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# Introduction

## Low Voltage Insulated Overhead Lines (LV-Aerial Bundled Conductor System)



Tyco Electronics Energy Division was one of the first to pioneer the connection, anchoring and suspension of low-voltage insulated overhead systems since its first installations in the mid 1950's. Since then, our continuous efforts in research and development have led to state of the art our product lines, meeting the demands of modern network design, operation and maintenance. Our products are successfully employed by utilities around the world including arctic, desert and tropical climatic extremes. With Tyco Electronics piercing connectors service lines can be connected to live lines with maximum safety to line-men.



### The 3 main types of LV-ABC according to European Standard HD 626

Our anchor and suspension clamps are designed and tested to fit to majority types of cables according to European Standard HD 626, regardless if cables are insulated with XLPE, PE or PVC. The products are tested according to national specifications such as NFC, VDE, BS, ESI and where possible in accordance to CENELEC prEN 50483.

#### Self-supporting LV-ABC lines



The self-supporting system is composed of 4 insulated aluminium conductors. Mechanical strength and nominal cross section of all 4 conductors are identical. The system can consist of additional 1 or 2 insulated aluminium conductors with cross sections of 16 mm<sup>2</sup> or 25 mm<sup>2</sup> as pilot wire or for street lighting.

When straining the line, all 4 conductors are equally loaded.

The service lines of all 3 LV-ABC systems are usually also of the self-supporting type, composed of 2 to 4 factory bundled insulated aluminium conductors with cross sections of 16 mm<sup>2</sup>, 25 mm<sup>2</sup> or 35 mm<sup>2</sup>.

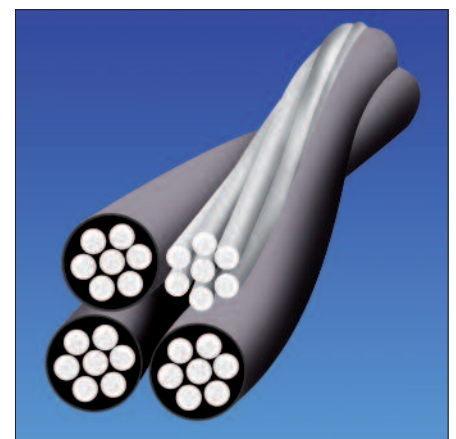
#### LV-ABC lines with insulated neutral messenger



LV-ABC line with insulated neutral messenger wire, also referred to as "French System", is composed of 3 insulated aluminium phase conductors and 1 neutral messenger of aluminium alloy (mostly Aldrey) also with insulation. The system can consist of additional 1 or 2 insulated aluminium conductors with cross sections of 16 mm<sup>2</sup> or 25 mm<sup>2</sup> as pilot wire or for street lighting.

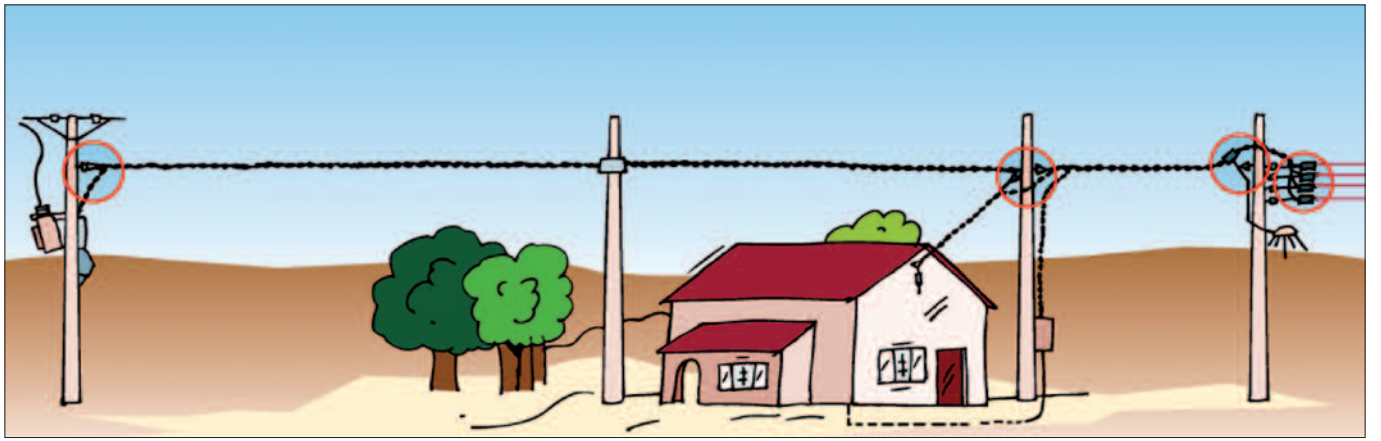
Mechanical strength and nominal cross section of the 3 phase conductors are identical. The neutral conductor is at the same time the suspension unit having a higher mechanical strength. When straining the line, only the neutral conductor, as suspension unit, is loaded.

#### LV-ABC lines with bare neutral messenger



LV-ABC line with bare neutral messenger wire, also referred to as "Finnish System", is composed of 3 insulated aluminium phase conductors and 1 neutral messenger of aluminium alloy without insulation. The system can consist of additional 1 or 2 insulated aluminium conductors with cross sections of 16 mm<sup>2</sup> or 25 mm<sup>2</sup> as pilot wire or for street lighting.

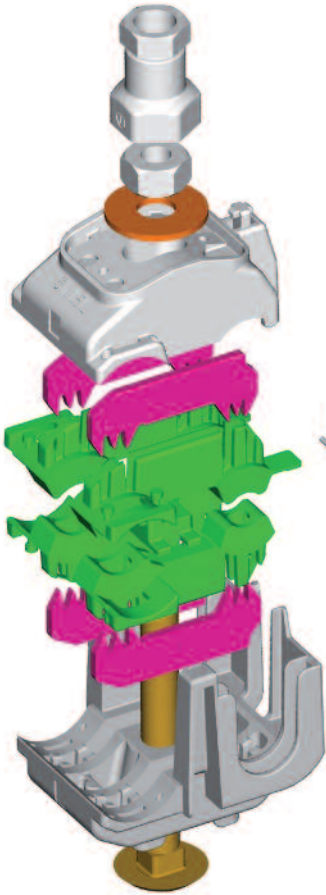
Mechanical strength and nominal cross section of the 3 phase conductors are identical. The neutral conductor is at the same time the suspension unit having a higher mechanical strength. When straining the line, only the neutral conductor, as suspension unit, is loaded.



# Tap-off connectors

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## Piercing Connector Systems



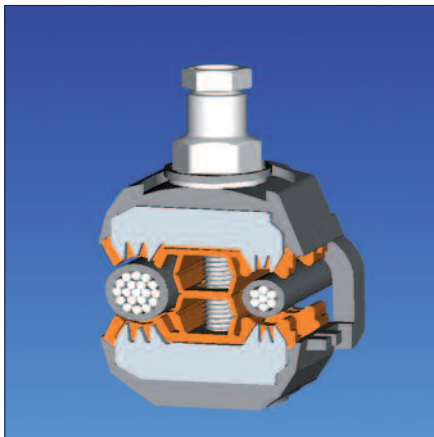
All our connectors are designed and tested to fit to majority types of cables made in accordance with the European Standard HD 626, regardless if cables are insulated with XLPE, PE or PVC. The products are tested according to national specifications such as NFC, VDE, BS, ESI and where possible in accordance to CENELEC prEN 50483-4.

These standards include tests to verify reliable operation even in the harshest environments:

- designed for Installation from  $-20\text{ }^{\circ}\text{C}$  up to  $+50\text{ }^{\circ}\text{C}$ ,
- operation experience with temperatures ranging from  $-60\text{ }^{\circ}\text{C}$  up to  $+60\text{ }^{\circ}\text{C}$ ,
- no limitation of mechanical loads for main and branch conductors,
- shear head forces are adapted to the required contact forces for each application (main, service, lightning),
  - voltage withstand to 6 kV in a 30 cm waterbath,
  - no change in contact resistance and temperature after overloads and load cycling,
  - voltage withstand to 6 kV after heavy weathering exposure (UV-light, humidity and temperature cycling),
  - corrosion resistance of metal parts proven in salt fog chamber and wet  $\text{SO}_2$  gas chamber.

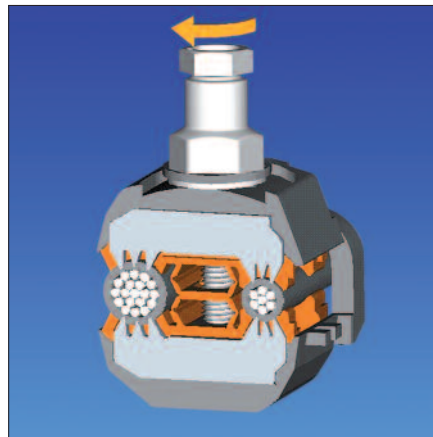
## Installation process engineered for long-term reliability

**Before installation**



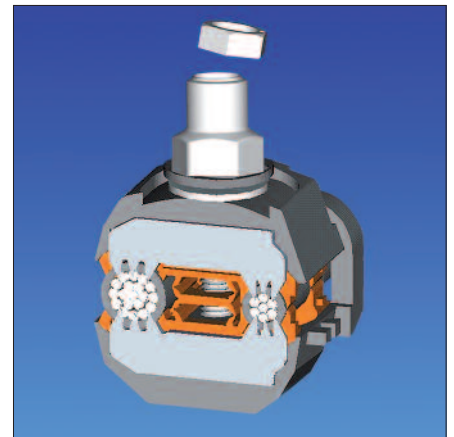
Connector easily positioned over cables, no loose parts can fall to ground. The correct position of the branch conductor can be felt inside the end cap.

**During installation**



Contact blades pierce the insulation and reliably contact the conductors. The tightening screw is insulated from the contact blades thus providing maximum safety for the installer even during live line installations.

**After shear head breaking**



The shear head ensures that conductors are not damaged by too strong forces. The long neck prevents the head from hasty shearing off by naturally applied cantilever loads on the tightening tool. The seals firmly conform to the insulation to prevent any moisture ingress.

## Waterproof insulation piercing connectors – test voltage 6 kV in water



Type: EP, P2X, P3X, P4X

### Application

The waterproof insulation piercing connectors are suitable for majority types of LV ABC conductors as well as connections to service and lighting cable cores. When tightening the bolts, the teeth of the contact plates penetrate the insulation and establish a perfect contact. The bolts are tightened until the heads shear off. Stripping of insulation is avoided.



Type: KZ 2-150 2B

### Features

- Tested for watertightness at a voltage of 6 kV for 30 min in a waterbath (NFC 33020, CENELEC prEN 50483 4 class 1)
- Potential free tightening bolts allow safe installations on life lines
- Suitable for aluminium and copper conductors
- Long neck 13 mm shear head nut ensuring reliable installations
- Exceeds requirements according to



Type: KZ31

NFC 33020 and EATS 43-14

- Components not losable, end cap attached to body
- Insulation material made of weather and UV resistant glass fibre reinforced polymer
- Contact plates made of aluminium or copper, bolt made of steel with Geomet (Chromium free) protection
- Designed that conductor breaking loads exceed cable system requirements:
  - 80 % for self-supporting system
  - 90 % for insulated neutral conductor and
  - 60 % for phase conductors for

### Simultaneous piercing of main and branch conductor

Application range (mm <sup>2</sup> )		Ordering description	Bolt	Torque (Nm)	Weight (kg/100 pcs)
Main	Tap				
<b>for main to service connections</b>					
2,5 – 35	1,5 – 6	EP35-13	1 x M6	7	5,0
16 – 95	1,5 – 10	EP95-13	1 x M6	7	5,0
16 – 95	4 – 35 (50*)	P2X 95 Mk2	1 x M8	11	10,8
16 – 120	1,5 – 6	EP120-13	1 x M8	8	5,4
50 – 150	6 – 35 (50*)	P2X 150	1 x M8	11	12,0
<b>for main to main connections</b>					
16 – 35	16 – 35	P2X 95 Mk2	1 x M8	11	10,8
25 – 95	25 – 95	P3X 95	1 x M8	18	16,0
25 – 120	25 – 120	P4X 120D	2 x M8	18	34,0
50 – 150	50 – 150	P4X 150D	2 x M8	18	34,0

\* Fits up to this conductor size, but current rating  $I_{max}$  of connector (138 A according to HD 626S1 part 6E) is lower than possible cable ratings.

### Independent connection of main (piercing) and branch conductor (strippable)

Application range (mm <sup>2</sup> )		Ordering description	Bolt Main/Tap	Torque (Nm) Main/Tap	Weight (kg/100 pcs)
Main	Tap				
<b>for main to 2 service connections (Bp-piercing tap side, B-strippable tap side)</b>					
25 – 150	2 x 6 – 35	KZ 2-150 2B	1 x M8/2 x M8	11/10	23,0
25 – 150	2 x 6 – 35	KZ 2-150 2Bp	1 x M8/2 x M8	11/10	23,0
<b>for main to main connections (strippable tap side)</b>					
35 – 70	35 – 70 (95*)	KZ31 70-70	1 x M8/1 x M10	18/10	24,0
50 – 150	35 – 70 (95*)	KZ31 150-70	1 x M8/1 x M10	18/10	24,0

\* Fits up to this conductor size, but current rating  $I_{max}$  of connector (213 A according to HD 626S1 part 6E) is lower than possible cable ratings.

**Note:** Possibility to disconnect and reconnect the tap line (only stripping version) without removal of the main side.



## Insulation piercing connectors for connections to bare overhead



Type: P2X 95 Mk2, EP95-13

### Application

The connectors allow the transition between bare lines (aluminium or copper) and insulated LV ABC lines.

The version with simultaneous connection of bare main and insulated tap conductor includes piercing and a waterproof seal of the tap conductor.

The second version with independent connection requires the tap conductor to be stripped. The bolts (13 mm) are tightened until the heads shear off.



Type: : CDR/CN, RDP 25/CN

### Features

- Suitable for aluminium and copper conductors
- Groove in contact area for bare conductor fits also for small wires
- Potential free tightening bolts allow safe installations on life lines
- Exceeds requirements according to NFC 33020
- Components not losable, end cap attached to body
- Insulation material made of weather and UV resistant glass fibre reinforced polymer
- Contact plates made of tinned copper, bolt made of steel with Geomet (Chromium free) protection



Type: KZ31-70

### Simultaneous connection of main (bare) and branch (insulated) conductor; piercing of branch conductor

Application range (mm <sup>2</sup> )		Ordering description	Bolt	Torque (Nm)	Weight (kg/100 pcs)
Bare	Insulated				
<b>for bare main to insulated service connections</b>					
16 – 95 <sup>1</sup>	1,5 – 10	EP95-13	1 x M6	7	5,0
16 – 95 <sup>1</sup>	4 – 35	P2X 95 Mk2*	1 x M8	11	10,8
7 – 100 <sup>2</sup>	16 – 35	RDP 25/CN	1 x M8	12	13,5
<b>for bare main to insulated main connections</b>					
7 – 100 <sup>2</sup>	25 – 95	CDR/CN 1S 95 UK	2 x M8	16	26,5

\* Connector of type P2X can only be used for connections between aluminium conductors.

**Note:** <sup>1</sup> Equivalent to a diameter range of 4,5 to 12 mm.

<sup>2</sup> Equivalent to a diameter range of 3 to 13,5 mm.

### Independent connection of main (bare) and branch conductor (strippable)

Application range (mm <sup>2</sup> )		Ordering description	Bolt Bare/Insulated	Torque (Nm) Bare/Insulated	Weight (kg/100 pcs)
Bare	Insulated				
22 – 75 Al*	35 – 70	KZ31-70 CNA	1 x M8/1 x M10	11/10	24,0
7 – 48 Cu	35 – 70	KZ31-70 CNU	1 x M8/1 x M10	11/10	24,0

\* Equivalent to a diameter range of 6 to 11 mm.

**Note:** Possibility to disconnect and reconnect the tap line without removal of the main side.

CNA only for bare main aluminium conductors.

CNU only for bare main copper conductors.

## Insulation piercing connectors for connections to cables



Type: **DZ6 UL-F**

### Application

All piercing connectors of EP and PX type (see page 9) can be used as a connection between LV-ABC and service or main cables.

The DZ6 connector is designed for connection of cables with large cross sections to insulated LV ABC lines. When tightening the bolts, the teeth of the contact plates penetrate the insulation and establish a perfect contact. The bolts (wrench size 17 mm) are tightened until the heads shear off. Stripping of insulation is avoided and the cable end is sealed with a cap.



Type: **P3X 95**

### Features

- Suitable for aluminium and copper conductors
- Potential free tightening bolts allow safe installations on life lines
- Connectors type DZ6 exceed requirements according to UL486 and ESI-43-14, including 4 kV voltage withstand test in air
- Connector teeth are factory greased and covered with a rubber seal to retard water entry and corrosion
- Components not losable, end cap attached to body
- Insulation material made of weather and UV resistant glass fibre reinforced polymer
- Contact plates made of tinned copper, bolt made of steel with Geomet (Chromium free) protection



Type: **P2X 95 Mk2, EP95-13**

For inline connections of LV-ABC to cables see section "Complete connection kits" on page 23.

For cable terminations and core protection tubing see pages 26 and 27.

### Simultaneous piercing of main (insulated LV-ABC) and branch (cable core) conductor

Application range (mm <sup>2</sup> )		Ordering description	Bolt	Torque (Nm)	Weight (kg/100 pcs)
LV-ABC	Cable conductor				
16 – 95	1,5 – 10	EP95-13	1 x M6	7	5,0
16 – 95	4 – 35	P2X 95 Mk2	1 x M8	11	10,8
25 – 95	25 – 95	P3X 95	1 x M8	18	16,0
25 – 120 (150*)	120 – 240	DZ6 UL-F-CHINA-N	1 x M10	40	30,0

\* Fits up to this conductor size, but current rating  $I_{max}$  of connector (300 A according to HD 626S1 part 6E) is lower than possible cable rating.

## Parallel groove clamps for bare neutral messenger and grounding



Type: **Al – Al**

### Application

Designed to connect two parallel bare conductors. Conductors can be aluminium alloy or aluminium steel reinforced.

### Features

- Exceed requirements according to VDE 0210 and VDE 0212
- Pressure pad ensuring uniform pressure along the clamp
- Cross-grooved clamp channels of universal clamp type improve mechanical pull-out strength and electrical contact
- Connector bodies made of corrosion resistant, high strength aluminium alloy AlMgSi1F32
- Bolts and nuts made of hot dip galvanized steel 8.8.



Type: **Al – Cu**

### Application

Designed to connect two parallel bare conductors. Conductors can be aluminium alloy or aluminium steel reinforced for main and copper for tap side.

### Features

- in addition to aluminium version:
- Hot compressed Cupal plate ensures good electrical contact and prevents corrosion
  - Cross-grooved clamp channels improve mechanical pullout strength and electrical contact
  - Spring washers maintain pressure even at dilatation caused by temperature changes



Type: **Cu – Cu**

### Application

Designed to connect two parallel bare conductors. Conductors can be copper stranded or solid.

### Features

different from aluminium version:

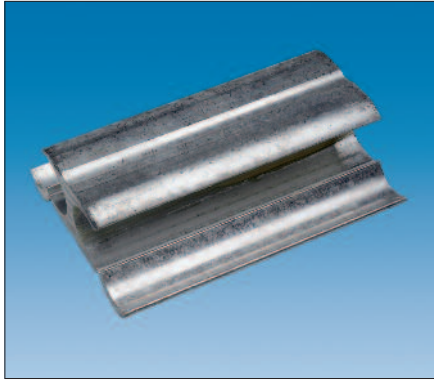
- Connector bodies and bolts made of high strength electrolytic copper F60

Conductor cross section (mm <sup>2</sup> )			Conductor diameter (mm)		Ordering description	Bolts	Weight (kg/100 pcs)
Al	Al/St, ACSR	Cu	Al	Cu			
<b>Aluminium – Aluminium</b>							
6 – 35	16/2,5 – 25/4	–	2,5 – 7,5	–	HEL-3587	2 x M7	9,5
10 – 50	16/2,5 – 35/6	–	4,1 – 9,0	–	HEL-3588	2 x M8	9,5
10 – 70	16/2,5 – 50/8	–	4,1 – 10,5	–	HEL-3589	2 x M8	11,4
10 – 95	16/2,5 – 70/12	–	4,1 – 12,5	–	HEL-3590	2 x M8	14,3
16 – 120	16/2,5 – 95/15	–	5,1 – 14,0	–	HEL-3591	2 x M8	15,8
25 – 150	25/4 – 120/20	–	6,3 – 15,7	–	HEL-3592	2 x M10	24,0
35 – 240	35/6 – 210/35	–	7,5 – 20,2	–	HEL-3594	2 x M10	45,0
<b>Universal type for fixing of dead – ends, tap conductors and auxiliary conductors</b>							
16 – 70	16/2,5 – 70/12 <sup>1)</sup>	–	5,1 – 10,5	–	HEL-3929	2 x M8	10,0
25 – 150	25/4 – 120/20 <sup>2)</sup>	–	6,3 – 15,7	–	HEL-3932	2 x M10	20,4
<b>Aluminium – Copper</b>							
16 – 95	16/2,5 – 50/8	1,5 – 10	5,1 – 11,7	1,5 – 5,1	HEL-3920	1 x M8	6,0
16 – 70	16/2,5 – 70/12	6 – 50	5,1 – 11,7	2,7 – 9,0	HEL-3919	1 x M8	6,0
16 – 95	16/2,5 – 70/12	6 – 50	5,1 – 12,5	2,7 – 9,0	HEL-3910	2 x M8	11,5
25 – 150	25/4 – 120/20	10 – 95	6,3 – 15,7	5,1 – 12,5	HEL-3911	2 x M8	15,0
35 – 300	35/6 – 265/35	35 – 240	7,5 – 22,5	7,5 – 20,2	HEL-3915	3 x M10	68,0
<b>Copper – Copper</b>							
–	–	2,5 – 16	–	1,8 – 5,1	HEL-3005	1 x M5	2,8
–	–	4 – 25	–	2,3 – 6,3	HEL-3006 M6	1 x M6	4,6
–	–	6 – 35	–	2,7 – 7,5	HEL-3007	1 x M7	6,5
–	–	6 – 70	–	2,7 – 10,5	HEL-3009	1 x M8	11,7
–	–	16 – 150	–	5,1 – 15,7	HEL-3032	2 x M10	43,0

**Note:** <sup>1)</sup> Use 2 clamps for dead – ends and auxiliary conductors of 50/8 and 70/12.

<sup>2)</sup> Use 2 clamps for dead – ends for 70/12 and above and for auxiliary conductors with strain above 90 N/mm<sup>2</sup>.

## Compression branch connectors and sealing kits



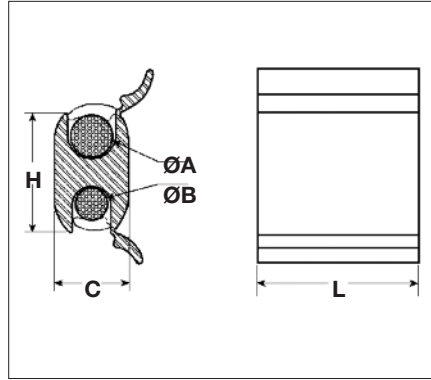
Type: **CH**

### Application

The compression connectors type CH are designed for branches on bare conductors.

The connector is made of aluminium alloy, inhibitor is filled into the grooves and marks indicate the place for crimping. The connectors are tested to Nema standard CC3.

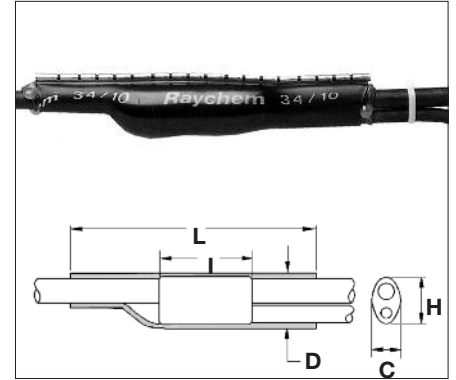
For installations on insulated conductors, the sealing kits shall be installed to re-establish the insulation and to ensure a good seal.



### Installation

The conductors are inserted into the grooves and hand closed with the two movable parts.

The connector is crimped at the indicated marks with the appropriate die by the crimping tool SIMABLOC C120 (for tool details see page 52).



Type: **SMOE 380**

### Application

The branch joints are designed for sealing branch connections made by bare tap connectors on insulated LV-ABC conductors.

Void filling mastic smoothes the edges of the connector. A wraparound heat-shrinkable sleeve insulates and seals the connection area.

### Compression branch connectors, type CH

Application range (mm <sup>2</sup> )		Ordering description	Dimensions (mm)					Crimping die
Main	Tap		Ø A	Ø B	C	H	L	
25 – 71,5	25 – 70	CH O 250	12,0	11,0	17	30	40	12SU-O
70 – 120	70 – 120	CH D 400	15,0	15,0	23	35	63	12SU-D3
120 – 240	120 – 240	CH N 450	22,0	22,0	30	47	85	12SU-N
120 – 240	35 – 120	CH N 500	22,0	18,0	30	48	50	12SU-N

**Note:** Other connectors are available on request.

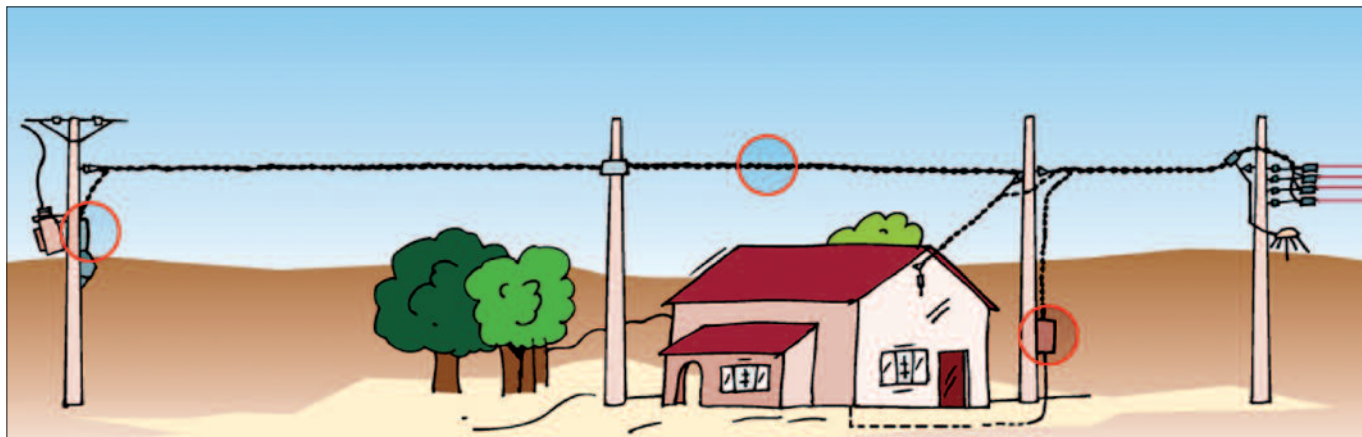
### Sealing joint kits, type SMOE

Cross section* (mm <sup>2</sup> )		Ordering description	Dimensions (mm)				
Main	Tap		Connector		Joint		
			C (max.)	H (max.)	I (max.)	L	D
16 – 50	1,5 – 16	SMOE 379	24	18	35	250	40
35 – 120	6 – 120	SMOE 380	40	40	75	250	55

\* Cross section ranges are based on cable and typical connector dimensions.

**Note:** The used connectors must not exceed the dimensions given in the table.

Branch joints for other cables or connector dimensions are available on request.



# Inline connectors and lugs

<b>Waterproof pre-insulated mechanical connectors</b>	<b>16</b>
<b>Waterproof pre-insulated hexagonal compression connectors</b>	<b>17</b>
<b>Waterproof pre-insulated hexagonal compression lugs</b>	<b>20</b>
<b>Complete termination and connection kits with mechanical lugs and connectors</b>	<b>22</b>

## Waterproof pre-insulated mechanical connectors for service cables



Type: **piercing version**

### Application

These waterproof insulated mechanical connectors are suitable for all types of LV-ABC conductors as well as connections to service and lighting cable cores. They are used when a customer service line is changed or reconnect to a customer after payment.

End cap is included to seal open sides. The bolts (13 mm) are being tightened until the heads shear off.

Available with a piercing contact and as second version which requires stripping of the insulation.



Type: **stripping version**

### Features

- Suitable for aluminium and copper conductors, solid and stranded
- Stripping version can be installed and removed under load (max. 90 A)
- Polymeric tightening bolts allow safe installations on hot lines
- Tested for watertightness at a voltage of 6 kV for 30 min in a waterbath (NFC 33020, CENELEC prEN 50483-4 class 1)
- Exceeds requirements according to NFC 33020, NFC 33021 and NFC 20 540
- Components not losable, end cap attached to body
- Stripping version re-openable, piercing version not re-openable
- Insulation material made of weather and UV resistant glass fibre reinforced polymer



Cross section (mm <sup>2</sup> )	Ordering description		Type	I <sub>max.</sub> * (A)	Torque (Nm)	Weight (kg/100 pcs)
	min.	max.				
4	35	BPC 35 - 35	stripping/stripping	90	10	8,5
4	35	BPC 35 - P35	stripping/piercing	90	10	8,5
4	35	BPC P35 - P35	piercing/piercing	—	10	8,5
4	50	BPC P50	piercing/piercing	—	10	8,5

\* Max. current for connection under load.

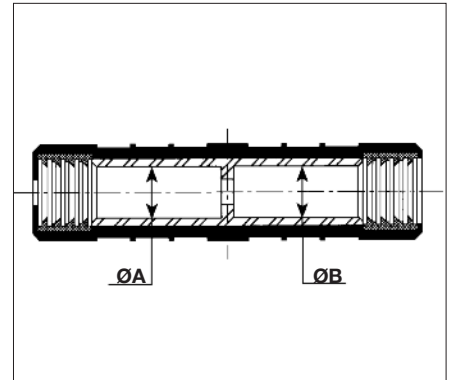
## Waterproof pre-insulated hexagonal compression connectors for service cables



Type: **MJPB, MJPBAS**



Type: **MJPB 10-16 (sectional view)**



### Application

These pre-insulated connectors are suitable for insulated stranded aluminium conductors. Stripped cables are inserted up to the block in the connector. Crimping according to the marks with crimping die size E140 over the insulation. The electrical contact and the sealing by the elastomeric ring are achieved during the crimp process. Uniform connector length of 70 mm.

### Features

- MJPB suitable for stranded aluminium conductors up to 35 mm<sup>2</sup> and stranded copper conductors up to 16 mm<sup>2</sup>
- MJPBAS suitable for stranded aluminium conductors to solid aluminium conductors
- Mechanical strength of 50 % of cable breaking load
- Tested for water tightness at a voltage of 6 kV for 30 min in a water bath

- One die size E140 for all connector sizes (tools and dies see pages 52 and 53)
- Exceeds requirements according to NFC 33021
- A colour code of elastomeric sealing ring allows an easy identification of the cross sections
- Inner aluminium sleeve filled with contact grease
- Insulation material made of weather and UV resistant polymer

### MJPB for stranded conductors

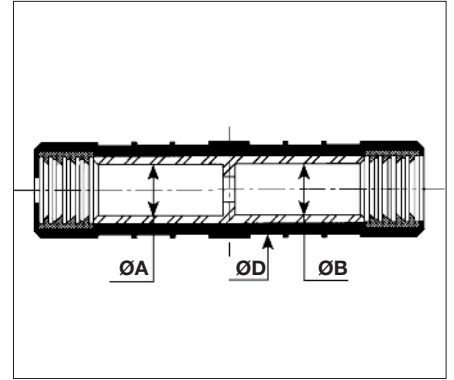
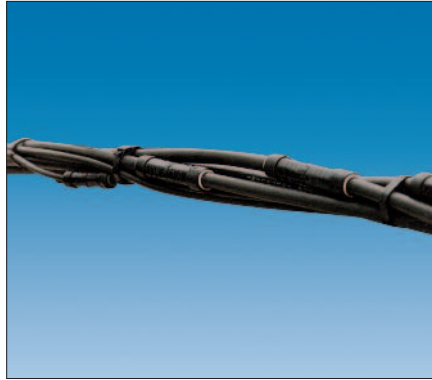
Cross section (mm <sup>2</sup> )		Ordering description	Colour code A/B	Dimensions (mm)		Weight (kg/100 pcs)
stranded A	stranded B			ØA	ØB	
4	16	MJPB 04-16	ivory/blue	2,7	5,3	2,5
6	6	MJPB 06	brown	3,3	3,3	2,5
6	10	MJPB 06-10	brown/green	3,3	4,3	2,5
6	16	MJPB 06-16	brown/blue	3,3	5,3	2,5
6	25	MJPB 06-25	brown/orange	3,3	6,5	2,5
6	35	MJPB 06-35	brown/red	3,3	8,0	2,5
10	10	MJPB 10	green	4,3	4,3	2,5
10	16	MJPB 10-16	green/blue	4,3	5,3	2,5
10	25	MJPB 10-25	green/orange	4,3	6,5	2,5
10	35	MJPB 10-35	green/red	4,3	8,0	2,5
16	16	MJPB 16	blue	5,3	5,3	2,5
16	25	MJPB 16-25	blue/orange	5,3	6,5	2,5
16	35	MJPB 16-35	blue/red	5,3	8,0	2,5
25	25	MJPB 25	orange	6,5	6,5	2,5
25	35	MJPB 25-35	orange/red	6,5	8,0	2,5
35	35	MJPB 35	red	8,0	8,0	2,5

### MJPBAS for stranded to solid conductors

Cross section (mm <sup>2</sup> )		Ordering description	Colour code A/B	Dimensions (mm)		Weight (kg/100 pcs)
stranded A	solid B			ØA	ØB	
10	25	MJPBAS 10-25M	green/orange	4,3	5,9	2,5
10	35	MJPBAS 10-35M	green/red	4,3	6,9	2,5
16	16	MJPBAS 16-16M	blue/blue	5,3	4,5	2,5
16	25	MJPBAS 16-25M	blue/orange	5,3	5,9	2,5
16	35	MJPBAS 16-35M	blue/red	5,3	6,9	2,5
25	16	MJPBAS 25-16M	orange/blue	6,5	4,8	2,5
25	25	MJPBAS 25-25M	orange/orange	6,5	5,9	2,5
25	35	MJPBAS 25-35M	orange/red	6,5	6,9	2,5
35	35	MJPBAS 35-35M	red/red	8,0	6,9	2,5



## Waterproof pre-insulated hexagonal compression connectors



Type: **MJPT**

### Application

These pre-insulated connectors are suitable for insulated stranded aluminium conductors. Three connector versions are available to meet the mechanical load requirements for self-supporting system and systems with a neutral messenger. Stripped cables are inserted up to the block in the connector. Crimping according to the marks with appropriate crimping die over the insulation. The electrical contact and the sealing by the elastomeric ring are achieved during the crimp process. Uniform connector length of 100 mm, except for neutral messengers 170 mm.

### Features

- Suitable for stranded aluminium conductors
- Tested for water tightness at a voltage of 6 kV for 30 min in a waterbath (NFC 33020, CENELEC prEN 50483-4 class 1)
- Only two crimping die sizes (E173, E215) cover complete connector range (tools and dies see pages 52 and 53)
- Exceeds requirements according to CENELEC prEN 50483-4 class 1, NFC 33021 and ESI 43-14
- A colour code of elastomeric sealing ring allows an easy identification of the cross sections
- Inner aluminium sleeve filled with contact grease
- Insulation material made of weather and UV resistant polymer

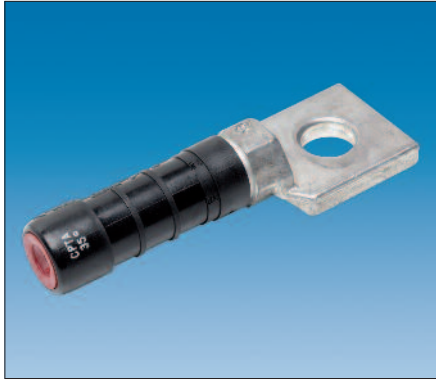
Mechanical load withstand of connectors:

- For conductors of self-supporting system: 85 % of conductor breaking load
- For systems with neutral messenger: 60 % of breaking load of phase conductor  
95 % of breaking load of insulated neutral conductor

## Waterproof pre-insulated hexagonal compression connectors

Cross section (mm <sup>2</sup> )	Ordering description	Colour code A/B	Dimensions (mm)			Crimp die size	Weight (kg/100 pcs)
			ØA	ØB	ØD		
<b>For self supporting LV-ABC systems</b>							
16	MJPT 16	blue	5,5	5,5	20	E173	5,5
25	MJPT 25 Alus	orange	6,5	6,5	20	E173	5,5
35	MJPT 35 Alus	red	—	—	—	E173	5,5
50	MJPT 50 Alus	yellow	9,0	9,0	20	E173	5,0
70	MJPT 70 Alus	white	10,5	10,5	20	E173	4,5
95	MJPT 95 Alus	grey	12,2	12,2	25	E215	7,5
120	MJPT 120 Alus	pink	14,2	14,2	25	E215	7,5
<b>For phase conductors of LV-ABC systems with neutral messenger</b>							
16	MJPT 16	blue	5,5	5,5	20	E173	5,5
25	MJPT 25	orange	6,5	6,5	20	E173	5,0
35	MJPT 35	red	8,0	8,0	20	E173	5,0
35 – 25	MJPT 35-25	red/orange	8,0	6,5	20	E173	5,0
50	MJPT 50	yellow	9,0	9,0	20	E173	5,0
50 – 25	MJPT 50-25	yellow/orange	9,0	6,5	20	E173	5,0
50 – 35	MJPT 50-35	yellow/red	9,0	8,0	20	E173	5,0
70	MJPT 70	white	10,5	10,5	20	E173	4,5
70 – 35	MJPT 70-35	white/red	10,5	8,0	20	E173	4,5
70 – 50	MJPT 70-50	white/yellow	10,5	9,0	20	E173	4,5
95	MJPT 95	grey	12,2	12,2	20	E173	4,0
95 – 35	MJPT 95-35	grey/red	12,2	8,0	20	E173	4,5
95 – 50	MJPT 95-50	grey/yellow	12,2	9,0	20	E173	4,0
95 – 70	MJPT 95-70	grey/white	12,2	10,5	20	E173	4,0
120	MJPT 120 D25	pink	14,2	14,2	25	E215	8,5
150	MJPT 150	violet	15,5	15,5	25	E215	8,0
150 – 70	MJPT 150-70	violet/white	15,5	10,5	25	E215	9,0
150 – 95	MJPT 150-95	violet/grey	15,5	12,2	25	E215	9,0
<b>For insulated neutral conductors of LV-ABC systems with neutral messenger</b>							
54,6	MJPT 54	black	10,0	10,0	20	E173	8,0
70	MJPT 70N	white	10,5	10,5	20	E173	8,0
70 – 54,6	MJPT 70N-54	white/black	10,5	10,0	20	E173	8,0

## Waterproof pre-insulated hexagonal compression lugs



Type: **CPTA**

### Application

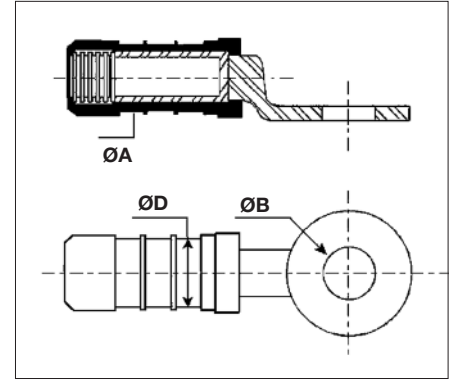
These pre-insulated lugs are suitable for insulated stranded aluminium conductors. Stripped cables are inserted up to the end. Crimping according to the marks with appropriate crimping die size over the insulation. The electrical contact and the sealing by the elastomeric ring are achieved during the crimp process. Available with aluminium palm (CPTA) and as bimetallic lug with a copper palm (CPTAU).



Type: **CPTAU**

### Features

- Suitable for stranded aluminium conductors
- Mechanical strength achieved is 50% of cable breaking load
- Tested for water tightness at a voltage of 6 kV for 30 min in a waterbath
- Three die sizes (E140, E173, E215) for all connector sizes (tools and dies see pages 52 and 53)
- Exceeds requirements according to CENELEC prEN 50483-4 class 1, NFC 33021 and ESI 43-14
- A colour code of elastomeric sealing ring allows an easy identification of the cross sections
- Inner aluminium sleeve filled with contact grease
- Insulation material made of weather and UV resistant polymer



## Waterproof pre-insulated hexagonal compression lugs

### Waterproof compression lugs

Cross section (mm <sup>2</sup> )	Ordering description	Colour code	Dimensions (mm)			Crimp die size	Weight (kg/100 pcs)
			ØA	ØB	ØD		
<b>with aluminium palms</b>							
35	CPTA 35	red	8,0	16,0	20	E173	7,0
50	CPTA 50	yellow	9,0	16,0	20	E173	7,0
54	CPTA 54	black	10,0	16,0	20	E173	7,0
70	CPTA 70	white	10,5	16,0	20	E173	7,0
95	CPTA 95 D20	grey	12,2	16,0	20	E173	6,5
150	CPTA 150-21 D20UK	violet	15,5	21,0	20	E173	7,0
<b>with copper palms (bimetallic)</b>							
16	CPTAU 16 D16	blue	5,5	10,5	16	E140	3,5
25	CPTAU 25 D16	orange	6,5	10,5	16	E140	3,0
35	CPTAU 35(trousse)	red	8,0	12,8	20	E173	7,0
50	CPTAU 50	yellow	9,0	12,8	20	E173	7,0
54	CPTAU 54	black	10,0	12,8	20	E173	7,0
70	CPTAU 70	white	10,5	12,8	20	E173	7,0
95	CPTAU 95	grey	12,2	12,8	20	E173	6,5
120	CPTAU 120 D25	pink	14,2	12,8	25	E215	13,0
150	CPTAU 150 D25	violet	15,5	12,8	25	E215	12,5

### Bimetallic washers

Ordering description	Dimensions (mm) ØB
RONDELLE 30X10,5X2 -AL/CU	10,5
RONDELLE 30X13X2 -AL/CU	12,8

## Complete termination kits – bare mechanical lugs with sealing tubing



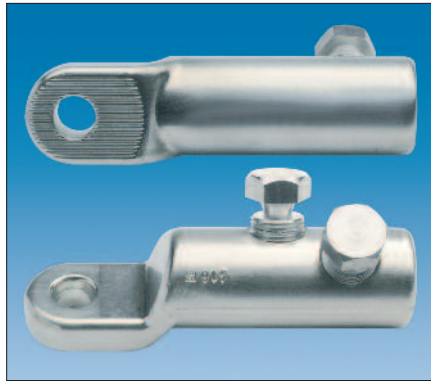
Type: **SMOE-xxxx**

### Application

These complete termination kits contain 4 pieces of mechanical lugs and 4 pieces of heat-shrinkable sealing tubing.

Included mechanical lugs are suitable for stranded or solid conductors made of either aluminium or copper. The cable insulation has to be stripped before the conductor is inserted into the lug. During an installation the bolts are being tightened with a regular spanner until the heads sheared off.

The reliable sealing between the lug and the conductor's insulation is achieved by supplied heat-shrinkable tubing. The tubing is resistant to UV-light and weathering and coated with hot-melt adhesive, which seals to all common plastics and metals.



Type: **BLMT**

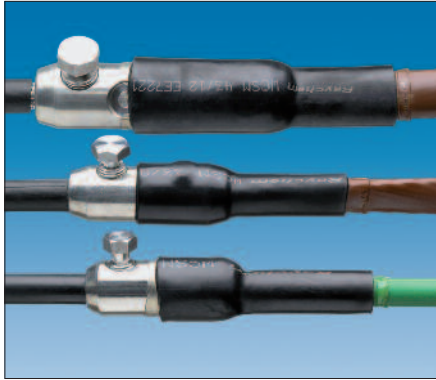
### Features

- Suitable for stranded and solid, round or sector shaped conductors
- Wide application ranges
- Lug bodies made of a high-tensile, tin-plated aluminium alloy
- Grooved internal surface of the conductor hole
- Lubricated shear bolts with predetermined shear torque made of special aluminium
- Exceeds requirements according to IEC 61238-1 class A
- Heat-shrinkable tubing, supplied with kit, ensures perfect sealing and electrical insulation

Cross section (mm <sup>2</sup> )	Ordering description	Length of sealing tubing (mm)	Hexagon contact bolts	
			Quantity (pc)	Width across flats (mm)
25 – 95	SMOE-82286	100	1	13
35 – 150	SMOE-82287	150	1	17
95 – 240	SMOE-82288	150	2	19

**Note:** Termination kits contain 4 lugs with 13 mm diameter hole in palm and 4 heat-shrinkable, sealing tubing.

## Complete connection kits – bare non-tension mechanical connectors with sealing tubing



Type: **SMOE-xxxx**

### Application

These complete connection kits contain 4 pieces of mechanical connectors and 4 pieces of heat-shrinkable sealing tubing. Included non-tension mechanical connectors are designed to connect LV ABC conductors between each other and to underground cable conductors.

The cable insulation has to be stripped before the conductor is inserted into the connector. During an installation the bolts are being tightened until the heads sheared off.

The reliable sealing between the connector and the conductor's insulation is achieved by supplied heat-shrinkable tubing. The tubing is resistant to UV-light and weathering and coated with hot-melt adhesive, which seals to all common plastics and metals.



Type: **BSM**

### Features

- Suitable for stranded and solid, round or sector shaped conductors
- Wide application ranges
- Connector bodies made of a high-tensile, tin-plated aluminium alloy
- Grooved internal surface of the conductor hole
- Lubricated shear bolts with predetermined shear torque made of special aluminium
- The BSM connectors included in connection kits (excluding SMOE-82283) exceed requirements according to IEC 61238-1 class A. The connector type BSLB (kit SMOE-82283) exceeds requirements according to DIN VDE 0220 Part1.
- Heat-shrinkable tubing, supplied with kit, ensures perfect sealing and electrical insulation



Type: **BSLB**

For cable terminations see Insulation Accessories at page 26 and 27, which include heat-shrinkable breakouts, sealing and protection tubing.

### Connection kits with connectors type BSM

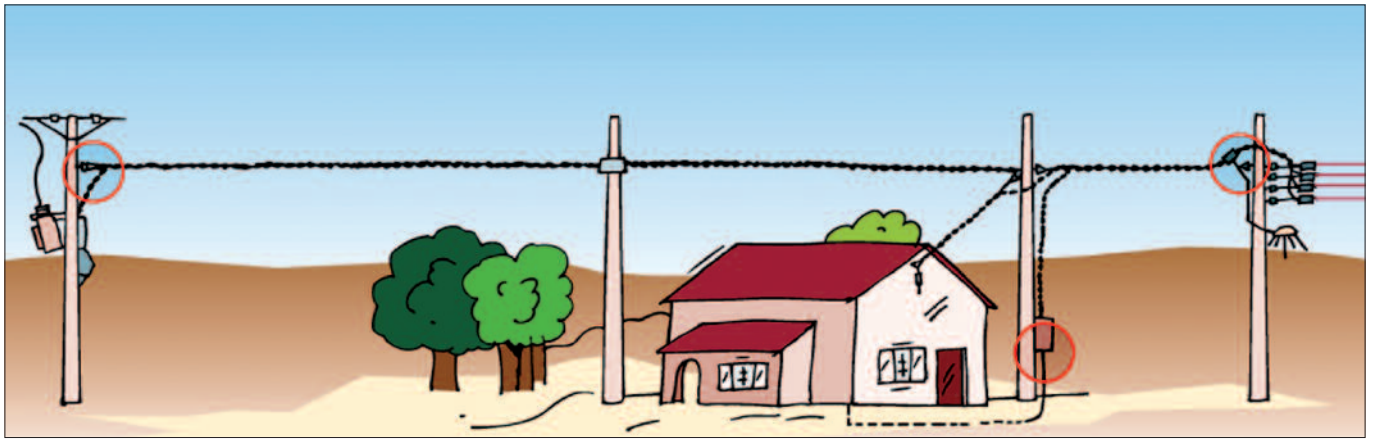
Cross section (mm <sup>2</sup> )	Ordering description	Length of sealing tubing (mm)	Hexagon contact bolts	
			Quantity (pc)	Width across flats (mm)
10 – 35	SMOE-82281	125	2	10
25 – 95	SMOE-82282	150	2	13
35 – 150	SMOE-82284	200	2	17
95 – 240	SMOE-82285	280	4	19

**Note:** All connection kits contain 4 connectors and 4 heat-shrinkable, sealing tubing.

### Connection kit with sector shaped conductor channel connector type BSLB

Cross section (mm <sup>2</sup> )	Ordering description	Length of sealing tubing (mm)	Allen contact bolts	
			Quantity (pc)	Width across flats (mm)
25 – 150	SMOE-82283	200	2	8

**Note:** The connection kit contains 4 connectors and 4 heat-shrinkable, sealing tubing.

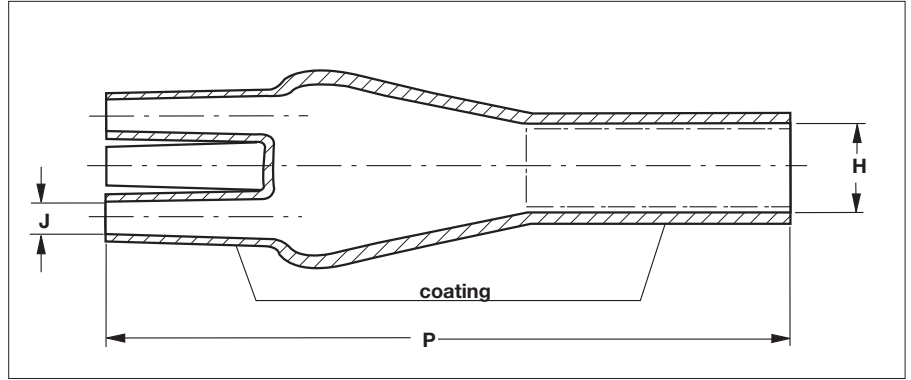
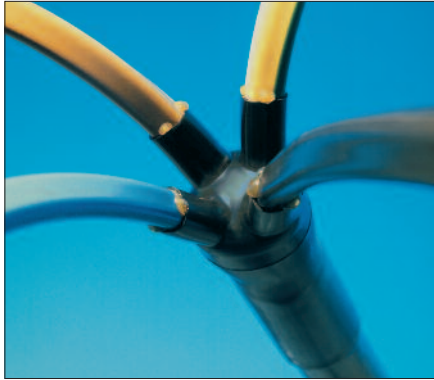


# Connection and insulation Accessories

Heat-shrinkable sealing breakouts with 2 to 5 fingers	26
Heat-shrinkable sealing, marking and protection tubing	27
Sealing end caps	28
Repair sleeves and tapes	29
Fuse cutout for services lines	31
Short-circuiting and earthing adapter and equipment	32



## Heat-shrinkable sealing breakouts with 2 to 5 fingers



Type: 502Kxxx/S

### Application

For crutches' sealing of multi-core cables, LV-ABC cables and cable entries into ducts. To seal onto all common plastics and metals, all outlets are coated with hot-melt adhesive. The breakouts are resistant to UV-light and weathering. Breakouts are available for 2, 3, 4 and 5 core cables, in a variety of sizes. For dimensional details see table below.

### Dimensions

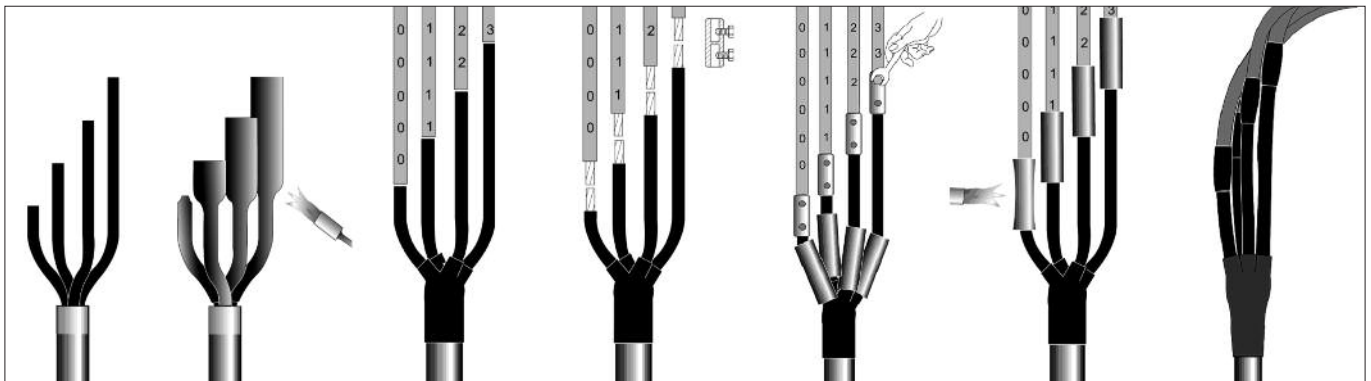
**H:** Diameter of large outlet  
**J:** Diameter of small outlets  
**P:** Length of breakout  
**a:** as delivered  
**b:** after free recovery

Number of cable cores	Recommended cross section (mm <sup>2</sup> )	Ordering description	Dimensions (mm)		J		P
			a (min.)	b (max.)	a (min.)	b (max.)	b (±10%)
2	4 – 35	302K333/S	28	9,2	15	4,1	90
	50 – 150	302K224/S	48	32	22	7	172
	150 – 400	302K466/S	86	42	40	17	200
3	4 – 35	402W533/S	38	13	16	4,2	103
	50 – 150	402W516/S	63	22	26	9	180
	95 – 500	402W526/S	95	28	44	13	205
4	1,5 – 10	502S013/S	23	9,5	7	2	60
	4 – 50	502K033/S	45	16,5	14	3,4	97
	25 – 95	502K046/S	45	19	20	7	165
	50 – 150	502K016/S	75	25	25	9	217
	120 – 400	502K026/S	100	31	40	13,5	223
4 + 1*	25** – 120	603W035/S	68	26	30*	7*	182

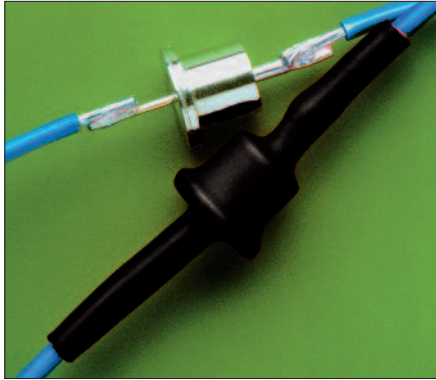
\* One of 5 outlets dim = 20/6 (mm).

\*\* for smaller cross sections use 502K033/S with 2 cores inside an outlet.

### Installation steps with typical components for transition terminations of cables to LV-ABC lines.



## Heat-shrinkable sealing, marking and protection tubing



Type: **EN-CGPT**

### Application of EN-CGPT

Thin-wall, flexible heat-shrinkable EN-CGPT tubing is uncoated and resistant to UV light and weathering. It is recommended to install it over a core insulation of terminating cables in case that is not resistant to UV light.



Type: **EN-DCPT**

### Application of EN-DCPT

As marking and protection tubing for grounding wires, cables and busbars the dual colour (yellow/green) EN-DCPT, thin wall tubing is recommended. The tubing is weathering and UV resistant.



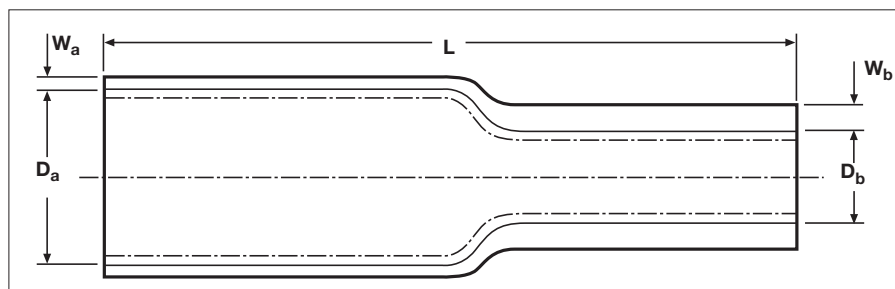
Type: **MWTM**

### Application of MWTM

Medium-wall, heat shrinkable MWTM tubing is recommended for general electrical insulation and sealing over connectors and lugs and onto the cable insulation. The tubing is resistant to UV light and weathering and coated with hot melt adhesive, which seals to all common plastics and metals.

Recommended cross section (mm <sup>2</sup> )		Application diameter (mm)		Ordering description	Dimensions (mm)				
min.	max.	min.	max.		L (nom.)	D		W	
						a (min.)	b (max.)	a (min.)	b (min.)
<b>EN-CGPT – thin wall, black, insulation and protection tubing</b>									
1,5	10	3,3	8,0	EN-CGPT-9/3-0-SP	on spool	9	3		0,75
4	35	4,5	10,5	EN-CGPT-12/4-0-SP	on spool	12	4		0,75
16	95	7,0	16,0	EN-CGPT-18/6-0-SP	on spool	18	6		0,85
35	150	9,0	21,5	EN-CGPT-24/8-0-SP	on spool	24	8		1,00
120	400	14,5	35,0	EN-CGPT-39/13-0-SP	on spool	39	13		1,15
<b>EN-DCPT – thin wall, green/yellow, marking and protection tubing for grounding wires, cables and busbars</b>									
1,5	10	3,2	5,6	EN-DCPT-6/3-45-SP	on spool	6	3		0,58
4	16	4,5	7,6	EN-DCPT-8/4-45-SP	on spool	8	4		0,64
10	25	5,5	9,5	EN-DCPT-10/5-45-SP	on spool	10	5		0,64
16	35	6,5	11,5	EN-DCPT-12/6-45-SP	on spool	12	6		0,64
50	120	10,0	18,0	EN-DCPT-19/9-45-SP	on spool	19	9		0,76
120	185	14,0	25,0	EN-DCPT-26/13-45-SP	on spool	26	13		0,89
185	400	23,0	35,0	EN-DCPT-38/19-45-SP	on spool	38	19		1,00
<b>MWTM – medium wall, black, insulation and sealing tubing</b>									
1,5	10	3,5	9,0	MWTM-10/3-1000/S	1000	10	3	0,3	1,0
4	35	5,5	14,5	MWTM-16/5-1000/S	1000	16	5	0,3	1,4
25	70	9,0	22,5	MWTM-25/8-1000/S	1000	25	8	0,4	2,0
70	150	13,0	31,5	MWTM-35/12-1000/S	1000	35	12	0,4	2,0
150	400	17,5	45,0	MWTM-50/16-1000/S	1000	50	16	0,5	2,0

**Note:** EN-CGPT and EN-DCPT tubing are delivered on spools and can be cut to desire length at site.



### Dimensions

**D:** Diameter  
**W:** Wall-thickness  
**L:** Length

**a:** as delivered  
**b:** after free recovery

Other heat-shrinkable tubing, either with or without adhesive coating, is available on request.

## Sealing end caps



Type: **CECT**

### Application of CECT

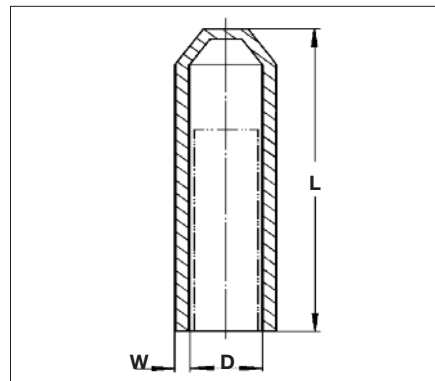
The elastomeric end caps are pre-moulded and simply pushed over the conductors. These end caps are made of thermo-plastic, UV-resistant material and fulfil voltage tests of 6 kV under water according to NFC 33020.



Type: **102L**

### Application of 102L

On the inside coated with hot-melt adhesive, the heat-shrinkable end caps are used to seal and protect the ends of insulated LV-ABC and cable conductors. Larger sizes are available to seal plastic, paper and rubber insulated cables during storage, transport and cable laying. The end caps are resistant to UV-light and weathering.



### Dimensions

**D:** Diameter

**W:** Wall-thickness

**L:** Length

**a:** as delivered

**b:** after free recovery

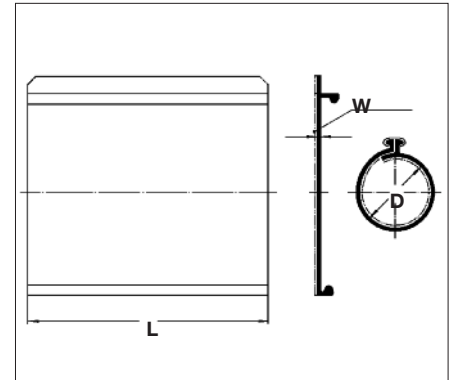
### Elastomeric end caps - CECT

Recommended cross section (mm <sup>2</sup> )	Application diameter (mm)	Ordering description
6 – 35	4,5 – 11,5	CECT 6 – 35
16 – 150	6,5 – 19,0	CECT 16 – 150

### Heat-shrinkable end caps – 102L

Recommended cross section (mm <sup>2</sup> )	Application diameter (mm)	Ordering description	Dimensions (mm)			
			D	L	W	
			a (min.)	b (max.)	b (±10 %)	b (±20 %)
4 – 25	4 – 8	102L011-R05/S	10	4	38	2,0
16 – 120	8 – 17	102L022-R05/S	20	7,5	55	2,8
120 – 300	17 – 30	102L033-R05/S	35	15	90	3,2
–	30 – 45	102L044-R05/S	55	25	143	3,9
–	45 – 65	102L048-R05/S	75	32	150	3,3
–	65 – 95	102L055-R05/S	100	45	162	3,8
–	95 – 115	102L066-R05/S	120	70	145	3,8

## Heat-shrinkable repair sleeve



Type: **CRSM**

### Application

The general purpose of CRSM wrap-around is to be used for a fast and reliable repair of polymeric insulated conductors and cable sheaths to re-established the electrical and mechanical integrity of the cable. The wraparound is supplied with an adhesive coating and is resistant to UV-light and weathering.

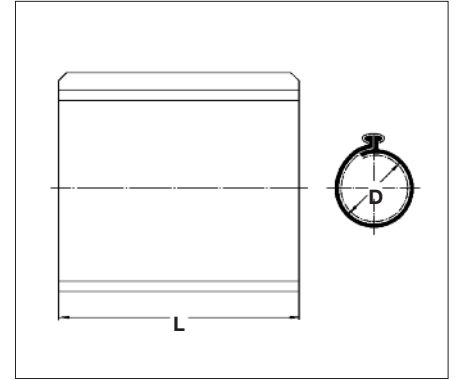
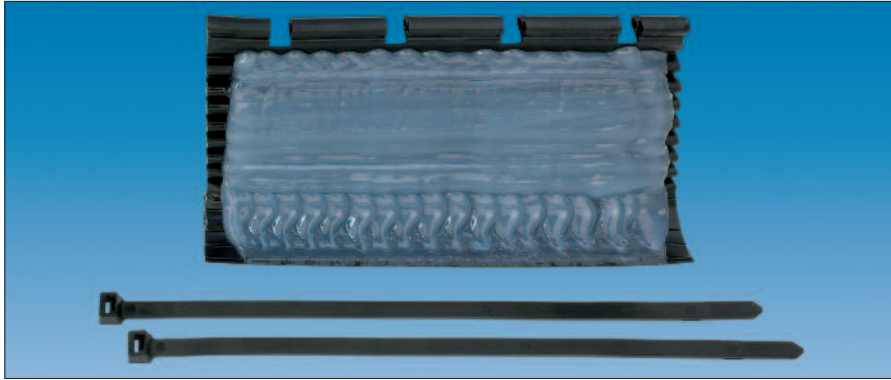
### Dimensions

**D:** Diameter  
**W:** Wall-thickness  
**L:** Length

**a:** as delivered  
**b:** after free recovery

Recommended cross section (mm <sup>2</sup> )	Application diameter (mm)	Ordering description	Dimensions (mm)				
			D		W		L
			a (min.)	b (max.)	a (min.)	b (min.)	a (±15 mm)
35 – 150	11 – 21	CRSM 34/10- 250/239	35	9	0,3	2,4	250
		CRSM 34/10- 500/239					500
		CRSM 34/10-1000/239					1000
		CRSM 34/10-1500/239					1500
70 – 400	17 – 32	CRSM 53/13- 250/239	54	15	0,3	2,0	250
		CRSM 53/13- 500/239					500
		CRSM 53/13- 750/239					750
		CRSM 53/13-1000/239					1000
		CRSM 53/13-1500/239					1500

## Gel-filled repair sleeve



Type: **GelWrap**

### Application

The GelWrap sleeve quickly and conveniently insulates and seals the connection area or the area of oversheath repair. It is simple wraparound design with dependable gel sealing performance. The sleeve is wrapped and snapped by self locking rails on any cable in the use range. Installing cable ties as a lock prevents accidental re-opening.

### Features

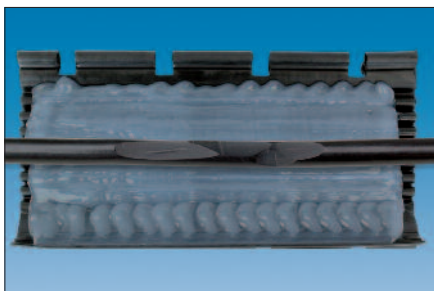
- Fast and easy installation, even when wearing insulated gloves
- Silicone gel (PowerGel) is high dielectric strength insulation and excellent water sealant
- Elastomer cover material combines outstanding tear strength, abrasion and chemical resistant
- Innovative snap-lock design with excellent flexibility and range-taking
- Resistant to UV-light and weathering

### Dimensions

- D:** Diameter
- L:** Length

Recommended cable cross section (mm <sup>2</sup> )	diameter (mm)	Ordering description	Max. dimensions (mm) connector or oversheath repair		Dimensions L x D (mm)
			Length	Diameter	
2,5 – 95	4 – 18	GELWRAP-18/ 4-150	75	25	150 x 35
2,5 – 95	4 – 18	GELWRAP-18/ 4-200	125	25	200 x 35
2,5 – 95	4 – 18	GELWRAP-18/ 4-250	150	25	250 x 35
35 – 240	10 – 33	GELWRAP-33/10-150	75	40	150 x 50
35 – 240	10 – 33	GELWRAP-33/10-200	125	40	200 x 50
35 – 240	10 – 33	GELWRAP-33/10-250	150	40	250 x 50

### Installation



Center GelWrap sleeve over connector or area of oversheath repair.

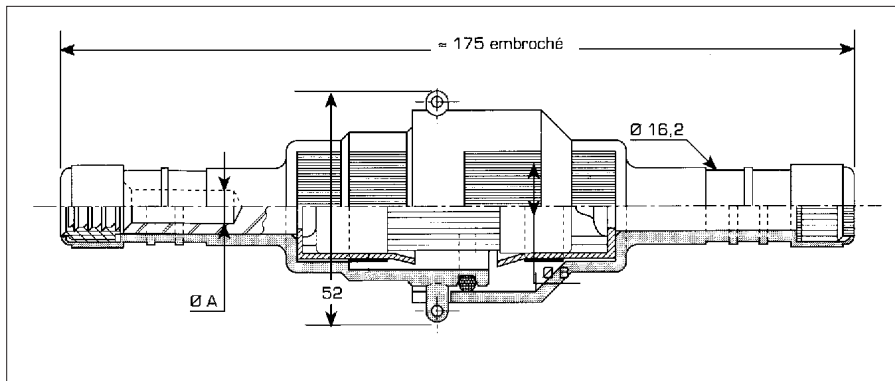


Wrap sleeve around connector or repair area and shut snap locks over entire length of sleeve.



Install cable ties at outermost notches of snap lock.

## Fuse cutout for service lines



### Application

These removable circuit breakers are installed on service lines as fuse with 4 to 125A and allow disconnection under load up to 60A. Attached sealing cap allows temporary protection access to the network side.

The connection to the service line of 6, 10, 16, or 25mm<sup>2</sup> is performed by crimping, see page 9 for crimping details.

### Features

- Suitable for 22x58 AD fuse cartridges from 4 to 155A
- Allows connection and disconnection under load up to 60A
- Passes 6 kV test under water (NF C 33020, CENELEC prEN 50483-4 class 1)
- Two part body with integrated seals easily interlock during closing
- Die size E140 for both sizes (tools and dies see page 38)
- Insulation material made of weather and UV resistant polymer

### Fuse cutouts

Cross Section (mm <sup>2</sup> )	Ordering Description	Fuse Dimensions and Size (mm) (A)		Weight (kg/100 pcs)
6	CCFBD 6- 6	22 x 58	4 - 125	13,0
10	CCFBD 10-10	22 x 58	4 - 125	13,0
16	CCFBD 16-16	22 x 58	4 - 125	12,5
25	CCFBD 25-25	22 x 58	4 - 125	12,5

### Fuse cutouts

Size (mm x mm)	Ordering Description	Rated In Current (A)	Rated Voltage (V)	Interrupting rating (A)	Weight (kg/100 pcs)
22 x 58	AD 16-22x58	16	500	80 000	12,5
22 x 58	AD 30-22x58	32	500	80 000	12,5
22 x 58	AD 60-22x58	63	500	80 000	12,5

Fuses according to IEC 269-2 and NFC 63 210, other sizes available on request

## Insulated short-circuiting and earthing adapter for piercing connectors



Type: **PMCC**

### Application

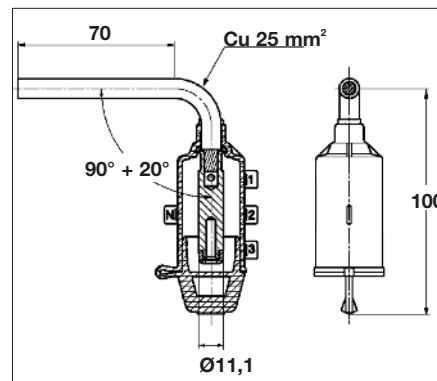
The PMCC adapter is installed on the tap-off side of an insulation piercing connector (type P2X, see page 9), usually close to the end of a line or at intersections. The insulating cover is removed for access to the inside brass stud fitted with a bayonet lock. A hole drilled into the stud provides a reliable point of contact for voltage testing. The connection to earth is done by insulated earthing equipment.



Type: **PMCC + P2X 95 Mk2**

### Features

- Suitable for all piercing connectors designed for tap conductors of 25 mm<sup>2</sup> (insulated conductor diameter of 9 mm)
- Designed for short circuit currents up to 4 kA/1s, permanent currents up to 200 A
- Phases are easily identified by phase neutral indexes (breakable flags)
- Passes 6 kV test under water



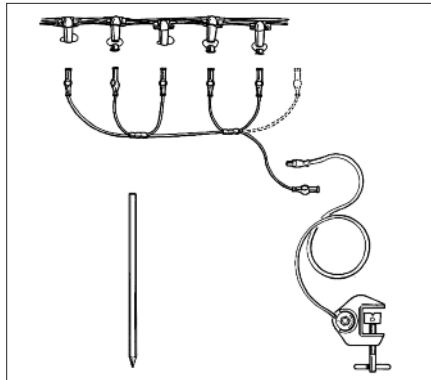
Dimensions: **mm**

(NFC 33020)

- Components not losable, cover attached to body
- Insulation material made of weather and UV resistant polymer
- Contact stud made of brass;  
Dimensions:  
Ø 11,1 mm, length 35 mm, hole 4 mm

Ordering description	Insulated conductor Cross section (mm <sup>2</sup> )	Diameter (mm)	I <sub>max</sub> (kA/1s)	Stud dimension		Weight (kg/100 pcs)
				Diameter (mm)	length (mm)	
PMCC	25	9,0	4	11,1	35	8,4

## Short-circuiting and earthing equipment



Type: **MT-207**

### Application

After checking for absence of voltage, the earthing and short circuiting equipment is connected to ground and then the studs inserted in PMCC adapters, thus following the common safety rules.

### Features

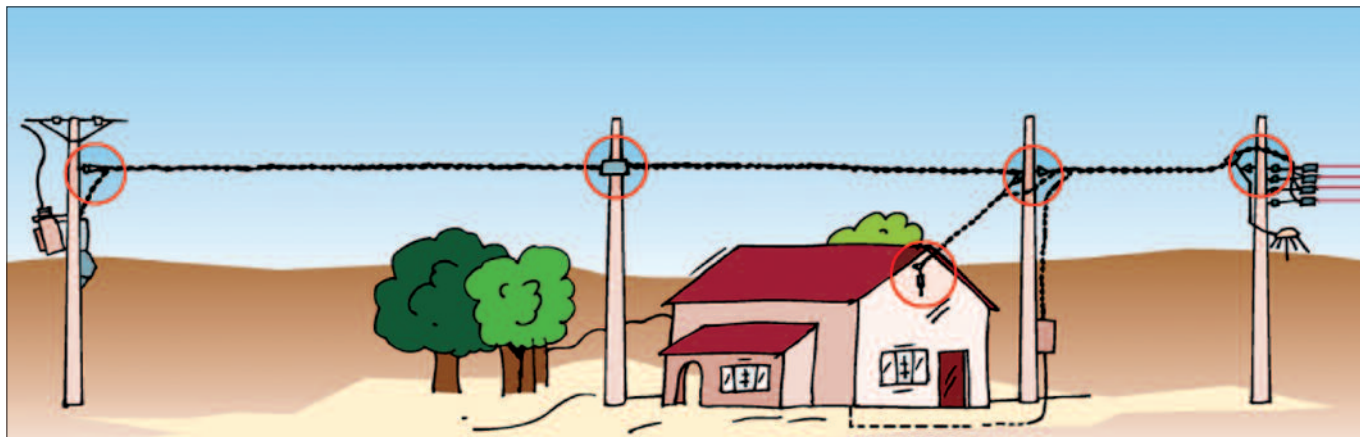
**Short-circuiting equipment** consisting of 6 or 7 stud pins with bayonet lock connected by highly flexible insulated copper cable, delivered in transport box. Conforms to EN 61230 and IEC 1230. Designed for short circuit currents up to 4 kA/1s, permanent currents up to 200 A. Contact stud dimensions Ø 11,1 mm, length 35 mm (according to NFC 33020-HT33 S69).

**Earthing equipment** consisting of an insulated splicing bayonet to connect on a stud pin, highly flexible insulated copper cable and an earth clamp for connection to an earth rod, delivered in a transport box. Designed for short circuit currents up to 4 kA/1s.

**Earthing rods** are made of stainless steel with diameter of 16 mm and length of 1 m.

Ordering description	Type	Cross section (mm <sup>2</sup> )	I <sub>max</sub> (kA/1s)	Box dimension (mm)	Weight (kg/kit)
<b>Short circuiting equipment</b>					
MT-206	6 stud pins	16	4	234 x 215 x 75	1,6
MT-207	7 stud pins	16	4	234 x 215 x 75	1,9
<b>Earthing equipment</b>					
MT-245-CATU	10 m cable	16	4	310 x 280 x 105	3,2
PT-INOX-160/AA-1M	1 m earthing rod	(Dia. 16,0 mm)	—	—	1,5





# Anchoring and suspension

## **Anchor and suspension clamps for:**

Service cables 36

Self supporting LV-ABC lines 38

LV-ABC lines with insulated neutral messenger 40

## **Anchor and suspension accessories:**

Wall mounted saddles and cable ties 42

Steel straps and protection devices 43

Hooks, brackets and bolts 44

## Anchor and suspension clamps for service cables



Type: **PA 25x100**

### Application of PA 25x100

The clamp is designed to anchor insulated service lines with 2 or 4 conductors. The clamp is composed of a body, 2 wedges and removable and adjustable bail.

### Features

- Tool free installation with wedges sliding inside the body
- Easy to open bail permits fixing to brackets and pigtails
- Adjustable length of bail in three steps, max. length of clamp 208 mm
- Exceeds requirements according to NF C 33 042
- Clamp made of weather and UV resistant polymer
- Adjustable link made of hot dip galvanized steel



Type: **PA 9-17**

### Application of PA 9-17 and PAS

The clamps are equipped with an adapted wedge for anchoring of round insulated service lines with up to 4 conductors.

### Features

- different from clamp PA 25x100
- Adjustable length of bail in four steps, max. length of clamp 220 mm



Type: **RA 25**

### Application of RA 25

The clamp is designed for suspension applications of insulated service lines with 2 or 4 conductors.

### Features

- For angles of the line up to 90°
- Tool free installation with core separator
- Easy to open bail permits fixing to brackets and pigtails
- Exceeds requirements according to NF C 33 042
- Clamp is made of weather and UV resistant polymer

### Anchor clamp for insulated overhead conductors (self-supporting)

Cross section (mm <sup>2</sup> )		Ordering description	Breaking load (kN)	Weight (kg/10 ks)
min.	max.			
2 x 16	4 x 25	PA 25x100	2,0	1,0

### Anchor clamps with rigid bail for round cables

Diameter (mm)		Ordering description	Breaking load (kN)	Weight (kg/10 ks)
min.	max.			
9	17	PA 9-17/GALVA	2,0	1,4
18	25	PAS 35	2,0	1,3

### Suspension clamp for insulated overhead conductors and cables

Cross section (mm <sup>2</sup> )		Ordering description	Breaking load (kN)	Weight (kg/10 ks)
min.	max.			
2 x 16	4 x 25	RA 25	2,0	0,9

For brackets and hooks see pages 44 and 45.

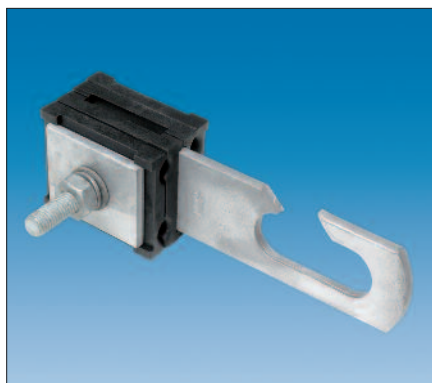
## Anchor and suspension clamps for service cables



Type: **HEL-5505**

### Application

The clamps are designed to anchor or suspend insulated service lines with 2 or 4 conductors.



Type: **HEL-5505-B**

### Features

- Clamp can be used as suspension clamp by simply rotating blocks
- Strap available either with closed eye (32,5 x 22,5 mm) or open eye (opening 18 mm)
- Simple single bolt installation with 17 mm spanner
- Clamp with short length of 165 mm
- Exceeds slipping requirements of 4 kN according to AS 3766
- Exceeds requirements according to VDE 0211
- Clamp made of weather and UV resistant glass fibre reinforced polymer and hot dip galvanized steel

### Anchor and suspension clamps for insulated overhead conductors (self-supporting)

Cross section (mm <sup>2</sup> )		Ordering description	Support strap type		Breaking load (kN)	Weight (kg/10 ks)
min.	max.		closed eye	open eye		
2 x 16	2 x 35	HEL-5505-2	X		12	4,3
2 x 16	2 x 35	HEL-5505-2B		X	5	4,3
2 x 16	4 x 35	HEL-5505	X		12	5,2
2 x 16	4 x 35	HEL-5505-B		X	5	5,2

For brackets and hooks see pages 44 and 45.

## Anchor clamps for self supporting LV-ABC lines



Type: **HEL-55xx with fixed arm**

### Application

The clamps are designed to anchor self supporting LV-ABC lines with 2 to 4 cores. The wedge type clamp is self-adjusting. Pilot wires or street lighting conductors are led alongside the clamp.

The insertion of conductors is facilitated by an integrated spring, which helps open the clamp. The version with movable arms in addition simplifies the installation.



Type: **HEL-55xx with movable arm**

### Features

- Single M12 bolt and self-locking nut allow clamp to be fixed also to closed eye screws and brackets
- Short length of approx. 320 mm
- Exceeds requirements according to ESI 43-14 and VDE 0211 and in future to CENELEC prEN 50483-2
- Clamp made of weather and UV-light resistant glass fibre reinforced polymer and hot dip galvanized steel

Cross section (mm <sup>2</sup> )	Ordering description	Breaking load (kN)	Weight (kg/10 ks)
<b>with fixed arm</b>			
4 x 10 – 35	HEL-5505*	12,0	5,2
4 x 25 – 50	HEL-5506	28,0	10,0
4 x 70 – 95	HEL-5507	43,0	11,0
4 x 120	PA 4 120	60,0	20,0
<b>with movable arm</b>			
4 x 25 – 50	HEL-5503	28,0	10,0
4 x 70 – 95	HEL-5504	43,0	11,0

\* For detailed information about HEL-5505, please see page 37.

For brackets and hooks see pages 44 and 45.

## Suspension clamps for self supporting LV-ABC lines



Type: **PS-xxx**



Type: **USC 25-120**



Type: **RSC 25-120**

### Application

The clamps are designed to suspend self supporting LV-ABC lines. They can be also used for LV-ABC lines with bare and insulated neutral messenger.

### Features

#### Suspension clamp PS

- Can be installed in straight direction and in line deviation angle up to 30°
- Tool free installation, equipped with wing nut
- Exceeds requirements according to ESI 43-14 and VDE 0211
- Made of weather and UV-light resistant elastomer and hot dip galvanized steel
- Fits to hooks and pigtails up to a diameter of 21 mm
- Operating load 2,5 kN

#### Universal suspension clamp USC

- Range taking: 4 x 25-120 mm<sup>2</sup>
- Can be installed in straight direction and in line deviation angle up to 40° for 4 x 25 – 50 mm<sup>2</sup> and up to 20° for 4 x 70 – 120 mm<sup>2</sup>
- Qualified according to CENELEC prEN 50483-2
- Reopen clamp allows easy positioning of the cables
- Fits to all common hooks and pigtails
- Not lose parts
- Made of weather and UV-light resistant thermoplastic and steel with Geomet (Chromium free) protection
- Versions with shear head and wing nuts are available on request

#### Rolling suspension clamp RSC

- Deviation angle up to 90°
- Assembly rolls can be used to run out a conductor during line mounting
- Not lose parts
- Made of weather and UV-light resistant elastomer and hot dip galvanized steel
- Equipped with a stainless steel reinforced ring in the hook attachment
- Easy to install with a spanner
- Fits to hooks and pigtails up to a diameter of 20 mm

Cross section (mm <sup>2</sup> )	Bundle diameter (mm)	Ordering description	Breaking load (kN)	Weight (kg/10 ks)
<b>Suspension clamps</b>				
2 x 50 – 4 x 35	21 – 25	PS 250/435	7,5	4,1
2 x 95 – 4 x 50	26 – 30	PS 450	7,5	3,8
4 x 70	31 – 35	PS 470	7,5	3,6
4 x 95	36 – 40	PS 495	7,5	3,5
4 x 120	40 – 43	PS 4120	7,5	4,4
<b>Universal suspension clamp</b>				
4 x 25 – 120 + 2 x 25	up to 42	USC 25-120	18,0	5,0
<b>Rolling suspension clamp</b>				
4 x 25 – 120 + 2 x 25	22 – 42	RSC 25-120	2,4*	5,0

\* Slippage load

For brackets and hooks see pages 44 and 45.

## Anchor clamps for LV-ABC lines with insulated neutral messenger

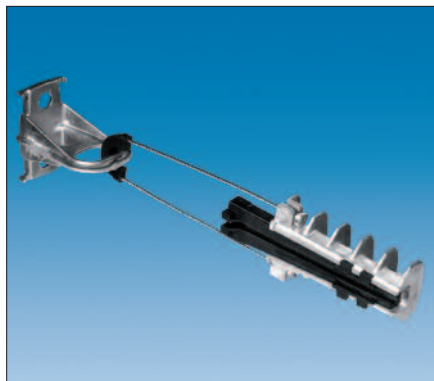


Type: PA 1500x20

### Application

The clamps are designed to anchor LV-ABC lines with insulated neutral messenger. The clamp consists of an aluminium alloy cast body and self-adjusting plastic wedges which clamp the neutral messenger without damaging its insulation.

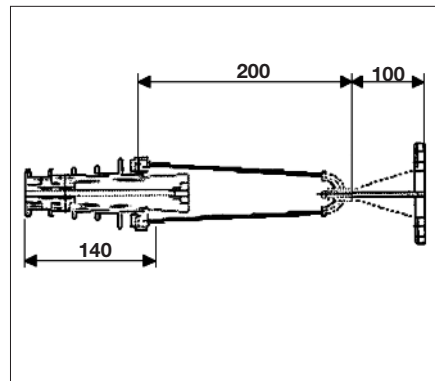
The flexible stainless steel bail protected by plastic wear-resistant saddle allows installations of up to 3 clamps on a bracket. The clamp and the bracket are available either separately or together as assembly.



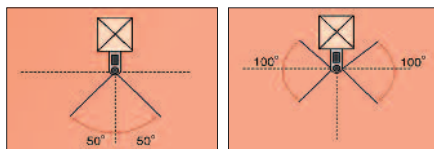
Type: EA xxxx

### Features

- Tool free installation
- Not lose parts
- Exceeds requirements according to GENELEC prEN 50483-2 and NFC 33 041 and 042
- Clamp body made of corrosion resistant aluminium alloy, bail of stainless steel, wedges of weather and UV resistant polymer
- Universal fixing of bracket by 2 bolts M14 or stainless steel straps of 20 x 0,7 mm.
- Bracket made of corrosion resistant aluminium alloy
- Maximum line deviation angles of 50° for single and 100° for double anchoring:



Dimensions: mm



Neutral messenger Cross section (mm <sup>2</sup> )	Diameter (mm)	Ordering description	Breaking load (kN)	Weight (kg/10 ks)
<b>Anchor clamp without bracket</b>				
25 – 35	8 – 11	PA 1000	10,0	3,2
50 – 70	12 – 14	PA 1500x20	15,0	3,4
50 – 70	12 – 14	PA 2000	20,0	4,1
95	14 – 16	PA 95-2000	20,0	4,1
<b>Anchor clamp with bracket</b>				
25 – 35	8 – 11	EA 1000	10,0	5,7
50 – 70	12 – 14	EA 1500	15,0	5,9
50 – 70	12 – 14	EA 2000	20,0	6,4
95	14 – 16	EA 95-2000	20,0	6,4
<b>Bracket</b>				
–	–	CA 1500-2	15,0	2,0
–	–	CA 1500/2000	20,0	2,3

For brackets and hooks see pages 44 and 45.

## Suspension clamps for LV-ABC lines with insulated neutral messenger



Type: **ES 1500 25-95**

### Application

The clamps are designed to suspend LV-ABC lines with insulated neutral messengers. The neutral messenger is fixed by an adjustable grip device. A movable link allows longitudinal and transversal movement of the clamp body.

Standard clamp version ES is supplied with preinstalled bracket. The upper bulge of the bracket prevents the clamp from turning over the bracket.

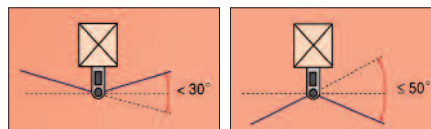
The clamps are also available without bracket (version PS) and with a fuse link (ESF). PS clamps are fixed to a pole by a pig tail hook or bracket.



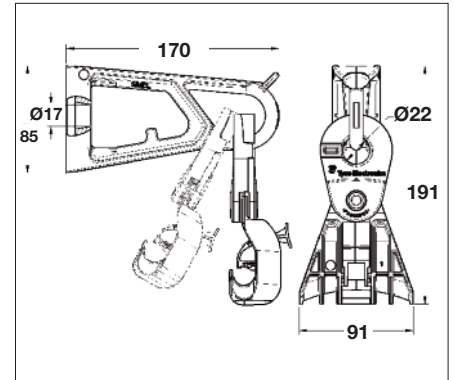
Type: **PS 1500+LM25-95**

### Features

- Tool free installation
- Not lose parts
- Clamp and link made of polymer giving an additional insulation between the cable and the pole.
- Exceeds requirements according to CENELEC EN 50483-3 and NFC 33 040
- Clamp and movable link made of weather and UV-light resistant glass fiber reinforced polymer
- Universal fixing of bracket by 1 bolt M16 or 2 stainless steel straps of 20 x 0,7 mm
- Bracket made of corrosion resistant aluminium alloy
- Maximum line deviation angles of 30° towards the pole and up to 50° pulling away form the pole:



(For larger line deviation angles 2 anchor clamps shall be used)



Dimensions: **mm**

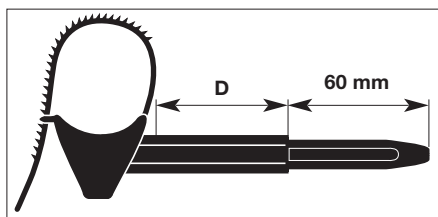
Neutral messenger Cross section (mm <sup>2</sup> )	Diameter (mm)	Ordering description	Breaking load (kN)	Hole diameter max. (mm)	Weight (kg/10 pcs)
<b>Clamp without bracket and mobile link</b>					
16 – 35	8 – 11	PS 35	4,3	25,0	0,8
95 – 120	15 – 17,5	PS 120	30,0	25,0	2,5
<b>Clamp without bracket with mobile link</b>					
25 – 95	8,3 – 16,3	PS 1500+LMx25-95	12,0	22,0	1,6
<b>Clamp with pre-installed bracket</b>					
16 – 35	8 – 11	ES 35-1500	4,3	–	2,8
25 – 95	8,3 – 16,3	ES 1500 25-95	12,0	–	3,5
25 – 95	8,5 – 16,3	ES 95-2000	16,0	–	4,2
<b>Clamp with bracket and fuse link</b>					
50 – 70	10 – 13,5	ESF 54/70	7,0	–	3,2

**Note:** For other cable dimensions see also suspension clamps for self supporting LV-ABC lines at page 39.

For brackets and hooks see pages 44 and 45.



## Wall mounted saddles and cable ties for LV-ABC lines



Type: **BRPF**

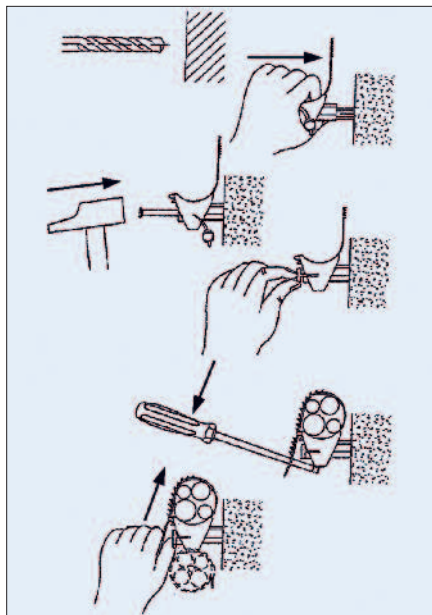
### Application

The wall mounted saddles are designed to install LV-ABC lines (self-supporting or insulated neutral messenger type) alongside walls and poles.

The LV-ABC cable is fixed to the saddle by a cable tie. A second cable can be installed on the same support by hanging it down from the bottom side with an additional cable tie (to be ordered separately).

### Features

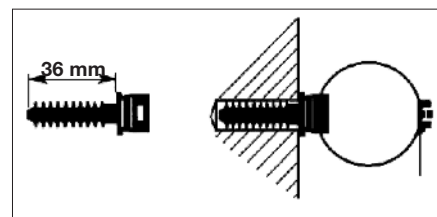
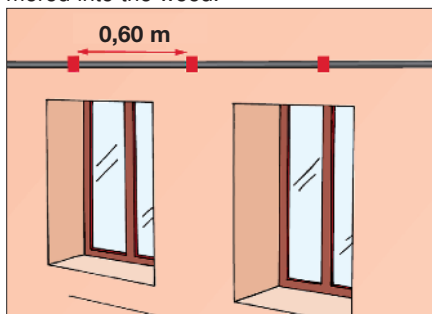
- The body of saddles and the cable ties are made of weather and UV-light resistant polymer material
- Width of cable ties 9 mm
- Black colour
- Halogen free and flame retarded
- Temperature ranges:  
operating  $-50\text{ }^{\circ}\text{C}$  to  $+80\text{ }^{\circ}\text{C}$   
installation  $-15\text{ }^{\circ}\text{C}$  to  $+60\text{ }^{\circ}\text{C}$   
max. allowed peak  $120\text{ }^{\circ}\text{C}$



Type: **BRPF**

### Installation

The expansion plastic pin is inserted in a drilled hole of  $\text{Ø} 12\text{ mm}$  and fixed to a wall by hammering a nail inside up to the contact with the pin. The plastic cap is placed over the nail's head for its protection. The cable tie fixes a variety of cables to the saddle. Usually, every 0,6 m a saddle is installed on a wall. For applications on walls or poles with soft material like wood, the expansion plug is simply cut off and the nail directly hammered into the wood.



Type: **CSBF-C**

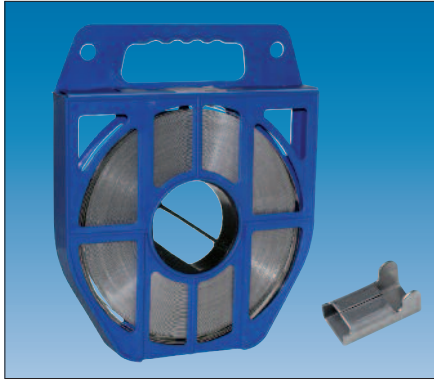
### Application

The CSBF-C is holding assembly mainly used to clamp a cable to walls. It consists of a cable tie CSB and a hammer-in support for drilled holes in walls ( $\text{Ø} 8\text{ mm}$ ).

Cable diameter (mm)	Ordering description	Spacing to wall D (mm)	Length (mm)	Breaking load (kN)	Weight (kg/10 ks)
<b>Wall mounted saddles</b>					
20 – 60	BRPF 1	10	–	2,0	4,8
20 – 60	BRPF 6	60	–	2,0	8,2
<b>Holding assembly with cable tie</b>					
10 – 40	CSBF-C	–	180	–	0,5
<b>Cable ties</b>					
8 – 27	CS 922	–	132	0,35	1,8
10 – 45	CSB	–	180	0,35	2,6
26 – 66	CSL 260	–	265	0,51	3,6
55 – 93	CSL 350	–	360	0,51	5,0

For plastic tie installation tool see page 50.

## Steel straps and protection devices for LV-ABC lines



Type: **RF 1007, A 100**

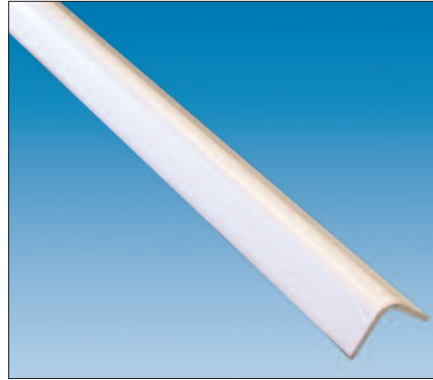
### Application

Stainless steel straps are used to attach cable protection, anchoring and suspension assemblies and other devices mainly to poles.

The steel straps are cut from a roll to the required length. The strap is fixed with the appropriate buckle and a binding tool.

### Features

- stainless steel grade 202
- min. breaking strength 0,6 kN/mm<sup>2</sup>
- width of 10 and 20 mm
- thickness of 0,4 and 0,7 mm
- rolls of 50 m in carrier case



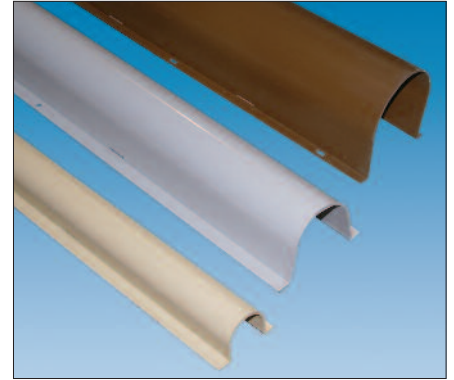
Type: **GPT**

### Application

Extruded PVC profiles GPT and GPC are used to protect cables and conductors against damages alongside poles or walls.

### Features

- type GPT 30 x 30 mm to be fixed by straps
- type GPC to be fixed either by screws Ø 6 mm (hole Ø 7 mm) or straps (slit approx. 3 x 30 mm)
- available in 3 colours



Type: **GPC**

Ordering description	Application	Dimensions (mm)	Packaging unit	Weight (kg/unit)
<b>Stainless steel straps</b>				
RF 1004 50M		10 x 0,4	1 roll of 50 m	1,8
RF 1007 50M		10 x 0,7	1 roll of 50 m	3,0
RF 2004 50M		20 x 0,4	1 roll of 50 m	3,4
RF 2007 50M		20 x 0,7	1 roll of 50 m	5,7
<b>Buckles for straps</b>				
A 100	for RF 1000 series	11	1 bag of 100 buckles	0,5
A 200	for RF 2000 series	21	1 bag of 100 buckles	1,1
<b>*Extruded PVC cable protection</b>				
GPT 30x30 L2600	grounding conductors	30 x 30 x 2600		0,6
GPC 35x35 L2750	low voltage cables	35 x 35 x 2750		1,2
GPC 60x60 L2750	low voltage cables	60 x 60 x 2750		1,9
GPC 90x90 L2750	low/medium voltage cables	90 x 90 x 2750		2,6

\* Standard colour is Gray. Colours of Ivory and Brown hue are available upon request.

Tools for steel straps see page 50.

## Hooks, brackets and bolts for LV-ABC lines

### Type

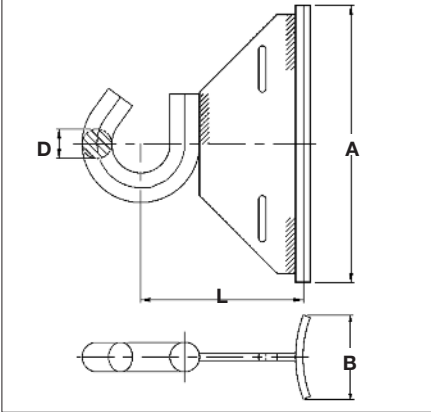
#### CA 1500, CA 2000



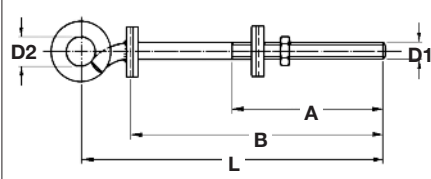
#### CAB 25



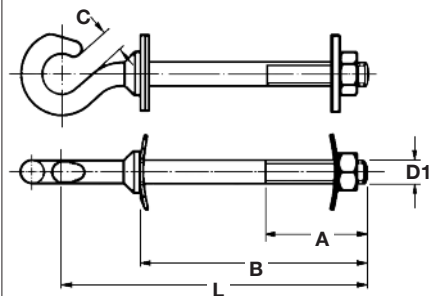
#### HEL-5661



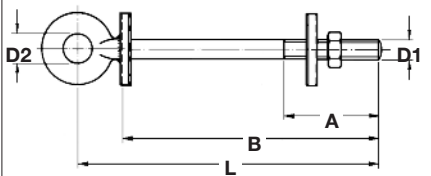
#### HEL-553x/4x



#### HEL-555x



#### HEL-556x/7x



### Application

#### Anchor bracket CA xxxx:

made of aluminium alloy designed for main cables. To be mounted by 2 steel straps (20 mm) or up to 2 bolts ( $\varnothing$  14 or 16 mm).

Ordering description	Breaking load (kN)	Operating load (kN)	Weight (kg/10 pcs)
CA 1500-2	15,0	5,0	2,0
CA 1500/2000	20,0	5,0	2,3

#### Anchor bracket CAB 25:

made of stainless steel designed for service cables. To be mounted by a steel strap (20 mm), a bolt ( $\varnothing$  14 or 16 mm) or 4 screws ( $\varnothing$  5 mm).

Ordering description	Breaking load (kN)	Operating load (kN)	Weight (kg/10 pcs)
CAB 25	2,0	0,8	0,2

#### Hook plate HEL-5661:

made of galvanized steel designed for main cables. To be mounted to poles by 2 steel straps (20 mm). Breaking loads of min. 28 kN horizontal and 18 kN vertical.

Ordering description	A (mm)	B (mm)	L (mm)	D (mm)	Weight (kg/pc)
HEL-5661	150	54	91	16	0,8

#### Spiral hooks, hook bolts, strain eye bolts HEL-55xx:

made of hot-dip galvanized steel designed for main and service clamps. Fixed length by welded, flat or bended washers. Max. loads of spiral and bolt hook versions for bolt size of M16 (M20) are 5,5 (13) kN horizontal and vertical. Max. loads for strain eye versions for bolt size of M16 (M20) are 40 (40) kN horizontal and 7 (15) kN vertical.

Ordering description	A (mm)	B (mm)	L (mm)	D1 (mm)	D2/C (mm)	Weight (kg/pc)
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#### Spiral hooks

HEL-5531	80	240	295	M16	30	0,9
HEL-5532	80	240	340	M16	30	1,0
HEL-5534	80	300	400	M16	30	1,2
HEL-5541	100	240	295	M20	30	1,3
HEL-5543	100	300	355	M20	30	1,5

#### Hook bolts

HEL-5551	80	240	300	M16	17/21	0,7
HEL-5552	80	300	360	M16	17/21	0,8
HEL-5556	80	240	300	M20	17/21	1,1

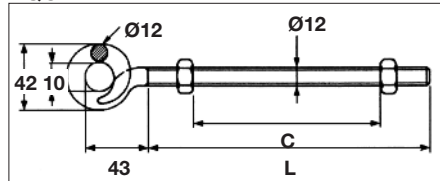
#### Strain eye bolts

HEL-5561	80	240	290	M16	22	0,9
HEL-5562	80	240	340	M16	22	1,0
HEL-5574	100	300	400	M20	22	1,7

## Hooks, brackets and bolts for LV-ABC lines

### Type

#### BQC



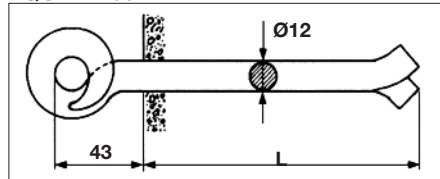
### Application

#### Spiral hook BQC:

made of hot-dip galvanized steel designed for service clamps and max. operating loads of 2 kN horizontal and 0,4 kN vertical. Freely adjustable fixing length by 2 nuts.

Ordering description	L (mm)	C <sub>max</sub> (mm)	Weight (kg/10 pcs)
BQC 12- 55	55	45	1,8
BQC 12-250	250	220	3,2
BQC 12-300	300	270	3,6

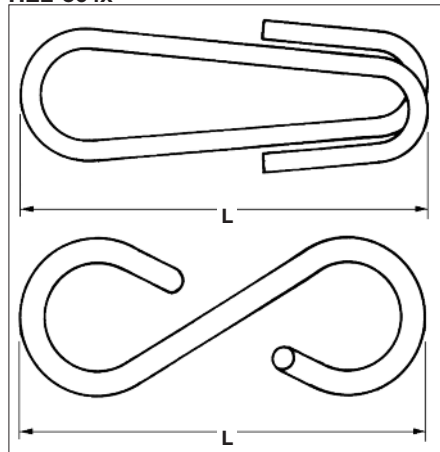
#### TQC 12-150



#### Spiral hook TQC 12-150:

made of hot-dip galvanized steel designed to anchor service dead end and suspension clamps to walls and max. operating loads of 2 kN horizontal and 0,4 kN vertical. Weight of 0,25 kg/pc, length L = 150 mm.

#### HEL-564x



#### Weak link hooks HEL-564x:

are used as hangers between the pole support fitting and the anchor or suspension clamp in areas where damage to the LV-ABC line could be expected from falling trees. Weak links withstand normal working loads but the controlled failure mechanism releases the cable in the event of overloads, enabling the cable to drop to the ground.

Ordering description	Breaking load (kN)	L (mm)	Weight (kg/10 pcs)
HEL-5641	4,0 ±10%	90	0,8
HEL-5642	8,0 ±10%	90	1,2

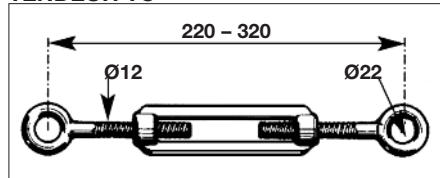
#### CPA 25



#### Anchoring clamp hook CPA 25:

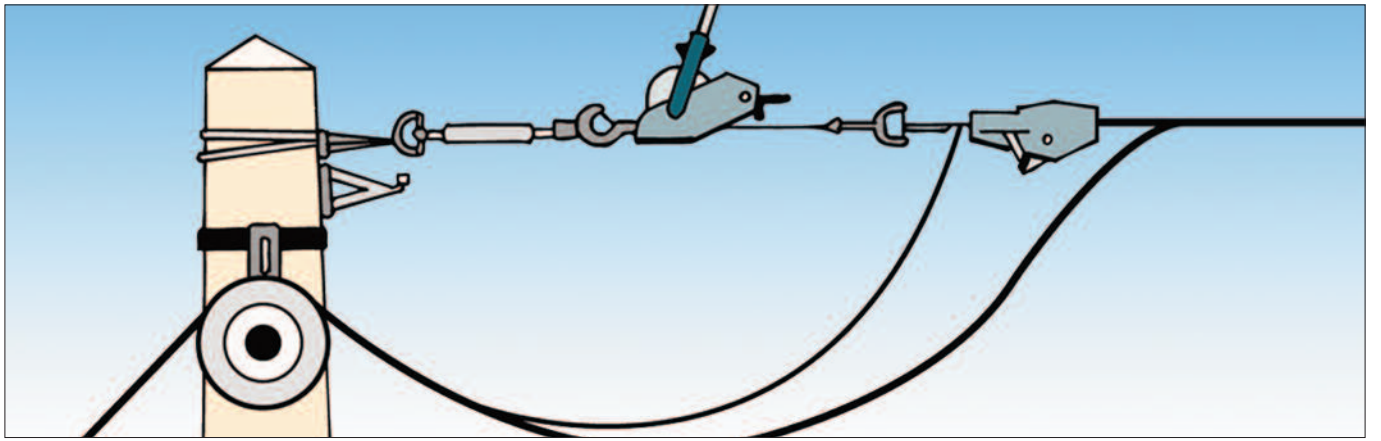
with 28 mm opening is used as hanger between the fixed support fitting and the anchor clamp for service cables, made of weather and UV resistant polymer material. It has a breaking load of 2 kN and recommended operating load of 0,8 kN, the weight is approx. 0,05 kg/pc. The hook allows remote operation in areas not allowed for live line working.

#### TENDEUR TC



#### Turnbuckle:

with closed eyes (22 mm) and an adjustable length of from 220 mm to 320 mm. Made of hot-dip galvanized steel with the eye thickness of 12 mm, breaking load of 8 kN and a weight of 0,6 kg/pc.



# Installation tools and equipment

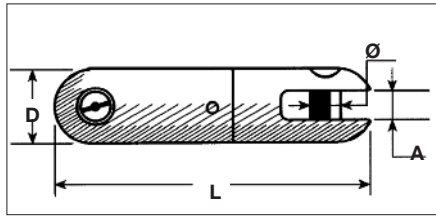
## Tools and equipment for:

Setting up LV-ABC lines	48
Installation of stainless steel straps and cable ties	50
Connecting LV-ABC lines	51
Compression connection of LV-ABC lines	52

## Tools and equipment for setting up LV-ABC lines

### Cable grip components and assemblies

#### EMD 15

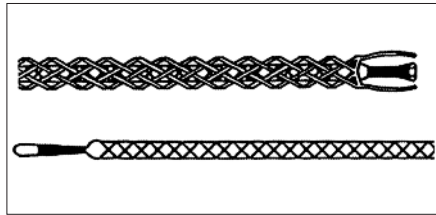


#### Swivel EMD 15:

Used with pulling socks to eliminate twist. Max. load 15 kN.

Dimensions (mm): D = 16, L = 122, Ø = 12, A = 16

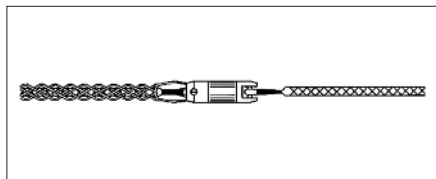
#### TCSB, DUL-NLV



#### Pulling socks TCSB, DUL-NLV:

Ordering description	Cross section (mm <sup>2</sup> )	Diameter (mm)	Length (mm)	Max. load (kN)
<b>for neutral messenger and ropes, made of galv. steel, single eyed</b>				
TCSB 15	54- 70	10-15	500	5
TCSB 20	95-120	15-18	500	5
<b>for protection of cables with neutral messenger, made of rilsan, single eyed</b>				
TCSB 38	3x 70+54	30-38	750	5
TCSB 50	3x150+70	40-50	900	5
<b>for self supporting cables, made of nylon strands, double soft eyes with alloy ferrules</b>				
DUL-NLV435	4x 35	25±1	550	15
DUL-NLV470	4x 70	32±1	600	15
DUL-NLV495	4x 95	39±1	600	15
DUL-NLV4150	4x150	44±1	600	15

#### ETC



#### Complete cable grip assemblies ETC:

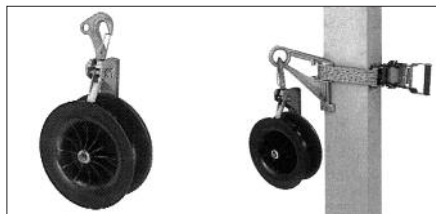
for cables with insulated neutral messenger.

Ordering description	Cross section (mm <sup>2</sup> )	Components
ETC 70	up to 3 x 70 + 54	2 x TCSB15 + TCSB 38 + EMD15
ETC 150	3 x 70 + 54 to 3 x 150 + 70	2 x TCSB15 + TCSB 50 + EMD15

### Stringing blocks and accessories

#### PO 1000

#### "EDD 1000"



#### Stringing block PO 1000:

consisting of plastic coated pulley and suspension hook.

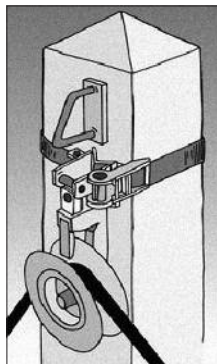
Max. acceptable cable diameter: 50 mm

Max. load: 10 kN

Weight: 2,3 kg

**Suspension assembly PO 1000 + SPC12 (=EDD 1000):** consisting of stringing block and 1,2 m long strap.

#### EDD 1700



#### Stringing block EDD 1700:

consisting of plastic coated pulley, suspension assembly and strap with clamping device.

Max. acceptable cable diameter: 50 mm

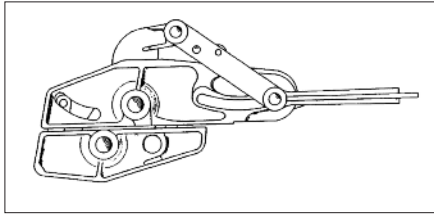
Max. load: 17 kN

Weight: 10,7 kg

## Tools and equipment for setting up LV-ABC lines

### Pulling equipment

#### SCT



#### Pulling equipment SCT:

designed for LV-ABC lines with insulated neutral messenger. The lever automatically actuated converts the pulling force into a clamping force. The usage of the long aluminium jaws prevents damage to the aluminium or aluminium alloy cables.

Ordering description	Cross section (mm <sup>2</sup> )	Diameter (mm)	Clamp length (mm)	Load max. (kN)	Weight (kg/pc)
SCT 13	up to 54	6 – 13,5	160	8	1,6
SCT 20	70 – 120	10 – 20	175	17	4,1

#### EM

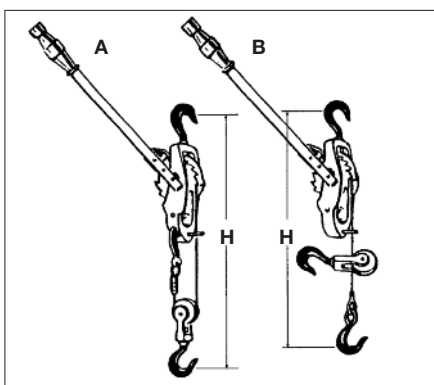


#### Pulling equipment EM:

designed for self-supporting LV-ABC lines.

Ordering description	Cross section (mm <sup>2</sup> )	Max. load (kN)	Weight (kg/pc)
EM35	2 x 25 – 35 + 4 x 16 -50	5,9	3,2
EM5095	4 x 50 – 95	7,8	5,8
EM95150	4 x 95 – 150	9,0	6,5

#### PTC

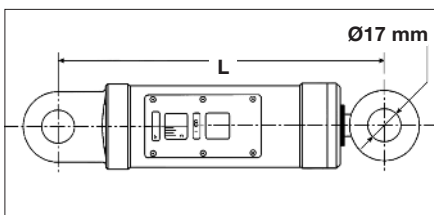


#### Lightweight cable hoist and pulling tool with hook pulley PTC:

for block or return, user-friendly handling by reversible lever with limited manual force (approx. 0,4 kN) and supporting reversible action.

Ordering description	Hook setup A			Hook setup B			Weight (kg/pc)
	Load max. (kN)	Length H (mm)		Load max. (kN)	Length H (mm)		
PTC 750	7,5	560	2860	3,8	430	5030	4,3
PTC 1000	10,0	550	2550	5,0	420	4420	4,2
PTC 1600	16,0	660	3960	8,0	470	7070	6,2

#### DY



#### Dynamometer DY:

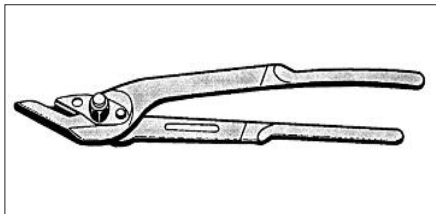
is lightweight and small with high accuracy (0,6 %) due to a spring washer system. No torsion or bending stresses permitted, use of swivel recommended.

Ordering description	Load max. (kN)	Scale (kN) (mm)		Travel max. (mm)	Length L (mm)	Weight (kg/pc)
DY 50	5	0,10	2,0	10	230	1,8
DY 100	10	0,20	2,0	9	230	1,8
DY 200	20	0,25	2,3	–	327	7,8



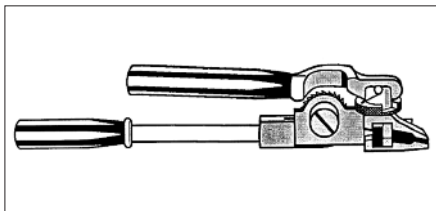
## Tools for installation of stainless steel straps and cable ties

**OPC**



Strap cutter **OPC**

**OPL**



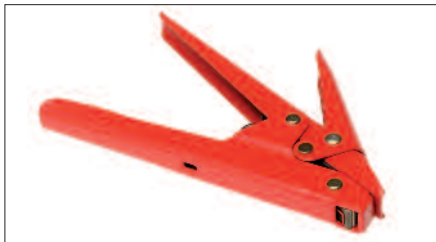
Ratchet type strap binding tool **OPL**

**OPV**



Wheel type strap binding tool **OPV**

**CABLE TY TOOL**



**CABLE TY TOOL**

Hand tool for bundling of heavy duty ties, user controlled tension and cut-off device, for cable ties of width from 6,0 to 9,0 mm.

## Tools for connecting LV-ABC lines

### EXRM-0607



**Cable knife EXRM-0607:**  
with fixed blade, length: 175 mm.

### DCS BT



**Insulation stripping tool DCS BT:**  
designed for LV-ABC cables from 16 mm<sup>2</sup> up to 150 mm<sup>2</sup> according to HD 626.

### IT-1000-022



**T-wrench IT-1000-022:**  
fully insulated hexagon head for allen screws.

Ordering description	Width of allen screw across flats (mm)
IT-1000-022-4	4
IT-1000-022-5	5
IT-1000-022-6	6
IT-1000-022-8	8

### CLESIM 2



**Ratchet wrench CLESIM 2:**  
fully insulated for sockets for allen screw and hexagon bolt.

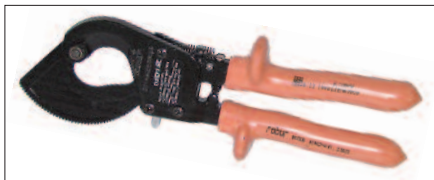
Ordering description	Ratchet wrench with socket for
CLESIM 2 + RT5	allen screw with 5 mm width across flats
CLESIM 2 + R10	hexagon bolt with 10 mm width across flats
CLESIM 2 + R13	hexagon bolt with 13 mm width across flats

### SERSIM 2



**Carrying case SERSIM 2:**  
includes one CLESIM 2 ratchet wrench and sockets RT5, R10 and R13.

### KR 240



**Ratchet cable cutter KR 240:**  
designed for both aluminium and copper conductors. For ordering description of fully insulated version use: **KR 240 ISO**.

Type of conductor	Application range of diameter (mm)
stranded	6 – 32
solid	6 – 26

### FH-1630-S-TS1



**Torch assembly FH-1630-S-TS1:**  
consists of a torch handle with holder and shut-off valve, a nozzle (38 mm) optimized for heat-shrink applications and a 5 m long pressure hose with DIN connection thread R 3/8" LH.

## Compression tools for connecting LV-ABC lines

### SIMPI



#### Manual compression tool SIMPI:

equipped with die E140, for cross sections up to 35 mm<sup>2</sup>.

#### HOLSTER SIMPI:

Holster for tool SIMPI, to be ordered separately.

### SIMABLOC 55



#### Manual operated, hydraulic compression tool SIMABLOC 55:

designed for removable dies (type 4E and 5E) for cross sections up to 95 mm<sup>2</sup>.  
Max. pressure force of 50 kN.

#### SIMABLOC 55 + CR:

Compression tool together with carrying case.

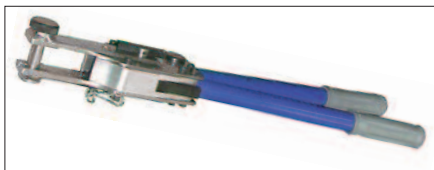
### AUTOPRESS 55



#### Battery operated, hydraulic compression tool AUTOPRESS 55:

designed for removable dies (type 4E and 5E) for cross sections up to 95 mm<sup>2</sup>.  
Max. pressure force of 50 kN. Supplied together with carrying case, battery and charger.

### SIMECA



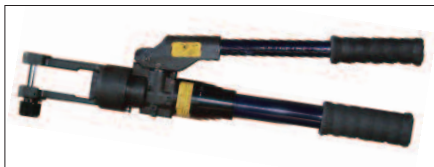
#### Manual compression tool SIMECA:

designed for removable dies (French type 7E) for cross sections up to 150 mm<sup>2</sup>.  
Max. pressure force of 70 kN.

#### COFFRET SIMECA:

Carrying case for tool SIMECA, to be ordered separately.

### SIMABLOC 80



#### Manual operated, hydraulic compression tool SIMABLOC 80:

designed for removable dies (type 7E) for cross sections up to 150 mm<sup>2</sup>.  
Max. pressure force of 80 kN.

#### SIMABLOC 80 + CR:

Compression tool together with carrying case.

### SIMABLOC C120



#### Manual operated, hydraulic compression tool SIMABLOC C120:

designed for removable dies (type 12SE) for cross sections up to 240 mm<sup>2</sup>.  
Max. pressure force of 120 kN.

#### SIMABLOC C120 + CR:

Compression tool together with carrying case.

### SIMABLOC U120



#### Manual operated, hydraulic compression tool SIMABLOC U120:

designed for removable dies (type 13UE) for cross sections up to 240 mm<sup>2</sup>.  
Max. pressure force of 120 kN.

#### SIMABLOC U120 + CR:

Compression tool together with carrying case.

## Compression dies for connecting LV-ABC lines

Hexagonal compression dies according to NFC 33021 for aluminium and copper conductors



Die Code	Diameter (mm)/ Cross sections (mm <sup>2</sup> )	Type of Compression Tool					
		SIMPI	SIMABLOC 55 AUTO- PRESS 55	SIMA- BLOC 80 SIMECA	SIMA- BLOC C120	SIMA- BLOC U120	Klauke/ HK 5/22, HK 60/22 EK 22, EK 60 UNV
E140*	16/ 4 – 35	included	4E140-E83	7E173-E140	12SE140-9	13UE140-9	E22/140
E173	20/ 16 – 95	–	4E173	7E173-E140	12SE173-9	13UE173-9	E22/173
E215	25/120 – 150	–	5E215	7E215	12SE215-9	13UE215-9	E22/215

\* Die code E140 typically for application on connectors' type of MJPB., E173 and E215 for MJPT.

Hexagonal compression dies according to DIN 48083 are available on request.

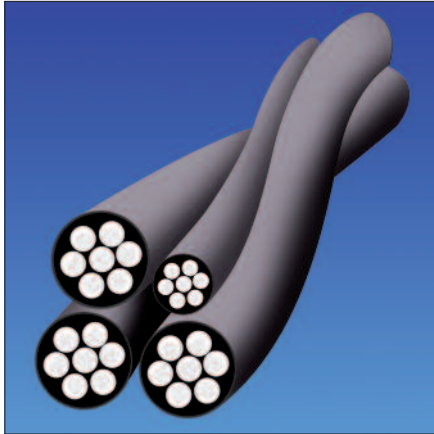


# Appendix

## Dimensions of LV-ABC cables according to HD 626:

Lines with insulated neutral messenger	56
Self-supporting lines	57
Lines with bare neutral messenger	58
<b>Reference table</b>	<b>59</b>

## Dimensions of LV-ABC lines with insulated neutral messenger according to HD 626



HD 626 S1: 1996  
Part 6-Section E

Aluminium conductors with XLPE insulation, included in national products/standards: NF C 33029

### Dimensions of phase conductors

Cross section (mm <sup>2</sup> )	Conductor diameter (mm)		Nom. thickness of insulation (mm)	Core diameter (mm)		Current carrying capacity (A)*	Breaking load (kN)
	min.	max.		min.	max.		
16	4,6	5,1	1,2	7,0	7,8	—	—
25	5,8	6,3	1,4	8,6	9,4	112	—
35	6,8	7,3	1,6	10,0	10,9	138	—
50	7,9	8,4	1,6	11,1	12,0	168	—
70	9,7	10,2	1,8	13,3	14,2	213	—
95	11,0	12,0	1,8	14,6	15,7	258	—
120	12,0	13,1	1,8	15,6	16,7	306	—
150	13,9	15,0	1,7	17,3	18,6	344	—

\* Defined for ambient temperature of 30 °C and max. conductor temperature of 90 °C.

### Dimensions of neutral messenger conductors

Cross section (mm <sup>2</sup> )	Conductor diameter (mm)		Nom. thickness of insulation (mm)	Core diameter (mm)		Current carrying capacity (A)	Breaking load (kN)
	min.	max.		min.	max.		
54,6	9,2	9,6	1,6	12,3	13,0	—	16,6
70	10,0	10,2	1,5	12,9	13,6	—	20,5
95	12,2	12,9	1,6	15,3	16,3	—	27,5

### Dimensions of cable bundle

Number of phase cores x cross section + public lighting conductors x cross section + neutral cross section (mm <sup>2</sup> )	Bundle diameter approx. (mm)
3 x 25 + 54,6	30,0
3 x 35 + K x 16 + 54,6	33,0
3 x 50 + K x 16 + 54,6	36,0
3 x 70 + K x 16 + 54,6	37,5
3 x 70 + K x 25 + 54,6	40,0
3 x 70 + K x 16 + 70	41,0
3 x 95 + K x 16 + 70	44,0
3 x 120 + K x 16 + 70	46,0
3 x 120 + K x 16 + 95	47,0
3 x 150 + K x 16 + 70	48,0
3 x 150 + K x 16 + 95	49,0

**Note:** K number of public lighting conductors (K can be equal to 0, 1, 2, or 3)

## Dimensions of self-supporting LV-ABC lines according to HD 626



HD 626 S1: 1996  
Part 4-Section F

Aluminium conductors with XLPE insulation, included in national products/standards: NFA2X (VDE 0276 - 626 4F-1), AsXS(n) (PL WT92/K396), 1-AES (CSN 34761-4F)

### Dimensions of conductors

Cross section (mm <sup>2</sup> )	Conductor diameter (mm)		Thickness of insulation (mm)		Max. core diameter (mm)	Current carrying capacity (A)*	Breaking load (kN)
	min.	max.	nom.	min.			
16	4,6	5,1	1,2	1,00	7,8	–	2,60
25	5,6	6,5	1,3	1,07	10,0	107	4,17
35	6,6	7,5	1,3	1,07	11,0	132	5,78
50	7,7	8,6	1,5	1,25	12,5	165	8,45
70	9,3	10,2	1,5	1,25	14,0	205	11,32
95	11,0	12,0	1,7	1,50	16,1	–	15,30
120	12,5	13,5	1,8	1,60	17,6	–	20,00
150	13,9	15,0	1,8	1,60	18,8	–	25,00

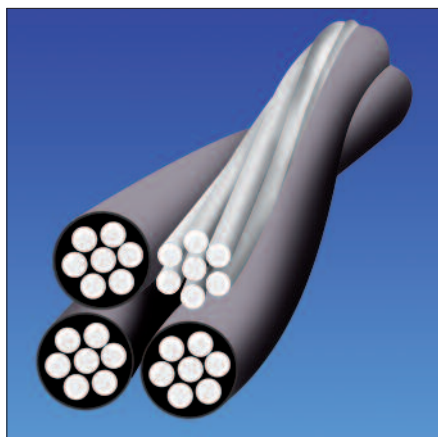
\* Defined for ambient temperature of 35 °C and max. conductor temperature of 80 °C.

### Dimensions of cable bundle

Number of cores x cross section + public lighting conductors x cross section (mm <sup>2</sup> )	Bundle diameter approx. (mm)
2 x 16	15
2 x 25	18
2 x 35	20
4 x 16	18
4 x 25	22
4 x 35	25
4 x 50	28
4 x 70	32
4 x 70 + 1 x 35	36
4 x 70 + 2 x 35	40
4 x 95	37
4 x 120	40
4 x 120 + 2 x 35	43
4 x 150	44



## Dimensions of LV-ABC lines with bare neutral messenger according to HD 626



HD 626 S1: 1996  
Part 5-Section D

Phase conductors with XLPE insulation, included in national products/standards:  
AMKA (SFS 2200)

### Dimensions of phase conductors

Cross section (mm <sup>2</sup> )	Conductor diameter (mm)	Nom. thickness of insulation (mm)	Core diameter (mm)		Current carrying capacity (A)*	Breaking load (kN)
			min.	max.		
16	4,4 ± 0,05	1,4	7,1	7,3	70	—
25	5,9 ± 0,20	1,4	8,3	9,1	95	—
35	6,9 ± 0,20	1,6	9,7	10,5	115	—
50	8,1 ± 0,25	1,6	10,8	11,8	140	—
70	9,7 ± 0,25	1,8	12,8	13,8	180	—
120	12,8 ± 0,30	2,0	16,2	17,4	250	—

\* Defined for ambient temperature of 25 °C and max. conductor temperature of 70 °C.

### Dimensions of neutral messenger conductors

Cross section (mm <sup>2</sup> )	Conductor diameter (mm)	Thickness of insulation (mm)	Core diameter (mm)		Current carrying capacity (A)	Breaking load (kN)
			min.	max.		
25	5,9 ± 0,20	—	5,5	6,3	—	7,4
35	6,9 ± 0,20	—	6,5	7,3	—	10,3
50	8,1 ± 0,25	—	7,6	8,6	—	14,2
70	9,7 ± 0,25	—	9,2	10,2	—	20,6
95	11,4 ± 0,30	—	10,8	12,0	—	27,9

### Dimensions of Cable Bundle

Number of phase cores x cross section + neutral cross section (mm <sup>2</sup> )	Bundle diameter approx. (mm)
1 x 16 + 25	15
3 x 16 + 25	22
4 x 16 + 25	22
3 x 25 + 35	26
4 x 25 + 35	26
3 x 35 + 50	30
3 x 50 + 70	35
3 x 70 + 95	41
3 x 120 + 95	47

## Reference Table

Ordering description	Product number	Page	Ordering description	Product number	Page
102L011-R05/S(S100)	381987N001	28	COFFRET SIMECA	910812-000	52
102L022-R05/S(S100)	204645N001	28	CPA 25	300038-000	45
102L033-R05/S(S100)	059453N001	28	CPTA 35	432466-000	20
102L044-R05/S(S50)	135907N001	28	CPTA 50	426682-000	20
102L048-R05/S(S25)	286711N001	28	CPTA 54	414030-000	20
102L055-R05/S(S10)	966649N001	28	CPTA 70	180178-000	20
102L066-R05/S(S10)	252509N001	28	CPTA 95 D20	906826-000	20
12SE140-9	037702-000	53	CPTA 150-21 D20UK	438928-000	20
12SE173-9	916764-000	53	CPTAU 16 D16	366520-000	20
12SE215-9	306480-000	53	CPTAU 25 D16	623808-000	20
13UE140-9	458492-000	53	CPTAU 35 (trousse)	381500-000	20
13UE173-9	027630-000	53	CPTAU 50	214368-000	20
13UE215-9	371078-000	53	CPTAU 54	107112-000	20
302K224/S(S20)	D45696N001	26	CPTAU 70	972344-000	20
302K333/S(S20)	D93040N001	26	CPTAU 95	068480-000	20
302K466/S(S10)	127794N001	26	CPTAU 120 D25	797666-000	20
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