

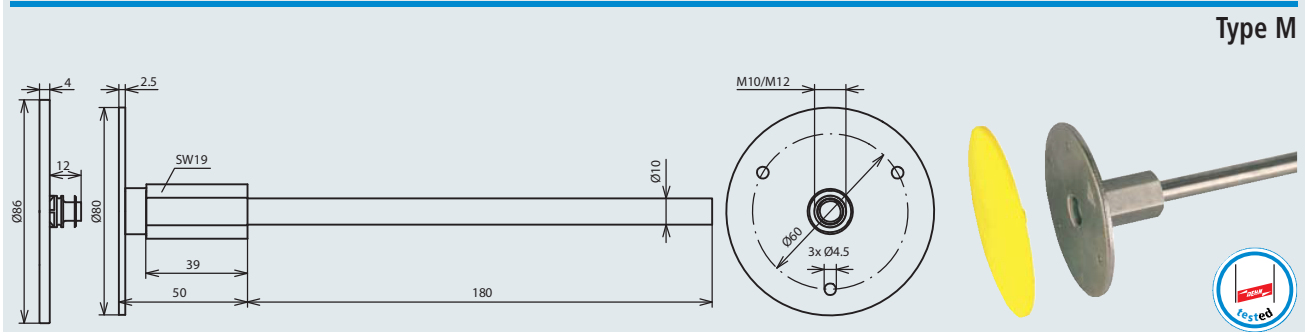
Fixed earthing terminals for installation into concrete as corrosion-free connection to the earth-termination system for protective equipotential bonding and/or functional equipotential bonding of the down conductor e.g. to the reinforcement of buildings.

For the double thread M10 and M12 mind the following minimum lengths of the screws:

35 mm of M10 (thread length 40 mm)

15 mm of M12 (thread length 20 mm)

- Connection possibility at the terminal axis e.g. by cross unit Part No. 319 201, or connecting clamp, e.g. Part No. 308 025 for the reinforcement
- Connection possibility for the equipotential bonding bar, e.g. by end pieces Part No. 390 499
- Connection possibility for flat conductors at the terminal plate (front) by terminal clamp Part No. 478 141, or at the back of the fixed earthing terminal without terminal axis, by terminal clamp Part No. 478 129
- Terminal axis screwed-in or press-fitted
- Snap-on plastic cover (yellow), sealed with pressure tested O-ring (test pressure 0.5 bar)



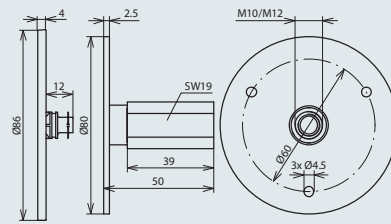
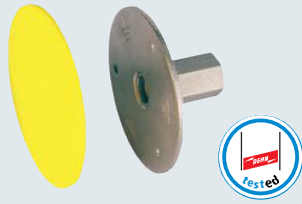
Type M

With terminal axis (l = 180 mm, Ø10 mm)

Part No.	478 011	478 019
Terminal thread	M10 / M12	M10 / M12
Material of plate	StSt (V4A)	StSt (V4A)
Material No.	1.4571 / 1.4404 / 1.4401	1.4571 / 1.4404 / 1.4401
ASTM / AISI:	316Ti / 316L / 316	316Ti / 316L / 316
Material of axis	St/tZn	StSt
Terminal plate Ø	80 mm	80 mm
Short-circuit current (50 Hz) (1 s; ≤ 300 °C)	6.5 kA	3.9 kA
Standard	EN 50164-1	EN 50164-1

More details in installation instructions No. 1476.

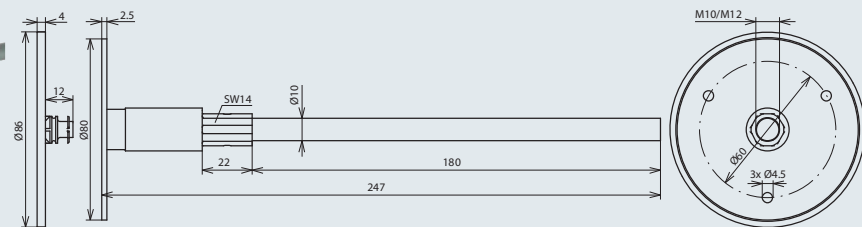
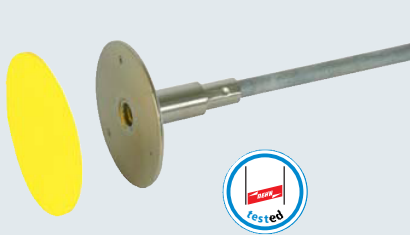
Type M without terminal axis



Part No.	478 012
Terminal thread	M10 / M12
Material of plate	StSt (V4A)
Material No.	1.4571 / 1.4404 / 1.4401
ASTM / AISI:	316Ti / 316L / 316
Terminal plate Ø	80 mm
Short-circuit current (50 Hz) (1 s; ≤ 300 °C)	9.3 kA
Standard	EN 50164-1

Specified short-circuit current applies for the connection with copper cable lug

Type M press-fitted

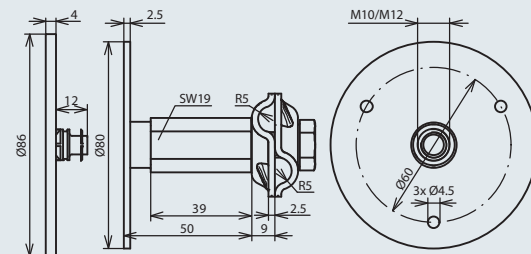
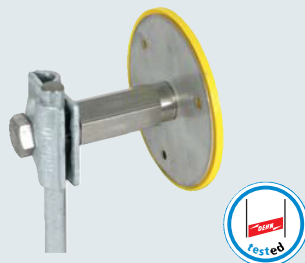


Terminal axis (l = 180 mm, Ø10 mm)

Part No.	478 041	478 049
Terminal thread	M10 / M12	M10 / M12
Material of plate	StSt (V4A)	StSt (V4A)
Material No.	1.4571 / 1.4404 / 1.4401	1.4571 / 1.4404 / 1.4401
ASTM / AISI:	316Ti / 316L / 316	316Ti / 316L / 316
Material of axis	St/tZn	StSt
Terminal plate Ø	80 mm	80 mm
Short-circuit current (50 Hz) (1 s; ≤ 300 °C)	3.7 kA	3.3 kA
Standard	EN 50164-1	EN 50164-1

Part No. 478 049 with UL certification

Type M with MV clamp

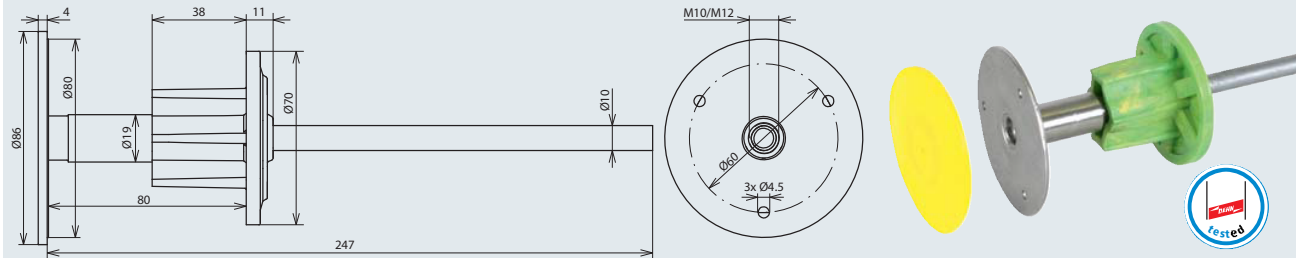


For round conductors 8-10 mm, design requiring little space in the shuttering

Part No.	478 112
Terminal thread	M10 / M12
Material of plate	StSt (V4A)
Material No.	1.4571 / 1.4404 / 1.4401
ASTM / AISI:	316Ti / 316L / 316
Terminal plate Ø	80 mm
Short-circuit current (50 Hz) (1 s; ≤ 300 °C)	9.3 kA
Standard	EN 50164-1

More details in installation instructions No. 1476.

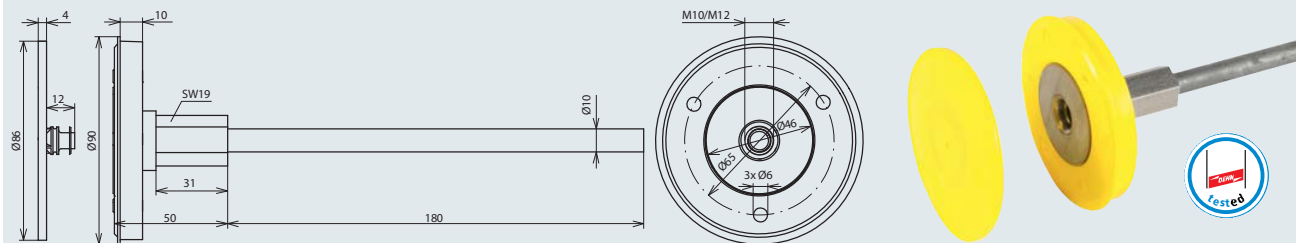
Type M press-fitted with additional water barrier



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 No.	1.4571 / 1.4404 / 1.4401
ASTM / AISI:	316Ti / 316L / 316
Material of axis	St/tZn
Terminal plate Ø	80 mm
Short-circuit current (50 Hz) (1 s; ≤ 300 °C)	3.7 kA
Material of water barrier	PVC
Standard	EN 50164-1

Type K



With plastic ring and terminal axis (l = 180 mm, Ø10 mm)

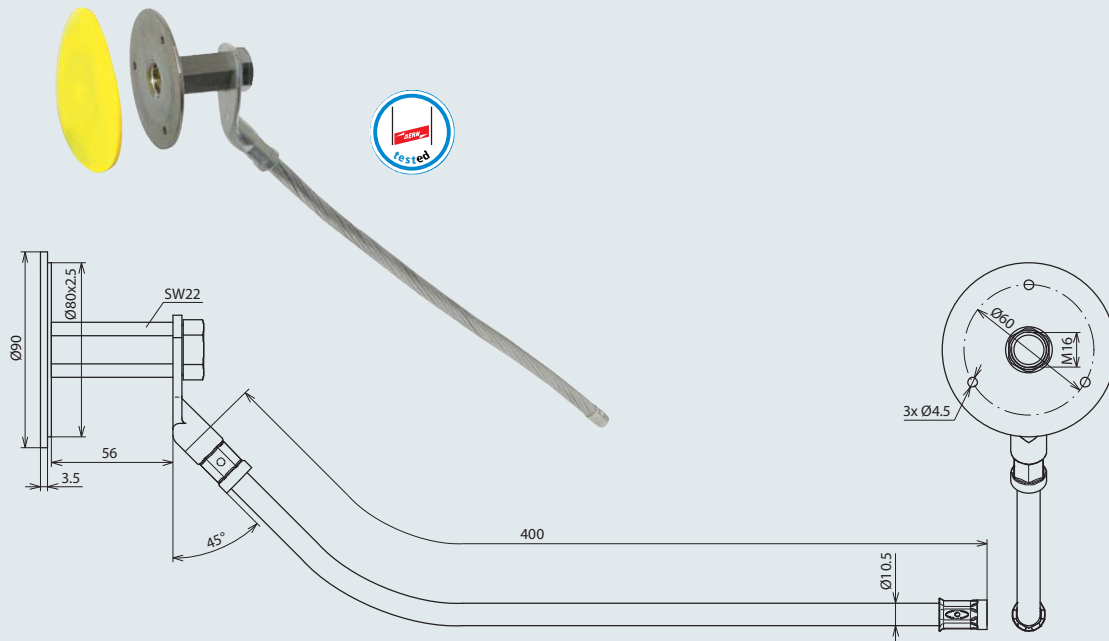
Part No.	478 200
Terminal thread	M10 / M12
Material of plate	StSt (V4A)
Material No.	1.4571 / 1.4404 / 1.4401
ASTM / AISI:	316Ti / 316L / 316
Material of axis	St/tZn
Terminal plate Ø	46 mm
Short-circuit current (50 Hz) (1 s; ≤ 300 °C)	6.5 kA
Standard	EN 50164-1

More details in installation instructions No. 1476.

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 connection cable may 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.



Part No.	478 027
Terminal thread	M16
Material of plate	StSt (V4A)
Material No.	1.4571 / 1.4404 / 1.4401
ASTM / AISI:	316Ti / 316L / 316
Material of cable	Cu/gal Sn
Cross section of terminal cable	70 mm ²
Length of terminal cable	400 mm
Diameter of terminal cable	10.5 mm
Terminal plate Ø	80 mm
Standard	EN 50164-1
Short-circuit current (50 Hz) (1 s; ≤ 300 °C)	11 kA

More details in installation instructions No. 1689

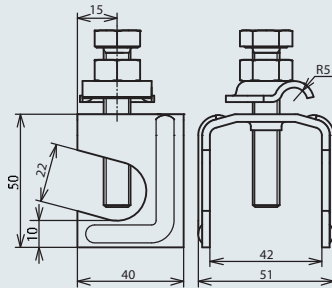
Clamps for connecting the reinforcement by clamping frame
For round conductors or fixed earthing terminals with simultaneous fixing in the formwork

Arrangement:

(II) = parallel

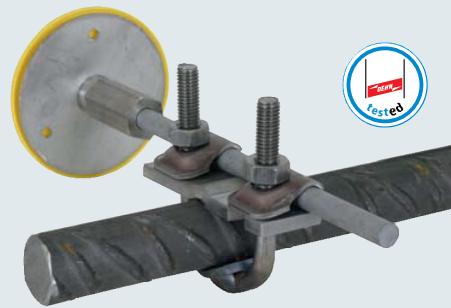
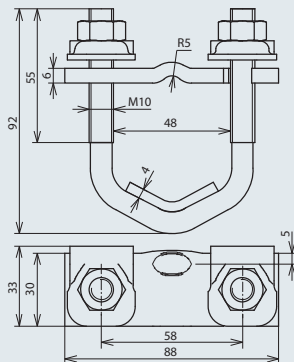
(+) = crosswise

For small diameters



Part No.	308 035
Material	St/bare
Clamping range Rd / Rd	(+//II) 6-22 / 6-10 mm
Clamping range Rd / Fl	(-) 6-22 / 40 mm
Screw	⚙ M10x60 mm
Material of screw	St/bare
Standard	EN 50164-1
Short-circuit current (50 Hz) (1 s; ≤ 300 °C)	1.0 kA

U-clamp for large diameters

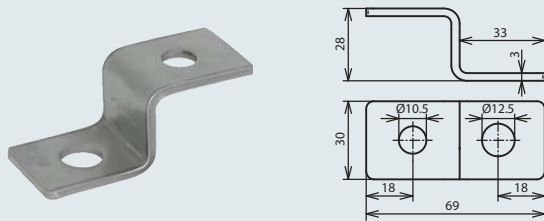


Part No.	308 046
Material	St/bare
Clamping range Rd / Rd	(+//II) 16-48 / 6-10 mm
Clamping range Rd / Fl	(II) 16-48 / 30-40 mm
Screw	stirrup bolt M10x48 mm
Material of screw	St/bare
Standard	EN 50164-1
Short-circuit current (50 Hz) (1 s; ≤ 300 °C)	6.5 kA



End pieces for screwing on the fixed earthing terminal for connecting e.g. an equipotential bonding bar or for connecting construction elements (e.g. steel girders or alike) by screwing

Simple design

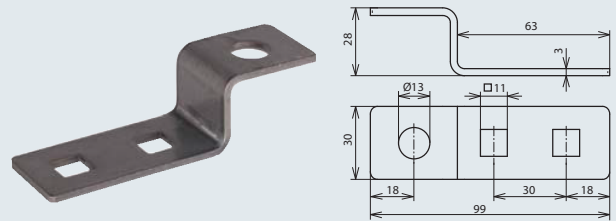


For universal use at terminals M10 and M12, e.g. at the fixed earthing terminal

For connecting Rd e.g. with KS connector (Part No. 301 019), or for connecting FI with screws and nuts M10 or M12

Part No.	390 499
Material	StSt
Bore Ø	10.5/12.5 mm

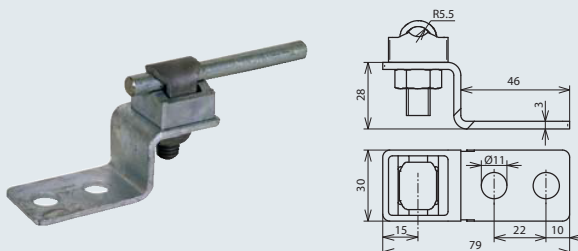
Design with square holes



Dimension 11x11 mm, for connecting Rd e.g. with KS connector (Part No. 301 019) or for connecting FI with screws and nuts M10

Part No.	390 479
Material	StSt
Distance of bores	30 mm
Bore Ø	13 mm

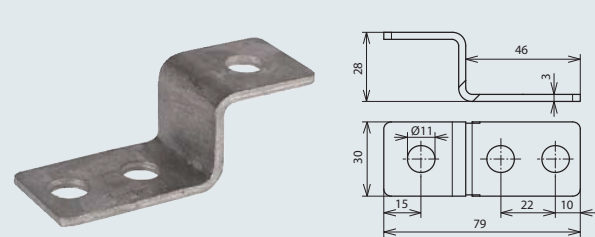
Design with bores and KS connector



Bores Ø11 mm

Part No.	363 010
Material	St/tZn
Distance of bores	22 mm
Bore Ø	11 mm
Clamping range Rd	7-10 mm
Standard	EN 50164-1

Design with bores



Bores Ø11 mm

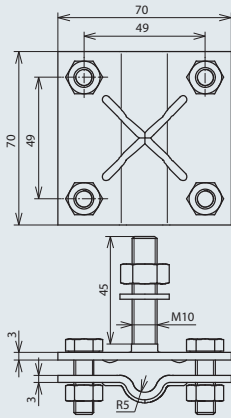
Part No.	363 000
Material	St/tZn
Distance of bores	22 mm
Bore Ø	11 mm

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

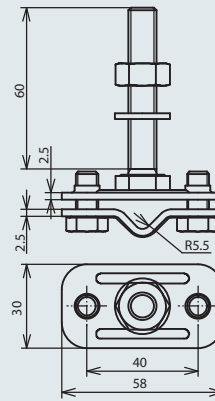
Terminal thread M10

Heavy design



Part No.	478 141
Material of clamp	St/tZn
Clamping range Rd / Fl	7-10 / 30-40 mm
Material of bolt	StSt
Screw	M10x45 / M8x25 mm
Material of screw/nut	StSt
Dimension	70x70x3 mm
Standard	EN 50164-1

Light design



Part No.	478 129
Material of clamp	StSt (V4A)
Clamping range Rd / Fl	8-10 / 30 mm
Material of bolt	StSt (V4A)
Screw	M10x60 / M8x16 mm
Material of screw/nut	StSt (V4A)
Material No.	1.4571 / 1.4404 / 1.4401
ASTM / AISI:	316Ti / 316L / 316
Dimension	58x30x2.5 mm
Standard	EN 50164-1
Short-circuit current (50 Hz) (1 s; ≤ 300 °C)	2.7 kA

Earth Electrode and Wall Bushings

Earth electrode and wall bushings with MV clamp made of StSt (V4A) for round conductors 8-10 mm. For water pressure-tight ducting of the earthing conductor/equipotential bonding conductor through walls and brickwork with StSt threaded rod M10

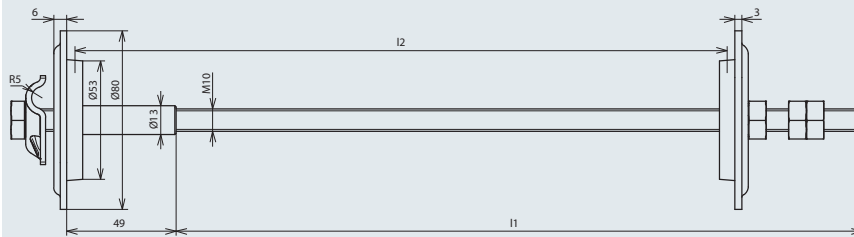
Type for subsequent installation through borehole (Ø14 mm) or if necessary through the formwork spreader.

Tested with water under pressure 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.



Part No.	478 410	478 430	478 450
Length of bushing (l2)	100-300 mm	300-500 mm	500-700 mm
Length of threaded rod (l1)	308 mm	508 mm	708 mm
Sealings	Neopren	Neopren	Neopren
Sealing disk Ø	80 mm	80 mm	80 mm
Material of disk	StSt (V4A)	StSt (V4A)	StSt (V4A)
Material No.	1.4571 / 1.4404 / 1.4401	1.4571 / 1.4404 / 1.4401	1.4571 / 1.4404 / 1.4401
ASTM / AISI:	316Ti / 316L / 316	316Ti / 316L / 316	316Ti / 316L / 316
Short-circuit current (50 Hz) (1 s; ≤ 300 °C)	2.7 kA	2.7 kA	2.7 kA
Standard	EN 50164-1	EN 50164-1	EN 50164-1

More details in installation instructions No.1332

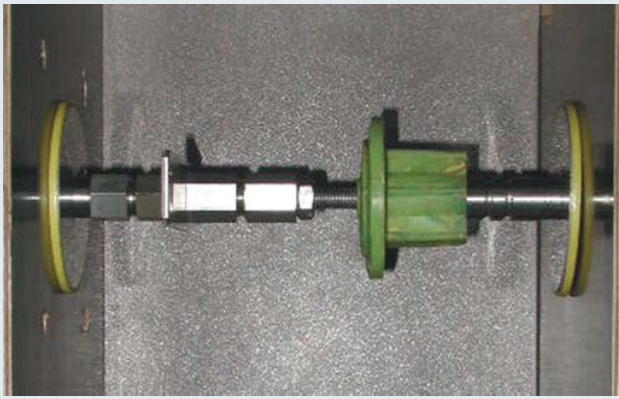


Figure 1: Wall bushing with formwork installation

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 DIN 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 Fundamententwurf – Allgemeine Planungsgrundlagen“:2007-09 be (Title English: Foundation earth electrode – General planning criteria).

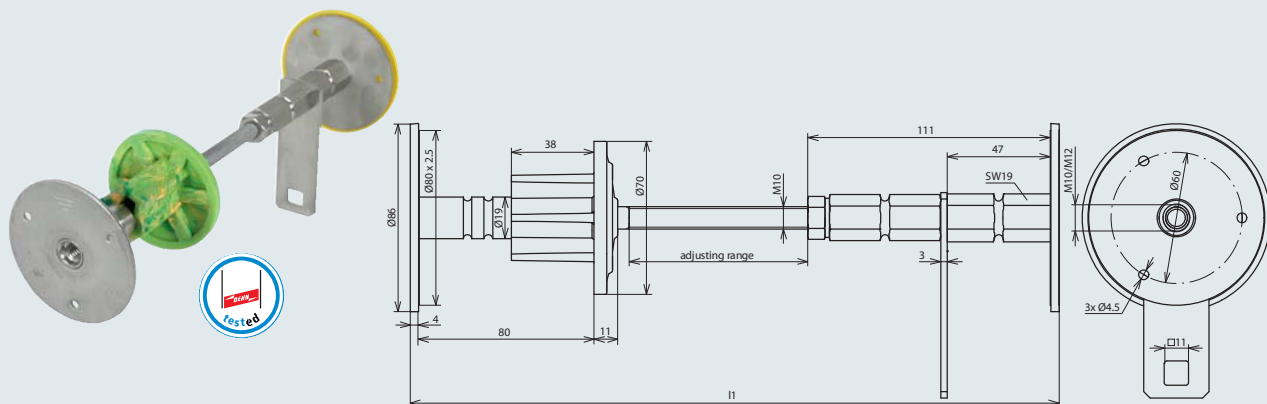
The ring earth electrode meshes under the foundation plates installed according to DIN 18014 have to be connected with the main earthing busbar of the building for equipotential bonding.

The electrical connection with the ring earth electrode also has to be water-tight. DEHN 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 configure 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 installation 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 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
- 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



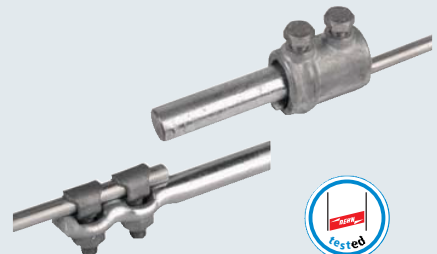
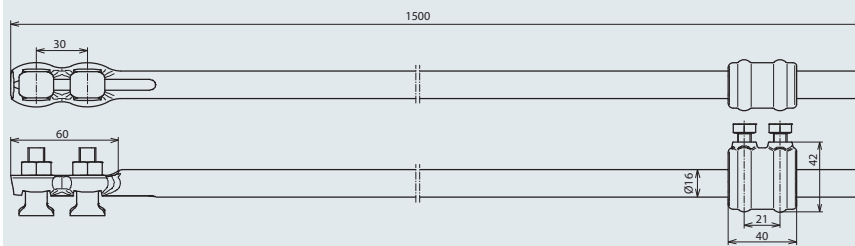
Part No.	478 530	478 540	478 550
Material of plate	StSt (V4A)	StSt (V4A)	StSt (V4A)
Material No.	1.4571 / 1.4404 / 1.4401	1.4571 / 1.4404 / 1.4401	1.4571 / 1.4404 / 1.4401
ASTM / AISI:	316Ti / 316L / 316	316Ti / 316L / 316	316Ti / 316L / 316
Material of axis	St/tZn	St/tZn	St/tZn
Wall thickness (l1)	200-300 mm	300-400 mm	400-500 mm
Terminal thread	M10 / 12	M10 / 12	M10 / 12
Terminal plate Ø	80 mm	80 mm	80 mm
Standard	EN 50164-1	EN 50164-1	EN 50164-1
Short-circuit current (50 Hz) (1 s; ≤ 300 °C)	4.1 kA	4.1 kA	4.1 kA

More details in installation instructions No. 1654

Earth entry rod - kit, complete with disconnecting sleeve and terminal clamps (KS screws)



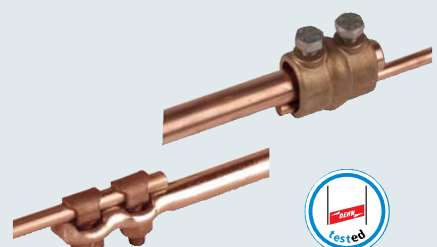
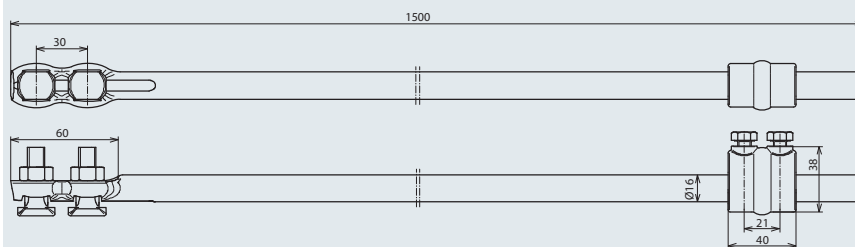
Type St/tZn



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	1500 mm
Connection KS screw Rd	7-10 mm
Connection sleeve Rd / Rd	7-10 / 16 mm

Type Cu



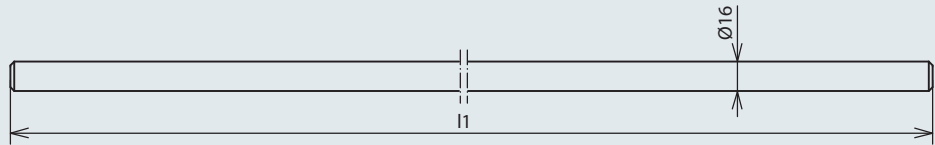
With disconnecting sleeve (Part No. 450 007) and KS screws (Part No. 300 007)

Part No.	480 157
Material	Cu
Standard	EN 50164-(1+2)
Length	1500 mm
Connection KS screw Rd	6-10 mm
Connection sleeve Rd / Rd	7-10 / 16 mm



Earth entry rods to connect down conductors to the earth-termination system

Chamfered

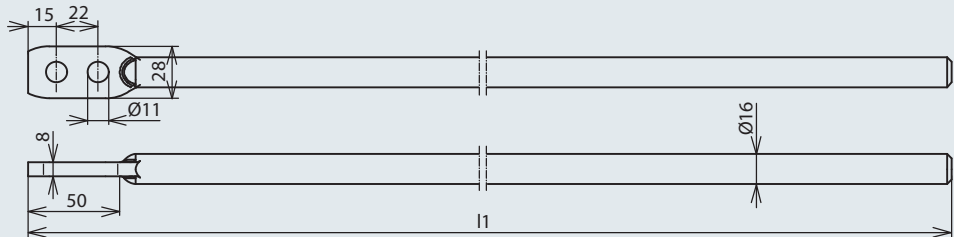


Part No.	483 150	483 200	104 903	104 905	104 906
Material	St/tZn	St/tZn	StSt (V4A)	StSt (V4A)	StSt (V4A)
Material No.	—	—	1.4571 / 1.4404 / 1.4401	1.4571 / 1.4404 / 1.4401	1.4571 / 1.4404 / 1.4401
ASTM / AISI:	—	—	316Ti / 316L / 316	316Ti / 316L / 316	316Ti / 316L / 316
Standard	EN 50164-2	EN 50164-2	EN 50164-2	EN 50164-2	EN 50164-2
Diameter	16 mm	16 mm	16 mm	16 mm	16 mm
Length (l1)	1500 mm	2000 mm	1000 mm	1500 mm	2000 mm

With forged flat lug

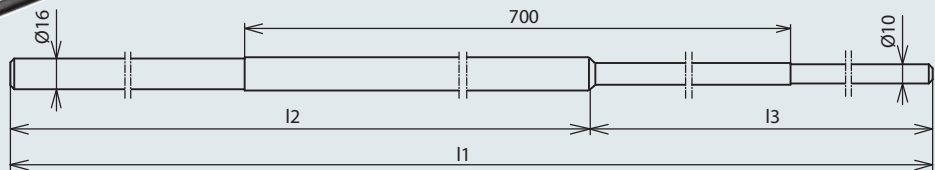
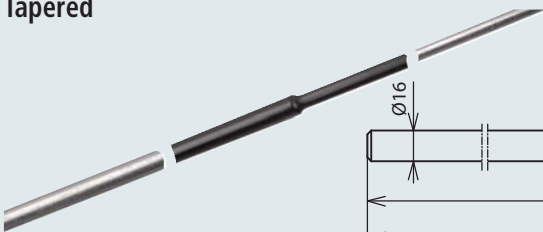


Bores [2x] Ø11 mm



Part No.	101 150
Material	St/tZn
Standard	EN 50164-2
Diameter	16 mm
Length (l1)	1500 mm
Bore distance	22 mm

Tapered

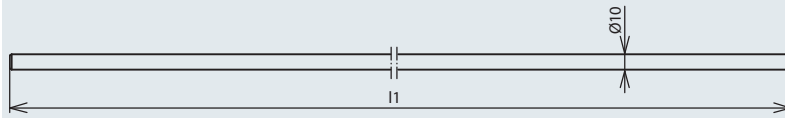


Notched conductor Ø10 mm, partly insulated (length approx. 700 mm)

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	16/10 mm	16/10 mm	16/10 mm	16/10 mm
Length (l1)	1500 mm	1750 mm	2000 mm	2500 mm
Partial length Ø16 mm (l2)	1000 mm	750 mm	1000 mm	1500 mm
Partial length Ø10 mm (l3)	500 mm	1000 mm	1000 mm	1000 mm

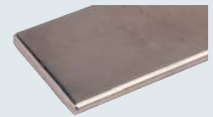
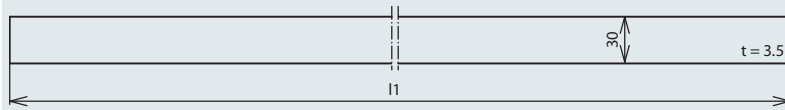
Terminal lugs straightened, for the connection of down conductors with the earth-termination system, made of corrosion-resistant stainless steel StSt (V4A)

Round wires



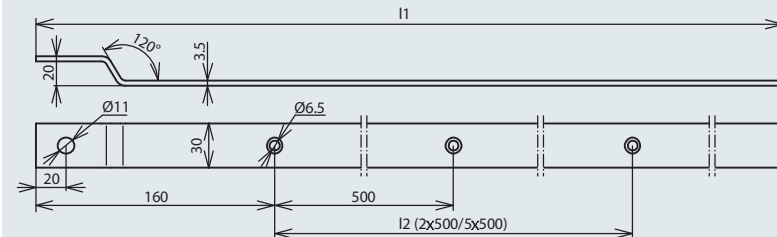
Part No.	860 110	860 115	860 130
Material	StSt (V4A)	StSt (V4A)	StSt (V4A)
Material No.	1.4571 / 1.4404	1.4571 / 1.4404	1.4571 / 1.4404
ASTM / AISI:	316Ti / 316L	316Ti / 316L	316Ti / 316L
Length (l1)	1000 mm	1500 mm	3000 mm
Dimension	Ø10 mm	Ø10 mm	Ø10 mm
Cross section	78 mm²	78 mm²	78 mm²
Standard	EN 50164-2	EN 50164-2	EN 50164-2

Flat strips



Part No.	860 215	860 230
Material	StSt (V4A)	StSt (V4A)
Material No.	1.4571 / 1.4404	1.4571 / 1.4404
ASTM / AISI:	316Ti / 316L	316Ti / 316L
Length (l1)	1500 mm	3000 mm
Dimension	30x3.5 mm	30x3.5 mm
Cross section	105 mm²	105 mm²
Standard	EN 50164-2	EN 50164-2

Flat strips angled



For direct wall mounting (without distance) with bores for countersunk head screws

Part No.	860 315	860 330
Material	StSt (V4A)	StSt (V4A)
Material No.	1.4571 / 1.4404	1.4571 / 1.4404
ASTM / AISI:	316Ti / 316L	316Ti / 316L
Length (l1)	1500 mm	3000 mm
Dimension	30x3.5 mm	30x3.5 mm
Connection	isolating clamp or clamping screw connector	isolating clamp or clamping screw connector
Fixing	[3x] Ø6.5 mm	[6x] Ø6.5 mm
Cross section	105 mm²	105 mm²
Standard	EN 50164-2	EN 50164-2

Other dimensions available upon request

Accessory for Terminal Lugs Straightened/Angled

Protective Cap for Terminal Lugs

For attaching on round wires or strips

A striking marker (as required according to DIN 18014) and an accident prevention during the construction phase

Part No.	478 099
Material	PVC
Diameter	70 mm
Support Fl	30x3.5 mm
Support Rd	10 mm
Colour	green/yellow

