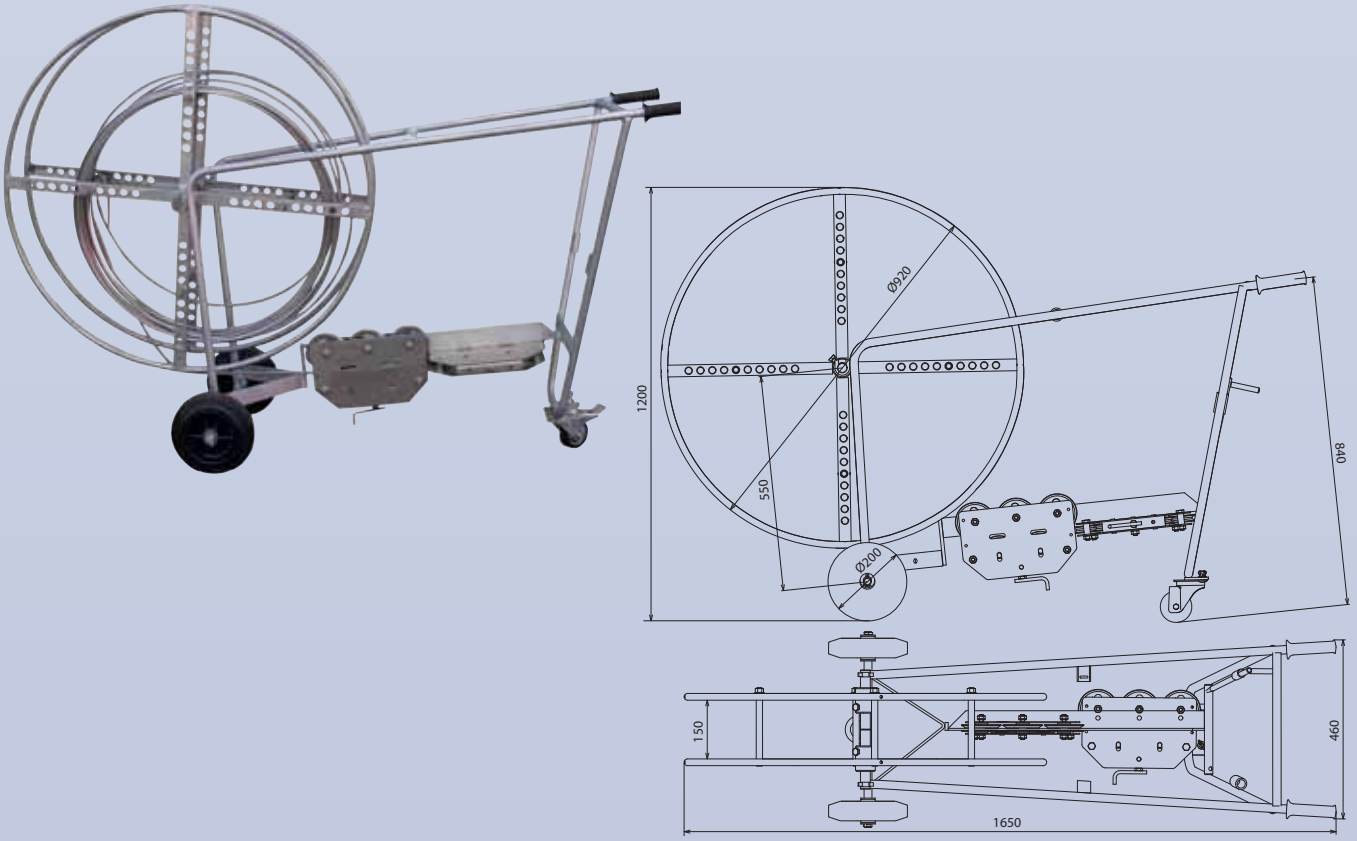


Part No.		597 003
Material		St/tZn
Support Rd	mm	7-10
Material of guide pulleys		MCI/gal Zn
Dimension (l x w)	mm	approx. 1350x580
Packing unit	pc(s)	1

10 guide pulleys, movable on rubber wheels

with wire unwinding device, for handling of coils (St/tZn and Al) with an inner diameter of 450-800 mm and coil widths up to 150 mm

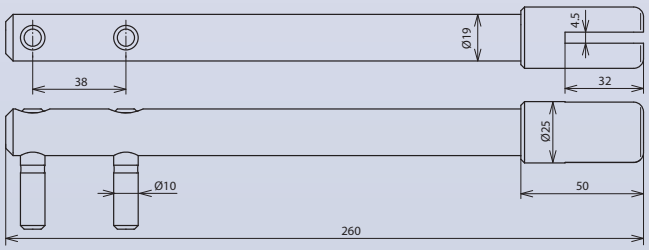
More details in instructions for use No. 1096



Part No.		597 006
Material		St/tZn
Support Rd	mm	7-10
Material of guide pulleys		MCI/gal Zn
Dimension (l x w)	mm	approx. 1650x1200
Packing unit	pc(s)	1

Straightening tools for angling and straightening of conductors

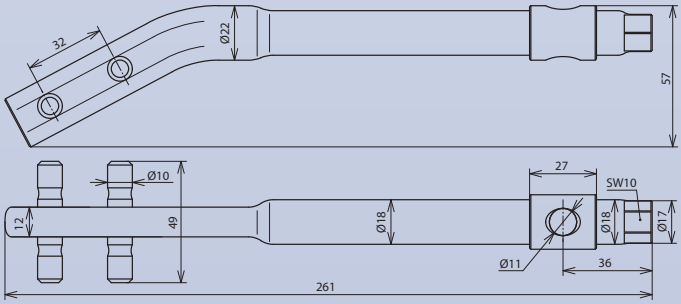
Straight design



Part No.		596 000
Material		St/barnished
Application Rd / Fl	mm	8-10 / -4
Length	mm	260
Weight	g	623
Packing unit	pc(s)	5

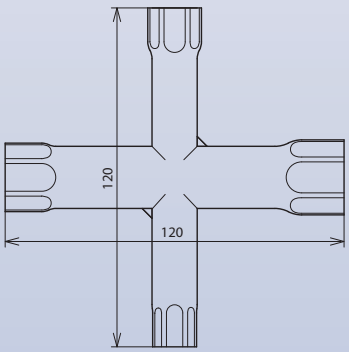
Cranked design

wrench size A/F 10 for screwing



Part No.		595 000
Material		St/barnished
Application Rd / Fl	mm	8
Length	mm	260
Weight	g	322
Packing unit	pc(s)	5

Spider Wrench



Part No.		572 000
Material		St/barnished
Wrench size	mm	10, 13, 17, 19
Packing unit	pc(s)	1

Anti-corrosion Tape

Anti-corrosion tape for coating of aboveground and underground connections

for use in the soil according to DIN 30672

in reels of length 10 m

UV stabilized

Part No.		556 125	556 130
Width	mm	50	100
Material		petrolatum	petrolatum
Packing unit	pc(s)	24	12

Heat-shrinkable Sleeve

Heat-shrinkable sleeve for coating of conductors Rd and Fl e.g. when-for leading terminal lugs out of the concrete or earth entries out of the ground

UV resistant type, customized length

Part No.		554 011
For use with Rd	mm	16
For use with Fl	mm	30
Material		DERAY
Colour		black
Packing unit	m	1

Special Coating Paint

Special coating paint for lightning protection components and conductors, weather resistant

Also weathered, hot-dip galvanized, spray-galvanized and electrogalvanized can be varnished without pretreatment.

Hazardous materials regulations allow for a transportation only in Germany and Austria. Alternatively use a suitable protective paint for zinc.

Part No.		559 010	559 011
Colour		grey	brown
Content	litres	0.75	0.75
Packing unit	pc(s)	1	1

Dowels for Rigid Foam Plates

Dowels for use with rigid foam plates for the fixing of conductor holders and rod holders and flat strip holders at external thermal insulation composite systems

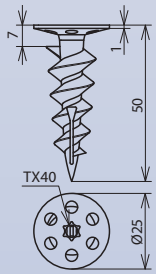
drive in with star drive screw driver (TX40)

for use with wood screws Ø4.5 mm

Dowel for fixing of conductor holders, only to be used if there is no risk of any additional tensile forces acting on the down conductor.

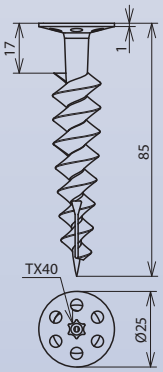
More details in installation instructions No. 1459.

Short design



Part No.		200 600
Material		PA
Thickness of insulating material	mm	60
Length of anchoring depth	mm	50
Working load of Styrofoam PS20	N	35
Working load of rigid foam plates	N	60
Packing unit	pc(s)	50

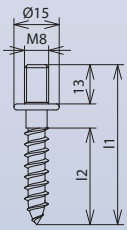
Long design



Part No.		200 601
Material		PA
Thickness of insulating material	mm	100
Length of anchoring depth	mm	85
Working load of Styrofoam PS20	N	60
Working load of rigid foam plates	N	85
Packing unit	pc(s)	50

Wood Screws with threaded head

rigid screw for the fixing of conductor holders with female thread



Part No.		528 850	528 870
Material		St/gal Zn	St/gal Zn
Thread		M8	M8
Length (l1)	mm	53	73
Length (l2)	mm	32	42
Packing unit	pc(s)	100	100

Earthing Resistance Meter FLUKE 1621

Device providing automatic selection of measuring range and checking of sensor resistance, auxiliary earth-electrode resistance and soil resistivity

- digital LCD indicator
- measuring range 0.15 ... 2000 Ω
- measuring frequency 128 Hz
- 2-/3-pole measuring method
- 2-pole a.c. resistance test

Part No.		578 350
Housing material		plastic
Dimension (l x w x d)	mm	216x113x54
Weight	g	860
Packing unit	pc(s)	1

Earthing Resistance Meter GEOHM C

Earthing resistance meter for measuring of earthing resistance and soil resistvity. The device provides automatic measuring range selection for checking the earthing resistance of sensors and auxiliary earth-electrodes.

- digital LCD indicator
- measuring range 0.01 ... 20 000 OHM
- measuring frequency 45 ... 200 Hz
- 3-/4-pole measuring method

Part No.		578 110
Housing material		plastic
Dimension (l x w x d)	mm	275x140x65
Weight	g	1200
Packing unit	pc(s)	1

Earthing Test Tongs CA 6412

Earthing test tongs for the measuring of earthing electrode loops automatic selection of measuring range

- digital LCD indicator
- measuring range 0.1 ... 1200 Ω
- measuring of fault currents 1 mA ... 30 A RMS
- measuring frequency 2400 Hz
- tongs opening 32 mm
- with transport case
- weight incl. case 1800 g

Part No.		578 360
Housing material		plastic
Dimension (l x w x d)	mm	235x100x55
Weight	g	960
Packing unit	pc(s)	1

EP4 Continuity Tester

Continuity tester for the measuring of resistances at e.g. air-termination conductors or down conductors and supplementary used reinforcing rods of buildings with a test current of 200 mA

- digital LCD indicator
- different measuring ranges of 0.001 OHM to 2 000 OHM
- measuring current 200 mA ranging up to 10 OHM
- automatic data storage
- quick compensation of the measuring line

More details in installation instructions No. 1567.

Part No.		578 370
Housing material		plastic
Dimension (l x w x d)	mm	230x60x40
Weight	g	250
Packing unit	pc(s)	1

Leather Case with Measuring Accessories for Continuity Tester

Leather case for the storing of the continuity tester and measuring accessories

Equipment includes:

- 2 coilers with handle for unwinding and 50 m measuring line, blue, Part No. 585 320
- 1 measuring line 0.75 mm², 3 m long, black, with split plug on both sides, Part No. 545 020
- 1 test terminal, clamping range 2-21 mm, Part No. 588 000

Part No.		582 620
Material		artificial leather
Dimension (l x w x h)	mm	370x130x220
Packing unit	pc(s)	1

Earth Resistance Measuring Equipment in a leather case

Case with shoulder strap for easy transport and combination lock

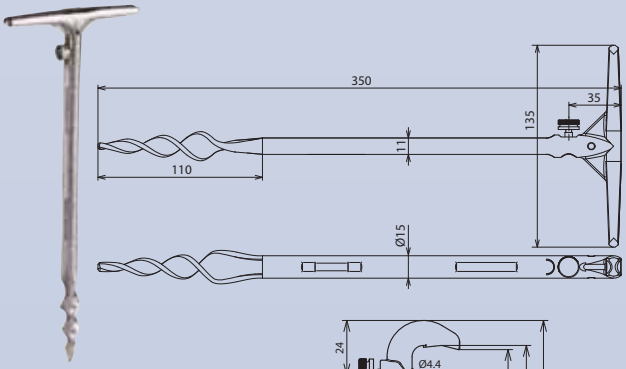
Equipment includes:

- 1 coiler with handle for unwinding and 25 m measuring line red, with split plug, Part No. 585 310
- 1 coiler with handle for unwinding and 50 m measuring line blue, with split plug, Part No. 585 320
- 2 earth borers 350 mm long, Part No. 587 460
- 2 measuring lines black 0.75 mm², 3 m long, with split plug on both sides, Part No. 545 010 (connection between earth termination system and earth resistance meter)
- 1 measuring line red 0.75 mm², 0.5 m long, with split plug on both sides, Part No. 545 010
- 1 measuring line blue 0.75 mm², 0.5 m long, with split plug on both sides, Part No. 545 011 (connection between coiler and earth borer)
- 1 test terminal, clamping range 2-21 mm, Part No. 588 000

The case provides an empty compartment for optional support of either FLUKE 1621 or GEOHM C measuring device.

Part No.		582 600
Material		artificial leather
Dimension (l x w x h)	mm	400x200x240
Packing unit	pc(s)	1

Accessories for Earth Resistance Measuring Equipment in a leather case

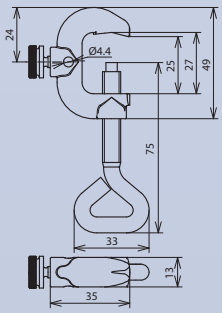


Earth Borer

For use as an auxiliary earth electrode and sensor for measuring of earthing resistances

With bore for split plugs of the measuring line

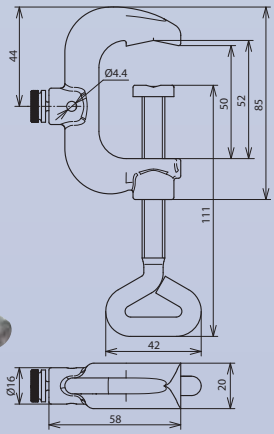
Part No.		587 460
Terminal		✹ M5
Material		TG/gal Zn
Length	mm	350
Packing unit	pc(s)	1



Test Clamp up to 21 mm

for earth electrode measuring

Part No.		588 000
Connection		✹ M5
Material		MCI/tZn
Clamping range	mm	2-21
Clamping spindle		M8
Packing unit	pc(s)	1



Test Clamp up to 45 mm

for earth electrode measuring

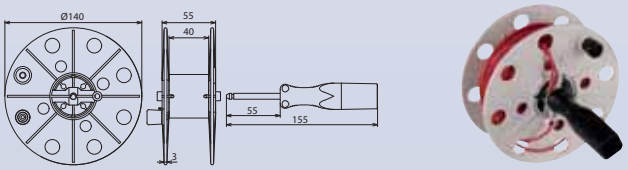
Part No.		589 000
Connection		✹ M5
Material		MCI/tZn
Clamping range	mm	4-45
Clamping spindle		M10
Packing unit	pc(s)	1

Accessories for Earth Resistance Measuring Equipment in a leather case

Coiler width 40 mm

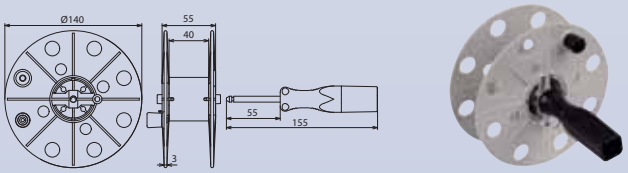
Part No.		585 025	585 026
Length of measuring line	m	25	25
Colour of measuring line		blue	red
Width	mm	40	40
Material		plastic	plastic
Packing unit	pc(s)	1	1

Part No.		585 050	585 051
Length of measuring line	m	50	50
Colour of measuring line		blue	red
Width	mm	40	40
Material		plastic	plastic
Packing unit	pc(s)	1	1



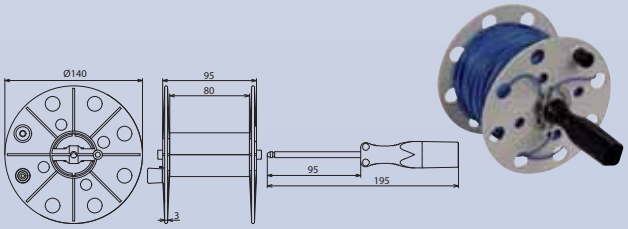
Coiler empty width 40 mm

Part No.		585 010
Length of measuring line	m	0
Width	mm	40
Material		plastic
Colour		grey
Packing unit	pc(s)	1



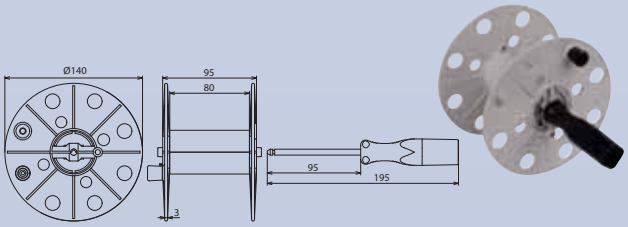
Coiler width 80 mm

Part No.		585 210	585 211
Length of measuring line	m	100	100
Colour of measuring line		blue	red
Width	mm	80	80
Material		plastic	plastic
Packing unit	pc(s)	1	1



Coiler empty width 80 mm

Part No.		585 200
Length of measuring line	m	0
Width	mm	80
Material		plastic
Colour		grey
Packing unit	pc(s)	1



Measuring Line

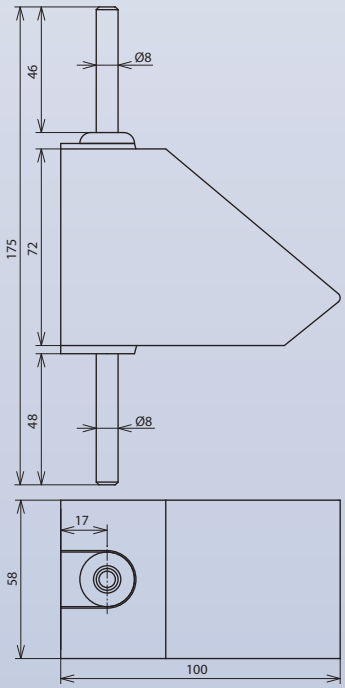
Part No.		545 000	545 001
Length	m	100	100
Cross section	mm^2	0.75	0.75
Material		Cu	Cu
Designaiton		H05V-K	H05V-K
Insulation		PVC	PVC
Colour		blue	red
Packing unit	m	100	100

Occurrence Counter

Counter for the digital recording of impulse currents

The device is preferably installed as a discharge current meter between the equipotential bonding busbar and the earth-termination system.

More details in installation instructions No. 1133



Part No.		910 001	910 007
Operating range		2-100 kA (8/20 µs)	2-100 kA (8/20 µs)
Counter		0-99	0-99
Lead-through rod	mm	Ø8	Ø8
Material of rod		St/tZn	Cu
Packing unit	pc(s)	1	1

HVI Lightning Protection at Thatched Roofs

Thatched roofs are easily inflammable and thus at an extremely high risk of fire.

Because of the high risk potential special measures are necessary to reduce this hazard in case of a lightning strike. The efficiency of lightning protection systems on thatched roofs can be considerably increased again by the application of the HVI conductor.

Due to the installation of the HVI conductor in a supporting tube the design of the isolated air-termination and down conductor system is much more appealing (**Figure 1**). The HVI conductor used has an additional coating (**Figure 3**).

Using the HVI conductor, the lightning protection system can be directly mounted at the object to be protected. Thus there is no more need of spacers along the roof pitch or of any supports for guying the conductor at the eaves to be mounted (**Figures 3** and **4**).

When designing the air-termination system, it has to be ensured that the entire roof surface is protected by the air-termination system against direct lightning strikes.

The supporting tube (GRP/Al) with the HVI conductor inside has to be positioned in such a way that the top section (GRP) projects the roofing while the bottom section made of aluminium is used for mechanical fixing. It has to be minded that within a radius of 1 m around the aluminium pipe there are no earthed parts or electrical equipment.
If the ridge (heather/sod ridge) will be covered with a wire mesh, the distance to the supporting tube has to be > 1 m. Alternatively , a non-conductive synthetic braid can be used.
Figure 2 shows a schematic drawing.

The performance parameters of the HVI conductor and the installation instructions are to be taken into account.

Figure 1: New design of lightning protection for thatched roofs (total view)

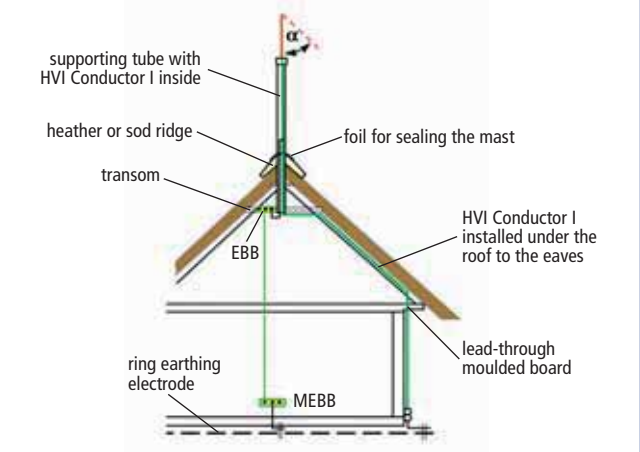


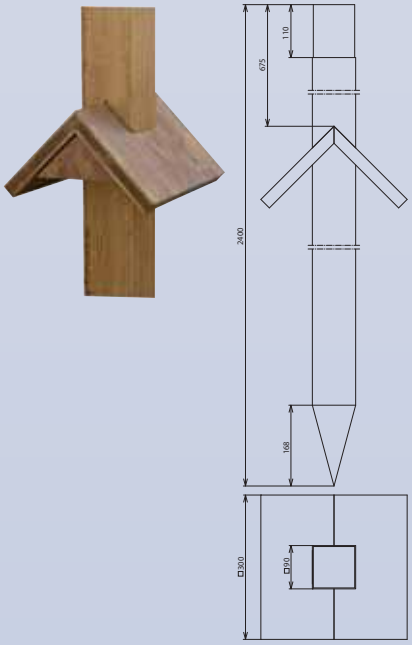
Figure 2: Schematic drawing

Figure 4: New design – lightning protection for thatched roofs (section)

Figure 3:
Connection to down conductor – bushing of cornice board

On thatched roofs the air-termination conductors have to be installed as elevated traverses e.g. on isolating supports. Certain distances have to be kept also to the eaves.

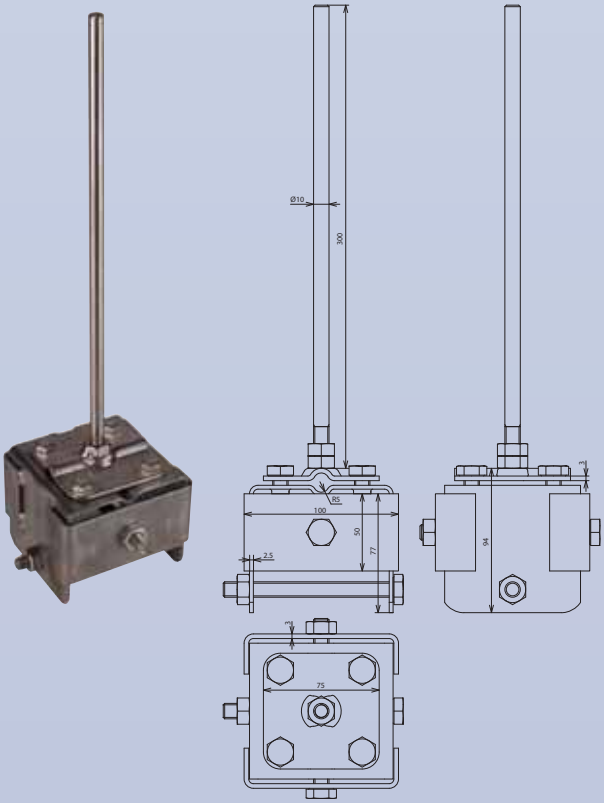
For ridge conductors the aspired span width is approx.15 m and for down conductors approx. 10 m without additional supports. Span stakes have to be fastened at the roof construction (rafters and crosspieces) by anchor bolts and flat washers.



Wooden Stake

with rain shelter, suitable for clamping cap (Part No. 146 309)

Part No.		145 241
Material		oak (impregnated)
Dimension (l x w x h)	mm	90x90x2400
Packing unit	pc(s).	1



Clamping Cap

for fixing at wood stakes (Part No. 145 241) with air-termination spike (length 300 mm, Ø10 mm in StSt)

Part No.		146 309
Material		StSt
Support Rd	mm	7-10
Screw	mm	M10x110
Material of screw/nut		StSt
Packing unit	pc(s).	1

Roof Conductor Support

with conductor holder

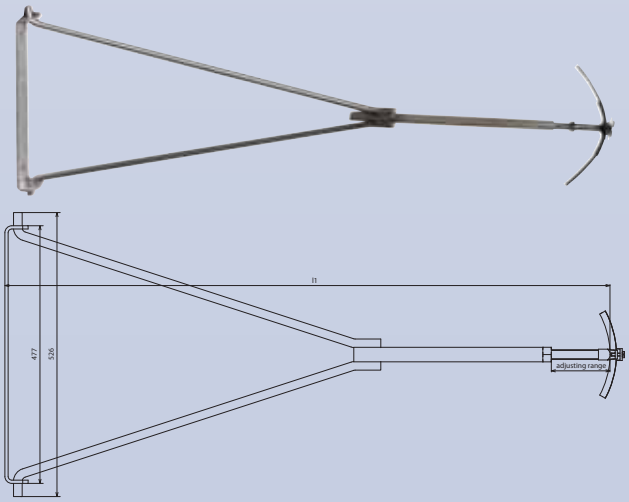
Part No.		240 000
Material		oak (impregnated)
Dimension (l x w x h)	mm	134x300x598
Support Rd	mm	6-10
Packing unit	pc(s).	1

Support St/tZn for Use at Eaves

for guying the conductors at eaves
distance between wall and conductors is adjustable

Part No.		239 000	239 001
Material		St/tZn	St/tZn
Adjustable range (l1)	m	1.00-1.15	1.25-1.40
Support Rd	mm	7-10	7-10
Packing unit	pc(s).	1	1

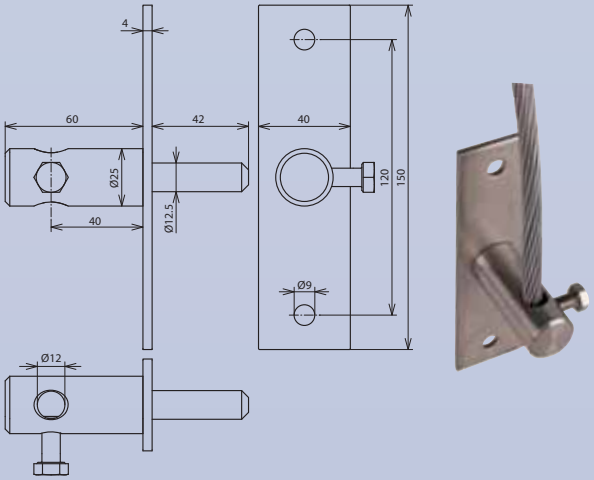
Part No.		239 009	239 019
Material		StSt	StSt
Adjustable range (l1)	m	1.25-1.55	1.45-1.75
Support Rd	mm	7-10	7-10
Packing unit	pc(s).	1	1



Guy Clamp

for tightening/guying the cable at the wall

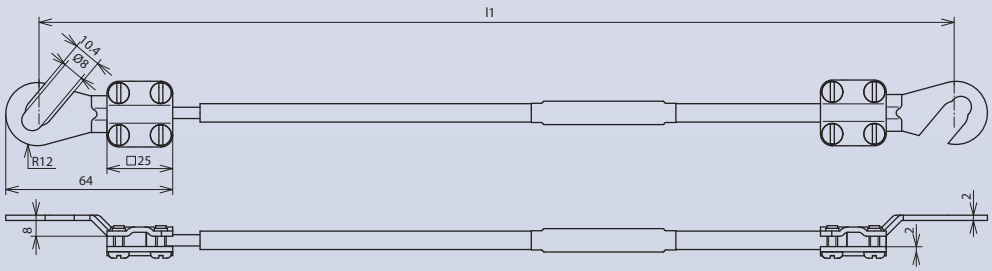
Part No.		241 009
Material		StSt
Dimension (l x w x d)	mm	150x40x4
Support Rd	mm	8
Bore Ø	mm	9
Screw	mm	M8x20
Material of screw		StSt
Packing unit	pc(s).	20



Earthing Conductors with open cable lugs

Earthing conductors made of highly flexible copper wire, frost-proof packing in accordance with VG 96927-11

Cable lug, 2x open, 2x M8/M10

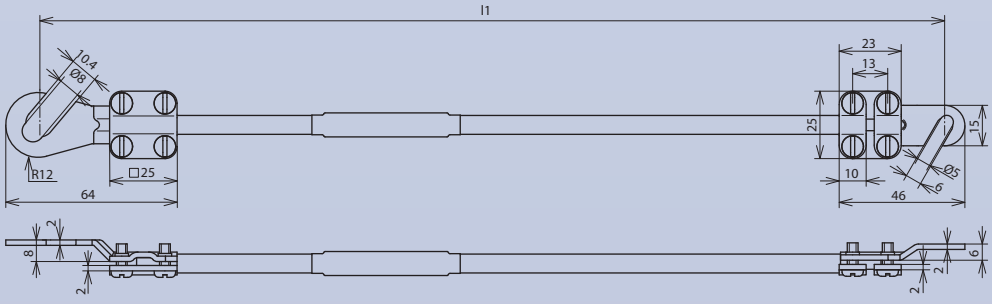


Part No.		410 003	410 005	410 006	410 010	410 015	410 020
Cable cross section	mm²	10	10	10	10	10	10
Cable length (l1)	m	0,35	0,55	0,65	1,05	1,55	2,05
Cable lug open		2xM8/M10	2xM8/M10	2xM8/M10	2xM8/M10	2xM8/M10	2xM8/M10
Colour		black	black	black	black	black	black
Military name		VG 96927 T011 A044	VG 96927 T011 A045	VG 96927 T011 A046	VG 96927 T011 A047	VG 96927 T011 A048	VG 96927 T011 A049
Packing unit	pc(s)	1	1	1	1	1	1
Stock No.		6150-12-156-9107	6150-12-156-8386	6150-12-156-9108	6150-12-156-8387	6150-12-156-9069	6150-12-156-9073

Part No.		410 025	410 030	410 035	410 040	410 050	410 060
Cable cross section	mm²	10	10	10	10	10	10
Cable length (l1)	m	2,55	3,05	3,55	4,05	5,05	6,05
Cable lug open		2xM8/M10	2xM8/M10	2xM8/M10	2xM8/M10	2xM8/M10	2xM8/M10
Colour		black	black	black	black	black	black
Military name		VG 96927 T011 A050	VG 96927 T011 A051	VG 96927 T011 A052	VG 96927 T011 A053	VG 96927 T011 A054	VG 96927 T011 A055
Packing unit	pc(s)	1	1	1	1	1	1
Stock No.		6150-12-156-9072	6150-12-156-9109	6150-12-156-9071	6150-12-156-9070	6150-12-156-6051	6150-12-156-9110

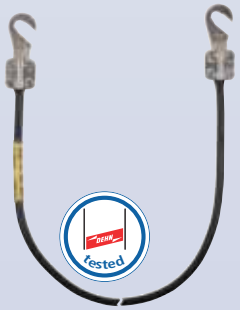
Part No.		410 070	410 099	410 140	410 150	410 199	410 299
Cable cross section	mm²	10	10	10	10	10	10
Cable length (l1)	m	7,05	10,0	14,0	15,0	20,0	30,0
Cable lug open		2xM8/M10	2xM8/M10	2xM8/M10	2xM8/M10	2xM8/M10	2xM8/M10
Colour		black	black	black	black	black	black
Military name		VG 96927 T011 A056	VG 96927 T011 A057	VG 96927 T011 A058	VG 96927 T011 A059	VG 96927 T011 A060	VG 96927 T011 A061
Packing unit	pc(s)	1	1	1	1	1	1
Stock No.		6150-12-156-9111	6150-12-156-9112	6150-12-156-6207	6150-12-161-4272	6150-12-156-9113	6150-12-156-9114

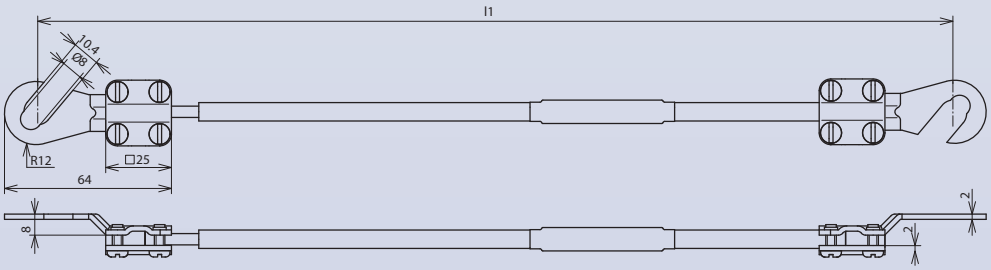
Cable lug, 2x open, 1x M8/M10 and 1x M5/M6



Part No.		410 603	410 605	410 610	410 615	410 620	410 625	410 630
Cable cross section	mm²	10	10	10	10	10	10	10
Cable length (l1)	m	0,35	0.55	1.05	1.55	2.05	2.55	3.05
Cable lug open		1xM8/M10 1xM5/M6	1xM8/M10 1xM5/M6	1xM8/M10 1xM5/M6	1xM8/M10 1xM5/M6	1xM8/M10 1xM5/M6	1xM8/M10 1xM5/M6	1xM8/M10 1xM5/M6
Colour		black	black	black	black	black	black	black
Military name					VG 96927 T011 A123			
Packing unit	pc(s)	1	1	1	1	1	1	1
Stock No.					6150-12-308-6928			6150-12-353-5887

Cable lug, 2x open, 2x M8/M10



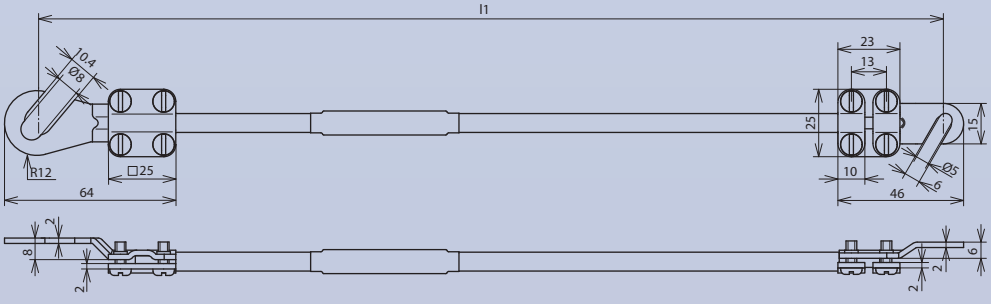


Part No.		416 003	416 005	416 006	416 010	416 015	416 020	416 025	416 030
Cable cross section	mm²	16	16	16	16	16	16	16	16
Cable length (l1)	m	0,35	0.55	0.65	1.05	1.55	2.05	2.55	3.05
Cable lug open		2xM8/M10	2xM8/M10	2xM8/M10	2xM8/M10	2xM8/M10	2xM8/M10	2xM8/M10	2xM8/M10
Colour		black	black	black	black	black	black	black	black
Military name		VG 96927 T011 A062	VG 96927 T011 A063	VG 96927 T011 A064	VG 96927 T011 A065	VG 96927 T011 A066	VG 96927 T011 A067	VG 96927 T011 A068	VG 96927 T011 A069
Packing unit	pc(s)	1	1	1	1	1	1	1	1
Stock No.		6150-12-156-9115	6150-12-156-9085	6150-12-156-9116	6150-12-156-9084	6150-12-156-9117	6150-12-156-9118	6150-12-156-9119	6150-12-156-9083

Part No.		416 035	416 040	416 050	416 060	416 070	416 080	416 100
Cable cross section	mm²	16	16	16	16	16	16	16
Cable length (l1)	m	3.55	4.05	5.05	6.05	7.05	8.05	10.05
Cable lug open		2xM8/M10	2xM8/M10	2xM8/M10	2xM8/M10	2xM8/M10	2xM8/M10	2xM8/M10
Colour		black	black	black	black	black	black	black
Military name		VG 96927 T011 A070	VG 96927 T011 A071	VG 96927 T011 A072	VG 96927 T011 A073	VG 96927 T011 A074	VG 96927 T011 A075	VG 96927 T011 A076
Packing unit	pc(s)	1	1	1	1	1	1	1
Stock No.		6150-12-156-6208	6150-12-156-8388	6150-12-156-9120	6150-12-156-9082	6150-12-156-9121	6150-12-188-4475	6150-12-156-9122

Part No.		416 120	416 140	416 150	416 200	416 220	416 280	416 300
Cable cross section	mm²	16	16	16	16	16	16	16
Cable length (l1)	m	12.05	14.05	15.05	20.05	22.05	28.05	30.03
Cable lug open		2xM8/M10	2xM8/M10	2xM8/M10	2xM8/M10	2xM8/M10	2xM8/M10	2xM8/M10
Colour		black	black	black	black	black	black	black
Military name		VG 96927 T011 A077	VG 96927 T011 A078	VG 96927 T011 A079	VG 96927 T011 A080	VG 96927 T011 A081	VG 96927 T011 A082	VG 96927 T011 A083
Packing unit	pc(s)	1	1	1	1	1	1	1
Stock No.		6150-12-188-4476	6150-12-156-9123	6150-12-161-4273	6150-12-156-9124	6150-12-188-4477	6150-12-188-4478	6150-12-156-9125

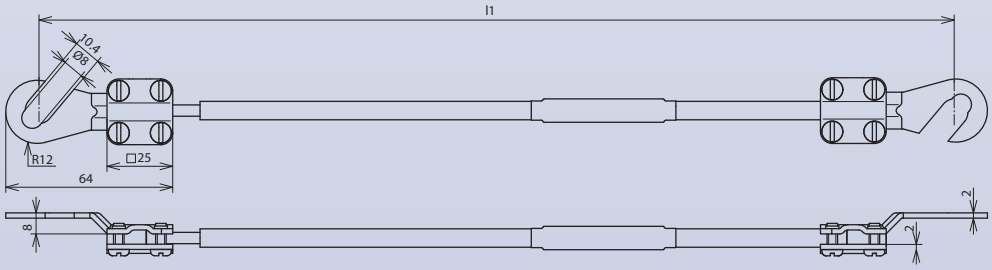
Cable lug, 2x open, 1x M8/M10 and 1x M5/M6

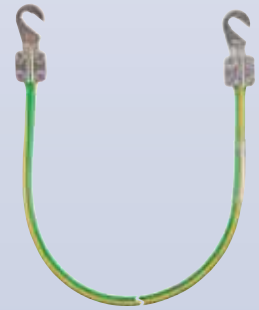


Part No.		416 516
Cable cross section	mm²	16
Cable length (l1)	m	1,55
Cable lug open		1xM8/M10 1xM5/M6
Colour		black
Military name		VG 96927 T011 A125
Packing unit	pc(s)	1
Stock No.		6150-12-308-6607

Cable lug, 2x open, 2x M8/M10 gr/ge

made of highly flexible copper wire (ESY), frost-proof





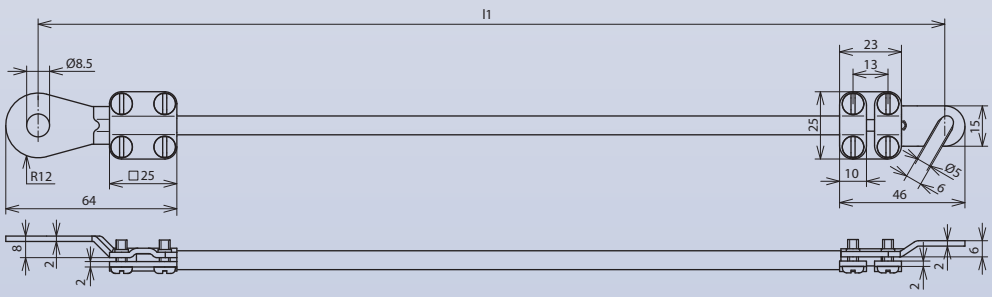
Part No.		417 005	417 010	417 015	417 020	417 030	417 050
Cable cross section	mm²	16	16	16	16	16	16
Cable length (l1)	m	0.55	1.05	1.55	2.05	3.05	5.05
Cable lug open		2xM8/M10	2xM8/M10	2xM8/M10	2xM8/M10	2xM8/M10	2xM8/M10
Colour		green-yellow	green-yellow	green-yellow	green-yellow	green-yellow	green-yellow
Packing unit	pc(s)	1	1	1	1	1	1
Stock No.		6150-12-313-5059	6150-12-313-5060	6150-12-313-5061	6150-12-313-5062	6150-12-313-5063	6150-12-313-5064

Part No.		417 100	417 115	417 120	417 125	417 130	417 150
Cable cross section	mm²	16	16	16	16	16	16
Cable length (l1)	m	10.05	15.05	20,05	25.05	30.05	50.05
Cable lug open		2xM8/M10	2xM8/M10	2xM8/M10	2xM8/M10	2xM8/M10	2xM8/M10
Colour		green-yellow	green-yellow	green-yellow	green-yellow	green-yellow	green-yellow
Packing unit	pc(s)	1	1	1	1	1	1
Stock No.		6150-12-313-5065	6150-12-313-5066	6150-12-313-5067	6150-12-185-8587	6150-12-313-5068	6150-12-174-2744

Earthing Conductors with open / closed cable lugs

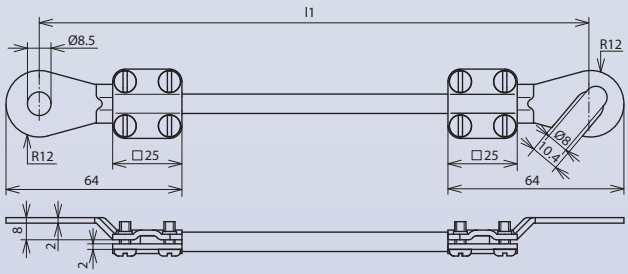
Earthing conductor made of highly flexible copper wire, frost-proof
packing in accordance with VG 96927-11

Cable lug, 1x open M5/M6 and 1x closed M8



Part No.		410 503	410 506	410 510	410 515	410 520	410 525	410 530
Cable cross section	mm²	10	10	10	10	10	10	10
Cable length (l1)	m	0,35	0.65	1.05	1.55	2.05	2.55	3.05
Cable lug open		M5/M6	M5/M6	M5/M6	M5/M6	M5/M6	M5/M6	M5/M6
Cable lug closed		M8	M8	M8	M8	M8	M8	M8
Bore Ø	mm	8,5	8.5	8.5	8.5	8.5	8.5	8.5
Colour		black	black	black	black	black	black	black
Military name		VG 96927 T011 A116	VG 96927 T011 A117	VG 96927 T011 A118	VG 96927 T011 A119	VG 96927 T011 A120	VG 96927 T011 A121	VG 96927 T011 A122
Packing unit	pc(s)	1	1	1	1	1	1	1
Stock No.		6150-12-196-7302	6150-12-195-9694	6150-12-196-7304	6150-12-196-7303	6150-12-196-7606	6150-12-198-6807	6150-12-198-6808

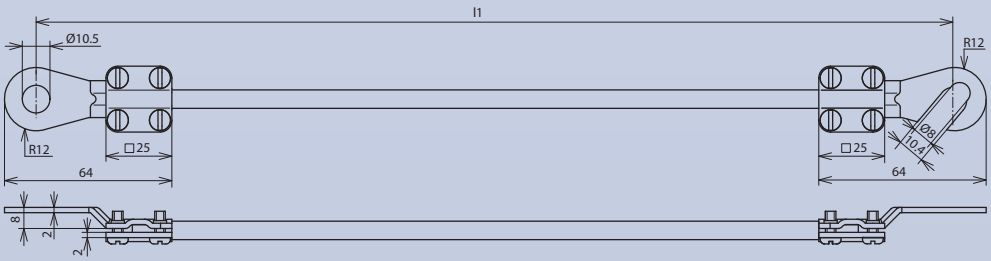
Cable lug, 1x open M8/M10 and 1x closed M8



Part No.		410 401	410 403	410 404	410 450	410 406
Cable cross section	mm²	10	10	10	10	10
Cable length (l1)	m	0.20	0.35	0.45	0.55	0.65
Cable lug open		M8/M10	M8/M10	M8/M10	M8/M10	M8/M10
Cable lug closed		M8	M8	M8	M8	M8
Bore Ø	mm	8.5	8.5	8.5	8.5	8.5
Colour		black	black	black	black	black
Military name		VG 96927 T011 A092	VG 96927 T011 A093	VG 96927 T011 A094	VG 96927 T011 A095	VG 96927 T011 A096
Packing unit	pc(s)	1	1	1	1	1
Stock No.		6150-12-300-9132	6150-12-195-9490	6150-12-192-5455	6150-12-197-0088	6150-12-192-5456

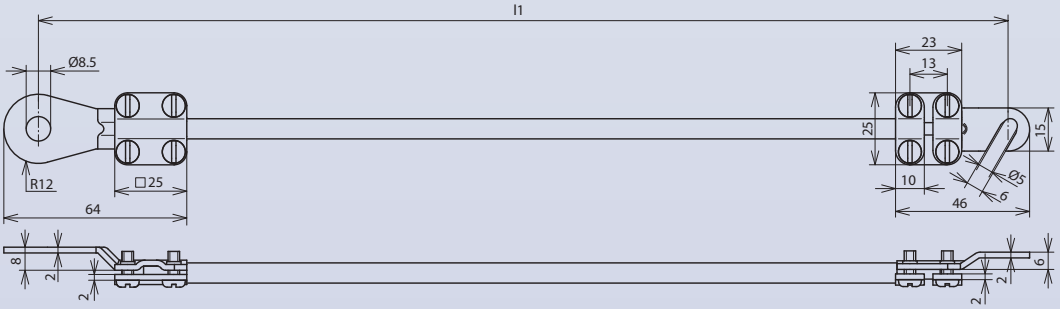
Part No.		410 411	410 415	410 420	410 425	410 430
Cable cross section	mm²	10	10	10	10	10
Cable length (l1)	m	1.05	1.55	2.05	2.55	3.05
Cable lug open		M8/M10	M8/M10	M8/M10	M8/M10	M8/M10
Cable lug closed		M8	M8	M8	M8	M8
Bore Ø	mm	8.5	8.5	8.5	8.5	8.5
Colour		black	black	black	black	black
Military name		VG 96927 T011 A097	VG 96927 T011 A098	VG 96927 T011 A099	VG 96927 T011 A100	VG 96927 T011 A101
Packing unit	pc(s)	1	1	1	1	1
Stock No.		6150-12-192-5457	6150-12-192-5458	6150-12-198-1217	6150-12-198-6803	6150-12-198-6805

Cable lug, 1x open M8/M10 and 1x closed M10



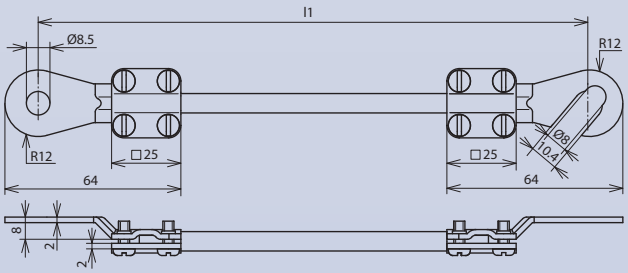
Part No.		410 413	410 405	410 407	410 410	410 416	410 421	410 426	410 431
Cable cross section	mm²	10	10	10	10	10	10	10	10
Cable length (l1)	m	0.35	0.55	0.65	1.05	1.55	2.05	2.55	3.05
Cable lug open		M8/M10	M8/M10	M8/M10	M8/M10	M8/M10	M8/M10	M8/M10	M8/M10
Cable lug closed		M10	M10	M10	M10	M10	M10	M10	M10
Bore Ø	mm	10.5	10.5	10.5	10.5	10.5	10.5	10.5	10.5
Colour		black	black	black	black	black	black	black	black
Military name		VG 96927 T011 A085	VG 96927 T011 A085	VG 96927 T011 A086	VG 96927 T011 A087	VG 96927 T011 A088	VG 96927 T011 A089	VG 96927 T011 A090	VG 96927 T011 A091
Packing unit	pc(s)	1	1	1	1	1	1	1	1
Stock No.		6150-12-196-7301	6150-12-196-6346	6150-12-198-7027	6150-12-171-2783	6150-12-198-1216	6150-12-198-1218	6150-12-198-6804	6150-12-198-6806

Cable lug, 1x open M5/M6 and 1x closed M8



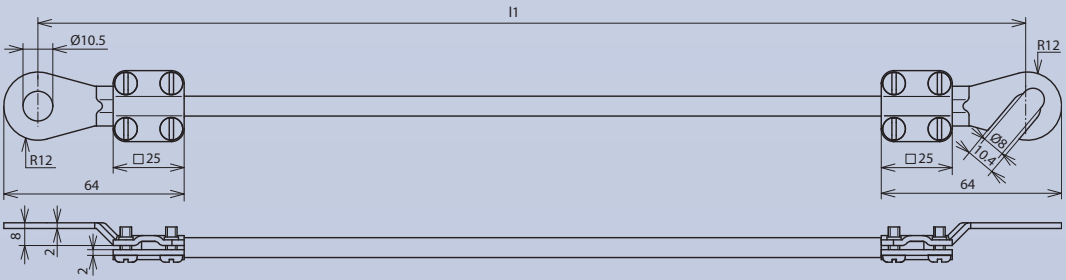
Part No.		416 505
Cable cross section	mm²	16
Cable length (l1)	m	0.55
Cable lug open		M5/M6
Cable lug closed		M8
Bore Ø	mm	8.5
Colour		black
Military name		VG 96927 T011 A124
Packing unit	pc(s)	1
Stock No.		6150-12-300-9131

Cable lug, 1x open M8/M10 and 1x closed M8



Part No.		416 411	416 415	416 420	416 425	416 430	416 440	416 450
Cable cross section	mm²	16	16	16	16	16	16	16
Cable length (l1)	m	1.05	1.55	2.05	2.55	3.05	4.05	5.05
Cable lug open		M8/M10	M8/M10	M8/M10	M8/M10	M8/M10	M8/M10	M8/M10
Cable lug closed		M8	M8	M8	M8	M8	M8	M8
Bore Ø	mm	8.5	8.5	8.5	8.5	8.5	8.5	8.5
Colour		black	black	black	black	black	black	black
Military name		VG 96927 T011 A109	VG 96927 T011 A110	VG 96927 T011 A111	VG 96927 T011 A112	VG 96927 T011 A113	VG 96927 T011 A114	VG 96927 T011 A115
Packing unit	pc(s)	1	1	1	1	1	1	1
Stock No.		6150-12-308-6934	6150-12-308-6981	6150-12-308-6933	6150-12-308-6932	6150-12-308-6931	6150-12-308-6930	6150-12-308-6929

Cable lug, 1x open M8/M10 and 1x closed M10

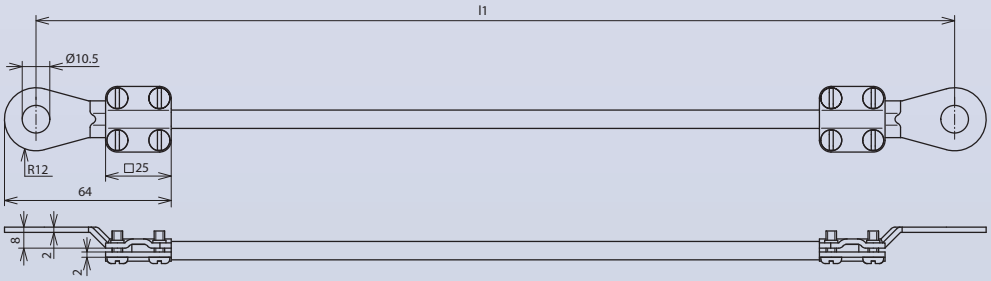


Part No.		416 403	416 410	416 416	416 421	416 426	416 431	416 441	416 451
Cable cross section	mm²	16	16	16	16	16	16	16	16
Cable length (l1)	m	0.35	1.05	1.55	2.05	2.55	3.05	4.05	5.05
Cable lug open		M8/M10	M8/M10	M8/M10	M8/M10	M8/M10	M8/M10	M8/M10	M8/M10
Cable lug closed		M10	M10	M10	M10	M10	M10	M10	M10
Bore Ø	mm	10.5	10.5	10.5	10.5	10.5	10.5	10.5	10.5
Colour		black	black	black	black	black	black	black	black
Military name			VG 96927 T011 A102	VG 96927 T011 A103	VG 96927 T011 A104	VG 96927 T011 A105	VG 96927 T011 A106	VG 96927 T011 A107	VG 96927 T011 A108
Packing unit	pc(s)	1	1	1	1	1	1	1	1
Stock No.			6150-12-308-6941	6150-12-308-6940	6150-12-308-6939	6150-12-309-6938	6150-12-308-6937	6150-12-308-6936	6150-12-308-6935

Earthing Conductors with closed cable lugs

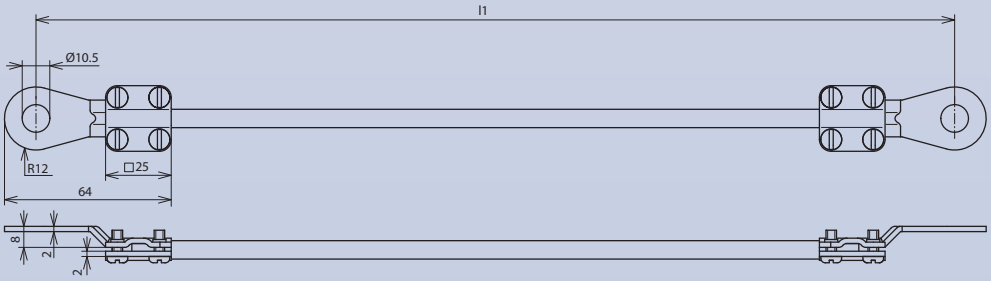
Earthing conductors made of highly flexible copper wire, frost-proof packing in accordance with VG 96927-11

Cable lug, 2x closed M10



Part No.		410 903	410 905	410 906	410 910	410 915	410 920	410 925	410 930
Cable cross section	mm²	10	10	10	10	10	10	10	10
Cable length (l1)	m	0.35	0.55	0.65	1.05	1.55	2.05	2.55	3.05
Cable lug closed		2xM10	2xM10	2xM10	2xM10	2xM10	2xM10	2xM10	2xM10
Bore ∅	mm	10.5	10.5	10.5	10.5	10.5	10.5	10.5	10.5
Colour		black	black	black	black	black	black	black	black
Military name		VG 96927 T011 A027	VG 96927 T011 A028	VG 96927 T011 A029	VG 96927 T011 A030	VG 96927 T011 A031	VG 96927 T011 A032	VG 96927 T011 A033	VG 96927 T011 A034
Packing unit	pc(s)	1	1	1	1	1	1	1	1
Stock No.		6150-12-198-1948	6150-12-198-6809	6150-12-198-6810	6150-12-198-1482	6150-12-168-2696	6150-12-168-2695	6150-12-168-2694	

Cable lug, 2x closed M10

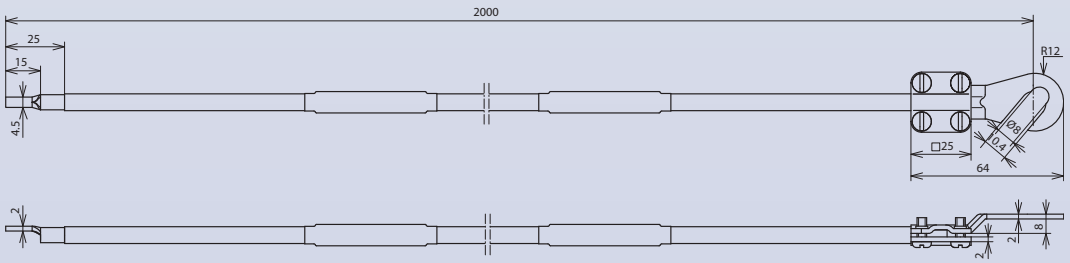


Part No.		416 903	416 905	416 906	416 910	416 915
Cable cross section	mm²	16	16	16	16	16
Cable length (l1)	m	0.35	0.55	0.65	1.05	1.55
Cable lug closed		2xM10	2xM10	2xM10	2xM10	2xM10
Bore ∅	mm	10.5	10.5	10.5	10.5	10.5
Colour		black	black	black	black	black
Military name		VG 96927 T011 A035	VG 96927 T011 A036	VG 96927 T011 A037	VG 96927 T011 A038	VG 96927 T011 A039
Packing unit	pc(s)	1	1	1	1	1
Stock No.		6150-12-198-6812	6150-12-198-6813	6150-12-198-6814	6150-12-168-9942	6150-12-168-2693

Part No.		416 920	416 925	416 930	416 970
Cable cross section	mm²	16	16	16	16
Cable length (l1)	m	2.05	2.55	3.05	7.05
Cable lug closed		2xM10	2xM10	2xM10	2xM10
Bore ∅	mm	10.5	10.5	10.5	10.5
Colour		black	black	black	black
Military name		VG 96927 T011 A040	VG 96927 T011 A041	VG 96927 T011 A042	VG 96927 T011 A043
Packing unit	pc(s)	1	1	1	1
Stock No.		6150-12-198-6815	6150-12-198-6816	6150-12-198-1483	6150-12-168-2692

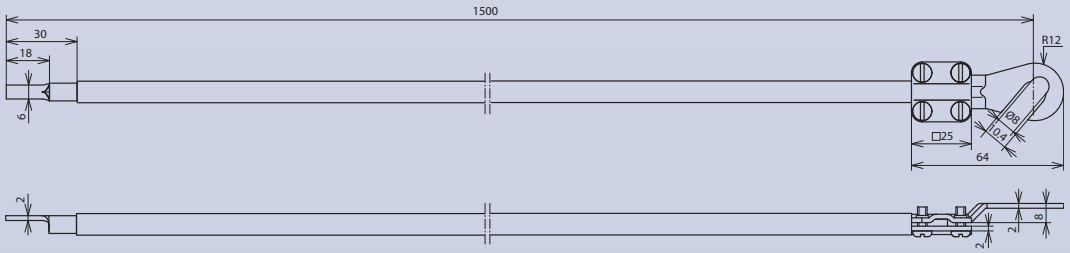
Earthing conductors made of highly flexible copper wire, frost-proof packing in accordance with VG 96927-11

Cable lug, 1x open and pin terminal size 10



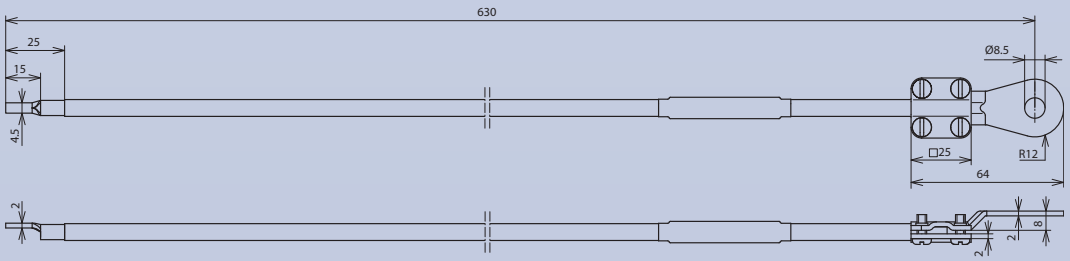
Part No.		410 720
Cable cross section	mm²	10
Cable length (l1)	m	2.05
Cable lug open		M8/M10
Pin terminal		size 10 (d = 4.3)
Colour		black
Military name		VG 96927 T011 A127
Packing unit	pc(s)	1
Stock No.		6150-12-308-6979

Cable lug, 1x open and pin terminal size 16



Part No.		416 016
Cable cross section	mm²	16
Cable length (l1)	m	1.55
Cable lug open		M8/M10
Pin terminal		size 16 (d = 5.4)
Colour		black
Military name		VG 96927 T011 A128
Packing unit	pc(s)	1
Stock No.		6150-12-178-9673

Cable lug, 1x closed and pin terminal size 10



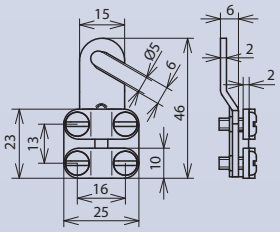
Part No.		410 606
Cable cross section	mm²	10
Cable length (l1)	m	0.65
Cable lug closed		M8
Bore Ø	mm	8.5
Pin terminal		size 10 (d = 4,3)
Colour		black
Military name		VG 96927 T011 A126
Packing unit	pc(s)	1
Stock No.		6150-12-304-4604

Earthing Cable Lugs

Earthing cable lugs for mounting on site with integrated strain relief (second half of clamping piece).

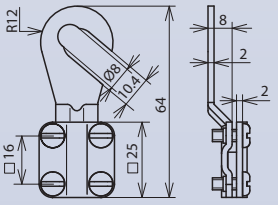
Mind the following parameters for mounting:
- strip approx. 15 mm
- wire end ferrule acc. to DIN 46228
- tightening torque of the locking nut screws ≥ 3 Nm

open M5/M6



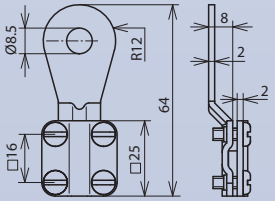
Part No.		444 006
Cable cross section	mm²	6-16
Cable lug fitting		M5/M6
Material		Cu/gal Sn
Military name		VG 96933 T14 A002A
Packing unit	pc(s)	100
Stock No.		5940-12-156-9126

open M8/M10



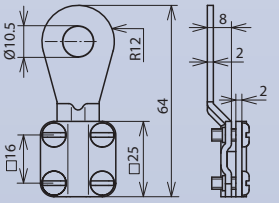
Part No.		444 010
Cable cross section	mm²	6-16
Cable lug fitting		M8/M10
Material		Cu/gal Sn
Military name		VG 96933 T14 A001A
Packing unit	pc(s)	100
Stock No.		5940-12-152-3867

closed M8



Part No.		444 008
Cable cross section	mm²	6-16
Cable lug fitting		M8
Material		Cu/gal Sn
Military name		VG 96933 T14 B001A
Packing unit	pc(s)	100
Stock No.		5940-12-156-9128

closed M10

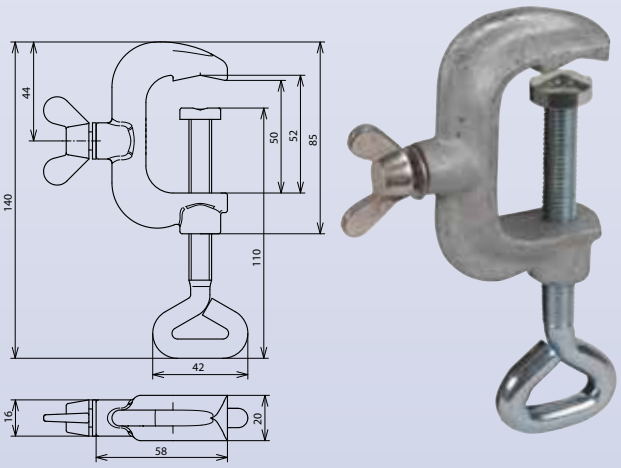


Part No.		444 009
Cable cross section	mm²	6-16
Cable lug fitting		M10
Material		Cu/gal Sn
Military name		VG 96933 T14 B002A
Packing unit	pc(s)	100
Stock No.		5940-12-156-9127

Earthing Clamps

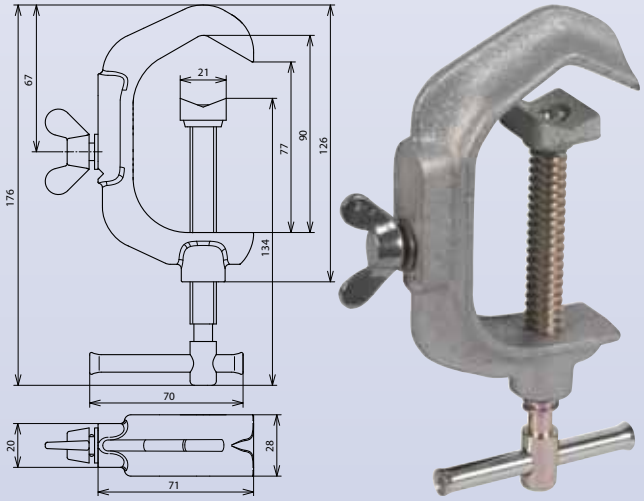
Earthing clamps for connecting earthing conductors to pipings

Small design



Part No.		435 805
Material of clamping body		TG/tZn
Material of spindle		St/gal Zn
Clamping range of pipe Ø	mm	4-45 ($^3/_8$ - $1^1/_4$'')
Terminal cross section	mm²	6-16
Military name		VG 96953 T06 A0001
Packing unit	pc(s)	1
Stock No.		5999-12-156-9129

Large design

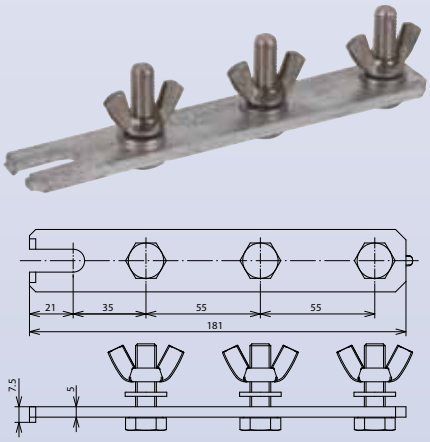


Part No.		435 803
Material of clamping body		TG/tZn
Material of spindle		St/gal Zn
Clamping range of pipe Ø	mm	12-60 ($^1/_2$ - 2'')
Terminal cross section	mm²	6-16
Military name		VG 96953 T06 B0001
Packing unit	pc(s)	10
Stock No.		5999-12-156-2656

Earthing Busbars

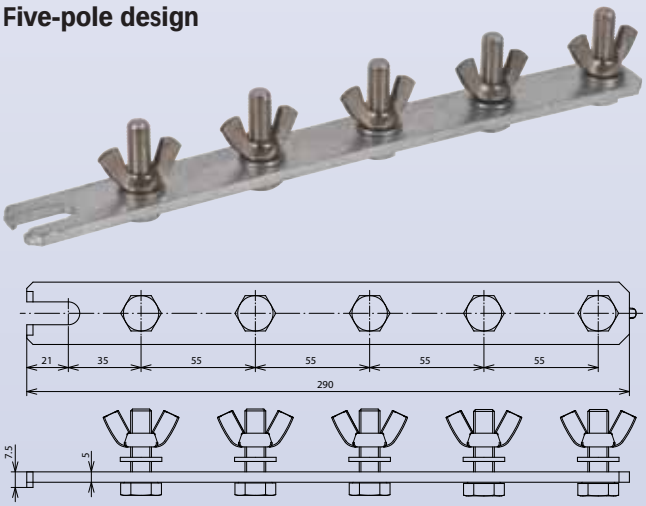
Earthing busbars with slot and rotation locking, for fixing at the earthing pipe

Three-pole design



Part No.		465 801
Material of busbar		St/tZn
Length	mm	181
Screw	mm	M10x35
Nut		wing nut M10
Material of screw/nut		StSt
Military name		VG 96953 T07 A0001
Packing unit	pc(s)	1
Stock No.		5940-12-156-8385

Five-pole design



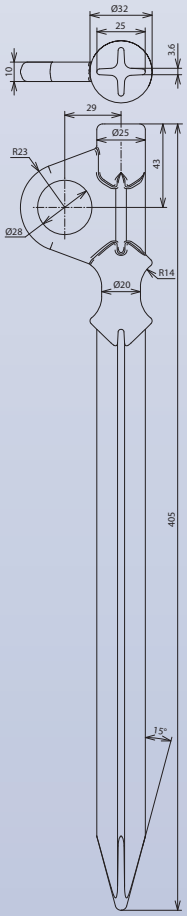
Part No.		466 192
Material of busbar		St/tZn
Length	mm	290
Screw	mm	M10x35
Nut		wing nut M10
Material of screw/nut		StSt
Military name		VG 96953 T07 B0001
Packing unit	pc(s)	1
Stock No.		5940-12-188-4931

Earthing Spike

Earthing spike for earthing mobile objects such as vehicles or power generators

Part No.		634 145	634 160
Material of profile		St/tZn	St/tZn
Profile	mm	50x50x3	50x50x3
Length (l1)	mm	450	600
Screw	mm	M8x40	M8x40
Nut		wing nut M8	wing nut M8
Material of screw/nut		StSt	StSt
Military name		VG 96953 T10 D0003	VG 96953 T10 D0004
Packing unit	pc(s)	1	1
Stock No.		5975-12-166-0114	5975-12-153-8505

Anchoring Pole

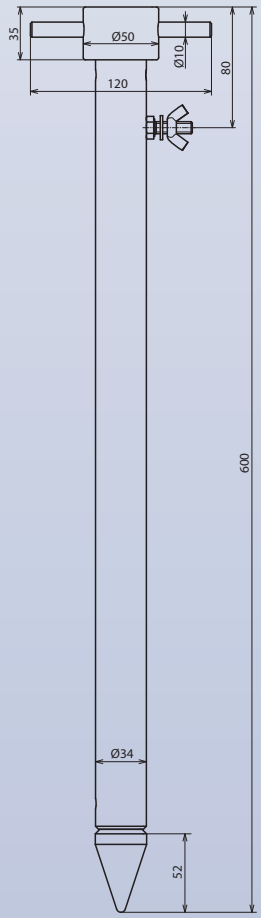


Anchoring pole for guying rod sections and batten shears e.g. in case of an elevated spanning of telecommunication cables

Part No.		466 203
Material of profile		MCl/tZn
Profile	mm	25x25x3
Length	mm	405
Design		hole Ø28 mm
Military name		VG 96953 T10 E0001
Packing unit	pc(s)	1
Stock No.		4030-12-320-9037

Earthing Pipe with Impact Spike

Earthing pipe with impact spike for earthing mobile objects such as vehicles or power generators



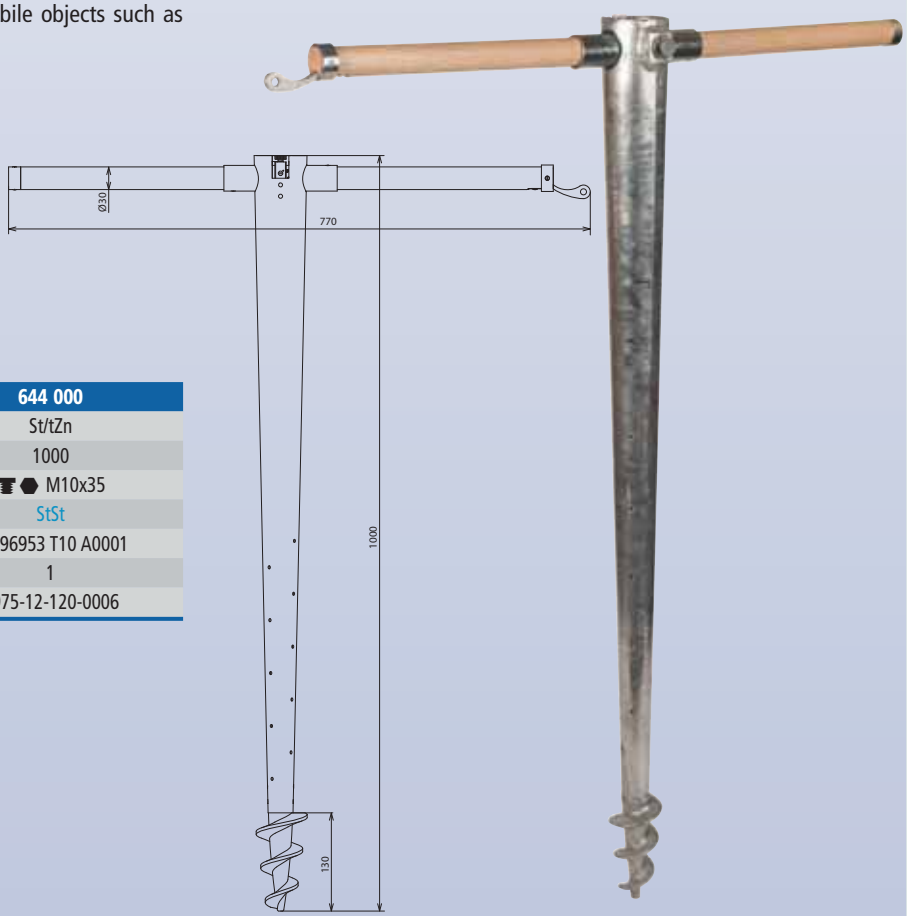
Part No.		646 000
Material		St/tZn
Pipe ∅	mm	34
Length	mm	600
Screw		wing nut M8
Material of screw		StSt
Military name		VG 96953 T010 B0001
Packing unit	pc(s)	1
Stock No.		5975-12-133-4342

Earthing Pipe with Drilling Spiral

Earthing pipe with drilling spiral for earthing mobile objects such as vehicles or power generators

comprising

- removable turning handle
  (Part No. 462 058
  military name VG 96953 T10 AB001
  insurance No. 5975-12-133-7084)
- earthing pipe
  (Part No. 462 060
  military name VG 96953 T10 AA001
  insurance No. 5975-12-133-7271)



Part No.		644 000
Material		St/tZn
Length	mm	1000
Screw	mm	M10x35
Material of screw		StSt
Military name		VG 96953 T10 A0001
Packing unit	pc(s)	1
Stock No.		5975-12-120-0006

Pipe Clamps for Explosion Hazard Areas

Pipe clamp for electrical contacting of pipes in explosion-hazard areas for implementing of lightning equipotential bonding according to EN 62305-3

Applied at a StSt pipe

- Usable in potentially explosive atmospheres Ex zones 1 and 2 (gases, vapours, mists) as well as Ex zones 21 and 22 (dusts)
- Tested according to explosion group IIB
- Time-saving installation – no need to deactivate systems/areas for welding or drilling works

So far equipotential bonding and lightning equipotential bonding of pipes in explosion-hazard areas has been implemented by means of welded or threaded bushing connections. Using clamps was only permitted if evidence of no ignition sparking in case of lightning current loading was provided. Such proof has now been rendered for a pipe clamp by DEHN + SÖHNE. In compliance with and tested according to EN 50164-1 (VDE 0185-201) title English: Requirements for connection components (clamps and connectors) in a potentially explosive atmosphere, the sample passed the test to give no rise ot ignition sparking at a lightning current loading of up to 50 kA (10/350 µs). This new pipe clamp for explosion-risk areas not only ensures the safe electrical contact by means of two contact clips, but also the adequate mechanical fixing by an electrically insulated clamping body.

The Ex pipe clamp provides following connection possibilities

– round conductors made of Cu, St/tZn, Al, StSt with Ø8 mm or stranded copper conductors, cross section 16-35 mm², with E-Cu crimping cable lug (DIN 46235)
– flat copper conductors with minimum dimensions of 20x2.5 mm and a bore of Ø10.5 mm

More details in installation instructions No. 1599

DEHN + SÖHNE

DECLARATION OF MANUFACTURER

Product: **Pipe clamp for explosive zones**

Product description:
Part No. 540 821
Part No. 540 801
Part No. 540 803
Part No. 540 805
Part No. 540 810

Manufacturer:
DEHN + SÖHNE GmbH + Co.KG.
Hans-Dehn-Str. 1
92318 Neumarkt i.d.OPf., Germany

Application:

The pipe clamp for explosive zones is used for connecting pipes of different materials and diameters to the lightning equipotential bonding structure in explosive atmospheres.

Lightning currents are discharged without formation of sparks as specified in the technical data sheet.

We herewith confirm that the pipe clamp for explosive zones is suitable for the use in explosive zones 1 and 2 (gas, vapour, mist) and explosive zones 21 and 22 (combustible dust) in connection with the installation instructions, Publication No. 1599, "Pipe Clamp for explosive zones" and is tested according to explosion group IIB.

Pipe clamps for explosive zones have no own potential source of ignition (mechanical device) and are thus not subject to the European directive 94/9/EG.

Therefore certification according to the European directive 94/9/EG is **not legally admissible** and **not necessary** with respect to explosion protection.

Neumarkt i.d.OPf., 12 Okt. 2009

Dr.-Ing. Ralph Brocke
Director R&D

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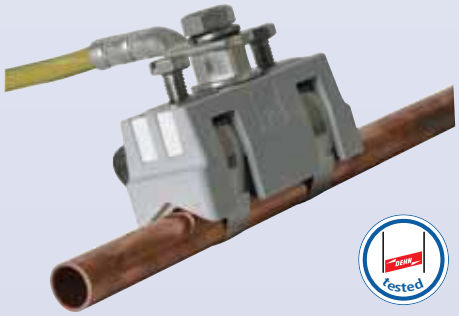
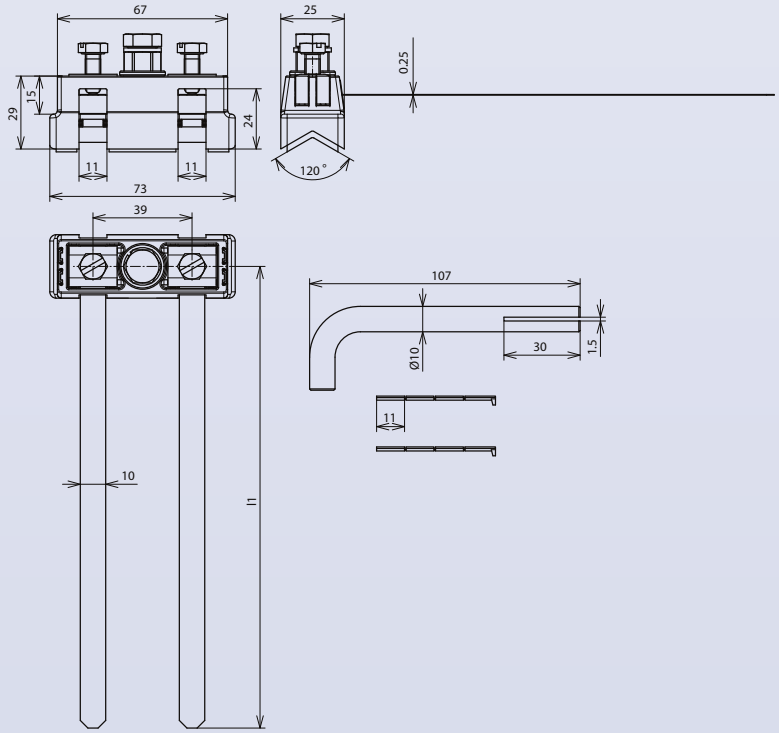
Page 1

Pipe Clamps for Explosion Hazard Areas

Type EX BRS 27

clamping range Ø6-26.9 mm (3/4")

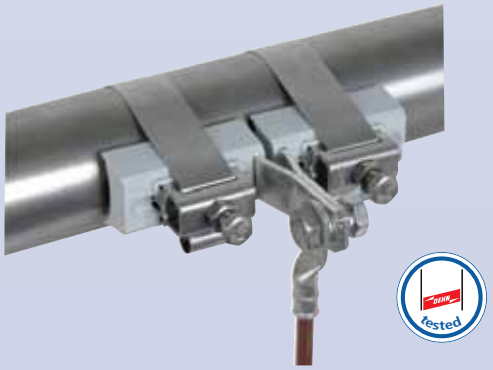


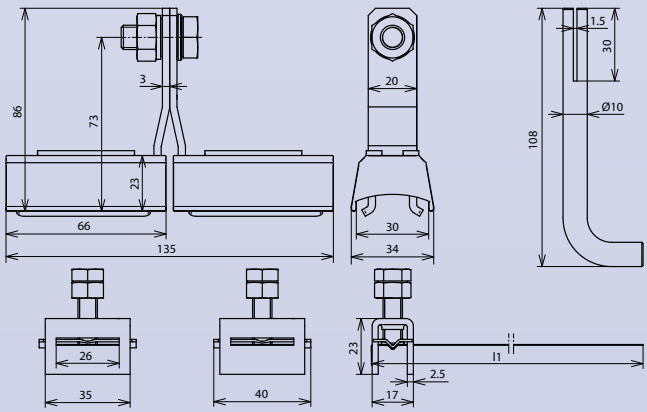


Part No.		540 821
Lightning impulse current (10/350) Cu Ø6-12 mm (I_{imp})	kA	10
Lightning impulse current (10/350) Cu Ø12-26.9 mm (3/4") (I_{imp})	kA	20
Lightning impulse current (10/350) Cu Ø26.9 mm (3/4") (I_{imp})	kA	25
Lightning impulse current (10/350) St/tZn Ø17.2-26.9 mm (3/4") (I_{imp})	kA	25
Lightning impulse current (10/350) StSt Ø6-12 mm (I_{imp})	kA	10
Lightning impulse current (10/350) StSt Ø12-26.9 mm (3/4") (I_{imp})	kA	12
Lightning impulse current (10/350) StSt Ø26.9 mm (3/4") (I_{imp})	kA	25
Clamping range of pipe Ø	mm	6-26.9 (3/4")
Material of clamping body		polyamide
Material of grip head/tensioning strap		StSt
Material of contact clip		Ms/gal Sn
Standard		EN 50164-1
Packing unit	pc(s)	1

Type EX BRS 90 / 300 / 500

Type EX BRS 90 Part No. 540 801 clamping range Ø26.9 mm (3/4") to 88.9 mm (3")
Type EX BRS 300 Part No. 540 803 clamping range Ø88.9 mm (3") to 300 mm and
Type EX BRS 500 Part No. 540 805 clamping range Ø300 to 500 mm



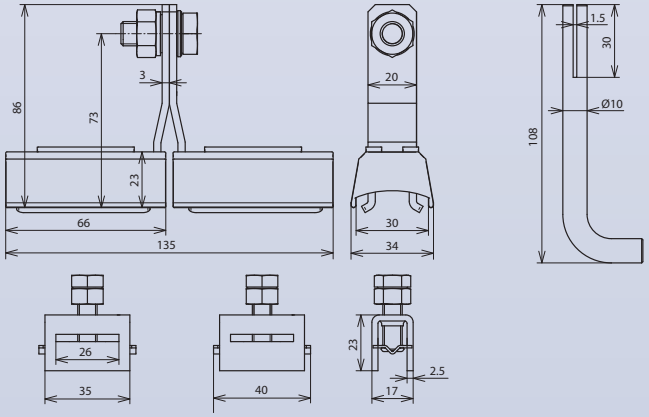


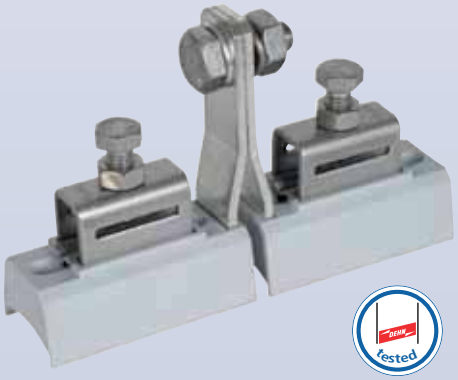
Part No.		540 801	540 803	540 805
Lightning impulse current (10/350) Cu (I_{imp})	kA	50	50	—
Lightning impulse current (10/350) St/tZn (I_{imp})	kA	50	50	—
Lightning impulse current (10/350) St/blank (I_{imp})	kA	—	—	50
Lightning impulse current (10/350) StSt (I_{imp})	kA	25	50	50
Clamping range of pipe Ø	mm	26.9 (3/4") - 88.9 (3")	88.9 (3") - 300	300 - 500
Material of clamping body		polyamide	polyamide	polyamide
Material of grip head/tensioning strap		StSt	StSt	StSt
Material of contact clip		Cu/gal Sn	Cu/gal Sn	Cu/gal Sn
Standard		EN 50164-1	EN 50164-1	EN 50164-1
Packing unit	pc(s)	1	1	1

Pipe Clamps for Explosion Hazard Areas

Separate clamping body

for use with endless tensioning strap (Part No. 540 901) clamping ranges Ø26.9 mm ($^3/_4$") to 500 mm





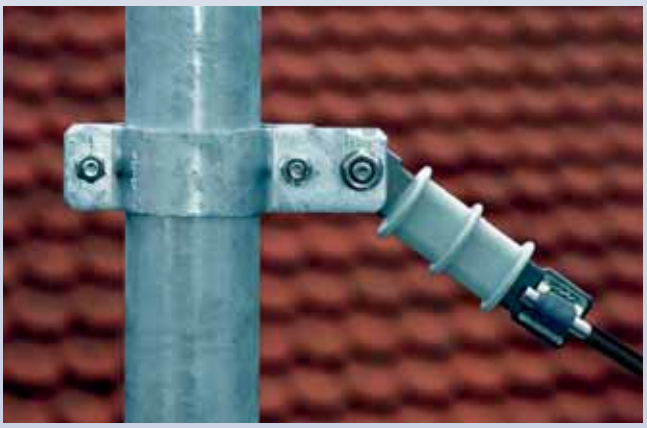
Part No.		540 810
Lightning impulse current (10/350) Cu (I_{imp})	kA	50
Lightning impulse current (10/350) St/tZn (I_{imp})	kA	50
Lightning impulse current (10/350) StSt (I_{imp})	kA	25
Clamping range of pipe Ø	mm	26.9 ($^3/_4$") - 500
Material of clamping body		polyamide
Material of grip head/tensioning strap		StSt
Material of contact clip		Cu/gal Sn
Standard		EN 50164-1
Packing unit	pc(s)	1

Accessory Part for Pipe Clamps for Explosion Hazard Areas

Tensioning Strap

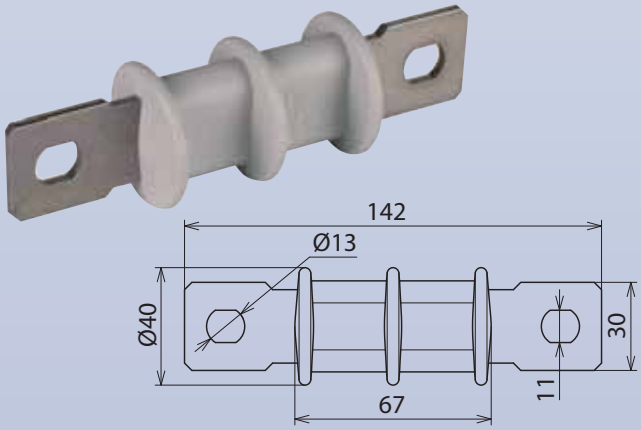
Part No.		540 901
Material		StSt
Dimension of strap (l x w x d)	mm	...x25x0.3
Length	m	100
Packing unit	pc(s)	1

Protective Spark Gap for Use at Overhead Line Roof Poles



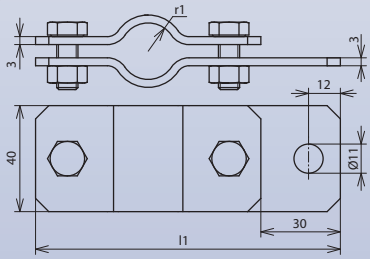
- For indirect connection of an overhead line roof pole to the external lightning protection system
- Corrosion-resistant stainless steel connections

The DSFS spark gap allows for indirect connection of an overhead line roof pole to the external lightning protection system in accordance with IEC 62305.



Part No.		920 000
100% Lightning impulse sparkover voltage (1,2/50 µs) U_{as100}	kV	~ 25
Nominal discharge current (8/20 µs) I_n	kA	25
Degree of protection		IP 54
Power frequency sparkover voltage (50 Hz) U_{aw}	kV	~ 10
Material (connection)		stainless steel (V2A)
Connection	mm	slot Ø13x11
Enclosure material		plastic
Packing unit	pc(s)	1

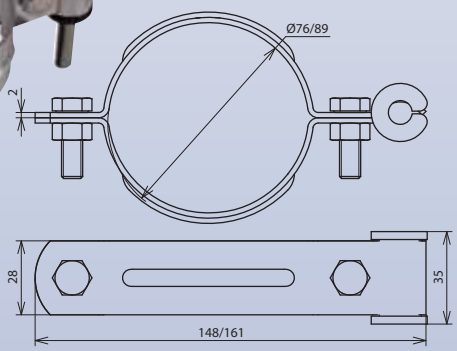
Pipe Clamps for Overhead Line Roof Poles



Pipe clamps for the connection of spark gaps at overhead line roof poles

Part No.		410 212	410 300
Clamping range Ø pipe	mm	76.1 (2 1/2")	88.9 (3")
Material		St/tZn	St/tZn
Bore Ø	mm	11	11
Screw	mm	M8x20	M8x20
Material of screw/nut		StSt	StSt
Dimension (l1 x r1)	mm	169x38	182.5x44.5
Packing unit	pc(s)	20	15

Conductor Holders for Overhead Line Roof Poles



Conductor holders for fixing of round conductors at the overhead line roof pole, insulated clamp bush

Part No.		425 076	425 089
Clamping range Ø pipe	mm	76	89
Material		St/tZn	St/tZn
Conductor holder support Rd	mm	8-10	8-10
Conductor leading		fixed	fixed
Screw	mm	M8x20	M8x20
Material of screw/nut		StSt	StSt
Packing unit	pc(s)	50	20

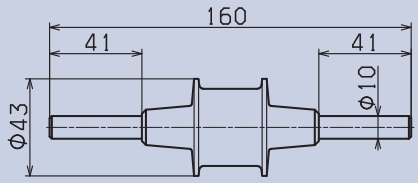
Isolating Spark Gap for lightning equipotential bonding

- For indirect connection/earthing of functionally isolated installation components when being affected by lightning
- For lightning equipotential bonding application according to IEC 62305
- With corrosion-resistant stainless steel connections
- For mounting inside of buildings, outdoors, in damp rooms as well as for underground installation
- Extremely heavy-duty devices

TFS: **High-capacity isolating spark gap**
KFSU: **Isolating spark gap**

TFS / KFSU

Isolating spark gaps with plastic coating and 2 connections (Rd 10 mm) made of stainless steel



Type Part No.		TFS 923 023	KFSU 923 021
Lightning impulse current (10/350 µs) I_{imp}	kA	100	—
Classification of lightning current carrying capability according to EN 50164-3		H	—
Nominal discharge current (8/20 µs) I_n	kA	100	100
Rated power-frequency withstand voltage (50 Hz) $U_{W/AC}$	V	300	300
100 % Lightning impulse sparkover voltage U_{rimp}	kV	≤ 4	≤ 4
Power frequency sparkover voltage (50 Hz) U_{aw}	kV	≤ 2.5	≤ 2.5
Operating temperature range T_U	°C	-20 ... +80	-20 ... +80
Degree of protection		IP 65	IP 65
Length	mm	160	160
Diameter of enclosure	mm	43	43
Enclosure material		steel-plastic coating	steel-plastic coating
Connection Rd	mm	10	10
Material (connection)		stainless steel	stainless steel
Packing unit	pc(s)	1	1

- For indirect connection/earthing of functionally isolated installation components when being affected by lightning
- Device for lightning equipotential bonding according to IEC 62305 in explosion-hazard areas
- For bridging insulating pieces, insulating flanges etc. in cathodically corrosion-protected pipe sections
- For safe installation in explosion protected zone 1 (gas) or 21 (dust)
- Especially low sparkover voltage
- Especially high a.c. current withstand capability

EXFS 100: **Isolating spark gap for use in explosion-hazard areas with plastic coating and M10 connecting thread nut**

EXFS 100 KU: **Isolating spark gap for use in explosion-hazard areas with 2 m connecting cable for underground installation**

The Ex isolating spark gaps of the EXFS 100 / EXFS 100 KU product family are used when conductive installation components situated in explosion-hazard areas cannot be connected directly with each other.
The spark gaps with low sparkover voltage are especially efficient for isolated installation components with little insulation resistance.
No special regulations have to be observed for safe application in zone 1 with gases or zone 21 with dusts.
With a maximum lightning impulse current of 100 kA (10/350 µs), EXFS 100 and EXFS 100 KU meet class H according to EN 50164-3 "Lightning Protection Components (LPC) – Part 3: Requirements for isolating spark gaps".
The ATEX-certified spark gaps EXFS 100 and EXFS 100 KU provide approved safety according to harmonised European standards.
For connecting EXFS 100 spark gaps, prewired connecting cables with different lengths are available as accessories.
Flat and angled connection brackets (IF) make it easier to connect the spark gaps to pipe flanges.
EXFS 100 KU types are enclosed by a damp-proof plastic coating and can therefore be ideally used for underground installation at insulating couplings.

IECEx Certificate of Conformity

INTERNATIONAL ELECTROTECHNICAL COMMISSION
IEC Certification Scheme for Explosive Atmospheres

KEMA

EXAM BBG Prüf- und Zertifizier GmbH

EG-Baumusterprüfbescheinigung

- Richtlinie 94/9/EG -

Geräte und Schutzsysteme zur bestimmungsgemäßen Verwendung in explosionsgefährdeten Bereichen

BVS 06 ATEX E 099

(4) Gerät: Trennfunkenstrecken Typ EXFS100 und EXFS100KU

(5) Hersteller: Dehn + Söhne GmbH & Co.KG

(6) Anschrift: 92318 Neumarkt/Opf.

(9) EN 60079-0:2004 Allgemeine Bestimmungen
EN 60079-7:2004 Druckfeste Kapselung 'd'
EN 61241-0:2006 Allgemeine Bestimmungen
EN 61241-1:2004 Schutz durch Gehäuse 'tD'

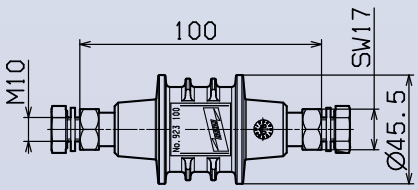
(12) II 2G Ex d IIC T6
II 2D Ex tD A21 IP 67 T 80°C

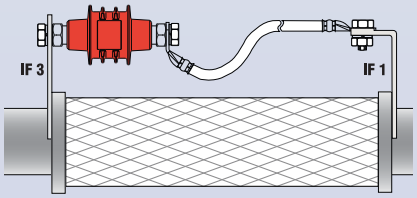
EXAM BBG Prüf- und Zertifizier GmbH

Baumusterprüfbescheinigung

EXFS 100

Ex isolating spark gap with plastic coating and M10 connecting thread nuts





Installation of EXFS 100

Type		EXFS 100
Part No.		923 100
Lightning impulse current (10/350 µs) I_{imp}	kA	100
Classification of lightning current carrying capability according to EN 50164-3		H
Nominal discharge current (8/20 µs) I_n	kA	100
Rated power-frequency withstand voltage (50 Hz) $U_{W/AC}$	V	250
100 % Lightning impulse sparkover voltage U_{rimp}	kV	≤ 1.25
Power frequency sparkover voltage (50 Hz) U_{aw}	kV	≥ 0.3
Rated discharge current (50 Hz) I_{max}	sec.	500 A / 0.5 (T_U: ≤ 45 °C)
(Ex) Marking according to EN 60079: gas		Ex II 2G Ex d IIC T6
(Ex) Marking according to EN 61241: dust		Ex II D Ex tD A21 IP67 T 80 °C
Operating temperature range T_U	°C	-20 ... +60
Degree of protection		IP 67
Approvals, Certifications		BVS 06 ATEX E 099, IECEx KEM 09.0051...
Length of enclosure	mm	100
Diameter of enclosure	mm	45.5
Enclosure material		plastic coating
Connection of enclosure		thread nut M10, 2x M10x25 mm, 2x spring washer
Packing unit	pc(s)	1

Accessory Parts for EXFS 100 / EXFS 100 KU

EXFS 100: Connecting cable, Cu 25 mm²

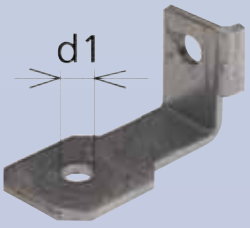
Connecting cable for EXFS 100;
two cable lugs ∅10.5 mm; hexagon screw and nut (M10), StSt(V2A) and spring washer

Type		AL EXFS L100 KS	AL EXFS L200 KS	AL EXFS L300 KS
Part No.		923 025	923 035	923 045
Cable lug material		Cu/gal Sn	Cu/gal Sn	Cu/gal Sn
Screw /nut material		NIRO	NIRO	NIRO
Cross section	mm²	25	25	25
Cable length	mm	100	200	300
Packing unit	pc(s)	1	1	1

Pair of angled connection brackets – IF 1 –

Pair of angled connection brackets for EXFS ...; diameter corresponds to bolt diameter of the bolted flange joint (d1 up to max. 60 mm, please indicate the diameter required when placing your order)

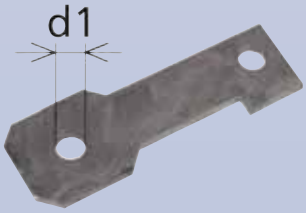
Part No.		923 011
Cable lug material		St/tZn
Packing unit	pc(s)	1



Pair of flat connection brackets – IF 3 –

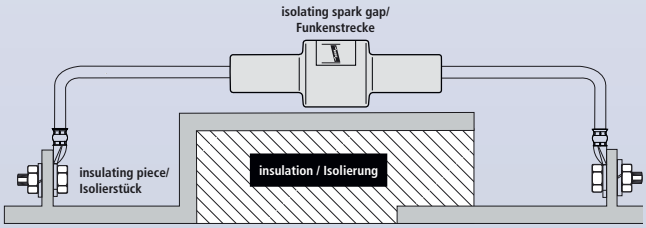
Pair of flat connection brackets for EXFS ...; diameter corresponds to bolt diameter of the bolted flange joint (d1 up to max. 60 mm, please indicated the diameter required when placing your order)

Part No.		923 016
Cable lug material		St/tZn
Packing unit	pc(s)	1

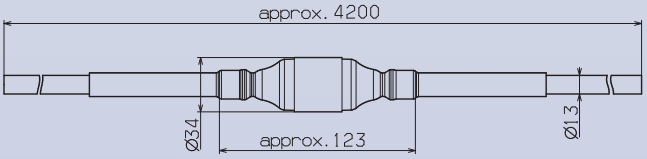


EXFS 100 KU

Ex isolating spark gap with connecting cable for aboveground and underground installation



Installation of EXFS 100 KU



Type		EXFS 100 KU
Part No.		923 101
Lightning impulse current (10/350 µs) I_{imp}	kA	100
Classification of lightning current carrying capability according to EN 50164-3		H
Nominal discharge current (8/20 µs) I_n	kA	100
Rated power-frequency withstand voltage (50 Hz) $U_{W/AC}$	V	250
100 % Lightning impulse sparkover voltage U_{rimp}	kV	≤ 1.25
Power frequency sparkover voltage (50 Hz) U_{aw}	kV	≥ 0.3
Rated discharge current (50 Hz) I_{max}	sec.	500 A / 0.5 (T_U: ≤ 45 °C)
(Ex) Marking according to EN 60079: gas		Ⓔx II 2G Ex d IIC T6
(Ex) Marking according to EN 61241: dust		Ⓔx II 2D Ex tD A21 IP67 T 80 °C
Operating temperature range T_U	°C	-20 ... +60
Degree of protection		IP 67
Approvals, Certifications		BVS 06 ATEX E 099, IECEx KEM 09.0051...
Length of enclosure	mm	123
Diameter of enclosure	mm	34
Enclosure material		plastic coating; water-proof coating
Connection of enclosure		NYY-J-1x25 mm²,
Cable length	m	2x approx. 2
Packing unit	Stk.	1

EXFS L / EXFS KU for use in explosion-hazard areas

- For indirect connection/earthing of functionally isolated installation components when being affected by lightning
- Device for lightning equipotential bonding acc. to IEC 62305 in explosion-hazard areas (Zone 2)
- According to "ATEX Directive" 94/9/EC
- Corrosion-resistant zinc diecasting enclosure with plastic cover and flexible conductor connection
- For bridging insulating pieces, insulating flanges etc. in cathodically corrosion protected pipe sections
- Extremely heavy-duty device

EXFS L ...: Isolating spark gap for use in explosion-hazard areas with flexible connecting cable

EXFS KU: Isolating spark gap for use in explosion-hazard areas with 1.5 m connecting cable for underground installation

Ex isolating spark gaps of the EXFS L / EXFS KU product family are used when the direct interconnection of electrically conductive installation components in Ex areas is not applicable. As, for example, in case of cathodically corrosion protected pipeline sections.
ATEX-certified EXFS L and EXFS KU spark gaps provide approved and tested safety in accordance with harmonised European standards.
The arc-resistant tungsten-copper electrodes ensure a long service life of the Ex spark gaps.
The approved type EXFS L with flexible conductor connection quickly adapts to any application environment. The prewired spark gaps provide connecting cables with different lengths with cable lugs, screws and M10 nut. The flat or angled connection brackets (IF), which are available as accessories, allow for easy connection of the spark gap to pipeline flanges.
The EXFS KU type is enclosed in a damp-proof PVC enclosure and is ideal for underground installation at insulating couplings.

Prüf- und Zertifizierungsstelle
ZELM Ex

(1) CONFORMITY STATEMENT

(2) Equipment and Protective Systems Intended for Use in Potentially Explosive Atmospheres - **Directive 94/9/EC**

(3) Test Certificate Number:

ZELM 03 ATEX 3192X

(4) Equipment: **Spark-gap ExFs, Art.No. : 923060, 923061, 923062 and Type Ex-Fs-KU, Art.-No. 923 019**

(5) Manufacturer: **DEHN+SÖHNE GmbH + Co. KG**

(6) Address: **D-92318 Neumarkt/Opf.**

(7) This equipment and any acceptable variation thereto are specified in the schedule to this certificate and the documents therein referred to.

(8) The Prüf- und Zertifizierungsstelle ZELM Ex, notified body No. 0820 in accordance with Article 9 of the Council Directive 94/9/EC of 23 March 1994, certifies that this equipment has been found to comply with the Essential Health and Safety Requirements relating to the design and construction of equipment and protective systems intended for use in potentially explosive atmospheres, given in Annex II to the Directive.

The examination and test results are recorded in the confidential report ZELM Ex 1090315264.

(9) Compliance with the Essential Health and Safety Requirements has been assured by compliance with:

EN 50 014: 1997+A1+A2 **EN 50 021: 1999**

(10) If the sign "X" is placed after the certificate number, it indicates that the equipment is subject to special conditions for safe use specified in the schedule to this certificate.

(11) This Conformity Statement relates only to the design, examination and tests of the specified equipment or protective system in accordance to the Directive 94/9/EC. Further requirements of the Directive apply to the manufacturing process and supply of this equipment or protective system. These are not covered by this Statement.

(12) The marking of the equipment shall include the following:

Ex II 3 G EEx nC II T4

Zertifizierungsstelle ZELM Ex — Braunschweig, February 27, 2004

Adolf Gruber

ZELM Ex

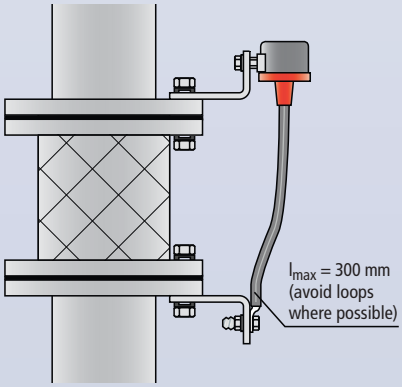
Sheet 1/2

Conformity Statements without signature and stamp are not valid. The certificates may only be circulated without alteration. Extracts or alterations are subject to approval by the Prüf- und Zertifizierungsstelle ZELM Ex. The English version is based on the German text. In the case of dispute, the German text shall prevail.

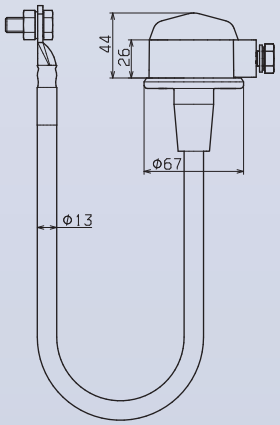
Prüf- und Zertifizierungsstelle ZELM Ex • Sidolgraben 58 • D-38124 Braunschweig

EXFS L ...

Ex isolating spark gap for aboveground installation

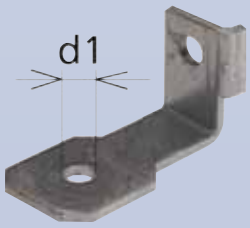


Installation of EXFS



Type		EXFS L100	EXFS L200	EXFS L300
Part No.		923 060	923 061	923 062
Lightning impulse current (10/350 µs) I_{imp}	kA	50	50	50
Classification of lightning current carrying capability according to EN 50164-3		N	N	N
Nominal discharge current (8/20 µs) I_n	kA	100	100	100
Rated power-frequency withstand voltage (50 Hz) $U_{W/AC}$	V	300	300	300
100 % Lightning impulse sparkover voltage U_{rimp}	kV	≤ 2.5	≤ 2.5	≤ 2.5
Power frequency sparkover voltage (50 Hz) U_{aw}	kV	≤ 1.2	≤ 1.2	≤ 1.2
Type of protection according to EN 50014, EN 50021		⟨Ex⟩ II 3 G EEx nC II T4	⟨Ex⟩ II 3 G EEx nC II T4	⟨Ex⟩ II 3 G EEx nC II T4
Operating temperature range T_U	°C	-20 ... +80	-20 ... +80	-20 ... +80
Degree of protection		IP 54	IP 54	IP 54
Approvals, Certifications		ZELM 03 ATEX 3192X	ZELM 03 ATEX 3192X	ZELM 03 ATEX 3192X
Length of enclosure	mm	90	90	90
Diameter of enclosure	mm	63	63	63
Enclosure material		zinc diecasting, plastic	zinc diecasting, plastic	zinc diecasting, plastic
Connecting cable		H01N2-D 25 mm² with cable lug and screw/nut (M10)	H01N2-D 25 mm² with cable lug and screw/nut (M10)	H01N2-D 25 mm² with cable lug and screw/nut (M10)
Cable length	mm	100	200	300
Suitable for flange size	mm	20-130	120-230	220-320
Packing unit	pc(s)	1	1	1

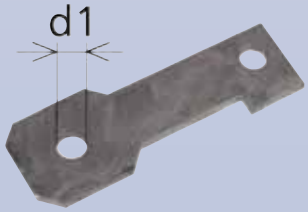
Accessory Parts for EXFS 100 / EXFS 100 KU



Pair of angled connection brackets – IF 1 –

Pair of angled connection brackets for EXFS ...; diameter corresponds to bolt diameter of the bolted flange joint (d1 up to max. 60 mm, please indicate the diameter required when placing your order)

Part No.		923 011
Cable lug material		St/tZn
Packing unit	pc(s)	1



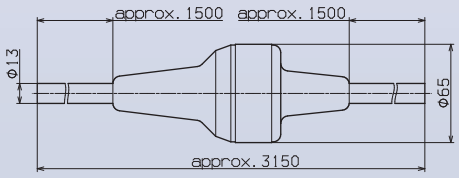
Pair of flat connection brackets – IF 3 –

Pair of flat connection brackets for EXFS ...; diameter corresponds to bolt diameter of the bolted flange joint (d1 up to max. 60 mm, please indicated the diameter required when placing your order)

Part No.		923 016
Cable lug material		St/tZn
Packing unit	pc(s)	1

EXFS KU

Ex isolating spark gap with connecting cables for aboveground and underground installation



Type		EXFS KU
Part No.		923 019
Lightning impulse current (10/350 µs) I_{imp}	kA	50
Classification of lightning current carrying capability according to EN 50164-3		N
Nominal discharge current (8/20 µs) I_n	kA	100
Rated power-frequency withstand voltage (50 Hz) $U_{W/AC}$	V	300
100 % Lightning impulse sparkover voltage U_{rimp}	kV	≤ 2.5
Power frequency sparkover voltage (50 Hz) U_{aw}	kV	≤ 1.2
Type of protection according to EN 50014, EN 50021		Ex II 3 G EEx nC II T4
Operating temperature range T_U	°C	-20 ... +80
Degree of protection		IP 67
Approvals, Certifications		ZELM 03 ATEX 3192X
Length of enclosure	mm	90
Diameter of enclosure	mm	63
Enclosure material		zinc diecasting, plastic
Connecting cable	mm^2	NYY-J-1x25
Cable length	m	2x approx. 1.5
Packing unit	pc(s)	1

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Part Nos / Page Index

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Conversion Table

Description	Part No.	Length (m)	Weight approx. (kg)	Weight (kg)	Length approx. (m)
Round Wires St/tZn, 8 mm	**800 008**	1	0.393	1	2.54
Round Wires St/tZn, 10 mm	**800 010 / 800 310**	1	0.617	1	1.62
Round Wires St/tZn, with plastic coating, 8 mm	**800 108**	1	0.440	1	2.30
Round Wires St/tZn, with plastic coating, 10 mm	**800 110**	1	0.680	1	1.48
Round Wires Al, medium-hard/soft, 8 mm	**840 008 / 840 018 840 108 / 840 028**	1	0.135	1	7.40
Round Wires Al, medium-hard/soft, 10 mm	**840 010**	1	0.211	1	4.72
Round Wires Al, with plastic coating, medium-hard, 8 mm	**840 118**	1	0.175	1	5.70
Round Wires StSt (V2A) / (V4A), 8 mm	**860 008 / 860 908**	1	0.395	1	2.54
Round Wires StSt (V2A) / (V4A), 10 mm	**860 010 / 860 020 860 910 / 860 920**	1	0.617	1	1.62
Round Wires Cu, medium-hard/soft, 8 mm	**830 008 / 830 108 830 038**	1	0.448	1	2.22
Strips St/tZn, 20x2.5 mm, Z300/500	**810 225 / 801 225**	1	0.400	1	2.50
Strips St/tZn, 30x3.5 mm, Z300/500	**810 335 / 852 335 801 335 / 825 335**	1	0.840	1	1.19
Strips St/tZn, 30x4 mm, Z300/500	**810 304 / 801 304**	1	0.960	1	1.04
Strips St/tZn, 40x4 mm, Z300/500	**810 404 / 801 404**	1	1.280	1	0.78
Strips St/tZn, 40x5 mm, Z300/500	**810 405 / 801 405**	1	1.600	1	0.63
Strips StSt (V2A) / (V4A), 30x3.5 mm	**860 335 / 860 325 860 900 / 860 925**	1	0.825	1	1.21
Strips Cu, 20x2.5 mm	**831 225**	1	0.450	1	2.22

The following list shows and explains all abbreviations mentioned in the present catalogue.

Conductor Types:

Abbreviation in catalogue	Conductor Types
Fl	Flat strip
Rd	Round wire

Materials:

Abbreviation in catalogue	Material
Al	Aluminium
AlMgSi	Aluminium magnesium silicon wrought alloy
E-AlMgSi	Electrical aluminium alloy
G-AlMg3	Aluminium casting with magnesium
StSt	Stainless steel (Material No. e.g. 1.4016/1.4301/1.4303)
StSt (V4A)	Stainless steel (Material No. e.g. 1.4571/1.4401/1.4404)
StSt / gal Cu	Stainless steel, copper-coated
St/blank	Steel (black)
St/Zn	Steel (GEOMET)
St/tZn	Steel, hot dip galvanised
St/gal Zn	Steel, galvanised
St/Cu	Steel, copper-coated
MCI	Malleable cast iron
MCI/tZn	Malleable cast iron, hot dip galvanised
ZDC	Zinc die casting
GCI	Grey cast iron
Cu	Copper, electrical copper
RCB	Red castin brass
Ms	Brasss
Ms/gal Cu	Brass, copper coated
Ms/gal Sn	Brass, tin-coated
Cu/gal Sn	Copper, tin-coated
Sn	Tin
K	Plastic material / Polyethylene / Polyamide / Polystyrene
PVC	Polyvinyl chloride
GRP	Glass-fibre reinforced plastic
UP	Polyester (unsaturated)
PA	Polyamide
EVA	Ethylene vinyl acetate copolymer
XLPE	Cross-linked polyethylene

Material combinations of air-termination systems and down conductors with one another and with structural parts

	Steel	Aluminium	Copper	StSt	Titanium	Tin
Steel (St/tZn)	yes	yes	no	yes	yes	yes
Aluminium	yes	yes	no	yes	yes	yes
Copper	no	no	yes	yes	no	yes
StSt	yes	yes	yes	yes	yes	yes
Titanium	yes	yes	no	yes	yes	yes
Tin	yes	yes	yes	yes	yes	yes

Symbols:

Screws	Screw heads
Half-round wood screw	Slot
Countersunk head wood screw	Hexagon
	Hexagon with slot
Wood screw with threaded head	Cross recessed
Cheese head screw	Star drive
Truss head screw	Combined slot
Knurled screw	
Countersunk screw	
Raised head screw	

Recommended values:

Screw	Tightening torque
M5 / M6	≥ 4 Nm
M8	≥ 10 Nm
M10	≥ 20 Nm
M12	≥ 25 Nm

Others:

tested according EN 50164-1

New Products

Discontinued Products

Legal Notes

Since we do not carry out the design of systems or system components, the suggested application of our products should be regarded as product information and for advisory purposes only. Our oral and written advice on application is based on experience and given to the best of our knowledge. However, it must be also considered as not binding. This particularly applies to the different conditions of use which are beyond our control. We recommend to check whether the respective DEHN product is suitable for the intended application.
Application, use and processing of our products take place beyond our control. Therefore, the product is completely subject to the user's responsibility.

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- "DEHNQUICK" *
- "DEHNsnap" *
- "HVI"
- "...Mit Sicherheit DEHN." *

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* in Germany

1. General, Scope

1.1 All deliveries and services in business dealings with entrepreneurs take place exclusively under our general terms of sale (hereinafter "terms of sale"). We oppose deviating regulations, especially conflicting terms of purchase of the customer, unless we expressly agreed to the validity in writing. Our terms of sale apply even if we complete unconditional delivery to the customer while knowing that the terms of sale of the customer are in conflict with our own.

1.2 Our terms of sale only apply to entrepreneurs within the meaning of section 310, paragraph 1 of the German Civil Code (BGB), to current business relationships and to all future transactions with the customer.

2. Offer and Order, Reservation of Right of Modification and Copyright

2.1 Insofar as not expressly indicated by us as binding, documents such as diagrams, drawings, and measurements are only roughly binding.

2.2 Should our order confirmation contain reasonable expansions, limitations, or other modifications with respect to the order, then the customer's agreement is implied, if it does not immediately, at the latest however within 3 business days from receipt of the order confirmation, oppose it.

2.3 Any order placed in our web shop shall be regarded as an offer to conclude a sales contract. A sales contract only comes into existence if the customer receives a written order confirmation or the goods are delivered / services are rendered.

2.4 Our goods are only delivered in the packaging units indicated in the catalogues. If a different number of items is ordered, the amount and price of the next larger packaging unit is considered agreed upon.

2.5 We reserve the right to make technical modifications to our services, insofar as such modifications promote technical progress or are unavoidable based on other circumstances and are reasonable for the customer.

2.6 We reserve ownership and copyright rights to diagrams, drawings, calculations, and other documents; these may not be made available to third parties without our express written consent.

3. Prices, Value-Added Tax, Packaging Costs

3.1 Our prices are subject to change without notice.

3.2 Prices include, insofar as nothing else is arranged, customary packaging from our plant without value-added tax. On the day of invoicing, the legally identified VAT amount is to be reimbursed to us.

3.3 The cost of non-customary packaging, e.g., collective or seaworthy packaging, is invoiced separately. The customer bears the cost of the disposal or return of packaging.

4. Passing of Risk, Optional Insurance

The risk of accidental loss, destruction, or deterioration passes to the customer upon dispatch to the customer from our plant, even if carriage-paid delivery is agreed upon. At the request and expense of the customer, we will insure the delivery against breakage, damage to goods in transit and fire damage.

5. Payment Due Dates, Discounts, Right of Refusal, Default, Small Order Quantity Surcharge

5.1 Unless otherwise agreed, invoices are payable net 10 days. Purchaser shall pay the costs of payment. Discount amounts are deductible only if they have been agreed on with us and all accounts payable due have been paid.

5.2 If purchaser is in default with his payments, interest on the outstanding amount shall be payable at the rate of 8 % above the base interest rate. We reserve the right to prove and allege higher default damages. We reserve the right to cause default by demanding early payment. If we are required to advance performance and, if after the execution of the contract, it becomes apparent that our claim, in particular for payment, may be jeopardised by purchaser's inability to perform we may refuse performance.

5.3 The customer cannot charge counter-claims against our due payment claims or exercise a right of retention, unless the customer is entitled to a claim recognised by declaratory judgement that is not contested by us and if, while exercising the right of retention, the counter-claim from the customer is based on the same contractual relationship.

5.4 Orders, with the exception of cash sales, for which the net amount (invoiced amount without shipping costs and value-added tax) is less than € 75.00, a small order surcharge of € 25.00 will be charged.

6. Retention of Title, Assignment, Release of Securities

6.1 Delivered goods remain our property until the payment of all open business claims up to the point of invoicing. The claims of the customer including value-added tax from the resale of reserved goods, i.e., from a work performance using our goods, should already be transferred to us in the amount of the open invoice. In the case that the reserved goods from the customer are sold together with other goods that do not belong to us, whether it be without or after processing, or are delivered within the framework of a working contract, the assignment of the resulting claim of the reserve buyer is calculated in the amount of the value of the reserved goods.

6.2 Should the value of the granted securities exceed the claims by more than 10 %, we are obliged to retransfer or release the securities upon request. We shall select the securities to be released.

6.3 Our goods may only be transferred within the framework of proper business activity. The customer is not allowed to pawn or transfer the ownership of goods that are still in our possession.

6.4 At our request, the customer is obliged to inform us of the purchaser and the arranged price and to show the assignment to its debtor.

7. Delivery Period and Appointment

7.1 The start of the delivery period presupposes the involvement of the customer for the clarification of all technical questions.

7.2 Delivery periods as well as delivery schedules will be appropriately extended if they cannot be adhered to as a result of military mobilisation, war, uprising, strike or lockout, delayed delivery of raw and auxiliary materials, late delivery by our suppliers, or similar circumstances beyond our control. A lasting obstruction under these circumstances gives us the right to withdraw from the contract without liability for damages.

8. Liability for Material and Title Defects

8.1 Insofar as there exists a defect of the contract subject that was beyond our control, we can choose to fix the defect or provide a defect-free contract subject (replacement).

8.2 Should the replacement (No. 8.1) not function properly, or should it be unreasonable to the customer, or should we seriously and conclusively refuse it or unreasonably delay it, or if other circumstances exist that, upon weighing mutual interests, justify immediate resignation or compensation, then the customer is entitled to choose to lower the contract price or to withdraw from the contract and/or demand compensation (No. 8.3). The customer is not entitled to withdraw from the contract if only insignificant contract inconformities exist, especially insignificant defects.

8.3 Should the customer exclusively choose compensation after proper replacement (No. 8.2), the contract subject remains with the customer, if it considers this reasonable. Compensation is limited to the difference between the purchase price (without value-added tax) and the value of the defective subject of the contract that remains with the customer.

8.4 Material and title defect claims, including claims for compensation due to material and title defects, with the exception of claims under the Product Liability Act, lapse 12 months after delivery of the goods.

8.5 Numbers 8.1 through 8.4 do not impair the customer's rights if we maliciously concealed a defect or if we offered a quality guarantee.

9. Liability for Other Reasons

9.1 Our liability is excluded for slightly negligent infringement of immaterial contractual obligations. Our liability is limited to the contractual, foreseeable damage for negligent infringement of other obligations.

9.2 The above regulation does not apply to claims under the Product Liability Act. Insofar as the limitation on liability pursuant to No. 9.1 for claims from the producer's liability pursuant to § 823 of the German Civil Code does not interfere, our liability is limited to the replacement of the insurance. Insofar as this does not occur or does not occur in full, we are liable up to the insured amount.

9.3 Insofar as our liability is excluded or limited, this also applies for the personal liability of all of our employees, representatives, and vicarious agents.

9.4 Our liability is unrestricted if the customer loses his/her life or suffers a bodily or health injury due to an action or failure attributable to us.

10. Return of Goods without Legal Liability

10.1 If no legal claim to return exists, delivered goods will be accepted only with previous agreement from us. Returns without previous agreement will be send back – postage-due – to the sender without inspection. The customer bears the shipping costs for the return delivery in No. 10.1.

10.2 The goods must still be in their original packaging. Special orders or deliveries, which date back more than three months or the net value of which is less than € 75.00, cannot be returned. A processing fee of 15 % of the net value of the goods will be charged to cover the cost of the return. If the goods can no longer be resold at the list price at the time of the return, an additional deduction (old goods deduction) will be made in addition to the processing fee. If we make an exception and agree to accept the return of parts that are unpackaged or that are no longer in their original packaging, an expense remuneration of at least 15 % will be charged for reworking and repackaging in addition to the processing fee and, if applicable, the old goods deduction.

10.3 Returned goods will only be credited to a new invoice. Credits cannot be used to clear invoices due at the time of the return.

11. Product Information, No Advisory Obligation

Our deliveries are intended only for speciality stores or skilled users. Our user information and instructions are limited to the details of each written product information (e.g., installation instructions, catalogues, data sheets). Further advisory obligations do not exist. Application, use, and processing of the products lie solely in the customer's realm of responsibility.

12. Use and Protection of Customer Data

We use customer data, which concern the business dealings with the customer, in terms of the Federal Data Protection Act.

13. Applicable Law, Jurisdiction

13.1 German law applies to the mutual contractual obligations, their materialisation, interpretation, and implementation as well as all resulting contractual and business relationships. The application of the UN Agreement on Contracts on the International Purchase of Goods and the thereafter enacted laws of the Federal Republic of Germany is excluded.

13.2 Place of performance and jurisdiction for delivery, payment, and for all obligations, including those from exchange and cheque payments, is exclusively Nuremberg. We reserve the right to file a complaint against the customer at its official location.

14. VAT Identification Number

VAT ID No. DE 133251475

DEHN + SÖHNE GmbH + Co.KG.
Nürnberg – Neumarkt

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Key Words

DEHN + SÖHNE

Surge Protection
Lightning Protection / Earthing
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