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GENERAL

Earthwires are used for earthing purposes as well as to protect the line against atmospheric discharge and lightning strikes and this increases the safety of the system.

The cables used are mainly steel-wires or made of alumoweld and al-alumoweld.

Oscillating earth wire clamps are usually used for the suspension points because of their good performance with regard to vibrations compared to rigid designs.

For tensioning wedge type clamps are commonly used but also compression fittings are available especially for earth wires with high breaking loads. To facilitate measurements of the earthing resistance insulating accessories are available for suspension and tension sets, which must then be earthed to the support structure by means of flexible connections.

Short circuit capability

The short circuit capability is excellent due to a narrow ranged groove which leads to a large contact area.

The connecting parts of the clamps are adjusted to the requirements.

Standards

The **dimensions** are according to DIN 48066.

The **connecting bolts** acc. DIN 48073/5.6 or 8.8.

Split pins are made of stainless steel or tinned copper.

Clevis eye connections acc. DIN 48074 resp. IEC 471 .

Hot dip galvanising

Steel hardware is hot dip galvanised in Mosdorfer's own plant.

Galvanising can be done in accordance to national and international standards.

abbreviation for bolts:

S = screw bolt

N = rivet bolt

SUSPENSION FITTINGS

C-brackets welded type

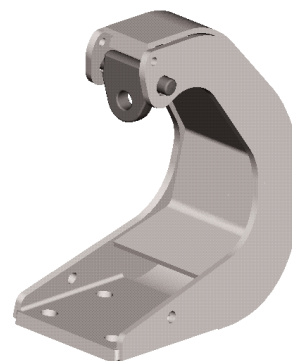
Due to the C-shape of the bracket the suspension clamps have a maximum freedom of movement.

Various types of suspension clamps can be used.

Material: Steel, hot dip galvanised								
L.-Nr.	Dimensions in mm				max. stat. load		Short circuit current kA	Weight kg
	Height	for bolt	Base plate Distance between hole centres	Bolts	hor. kN	vert. kN		
4654.01	265	19	90 x 90	M 16	15	30	40	13,00
4654.01/2	265	19	90 x 90	M 16	15	30	40	13,00
4654.03	310	19	90 x 90	M 16	15	30	40	18,00
4654.01/H	265	19	90 x 90	M 16	20	30	40	14,50*
4654.04	310	19	90 x 90	M 16	60	30	40	24,00

* Special designs for conductor uplift.

Other designs of the base plate are available upon request. If an insulated design is required, please state this separately on your order. Other bolts sizes are also available on request.

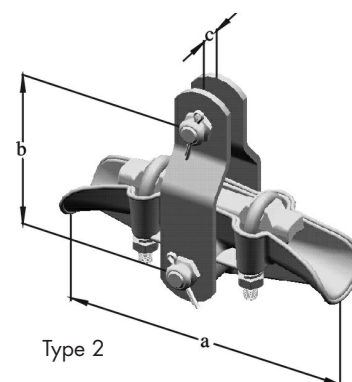
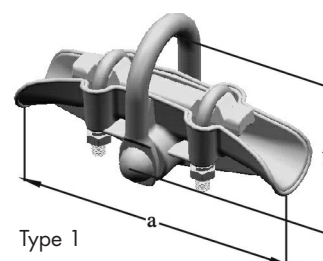


Oscillating type suspension clamps

for steel- and copper-conductors

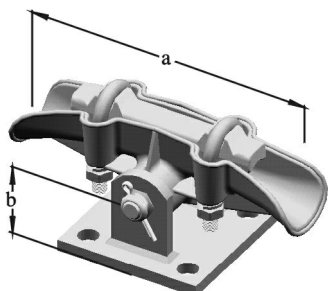
Material: Body and keeper: malleable or ductile iron Other parts: steel, all hot dip galvanised									
L.-Nr.	Type	Dimensions in mm				Connecting bolt	Breaking load kN	Short circuit current kA	Weight kg
		Conductor Ø	a	b	c				
634.01/001	1	4,5–10,0	150	100	–	–	50	16	1,00
4337.02/1	1	6,0–11,0	130	100	–	–	50	16	1,10
4337.02/4	1	11,0–12,7	130	100	–	–	120	16	1,10
4337.00	2	9,0–16,5	210	150	20	S 19	100	22	2,80
634.04	2	15,8–20,0	230	110	20	S 19	100	22	2,80
4337.03	2	18,5–20,0	220	125	20	S 19	120	22	2,80

All types can be supplied with shackles **type 1** or with straps **type 2**.
Other types on request.



Suspension clamps

for Al-conductors
see Cat. part 4



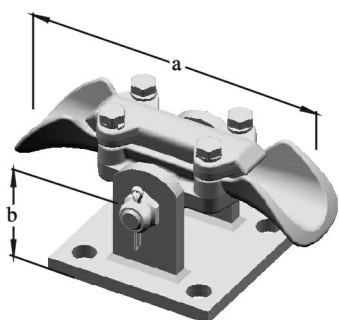
Oscillating type suspension clamps ^{casted}

with bracket for bolts M16

for aluminium-, al-alloy-, ACSR-, AACSR- and alumoweld conductors

Material: Body and keeper: cast aluminium
Other parts: steel, hot dip galvanised

L.-Nr.	Dimensions in mm				Breaking strength kN	Short circuit current kA	Weight kg
	ConductorØ	Hole centres	a	b			
4616.04	9,0–16,5	90 x 90	210	35	100	22	2,52
4616.05	16,5–21,7	90 x 90	230	45	120	30	3,00
4616.06	21,0–25,5	90 x 90	250	50	120	30	3,16



Oscillating type suspension clamps ^{forged}

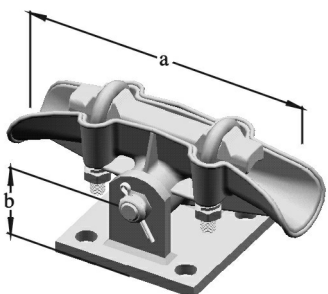
with bracket for bolts M16

for aluminium-, al-alloy-, ACSR-, AACSR- and alumoweld conductors

The body and keeper are equipped with serrated grooves. Due to the high tensile bolts the holding strength and short circuit capability is very high.

Material: Body and keeper: aluminium-alloy forged
Other parts: steel, hot dip galvanised

L.-Nr.	Dimensions in mm				Breaking strength kN	Short circuit current kA	Weight kg
	ConductorØ	Hole centres	a	b			
4616.11	20,3–23,1	90 x 90	226	50	160	40	3,16



Oscillating type suspension clamps

with bracket for bolts M16

for steel- and copper-conductors

Material: Body and keeper: malleable or ductile iron
Other parts: steel, hot dip galvanised

L.-Nr.	Dimensions in mm				Breaking strength kN	Short circuit current kA	Weight kg
	ConductorØ	Hole centres	a	b			
4615.01	6,0–11,0	90 x 90	130	60	50	16	2,52
4615.02	9,0–16,5	90 x 90	210	60	100	22	3,37
4614.04	15,0–18,5	90 x 90	190	60	100	22	3,50

Earth wire brackets welded type

for bolts M16

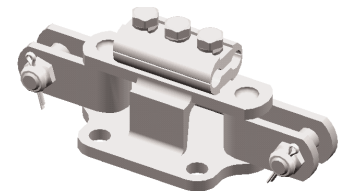
for aluminium-, al-alloy-, ACSR-, AACSR- and alumoweld conductors

The concept of the brackets allows movement in all directions.

The PG clamp is mounted on the top of the bracket and covers the whole range of earthwires.

Material: Bracket: Steel, hot dip galvanised
P.G.-clamp: aluminium-alloy

L.-Nr.	Dimensions in mm					Breaking strength N	Short circuit current kA	Weight
	ConductorØ	Bolts	Holes	Height of link	Width of link			
4652.02/0	ohne Klemme	S19	90 x 90	40	21	100	40	3,60
4652.06/01	ohne Klemme	S19	90 x 90	60	21	230	40	7,00
4652.02	8,2–11,7	S19	90 x 90	40	21	100	40	4,10
4652.03/2	11,8–13,0	S19	90 x 90	40	21	100	40	4,10
4652.02/2	13,1–14,4	S19	90 x 90	40	21	100	40	4,10
4652.03/3	14,5–16,0	S19	90 x 90	40	21	100	40	4,10
4652.03/1	15,9–17,4	S19	90 x 90	40	21	100	40	4,10
4652.03/10	15,9–17,4	S22	90 x 90	60	21	310	50	8,20
4652.04	17,5–19,2	S19	90 x 90	40	21	100	40	4,10
4652.06/1	19,1–21,0	S19	90 x 90	60	21	230	40	7,80
4652.06	21,1–23,4	S22	90 x 90	60	21	230	50	7,20



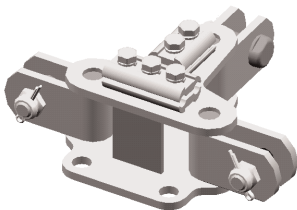
Other types on request.

If insulation is needed please state in the order.

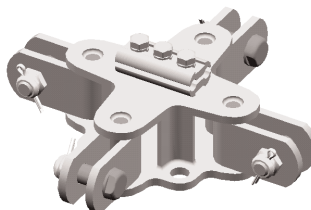
Bolts M16 to be delivered on request.

Earth wire brackets

with 3- or 4-hinges

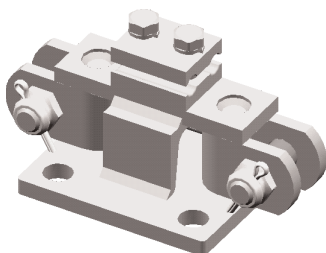


Earth wire brackets with 3 hinges
Serial-Nr. 4653...



Earth wire brackets with 4 hinges
Serial-Nr. 4653...

Earth wire brackets welded type for steel- and copper-conductors



Material: Steel, hot dip galvanised

L-Nr.	Dimensions in mm						Breaking strength kN	Short circuit current kA	Weight kg
	Conductor Ø	Clevis width	Hole centres	Holes	Height of links	Bolts			
4650.01	7,5–16,0	21	90 x 90	17.5	40	S19	100	40	3,50
4650.02	11,7–15,7	21	90 x 90	17.5	40	S19	100	50	3,85

Compression dead end clamps

for steel- and alumoweld wires

Compression dead end clamps are filled with compound.

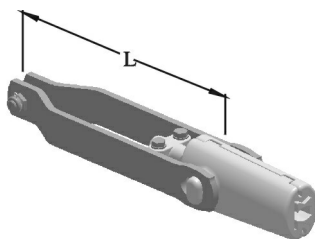
Other sizes upon request, also possible with oval eyes, clevis connection, jumpers and manufactured from stainless steel.



Material: Steel, hot dip galvanised

L-Nr.	Conductor type and size	Conductor Ø	Dimensions in mm			Weight kg
			Code	Length	Hole	
4459.10	Steel 50	9,00	17	155	20	0,46
4459.15	Steel 55	9,50	19	165	20	0,56
4459.18	Steel 70	10,50	21	160	20	0,60
4458.18	AW 7 No. 9	8,70	17	160	20	0,50
4458.11/1	AW 7 No. 8	9,78	19	155	20	0,52
4458.10	AW 7 No. 6	12,35	23	185	20	0,82

Wedge type tension clamps trunnion type for steel conductors



Type 2 without jumber attachment

Material: Body: aluminium-alloy forged
Wedges: steel- or malleable iron, hot dip galvanised
Straps: steel, hot dip galvanised
Bolts and screws: see separate table

L-Nr.	Dimensions in mm		Breaking strength kN	Short circuit current kA	Type	Weight kg
	Conductor Ø	L				
566.21/S1	< = 9,0	210	70	20	2	1,30
566.21/S2	9,1–10,5	210	70	20	2	1,30
566.21/S3	10,6–11,7	210	70	20	2	1,30
566.03/S1	10,5–12,5	270	100	32	2	3,50
566.03/S2	12,6–14,0	270	100	32	2	3,50
566.03/S3	14,1–15,8	270	100	32	2	3,50

Straps for clamps <15,8 mm are already assembled with the body. Other types on request.

Wedge type tension clamps

trunnion type,

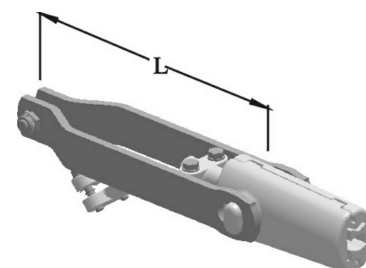
for aluminium-, al-alloy-, ACSR-, AACSR- and alumoweld conductors

Wedge-type tension clamps have a universal usage in all areas of overhead line construction. They are also used in substations.

For conductors with a diameter greater than 15,9 mm clamps with jumper attachments can be provided. The two halves of the body are kept together because of the shape of the wedges.

Material: Body and wedges: aluminium-alloy, forged
Straps: steel, hot dip galvanised
Bolt and screws: see separate table

L-Nr.	Dimensions in mm Conductor Ø	L	Breaking strength kN	Short circuit current kA	Type	Weight kg
566.21/1	< = 9,0	210	70	20	2	1,10
566.21/2	9,1-10,5	210	70	20	2	1,10
566.21/3	10,6-11,7	210	70	20	2	1,10
566.21/4	11,8-14,0	210	70	20	2	1,10
566.03/1	10,6-12,5	270	100	20	2	3,40
566.03/2	12,6-14,0	270	100	20	2	3,40
566.03/3	14,1-15,8	270	100	20	2	3,40
566.04/0	15,9-17,3	320	110	32	1 + 2	4,90
566.04/1	17,4-19,0	320	110	32	1 + 2	4,90



Type 1 with jumper connectial

Straps for clamps < 15.8 mm Ø are already assembled with the body.

Numbering system for Wedge type clamps

1. "x" =	Number	Bolt- diameter	Clevis- opening	Short circuit current kA
	1	13	14	18
	2	13	20	18
	3	16	20	28
	4	19	20	40
	5	22	20	50

2. "x" =	Code	Locking- device	Bolt- material	Split pin material	Jumper attachment
	A	DIN128-A	5,6	A2	NO
	B	Sheet	5,6	A2	NO
	C	DIN128-A	5,6	Cu sn.	NO
	D	Sheet	5,6	Cu sn.	NO
	E	DIN128-A	8,8	A2	NO
	F	Sheet	8,8	A2	NO
	G	DIN128-A	8,8	Cu sn.	NO
	H	Sheet	8,8	Cu sn.	NO
	I	DIN128-A	5,6	A2	YES
	J	Sheet	5,6	A2	YES
	K	DIN128-A	5,6	Cu sn.	YES
	L	Sheet	5,6	Cu sn.	YES
	M	DIN128-A	8,8	A2	YES
	N	Sheet	8,8	A2	YES
	P	DIN128-A	8,8	Cu sn.	YES
	R	Sheet	8,8	Cu sn.	YES

Example:

566.03/3EA means a wedge type clamp 14,1-15,8 Ø without jumper attachment, with connecting bolt 19; 8.8 split pin A2 and locking device acc. DIN 128-A made of stainless steel A2F80.

3. "x" =	Code	Locking device
	blank A	8.8 galv. A2F80

The 3 numbers and the codes are to be added onto the L-N°.

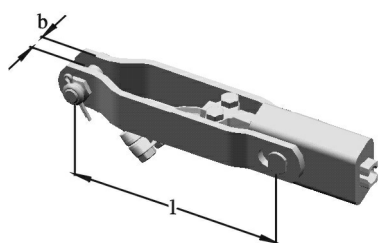
DOUBLE WEDGE TENSION CLAMPS

for aluminium-, al-alloy-, ACSR-, AACSR- and alumoweld conductors

To avoid damaging the conductor which might lead to a notching effect the wedges are designed without serrated grooves.

This has the advantage of permitting transfer of the clamp to another place if it is necessary.

Double wedge tension clamps with jumper connections

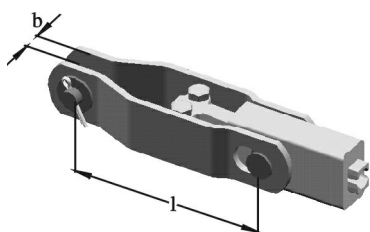


Material: Body and wedges: aluminium-alloy
Trunnion: steel, hot dip galvanised
Bolts and straps: steel, hot dip galvanised

L.-Nr.	Dimensions in mm				Short circuit current kA	Weight kg
	Conductors Ø	l	b	Bolt		
4440.52/3	13,6–16,1	310	14	N 13	10	2,40
4440.52/4	13,6–16,1	310	14	S 13	10	2,40
4440.53/3	13,6–16,1	310	20	N 19	22	2,50
4440.53/4	13,6–16,1	310	20	S 19	22	2,50

Other sizes on request.

Double wedge tension clamps without jumper connections



Material: Body and wedges: aluminium-alloy
Trunnion: steel, hot dip galvanised
Bolts and straps: steel, hot dip galvanised

L.-Nr.	Dimensions in mm				Short circuit current kA	Weight kg
	Conductors Ø	l	b	Bolt		
4440.50	7,5– 9,6	210	14/20	N13	10	1,06
4440.50/4	7,5–10,0	210	20	S 19	10	1,12
4440.51	10,5–12,5	210	14/20	N13	10	1,04
4440.51/3	10,5–12,5	210	20	S 19	10	1,11
4440.52/1	13,6–16,1	310	14	N13	10	2,25
4440.52/2	13,6–16,1	310	14	S 13	10	2,25
4440.53/1	13,6–16,1	310	20	N19	22	2,35
4440.53/2	13,6–16,1	310	20	S 19	22	2,35

Bolted type tension clamps

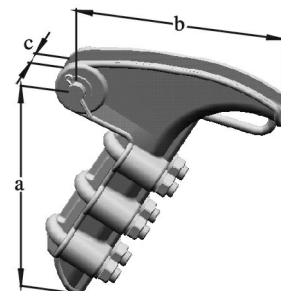
for aluminium-, al-alloy-, ACSR-, AACSR-conductors

Bolted type tension clamps are used in substation constructions and distribution lines. Consequently it is always necessary to give the exact data concerning the conductor and stresses. With this clamp type the conductor can be passed onwards uncut. Fitting is extremely simple by tightening the clamp bolts to the prescribed tightening torque.

Material: Body and keeper piece: aluminium-alloy
Other parts: steel, hot dip galvanised

L.-Nr.	Conductor Ø	Dimensions in mm					Torque Nm	Short circuit cur- rent kA	Weight kg
		a	b	c	Bolt	U-Bolt			
4432.08	5,0-13,5	99	83	17	N13	2 x M 8	11	10	0,45
4432.14	9,0-16,0	155	125	23	N16	3 x M 10	22	20	0,90
4432.14/1	9,0-16,0	155	125	23	N13	3 x M 10	22	20	0,90

Other types on request.

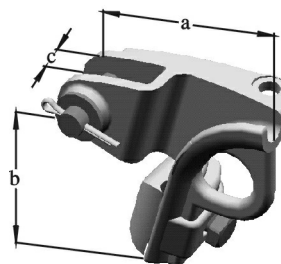


Bolted type tension clamps

for aluminium-, al-alloy-, ACSR-, AACSR-conductors

Material: Body and keeper piece: aluminium-alloy
Other parts: steel, hot dip galvanised

L.-Nr.	Cross section mm ²	Dimensions in mm				Torque Nm	Weight kg
		a	b	c	Bolt		
4435.01/1	25-132	140	85	20	N16	60	0,90

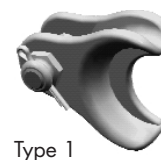


Strain thimbles

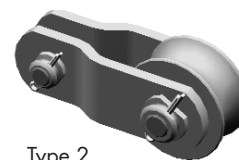
Material: Thimble: malleable or ductile iron, hot dip galvanised
Bolt: steel, hot dip galvanised

L.-Nr.	Type	Dimensions in mm			Breaking strength kN	Short circuit current kA	Weight kg
		Bolt	Clevis width	Neck			
4410.01	1	S13	14	60	60	10	0,40
4410.02	1	S19	20	70	100	28	0,80
4410.15/1	1	S19	22	70	230	40	1,20
4410.15	1	S22	22	70	230	40	1,20
4410.9001	2	S22	20	75	310	42	4,60*

*steel, hot dip galvanised

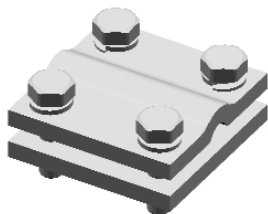


Type 1



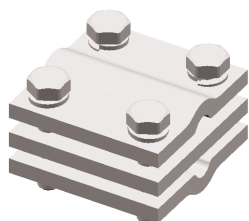
Type 2

Earthing clamps single



Material: Steel, hot dip galvanised					
L.-Nr.	for	Dimensions in mm			Weight kg
		Hole centres	Bolts	Thickness	
4680.01	Fl 30x3; Rd 10 Ø	40	M 8	6	0,42
4680.02	Fl 40x4; Rd 10 Ø	52	M 10	8	0,75

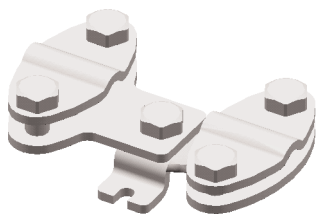
Earthing clamps double



Material: Steel, hot dip galvanised					
L.-Nr.	for	Dimensions in mm			Weight kg
		Hole centres	Bolts	Thickness	
4680.05	Fl 30x3; Rd 10 Ø	40	M 8	6	0,56

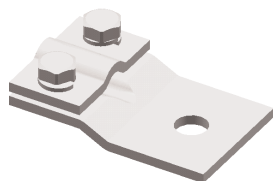
Other types on request.

Earthing clamps with testing connection



Material: Steel, hot dip galvanised					
L.-Nr.	for	Dimensions in mm			Weight kg
		Length	Width	Bolts	
4681.01/2	Rd 10 Ø	124	79	M 10	0,48

Cable lug



Material: Steel, hot dip galvanised							
L.-Nr.	for	Connecting hole	Dimensions in mm				Weight kg
			Length	Width	Bolts	Thickness	
4682.01	Rd 10 Ø	13	80	40	M 8	4	0,20

Parallel groove clamps

for steel conductors

Material: Steel, hot dip galvanised				
L.-Nr.	Dimensions in mm		Bolts	Weight kg
	Conductor Ø	Length		
4503.10	5,1– 8,1	58	2 x M10	0,28
4503.11	8,2–11,6	64	2 x M10	0,43
4503.12	11,7–15,7	65	2 x M12	0,88
4503.13	15,8–19,2	75	2 x M12	1,15
4503.15	19,3–23,0	80	2 x M12	1,30

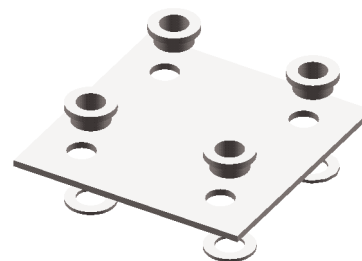


Other types on request.

Insulating accessories

For easy measurement of the earth resistance insulating accessories are available. In this case the bracket has to be connected to the tower by means of flexible copper earth bonds.

Material: Bachelite					
L.-Nr.	Distance of hole centres	Dimensions in mm		Thick-ness	Weight kg
		for screws	Size		
4660	90 x 90	M 16	145 x 145	4	0,17



Flexible copper earth-bonds

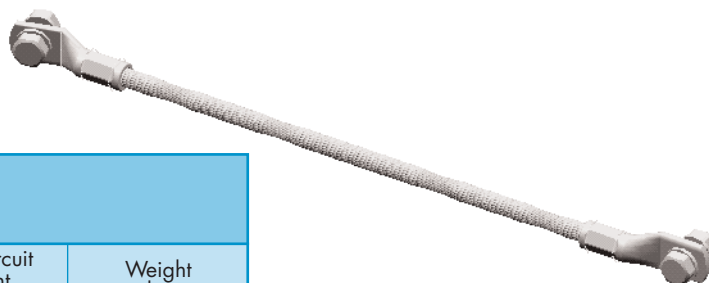
The earth bonds are equipped with one bent cable lug including one bolt M12 x 20 and one straight cable lug with connecting device complete with one bolt M 12 x 35 a washer and a nut.

Material: Flexible copper-bond Cable-lug: copper, tinned				
L.-Nr.	Cross section mm ²	Length mm	Short circuit current kA	Weight kg
4664.03	70	500	14	0,60
4664.03/1	70	1000	14	1,00
4664.31/1	95	500	19	0,80
4664.40/20	120	500	24	0,90

Other lengths on request.

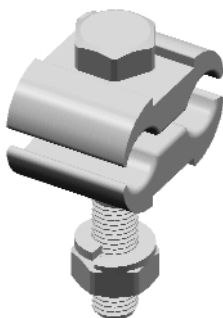
Special design with shrink tube + **S**,

e. g.: 4664.03 **S**



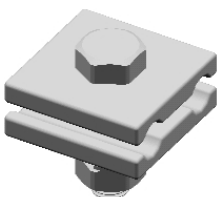
Earthing clamps

for aluminium-, al-alloy-, ACSR-, AACSR- and alumoweld conductors



Material: Body: aluminium-alloy Bolt: steel, hot dip galvanised				
L.-Nr.	Dimensions in mm		Bolt	Weight kg
	Conductor Ø	Length		
4680.58/1	8,1–11,7	60	1 x M 10	0,13
4680.60	11,8–15,8	70	1 x M 12	0,15
4680.59	15,8–19,2	70	1 x M 12	0,20

Earthing clamps for steel conductors



Material: Steel, hot dip galvanised				
L.-Nr.	Dimensions in mm		Bolt	Weight kg
	Conductor Ø	Length		
4680.30/1	8,0–12,0	50	1 x M 12	0,40
4680.33/3	11,7–15,7	70	1 x M 12	0,40

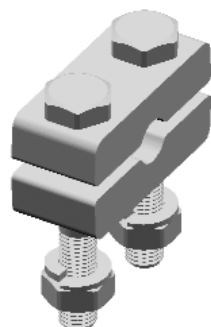
Earthing clamps for copper conductors



Material: Body: bronze Bolt: steel, hot dip galvanised				
L.-Nr.	Dimensions in mm		Bolt	Weight kg
	Conductor Ø	Length		
4680.35	7,5– 9,0	40	1 x M 10	0,20
4680.37	14,0–17,0	50	1 x M 16	0,45

Earthing clamps

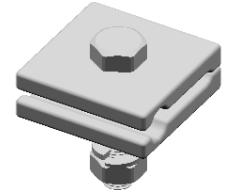
for aluminium-, al-alloy-, ACSR-, AACSR- and alumoweld conductors



Material: Body: aluminium-alloy Bolts: steel, hot dip galvanised				
L.-Nr.	Dimensions in mm		Bolts	Weight kg
	Conductor Ø	Length		
4680.41	9,0–11,0	70	2 x M 10	0,21
4680.42	11,5–15,0	80	2 x M 12	0,33

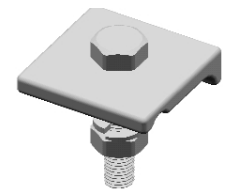
Earthing clamps for steel conductors

Material: Steel, hot dip galvanised				
L-Nr.	Dimensions in mm		Bolt	Weight kg
	Conductor Ø	Length		
4680.39/4	9,0–11,0	50	1 x M 10	0,30



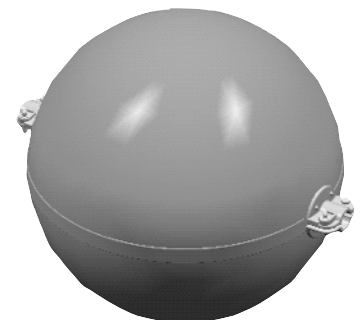
Earthing clamps for steel conductors

Material: Steel, hot dip galvanised				
L-Nr.	Dimensions in mm		Bolt	Weight kg
	Conductor Ø	Length		
4680.39/1	9,5–11,0	50	1 x M 10	0,20
4680.39/2	11,5–13,0	50	1 x M 10	0,20



Warning spheres

Material: Sphere: glass fibre reinforced polyester Clamps: aluminium-alloy			
L-Nr.	Maße in mm		Weight kg
	ConductorØ	SphereØ	
9220.10 ..	9,5–12,0	600	5,5
9220.11 ..	12,0–14,5	600	5,5
9220.12 ..	14,5–17,0	600	5,5
9220.13 ..	17,0–19,5	600	5,5
9220.14 ..	19,5–22,0	600	5,5
9220.15 ..	22,0–24,5	600	5,5
9220.16 ..	24,5–28,0	600	5,5
9220.17 ..	28,0–31,5	600	5,5
9220.18 ..	31,5–35,0	600	5,5



Types: L-Nr. OR – orange RAL 2005
 L-Nr. RT – red RAL 3020
 L-Nr. WE – white RAL 9016
 L-Nr. RW – one half red, one half white

Other types on request