

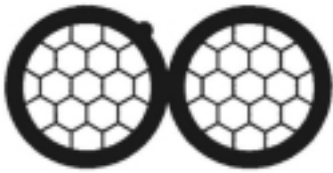
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## GENERAL

Insulated overhead lines are intended as a replacement for bare overhead lines in low-voltage networks. They offer the following advantages:

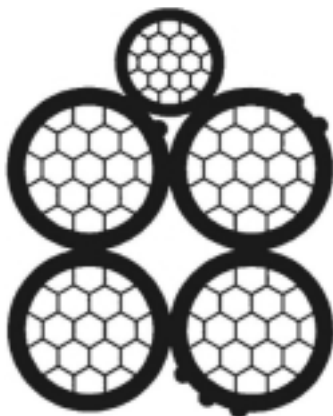
### Examples of bundle configurations



Insulated 2 bundle configuration



Insulated 4 bundle configuration



Insulated 4 bundle configuration with an additional cable of a smaller cross section



Insulated 4 bundle configuration with two additional cables of a smaller cross section

- The two or four equally insulated conductors are twisted at a relatively long pitch and can be used in networks up to 1000 V.
- Due to the negligible spacing between the phases the inductance on insulated overhead lines is much lower than on bare lines. This results in smaller voltage drops for equal span length, compared with bare conductors.
- For lines running through wooded areas it will in most cases not be necessary to clear the trees away from the network.
- Icing on insulation material is very low, therefore snow and ice loads will be much smaller than on bare conductors.
- As there is no phase spacing it is possible to save costs by using shorter wooden poles and house service connections.
- Costs are saved when running out the conductor by drawing and adjusting just one bundle instead of four single conductors.
- Security of operation is much better as short circuits caused by line impact or falling branches are virtually eliminated.
- It allows the construction of a new circuit independent of the old one on the same poles.
- Because of the fewer faults, repair and maintenance costs are reduced.
- Due to the insulation which protects the core against accidental contact, security is improved.

Two different systems are used:

- All phase conductors and the neutral are insulated and the materials and sections are equal. The complete bundle is fixed by means of suspension and tension clamps.
- The neutral, which can be insulated or bare, consists of a stronger material, thus allowing for a smaller cross section. Only this neutral is suspended and tensioned.

It is possible for both systems to use additional cables for street lighting or other purposes.

## FITTINGS FOR 2 AND 4 EQUAL BUNDLE CABLES

### TENSION CLAMPS

All tension clamps are made to safely meet the maximum holding strengths demanded in the specifications.

Great importance was attached to the design of the clamping action to ensure that no damage could occur to the conductor insulation.

### Universal tension clamps

A useful feature is the swinging loop that can be placed into a closed eye bolt or engaged in a tension hook.

Fitting is made easier by means of the pressure springs. After loosening the nuts they will separate the jaws thus making the lateral insertion of conductors very easy.

**Material:** Clamping jaws: glassfibre reinforced polyamide  
Wedges: aluminium-alloy  
Other parts: steel, hot dip galvanised

L.-Nr.	Cross section mm <sup>2</sup>	Dimensions in mm				Weight kg
		Length	Width	Height	Thread length	
5015	4 x 25	325	80	95	30	0,80
5017	4 x 35 ÷ 4 x 50	395	96	115	30	1,10
5017/1	4 x 35 ÷ 4 x 50	395	96	115	100	1,10
5019	4 x 70 ÷ 4 x 95	430	118	145	35	1,95
5019/1	4 x 70 ÷ 4 x 95	430	118	145	100	1,95

Type/1 with longer thread to be used as a turnbuckle.



### Tension clamps for house connections.

The same design is available for one, two, three or four conductors by combination of clamp bodies and wedges. No tools are needed for installation as the wedge type clamp is self-adjusting.

**Material:** Clamping body: steel, hot dip galvanised  
Wedge: glassfibre reinforced polyamide  
Sliding insert: plastic

L.-Nr.	Cross section mm <sup>2</sup>	Weight kg
5004/2	2 x 10-16	0,30
5004/4	4 x 10-16	0,60
5005/2	2 x 25-35	0,30
5005/4	4 x 25-35	0,60

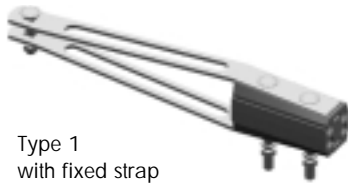
Special types on request.



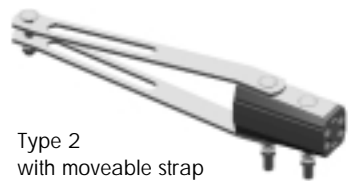
## Cover plate tension clamps

This type is particularly characterised by its light weight since both the connecting piece and the wedges are made of glass fibre reinforced plastic. Another advantage is the straight cable inlet, ensuring that no damage will occur to the conductor insulation. On this type, tightening the bolts will give sufficient holding strength however further tension on the outer clamping wedges will move them in the direction of the tensional force, so applying an increase in the clamping force on to the conductor bundle.

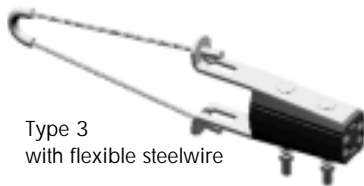
The cover plates together with the tension bolts allow the clamps to be installed in a closed eye bolt.



Type 1  
with fixed strap



Type 2  
with moveable strap



Type 3  
with flexible steelwire



By using the model (type 3) you can fix two clamps in one eye or hook.

<b>Material:</b> Wedge and connecting piece: glassfibre reinforced polyamide Other parts: steel, hot dip galvanised					
L.-Nr.	Cross section mm <sup>2</sup>	Type	Dim. in mm		Weight kg
			Bolt length	Length	
5010	4 x 25 – 50	1*	60	310	1,20
5010/2	4 x 25 – 50	1	55	310	1,20
5010/B	4 x 25 – 50	2	55	310	1,20
5010/3F	4 x 25 – 50	3		430	1,00
5011	4 x 70 – 95	1*	60	310	1,20
5011/2	4 x 70 – 95	1	55	310	1,20
5011/B	4 x 70 – 95	2	55	310	1,50
5011/3F	4 x 50 – 120	3		430	1,00
5011/4F/25	4 x 50 – 120 + 1/2 x 25	3		430	1,10
5012/1	4 x 50 – 95	1*	60	310	1,20
5012/2	4 x 50 – 95	1	55	310	1,20
5012/3L	3-4 x 50 – 95	2	55	405	1,60
5012/3F	3-4 x 50 – 95	3	55	455	1,30
5012/4	2 x 50 – 95	1	55	310	1,20
5012/4F	2 x 50 – 95	3	55	455	1,30
5014	4 x 120 – 150	2	55	605	3,20
5014/3F	4 x 120 – 150	3		470	3,20

\*with washer

The clamps L.-Nr. 5012/3L and 5012/3F are equipped with a fill packing piece in one groove, which is removable. Therefore it is possible to tension a three as well a four bundle configuration.

## Tension clamps for house connections.

These clamps are suited for gripping a two-conductors bundle.



<b>Material:</b> Clamping jaws: glassfibre reinforced polyamide Other parts: steel, hot dip galvanised				
L.-Nr.	Cross section mm <sup>2</sup>	Length mm	Number of bolts	Weight kg
5001	2 x 25	170	1	0,45
5001/10	2 x 35-50	305	2	0,92

## SUSPENSION CLAMPS

Suitable for up to 30° line angle deviation.

The suspension clamp consists of a clamping loop, an elastomer sleeve and a wing head bolt.

The elastomer sleeve is split and can thus easily be applied over the insulated conductors during installation.

The wing head bolt enables tightening without using any tools.

Sufficient clamping is achieved by tightening by hand only.

The following types are available:

### Standard type

**Suspension clamps** with twisted connections

**Suspension clamps** with bolts for fixing in eye connections



Standard type



Twisted type



Type with bolts

<b>Material:</b> Insert: elastomere Other parts: steel, hot dip galvanised						
	Standard type		Twisted type		Type with bolts	
Cross section mm <sup>2</sup>	L.-Nr.	Weight kg	L.-Nr.	Weight kg	L.-Nr.	Weight kg
2x25, 2x50	5022	0,48	5075	0,51	5024	0,55
4x25	5020	0,46	5076	0,49	5025	0,53
4x35	5035	0,46	5074	0,49	5027	0,53
4x50	5033	0,45	5077	0,48	5034	0,52
4x70	5021	0,41	5078	0,44	5026	0,48
4x95	5023	0,40	5079	0,43	5029	0,47
4x120 -150	5023/10	0,40	5079/10	0,43		

### Special types:

A al-bushing can be incorporated to standard types.

L.-Nr. type .../1

On request all types can be supplied with safety clips for the bolts. L.-Nr. type .../(1)S

## Suspension clamps for upward tension and line angles

**Special types** for 30° upward tension

The standard types are not suitable for upward tension as there is a possibility that separation from the pole can occur particularly when using open hook connections.

In cases of clear upward tension the standard types can be used by installing them in reverse.

### Variations:

- for fixing on wooden poles
- for fixing with collars

## Roller suspension clamps

For line angles upto 60°.

The big advantage of this product is that it can be used as a mounting roller and suspension clamp.

This makes the pulling of the line much more cost effective. The mobility of the rotating eye or clavis makes it suitable for all problems associated with pulling a line. The suspension roller clamp is made of two straps. One of them can be released from the fixed position. Further components of the design are the roller, the counterpiece and a special system for clamping.

The roller has a soft layer (coating) made from elastomer therefore together with correct installation damage of the sheath of the conductor will be avoided even at difficult larger angles.

The roller suspension clamp is installed with the counterpiece in a raised position. Therefore providing a large aperture for pulling with stockings and joints.

The counterpiece clamps onto the conductor when the operating lever is pulled and the conductor is firmly fixed in position.

The asymmetric clamping system enables you to put in or take out the conductor from the side by releasing the moveable strap.

The clamp does not need any tools for installation and has the major benefit of performing two distinct functions.

Further information is given in our special booklet "Roller Suspension Clamp".



Type 1



Type 2

**Material:** Straps, bolts: steel, hot dip galvanised  
Roller: glassfibre reinforced polyamide with elastomere-insert  
Keeper piece: elastomere

L.-Nr.	Cross section mm <sup>2</sup>	Connection	Hole resp. bolt Ø mm	Type	Weight kg
5170.04	2-4 x 25 - 120	Rotating eye	30	1	1,5
5170.06	2-4 x 25 - 120	Rotating clavis	13	2	1,6
5170.05	4 x 95 - 150	Rotating eye	30	1	2,2
5170.07	4 x 95 - 150	Rotating clavis	13	2	2,3

## Suspension rollers

for line angles upto 60°

The big advantage of this product is that it can be used as a mounting roller and suspension point.



**Material:** Straps, bolts: steel, hot dip galvanised  
Roller: plastic

L.-Nr.	Cross section mm <sup>2</sup>	Hole Ø mm	Weight kg
5030	4x25/4x50	23	0,93
5031	4x70/4x95	23	1,12

## Insulated piercing connectors – standard type

for aluminium- and copper-conductors

The standard type of MOSDORFER-piercing connector consists of two glassfibre reinforced polyamide case halves with penetration teeth.

The contact is achieved by tightening the bolts. A grease is used for protecting the contact points against ingress of moisture.

The **standard type** is sufficient for all normal purposes. In polluted areas it is preferable to use the watertight version.

**Material:** Case halves: glassfibre reinforced polyamide  
Piercing elements: copper tinned  
Pressure plates: steel, hot dip galvanised  
Bolts: steel, hot dip galvanised

L.-Nr.	Main cable cross section mm <sup>2</sup>	Tap off cable cross section mm <sup>2</sup>	number of bolts	Weight kg
5209/3	25 – 120	1,5 – 6	1 x M 8	0,06
5210/.	16 – 70	4 – 35	1 x M 8	0,11
5214/.	25 – 120	6 – 70	1 x M 8	0,15
5211/.	25 – 120	6 – 70	2 x M 8	0,27
5212/.	25 – 120	25 – 120	2 x M 8	0,27
5220/.	95 – 240	16 – 120	2 x M10	0,50
5223/.	95 – 240	50 – 150	2 x M 8	0,60

### Types:

L.-Nr. .../1 1 groove open  
.../3 3 grooves open  
.../4 4 grooves open  
.../K with shear head nut

### Special types:

- for bare wires at one side on request

5209 only available as type 5209/3

5223 only available as type 5223/3 and 5223/4



## End caps for piercing connectors

End caps are used for sealing bare ends of a conductor.

The polyamid sleeve is filled with grease for improved sealing.

**Material:** Cap: polyamide  
Tightening ring: elastomere  
Filling: grease

L.-Nr.	Cross section mm <sup>2</sup>	Weight kg/100
5231/2	16–35	0,30
5233/1	16–95	0,60



## Insulated piercing connectors – waterproof type for aluminium- and copper-conductors

One of the main problems with piercing connectors is the penetration of moisture.

This problem causes corrosion of the connector contact straps and electrolytic corrosion of the conductor, this will cause heating up of the connector and an increased voltage drop.

MOSDORFER **waterproof** piercing connectors consist of two glassfibre reinforced polyamide case halves with toothed contact straps, two pressure plates and a high tensile bolt.

The contact straps are encased in neoprene rubber, which seals the points of contact against environmental penetration of moisture.

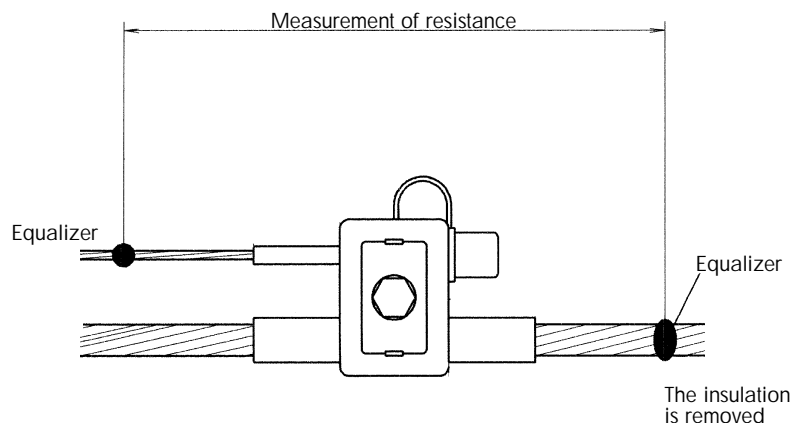
The end cap is filled with special grease and can be removed if required.



Neoprene-tightening including spring

<b>Material:</b> Case halves: polyamide, glasfibre reinforced Piercing elements: copper tinned Pressure plates: steel, hot dip galvanised Bolts: steel, hot dip galvanised Tightening: neoprene End cap: elastomere					
L.-Nr.	Main cable cross section mm <sup>2</sup>	Tap off cable cross section mm <sup>2</sup>	Number of piercing elements	Number of bolts	Weight kg
5210/WPR3	16 – 70	4 – 35	4	1 x M8	0,130
5214/WPR3	25 – 120	6 – 70	4	1 x M8	0,160
5216/3W	25 – 120	25 – 120	4	1 x M8	0,185
5212/3W8	25 – 120	25 – 120	8	2 x M8	0,360

Variation with shear head nut .../K f. e.: 5214/WPR 3/K



Example of a testing circuit of a piercing connector in a heat cycle test.

## Cold shrink tubes

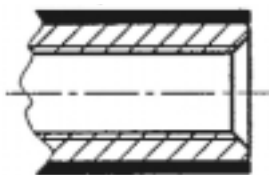
To insulate compression joints.

Material: Rubber			
L.-Nr.	Cross section mm	Finished length mm	Weight kg/100
5200	25	200	3,00
5202	50 ÷ 70	225	4,50
5204	95	250	6,00

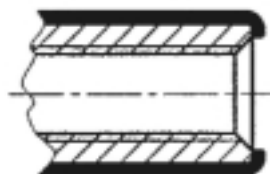


## Arrester connections

Material: Aluminium-alloy, plastic					
L.-Nr.	Type	Length mm	Cross section mm <sup>2</sup>	Thread	Weight
5250	1	310	25	M 8	0,04
5250/1	2	310	25	M 8	0,04



Type 1



Type 2

## DISCONNECTING FUSE SWITCHES

for aluminium- and copper-conductors

A disconnecting fuse switch is a protective switch for LV overhead networks. It serves to protect or disconnect a network section or consumer and to short circuit or earth a network section in case of line maintenance work.

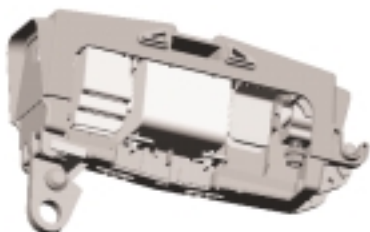
It can also be equipped with connecting blades.

For ease of use they can be operated from the ground using an operating rod.

The following types are available:

**ISO-LTS-00** for NH fuses size 00 up to **160 Amp.** (DIN 43620)  
(with connecting blades: 250A)

**ISO-LTS-1-2** for NH fuses size 1 up to **250 Amp.**  
and size 2 up to **400 Amp.** (DIN 43620)  
(with connecting blades: 630A)



## Construction

The MOSDORFER disconnecting-fuse switch comprises a fully insulated frame made of impact-resistant weatherproof plastic, a pivoted removable switching flap and cover hoods for the terminals.

The frame holds the top access conductor terminals which are connected to the fuse contacts.

The switching flap has fuseholders suitable for NH-Cartridge fuses, disconnecting blades or a short circuit device.

The opening eye is integrated into the flap which can be operated by means of operating rods.

## Technical data

	LTS00	LTS1-2
Rated current capacity (with blades)	160 A (250 A)	400 A (630 A)
Rated insulation voltage	1000 V	1000 V
Terminals – cross section	16–95 mm <sup>2</sup>	50–240 mm <sup>2</sup>
Utilization category acc. IEC 947	AC 21 660V cos φ 0,95	
	AC 22 500V cos φ 0,65	
	AC 23 380V cos φ 0,35	

The disconnecting fuse switches are equipped with an optical or mechanical indicator.

- Mech. Indicator: shows, if a fuse is installed or not.
- Electr. Indicator: shows, if the fuse is working or not.

## Tests

MOSDORFER on-load-disconnecting switches has been extensively tested in accordance with numerous standards ie. IEC 947, CENELEC HD 422, ÖVE SN40, VDE 0660/part 107. Type testing involves testing of rated making capacity, rated breaking capacity, proving the rated short-circuit current on fuse protection, testing of mechanical and electrical life.

The switches have also been subjected to additional tests such as:

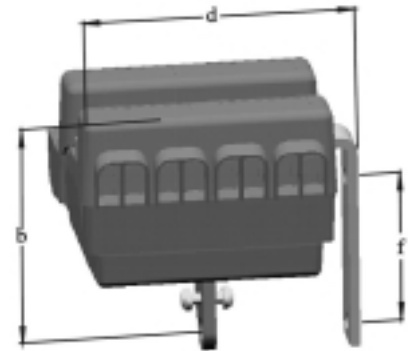
- voltage resistance in rain
- mechanical behaviour in icing-up conditions.
- temperature behaviour under different current-loadings and ambient temperatures
- ozon-test



Excerpt from a test report.

## Disconnecting fuse switches Compacted type

<b>Material:</b> Frame: glassfibre reinforced polyamide Terminals: aluminium-alloy Contacts: copper, tinned Other parts: steel, hot dip galvanised				
Type	Dimensions in mm			Weight kg
	b	d	f	
LTS00	195	320	120	3,50
LTS1-2	260	340	200	7,00



### LTS00 – 160 A

- 5501/002... Standard-type with one incoming and two outgoing terminals  
3 phases with permanently connected neutral for fixing on wooden poles
- 5501/003... Standard-type with one incoming and two outgoing terminals for house service connections
- 5501/300... Fuse switch for 3 phases with one incoming and one outgoing terminal

### LTS 1-2 – 400 A

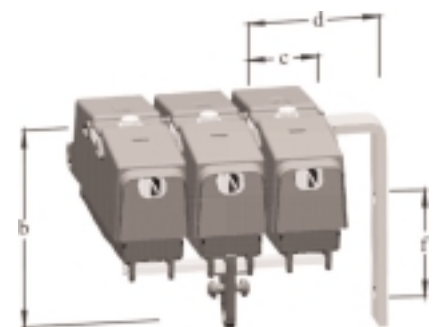
- 5505/002... Standard-type with one incoming and two outgoing terminals  
3 phases with permanently connected neutral for fixing on wooden poles
- 5505/.../L Type with optical indicator
- 5505/.../M Type with mechanical indicator

Other types on request.

## Modular type for aluminium- and copper-conductors.

This connecting fuse switches of modular construction are to be assembled with single pole segments. For many purposes it is not necessary to switch also the neutral. resp. in some cases only single pole or two pole switches are requested. The switches can be equipped with **standard** or with **piercing type terminals**.

<b>Material:</b> Frame: glassfibre reinforced polyamid Terminals: aluminium-alloy Contacts: copper, tinned Other parts: steel, hot dip galvanised					
Type	Dimensions in mm				Weight/element kg
	b	c	d*	f	
LTS00	180	65	115	90	1,50
LTS 1-2	195	80	160	200	2,00



\*Switch with one segment. For any further segment the dimension c is to be added.

## Numbering system – modular types

To describe the variations which are available the numbering system is shown below.



Number 1 to 3	L.-Nr.	Size	Modular types
	562	160A/00	Individual operation of all segments
	563	160A/00	To operate together but neutral individual
	564	160A/00	To operate together
	566	400A/1-2	Individual operation of all segments
	567	400A/1-2	To operate together but neutral individual
	568	400A/1-2	To operate together



Number 4 to 5	L.-Nr.	Number of phases
	1/	1 phase, no neutral
	2/	2 phases, no neutral
	3/	3 phases, no neutral
	1N	1 phase and 1 neutral link
	2N	2 phases and 1 neutral link
	3N	3 phases and 1 neutral link
	1S	1 phase and 1 disconnecting blade for neutral
	2S	2 phases and 1 disconnecting blade for neutral
	3S	3 phases and 1 disconnecting blade for neutral

Number 6	L.-Nr.	Number of terminals	
		Incoming	Outgoing
	1	1	1
	2	1	2
	3	2	1
	4	2	2

Number 7 to 9	L.-Nr.	Composition of terminals
	VC1	V-terminal with counter piece Cu; 1 bolt
	VA1	V-terminal with counter piece Al; 1 bolt
	VC2	V-terminal with counter piece Cu; 2 bolts
	VA2	V-terminal with counter piece Al; 2 bolts
	VI1	V-terminal with counter piece Cu; 1*
	VI2	V-terminal with counter piece Cu; 2*
	PC1	Piercing terminal with counter piece Cu; 1 bolt
	PA1	Piercing terminal with counter piece Al; 1 bolt
	PC2	Piercing terminal with counter piece Cu; 2 bolts
	PA2	Piercing terminal with counter piece Al; 2 bolts
	PI1	Piercing terminal with counter piece Cu; 1*
	PI2	Piercing terminal with counter piece Cu; 2*
	L13	Connection with cable lug 13 mm

\*Hexagon socket head cap bolt(s)

Number 10	L.-Nr.	Indicator
	A	Inspection glass, transparent
	B	Mechanical indicator, yellow
	D	Signal lamp in case fuse is failing
	E	Mechanical indicator, yellow and signal lamp in case fuse is failing

Number 11	L.-Nr.	Shear head nut
	X	Without shear head nut
	K	With shear head nut

Other special types on request

## Example

L.-Nr. 5643/1PA1AKD



5	6	4	3	/	1	P	A	1	A	K	D
---	---	---	---	---	---	---	---	---	---	---	---

- With stirrup special style
- With shear head nut
- Inspection glass, transparent
- piercing terminal with counter piece Al, 1 bolt
- one incoming and one outgoing terminal
- 3 phases, no neutral
- size 160/00, to operate jointly

## Terminals:

**V-terminals:** The cables must be dismantled prior to connection.

**Piercing terminals:** The terminal is a piercing clamp therefore dismantling of cables is not necessary. The clamp is tightened by a plastic cap and thus good corrosion resistance is secured.

## Switch stirrup

**Standard type** with stirrup for pole fixing

**Special type** stirrup for roof pole fixing can be delivered upon request.

**Special style** for locking, when the switch flap is open.

## ACCESSORIES

### Short circuit devices



Type	L.-Nr.	for type	Phases	Weight kg
Compacted	5502	LTS 00	3+N	0,30
	5507	LTS 1-2	3+N	0,60
Modular	5502/11	LTS 00	1	0,20
	5502/12	LTS 00	2	0,26
	5502/13	LTS 00	3	0,33
	5502/14	LTS 00	3+N	0,40
	5507/11	LTS 1-2	1	0,35
	5507/12	LTS 1-2	2	0,50
	5507/13	LTS 1-2	3	0,65
	5507/14	LTS 1-2	3+N	0,80

**Operating rods** suitable for LTS00 and LTS1-2 as compacted- and modular-types

L.-Nr	Length m	Weight kg
5503	1	0,41
5503/2	2	0,73

Other lengths on request.

**Operating rod adaptors** suitable for LTS00 and LTS1-2 as compacted- and modular-types

L.-Nr.	Type	Weight/100 kg
ZS 200.020	without arrester	3,50
ZS 200.025	with arrester	3,50

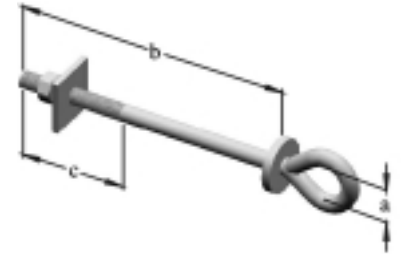
### Optical indicators

L.-Nr.	for type
ZS 400.000	Compacted LTS1-2 Modular LTS1-2 Modular LTS 00
ZS 400.001	
ZS 400.002	

## ACCESSORIES FOR WOODEN POLES

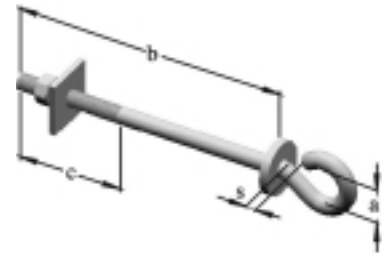
### Eye bolts

Material: Steel, hot dip galvanised							
L.-Nr.	Dimensions in mm			Rated strength kN		Weight kg	
	Thread	a	c	b	horizontal		vertical
5050/1	M16	30	100	220	40	7	0,78
5050	M16	30	100	250	40	7	0,80
5051/1	M16	30	100	350	40	7	0,96
5051	M16	30	100	380	40	7	1,00
5050/11	M20	30	120	230	40	15	1,23
5050/12	M20	30	120	350	40	15	1,56



### Hook bolts

Material: Steel, hot dip galvanised								
L.-Nr.	Thread	Dimensions in mm				Rated strength kN		Weight kg
		a	b	c	s	horizontal	vertical	
5060	M16	30	250	100	15	5,5	5,5	0,80
5061	M16	30	380	100	15	5,5	5,5	1,00
5062	M20	30	250	100	15	13,0	13,0	1,28
5063	M20	30	380	100	15	13,0	13,0	1,60



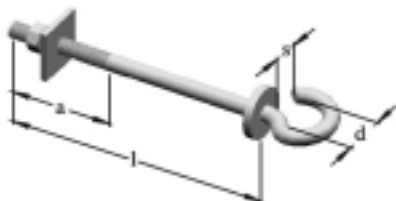
### Security hooks

for fixing with double arming bolts or eye bolts

Material: Steel, hot dip galvanised				
L.-Nr.	Thread	Rated strength kN		Weight kg
		horizontal	vertical	
5092	M20	20,0	20,0	0,56
5092/3	M16	20,0	20,0	0,56

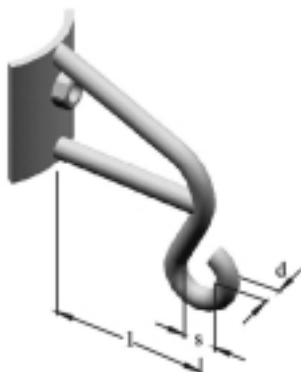


## Security hook bolts



**Material:** Steel, hot dip galvanised

L.-Nr.	Thread	Dimensions in mm				Rated strength kN		Weight kg
		d	l	a	s	horizontal	vertical	
5070	M20	30	220	80	17	13	13	1,30
5071	M20	30	380	100	17	13	13	1,62



## Outrigger hook

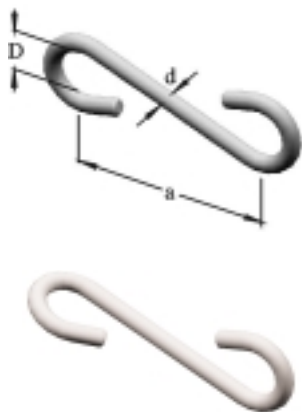
for wooden poles with double arming bolts or eye bolts

**Material:** Steel, hot dip galvanised

L.-Nr.	Thread	Dimensions in mm			Rated strength kN		Weight kg
		d	l	s	horizontal	vertical	
5091	M20	20	208	32	5,5	5,5	1,92
5091/3	M20	20	275	32	5,5	5,5	2,00

## Weak links

In areas, where damage of ABC-systems could be expected due to **tree's** falling across the line, the use of mechanical **weak links** is recommended. They can be installed between the pole fitting ie. hook bolt and the standard suspension clamp.



**Material:** Steel, hot dip galvanised

L.-Nr.	Type	Nom. failing load kN +/- 10%	Dimensions in mm			Weight kg
			a	D	d	
5360	Straight	4,00	85	22	8	0,08
5360/1	Twisted	4,00	85	22	8	0,08
5096	Straight	6,00	80	22	10	0,13
5094	Twisted	8,00	60	20	10	0,12
5096/1	Twisted	6,00	80	22	10	0,13
5096/3	Twisted	6,00	80	22	10	0,13
5096/4	Twisted	9,00	80	22	10	0,13
5096/5	Twisted	14,50	80	22	12	0,19

Other dimensions on request.

**Other accessories on request:**

- f. e.: **Strain hinges**
- Strain bolts**
- Strain hinges for angle poles**

## ACCESSORIES FOR ROOF POLES

### Strap for roof poles

with hook with two bolts M16x50

<b>Material:</b> Steel, hot dip galvanised	
L.-Nr.	Weight kg
5100	1,85



### Strap for roof poles elongated

for tensioning both sides with two bolts M16x50

<b>Material:</b> Steel, hot dip galvanised	
L.-Nr.	Weight kg
5101	1,40



### Strap for roof poles elongated, with ancor

for tensioning on one side with two bolts M16x50

<b>Material:</b> Steel, hot dip galvanised	
L.-Nr.	Weight kg
5102	2,50



With collars to be ordered separately according to the pole diameter.

### Strap for roof poles with ancor

for suspension clamps with two bolts M16x50

<b>Material:</b> Steel, hot dip galvanised	
L.-Nr.	Weight kg
5104	2,30



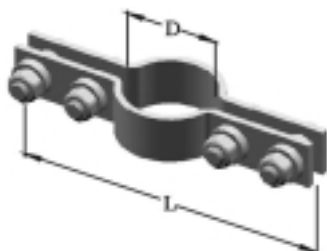
### Strap for roof poles

for suspension clamps with two screws M16x50

<b>Material:</b> Steel, hot dip galvanised	
L.-Nr.	Weight kg
5103	1,50



## Fixing collars



Material: Steel, hot dip galvanised			
L.-Nr.	Dimensions in mm		Weight kg
	D	L	
5130	76	266	1,75
5131	89	279	1,80
5132	102	292	1,90

## CONSTRUCTION TOOLS

### Running out rollers



The running out roller is used for installing the insulated cables and consists of a plastic roller, a steel loop and a swivelling suspension hook.

The plastic roller is shaped to avoid any damage to the conductor bundle during running out.

Maximum rated tension 15 kN with safety hook.

Material: Roller: plastic Other parts: steel, hot dip galvanised	
L.-Nr.	Weight kg
5300	2,65
5300/3	2,73

### Draw vices for connecting bolt 16 Ø

Draw vices are required for running out and partly, for pulling the cable towards the pole at line angles.

These tools offer the great advantage that it is possible to clamp the cable without any bolted connection.

The grip on the cable increases with increasing tension on the draw vice ensuring safe clamping under any load condition.

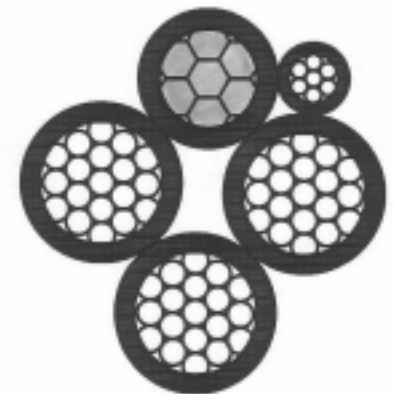


Material: Clamping jaws: aluminium-alloy Other parts: steel, painted		
L.-Nr.	Cross section mm <sup>2</sup>	Weight kg
5340	4 x 25-50	2,50
5341	4 x 70-95	5,00

## FITTINGS FOR THE CATENARY WIRE SYSTEM

The neutral which is used as a messenger wire consists of a stronger material thus allowing for a smaller cross section.

Usually this wire is insulated but also bare wires are used. It is possible for all systems to use additional cables for street lighting or other purposes. All clamps and accessories are made in accordance to the relevant french standards and are also tested to these specifications.



### Tension assemblies according to standard NF C 33-041

All assemblies are made to safely meet the maximum holding strength demanded in the specifications. Great importance is attached to the design of the clamping action to ensure that no damage could occur to the conductor insulation.



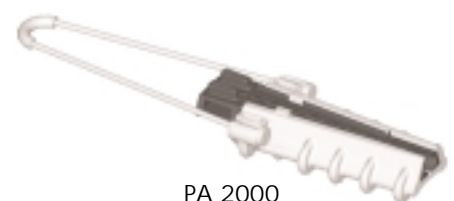
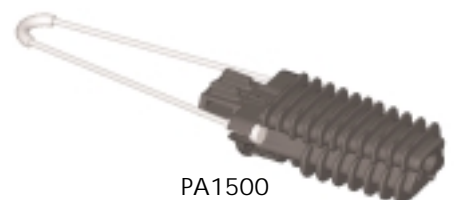
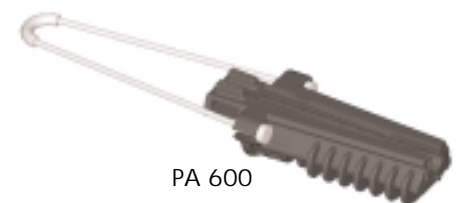
Crosssection mm <sup>2</sup>	Assembly		Consisting of				Rated strength kN	Weight kg
	L.-Nr.	Type	Tension clamp		Bracket			
			L.-Nr.	Type	L.-Nr.	Type		
54,6 ÷ 71,5	5003/2EA	EA600	5003/2	PA600	5410/2	CA2000	6	0,9
54,6 ÷ 71,5	5003/3EA	EA1500	5003/3	PA1500	5410/2	CA2000	15	1,0
54,6 ÷ 71,5	5003/1EA	EA2000	5003/1	PA2000	5410/2	CA2000	20	1,0

### Tension clamps according to standard NF C 33-041

Simple assembling because the wedges open by pulling them back. The flexible steel loop can be fixed into a closed eye bracket.

<b>Material:</b> Clamping body: glasfibre reinforced polyamid Wedges: glasfibre reinforced polyamid Flexible steel loop: stainless steel				
L.-Nr.	Type	Cross-section mm <sup>2</sup>	Length mm	Weight kg
5003/2	PA600	54,6 / 71,5	380	0,4
5003/3	PA1500	54,6 / 71,5	385	0,5
5003/1	PA2000	54,6 / 71,5	380	0,5 *

\* for type PA2000: the clamping body is made of aluminium alloy



## Bracket for tension clamps

according to standard NF C 33 - 041

For one or two tension clamps fixing can be done by means of 2 bolts M14 or M16 or by steel bands



Material: Steel, hot dip galvanised				
L.-Nr.	Type	Length mm	Breaking load kN	Weight kg
5410/2	CA 2000	100	28,25	0,5

## Tension clamps for house connections

according to standard NF C 33 - 042

Two types are available, each one for the complete range of 2 or 4 bundle conductors.



Material: Clamping body and wedges: glasfibre reinforced polyamid Loop: stainless steel					
L.-Nr.	Type	Cross section mm <sup>2</sup>	Length mm	Breaking load N	Weight kg
5001/1	PA25	2x10 ÷ 2x35	176	2000	0,07
5001/2	PA25	4x10 ÷ 4x35	176	2000	0,11



## Suspension assembly according to standard NF C 33 - 040

suitable for a salient angle of 45° and a re-entrant angle of 27°

All assemblies are made to safely meet the maximum holding strength demanded in the specifications. Great importance is attached to the design of the clamping action to ensure that no damage could occur to the conductor insulation.

Cross-section mm <sup>2</sup>	Assembly		Consisting of						Breaking load kN	Weight kg
			Suspension clamp		Eye		Bracket			
	L.-Nr.	Type	L.-Nr.	Type	L.-Nr.	Type	L.-Nr.	type		
54,6 ÷ 71,5	5400/3 EA	ES1500	5400/3	PS1500	incl.	LM1500	5411/2	CS1500-2000	12,0	0,75

**Suspension clamp** according to standard NF C 33 - 040  
suitable for up to 45° line angle deviation.

Fixing of the conductor by means of a snap connection.  
The connecting eye is suitable to be fixed into a closed eye also.  
It is designed to be self locking and provides movement in all directions.

<b>Material:</b> Clamping body: glasfibre reinforced polyamid Eye: steel, hot dip galvanised Bolt: aluminium alloy					
L.-Nr.	Type	Cross-section mm <sup>2</sup>	Length mm	Breaking load kN	Weight kg
5400/3	PS1500 +LM1500	54,6 ÷ 71,5	110	12,00	0,22



## Bracket for suspension clamps

according to standard NF C33 - 040

Fixing can be done by means of 2 bolts M14 or M16 or by steel bands.  
The bracket has stops to prevent excessive movement upwards and towards the pole.

<b>Material:</b> Steel, hot dip galvanised				
L.-Nr.	Type	Length mm	Breaking load kN	Weight
5411/2	CS1500 - 2000	134	17,5	0,5

