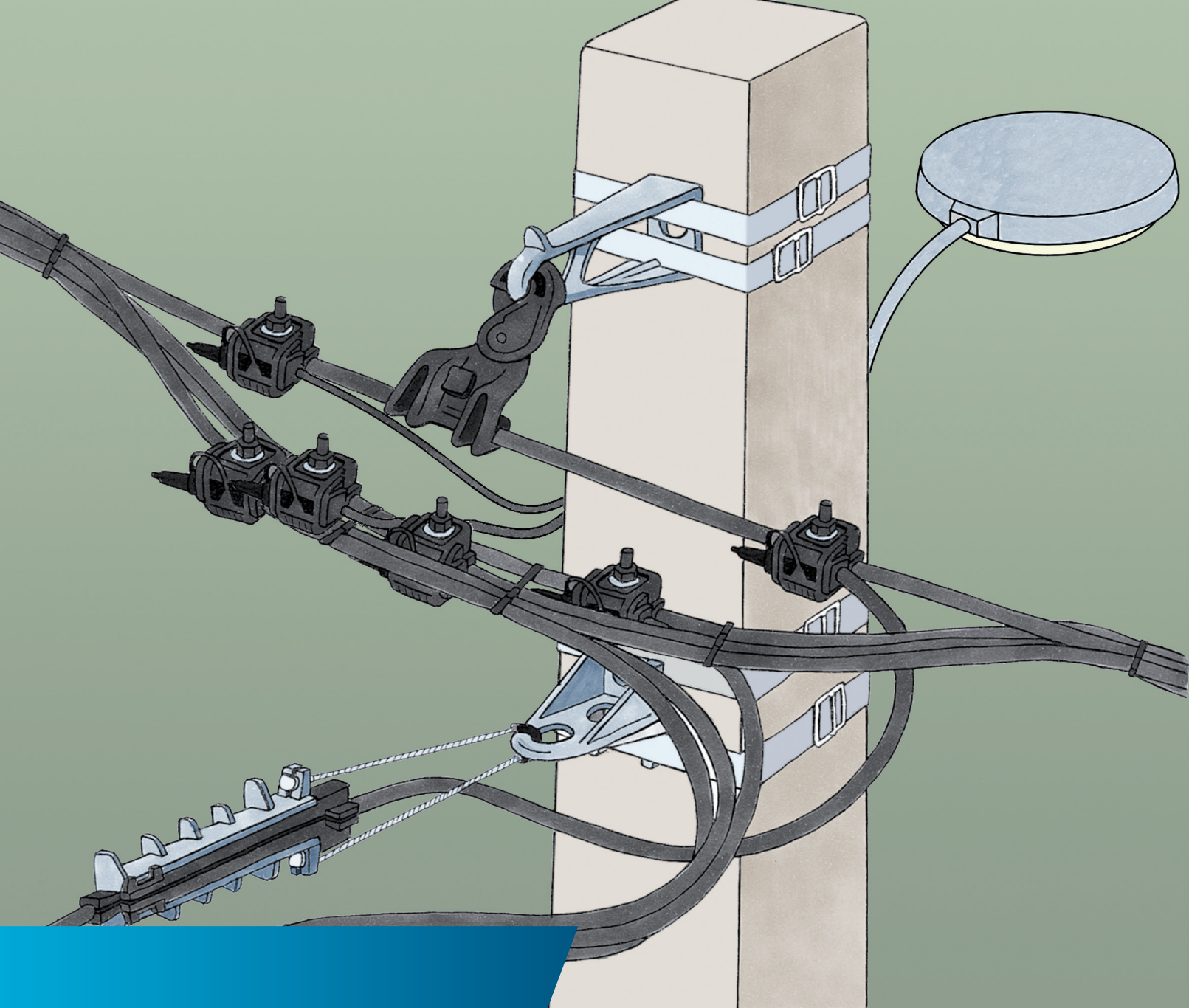




Energy Division

Application Guide for Low Voltage Insulated Overhead Lines

Application Guide for Low Voltage Insulated Overhead Lines (Aerial Bundled Cables)

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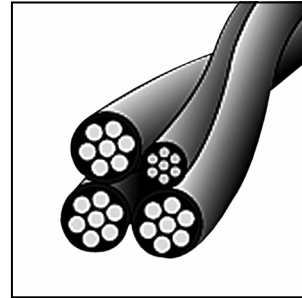
Introduction to LV-ABC lines

Tyco Electronics Energy Division has been pioneering the connection, anchoring and suspension of low-voltage aerial bundled cables (LV-ABC) lines since they were first installed in the mid 1950s. Our ongoing research and development effort flows into the state-of-the-art and product lines that meet the most stringent demands of modern network design, operation and maintenance. Our products are deployed by utilities around the world, functioning perfectly even in arctic, desert and tropical climates.

The main types of LV-ABC lines

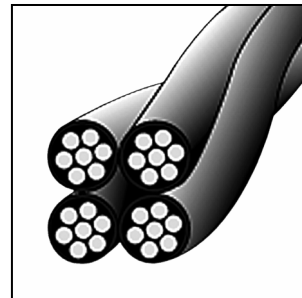
LV-ABC lines with insulated neutral messenger

LV-ABC lines with an insulated neutral messenger wire, also known as a French System, consist of 3 insulated aluminium phase conductors and 1 neutral insulated messenger made of aluminium alloy (usually Aldrey). The system can incorporate 1 or 2 additional insulated aluminium conductors with cross sections of 16 mm^2 or 25 mm^2 as pilot wires or for street lighting. The mechanical strength and nominal cross section of the 3 phase conductors are identical. The neutral conductor acts as the suspension wire and has a higher mechanical strength.



Self-supporting LV-ABC lines

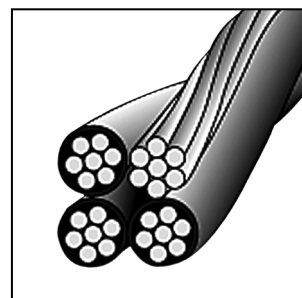
Self-supporting LV-ABC lines consist of 4 insulated aluminium conductors with identical mechanical strength and nominal cross section. The system can incorporate 1 or 2 additional insulated aluminium conductors with cross sections of 16 mm^2 or 25 mm^2 as pilot wires or for street lighting. Loading the cable puts equal strain on all 4 conductors.



LV-ABC lines with bare neutral messenger

LV-ABC lines with a bare neutral messenger wire, also known as a Finnish System, consist of 3 insulated aluminium phase conductors and 1 neutral messenger made of aluminium alloy without insulation. The system can incorporate 1 or 2 additional insulated aluminium conductors with cross sections of 16 mm^2 or 25 mm^2 as pilot wires or for street lighting.

The mechanical strength and nominal cross section of the 3 phase conductors are identical. The neutral conductor acts as the suspension wire and has a higher mechanical strength.



Service line

The service line for the three LV-ABC systems is usually of the self-supporting type. They consist of 2 to 4 factory bundled insulated aluminium conductors with cross sections of 16 mm^2 , 25 mm^2 or 35 mm^2 .

Aim and scope of the LV-ABC application guide

The LV-ABC application guide should be used in conjunction with our catalogue '**Connectors and Fittings for Low Voltage Insulated Overhead Lines**'. The application guide provides fully documented application cases for the three main types of LV-ABC lines. It aims to meet important practical needs:

- Use it to define a technical situation and its solution.
- Use it to select the right products for a network application.
- Use it as a support tool for LV network designs.
- Use it as a training aid for network engineers and installers.
- Use it for self-study to familiarize yourself with the topic.
- Use it as a base for solutions not covered by this guide.
- Use it as reference material, and for drawing up or completing tenders.

In the event of queries and problems you are invited to contact our technical support. Suggestions and recommendations from our readers are also always welcome. If you develop a solution that is relevant but not covered by this application guide, we'll be pleased to include it in a future edition.

How to use the LV-ABC application guide

The technical part of the guide is divided into three main sections:

- Self-supporting LV-ABC lines
- LV-ABC lines with an insulated neutral messenger
- LV-ABC lines with a bare neutral messenger

Each section starts with a hypothetical network layout showing typical application points. These are numbered and each point is described in detail on the pages that follow. Detail drawings, network data and material lists give you all the information you need to select the right components. The variants within a particular application are listed. These are variables that do not invalidate a particular solution but can result in an alternative subset of components.

Some pertinent points

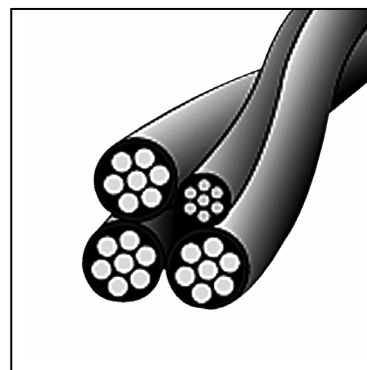
In a textbook, LV networks all look the same. In real life, networks are essentially all different. This guide does not claim to cover every conceivable application. But in covering the three main network types with over 30 application examples, it provides an overview and a detailed view, with lots of hints and ideas on how to make things work effectively and efficiently.

Many components are of course common to all systems. These include connectors for insulated and bare conductors, fixing elements, insulated sleeves and lugs, surge arresters and the like. You will find these products in our 'Connectors and Fittings for Low Voltage Insulated Overhead Lines' catalogue. This catalogue also describes the operation of crucial products like piercing connector systems and lists the full technical specifications of any component offered as part of the application solution.

Dimensions of LV-ABC lines with insulated neutral messenger

According to
HD 626 S1: 1996
Part 4-Section E

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



Dimensions of phase conductors

Cross section mm ²	Conductor diameter		Thickness of insulation		Core diameter		Current carrying capacity (A)*	Breaking load kN
	min. mm	max. mm	nom. mm	min. mm	min. mm	max. mm		
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 ²	Conductor diameter		Thickness of insulation		Core diameter		Current carrying capacity (A)*	Breaking load kN
	min. mm	max. mm	nom. mm	min. mm	min. mm	max. mm		
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
+ neutral cross section
mm²

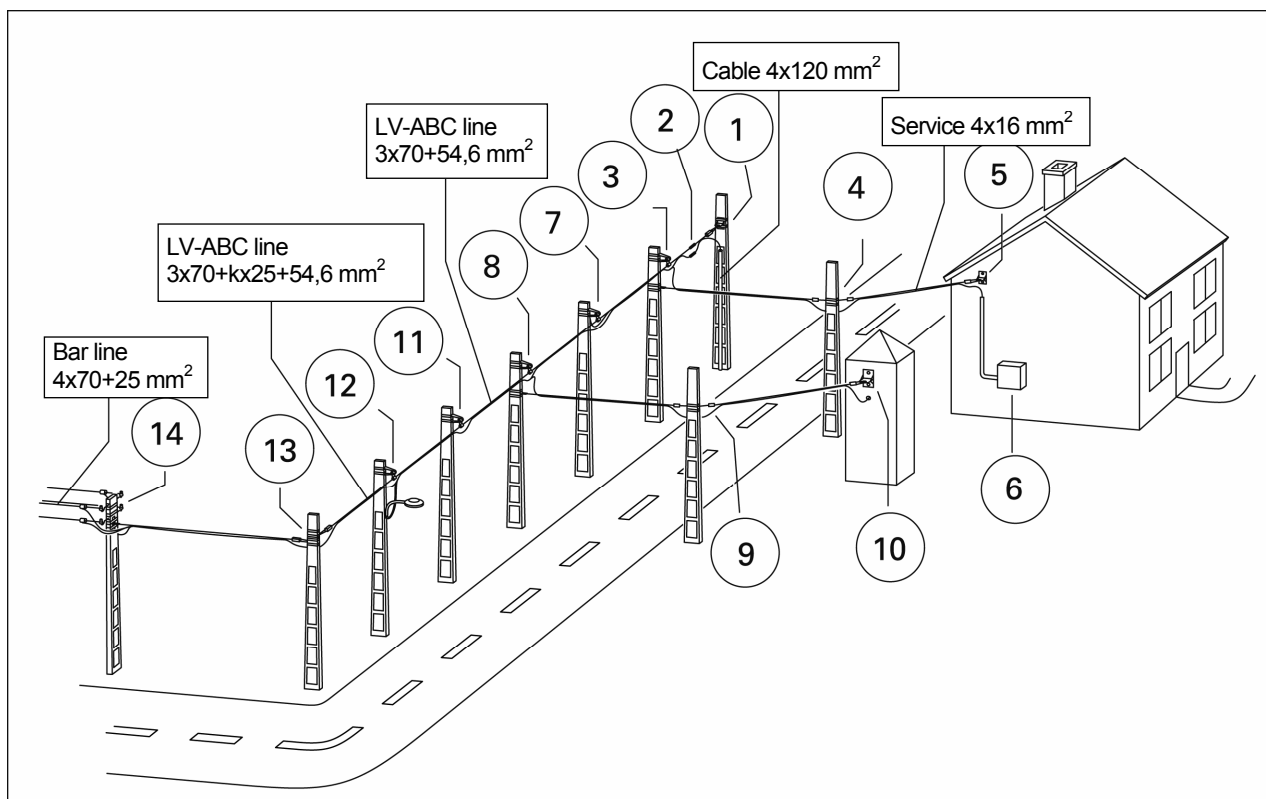
Bundle diameter
approx.

mm ²	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 x120+k x 16 + 70	46,0
3 x120+k x 16 + 95	47,0
3 x150+k x 16 + 70	48,0
3 x150+k x 16 + 95	49,0

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

LV ABC system with insulated neutral messenger

Sample network layout



LV accessoires application points

Page

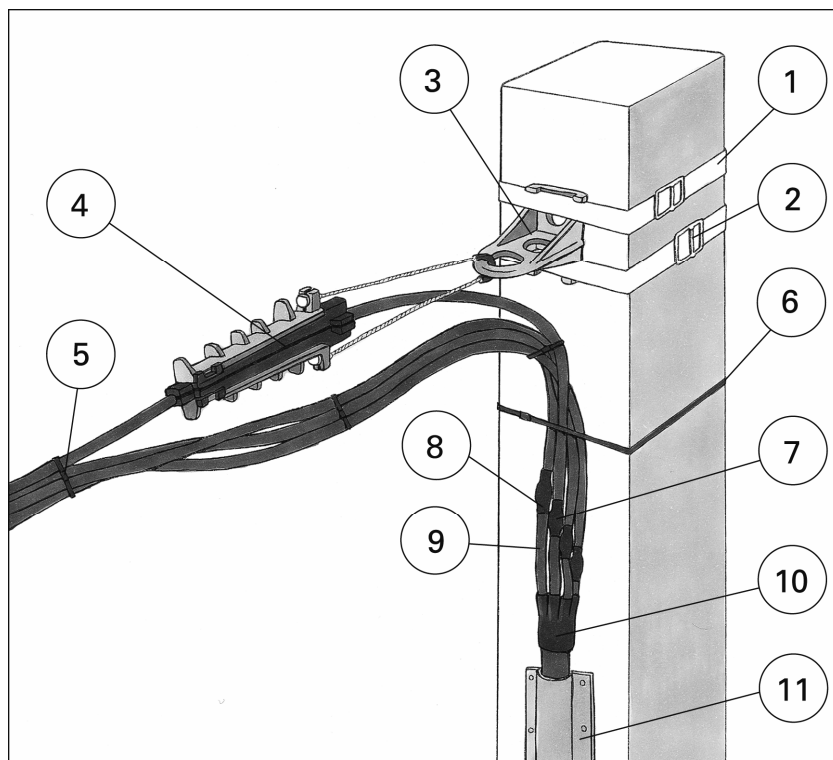
1	Anchoring and cable connection	6
2	Joints	7
3	Main suspension and service line tap	8
4	Service line anchoring	9
5	Service line house anchoring	10
6	Service line house fuse box	11
7	Suspension and earth connection	12
8	Suspension and main tap	13
9	Double anchoring deviation 100° and surge arresters	14
10	Transformer house connection	15
11	Main suspension	16
12	Suspension and lamp connection	17
13	Double anchoring deviation 90°	18
14	Anchoring and connection to bare overhead line	19

The network layout shows a low voltage network with 14 typical application points all described in detail on the following pages.

Cable cross sections are fixed (see drawing) and all connectors and fittings are chosen to match these dimensions. Refer to the 'Connectors and Fittings for Low Voltage Insulated Overhead Lines' catalogue to select the correct product for a different cross section.

The sections for self-supporting LV-ABC lines and LV-ABC lines with bare neutral messenger and start on page 20 and 28, respectively. Refer to these sections if you are looking for a configuration not covered by this section.

Point 1: LV-ABC anchoring and cable connection



Typical applications

Transformer feed lines; factory supply lines; bypass systems (railways, bridges, roads)

Application variants

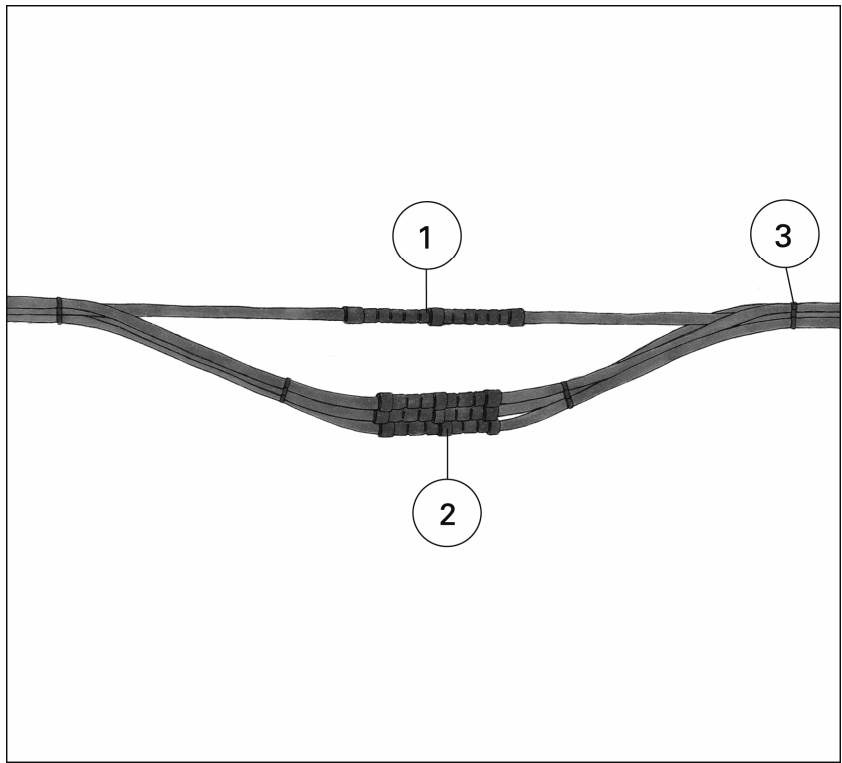
Support, support size, number of masts, support material (wood, steel, concrete); cable cross section, construction

Network data LV-ABC line: $3 \times 70 + 54,6 \text{ mm}^2$ Cable: $4 \times 120 \text{ mm}^2$

Material list

Pos	Product description	Product name	Pcs	m
1	F 2007	Stainless steel straps		2
2	A 200	Buckles for straps	2	
3	CA 1500	Anchor bracket	1	
4	PA-1500	Anchoring clamp	1	
5	CSB	Cable tie	3	
6	CSL 350	Cable tie	4	
7	HEL 6893ZAK	Mechanical connector	4	
8	WCSM 33/8	Sealing tubing	4	
9	CGPT 18/6-0	Protection tubing	4	
10	502 K 016/S	Breakout	1	
11	GPC 60x60 L2750	PVC cable protection	1-3	

Point 2: LV-ABC joints



Typical applications
Joining two LV-ABC lines

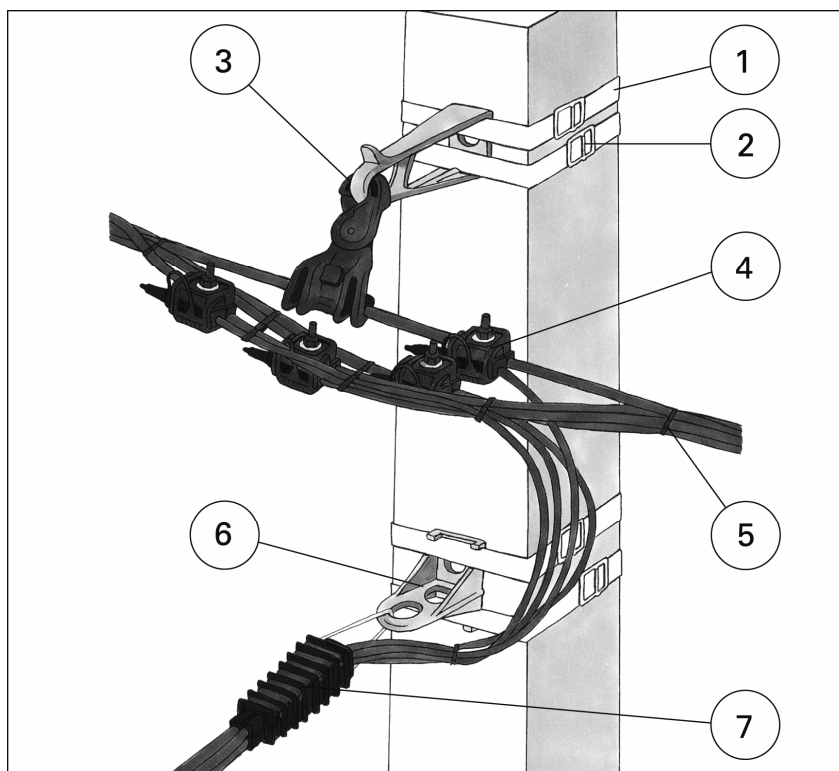
Application variants
Cable cross section

Network data 3x70+54,6 mm²

Material list

Pos	Product description	Product name	Pcs
1	MJPT-54	Pre-insulated connector	1
2	MJPT-70	Pre-insulated connector	3
3	CSB	Cable tie	4

Point 3: LV-ABC main suspension and service line tap



Typical applications

Service connection

Application variants

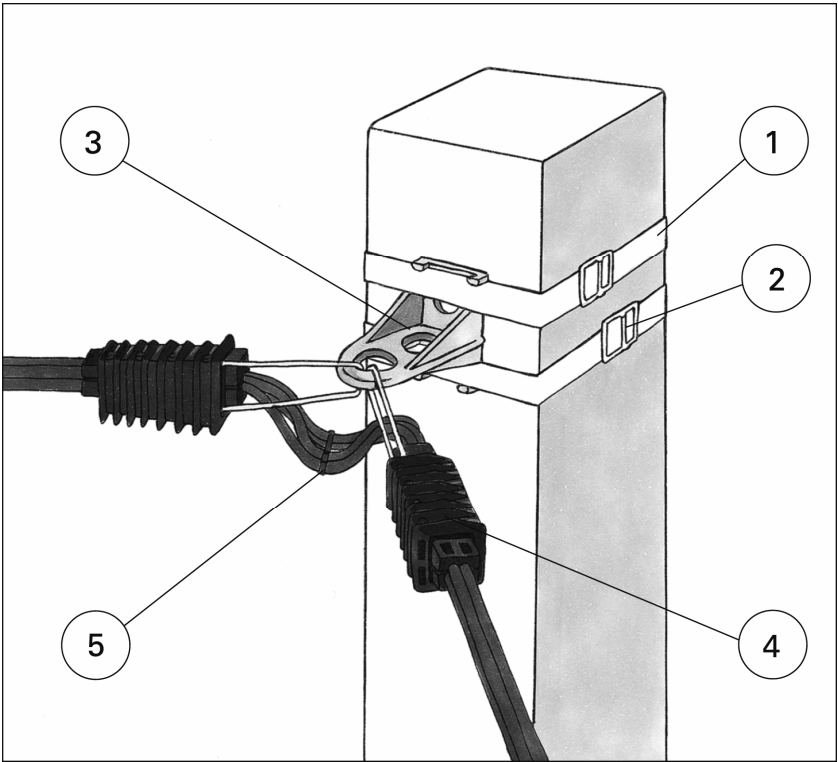
Masts; cable cross section, number of phases (one or three)

Network data LV-ABC line: 3x70+54,6 mm² LV-ABC service tap: 4x16 mm² (Service line)

Material list

Pos	Product description	Product name	Pcs	m
1	F 2007	Stainless steel straps		4
2	A 200	Buckles for straps	4	
3	ES 1500	Suspension clamp with bracket	1	
4	P2X 95	Piercing connector	4	
5	CSB	Cable tie	6	
6	CA 1500	CA 1500	1	
7	PA 25x100	Anchoring clamp for service line	1	

Point 4: Service line anchoring



Typical applications
Service connection with longer line

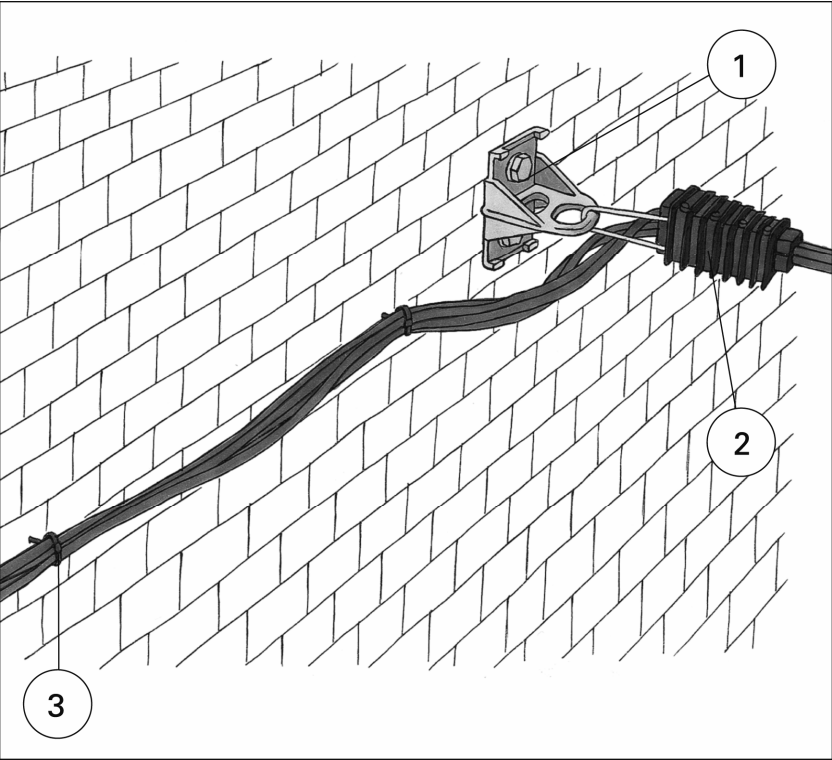
Application variants
Cable cross section; line length on wall; anchoring clamp

Network data LV-ABC service line: 4x16 mm²

Material list

Pos	Product description	Product name	Pcs	m
1	F 2007	Stainless steel straps		2
2	A 200	Buckles for straps	2	
3	CA 1500	Anchoring bracket	1	
4	PA 25x100	Anchoring clamp for service line	2	
5	CSB	Cable tie	1	

Point 5: Service line house anchoring



Typical applications
Service connection

Application variants
Cable cross section; line length on wall; anchoring clamp

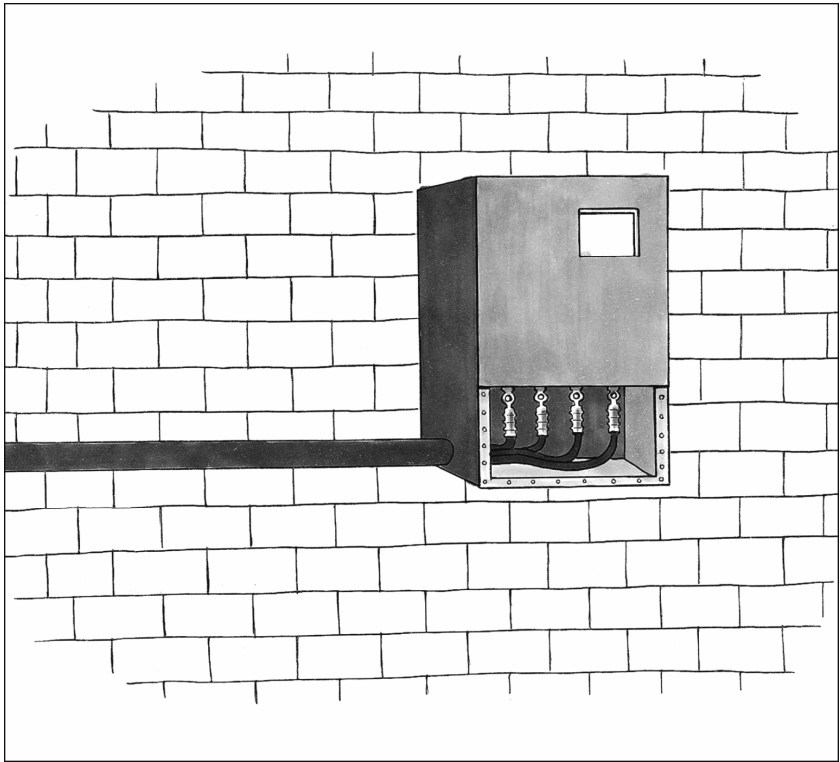
Network data LV-ABC service line: 4x16 mm²

Material list

Pos	Product description	Product name	Pcs	
1	*CA 1500	Anchor bracket	1	
2	PA 25x100	Anchoring clamp	1	
3	BRPF 70-150-1F	Wall mounted saddles	2	(1pc/0,7m)

* or CAB 25 anchor bracket

Point 6: Service line house fuse box



Typical applications
Domestic or switchgear connection

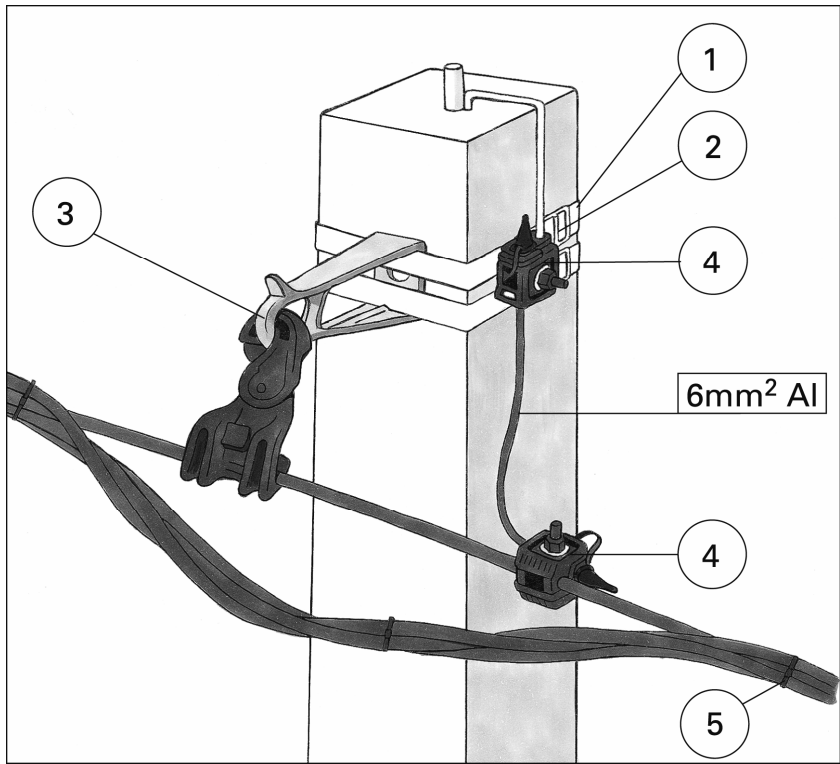
Application variants
Cable cross section; line length on wall; anchoring clamp; conductor or bus bar material

Network data LV-ABC service line: 4x16 mm²

Material list

Pos	Product description	Product name	Pcs
1	CPTAU 16	Pre-insulated lugs	4

Point 7: LV-ABC main suspension and earth connection



Typical applications

Mast earthing point connection to neutral

Application variants

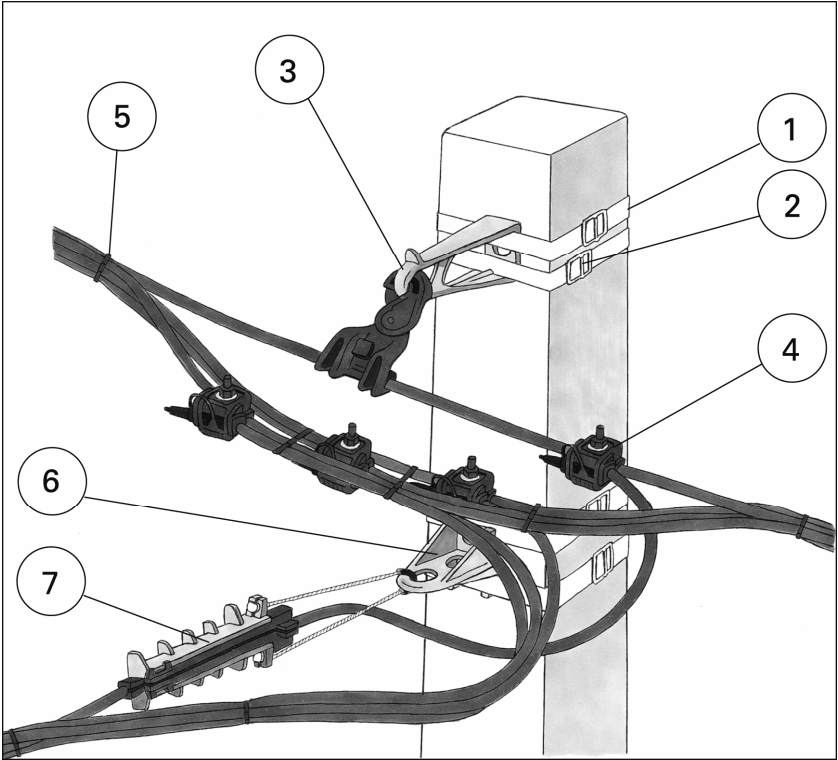
Earthing material (iron, aluminium, cooper); cross section, shape (round, flat); mast (concrete, wood, steel)

Network data LV-ABC main: 3x70+56,6 mm² Insulated earth lead: 6 mm² Al Pole earth lead: Φ = 6 mm steel

Material list

Pos	Product description	Product name	Pcs	m
1	F 2007	Stainless steel straps		2
2	A 200	Buckles for straps	2	
3	ES 1500	Suspension clamp with bracket	1	
4	P2X 95	Piercing connector	2	
5	CSB	Cable tie	3	

Point 8: LV-ABC suspension and main tap



Typical applications
Transformer feed lines; line branches

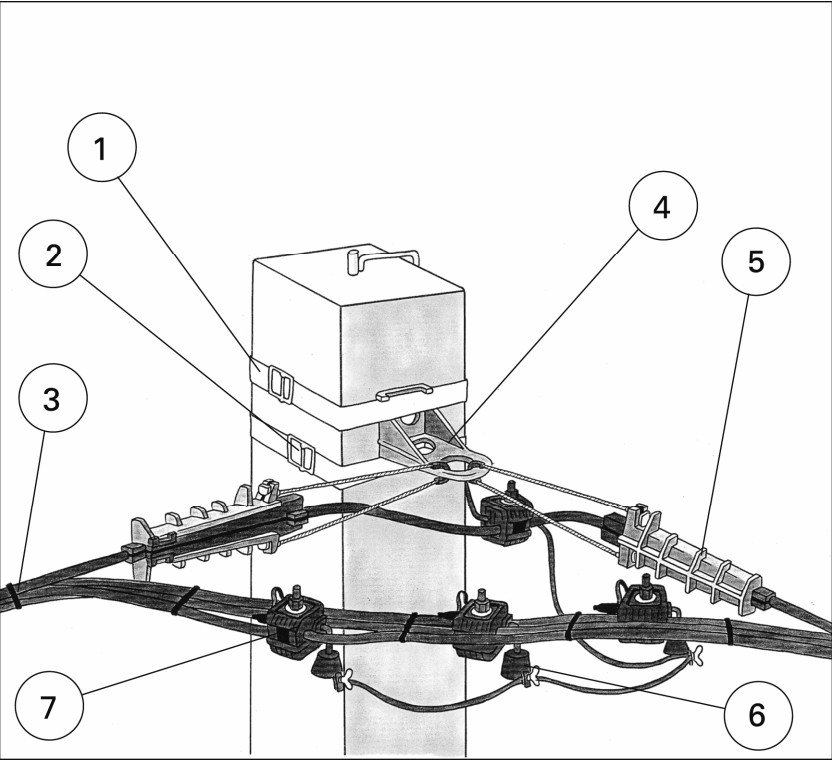
Application variants
Support, support size, number of masts;
support material (wood, steel, concrete);
line cross section

Network data LV-ABC main: 3x70+54,6 mm² LV-ABC tap: 3x70+54,6 mm²

Material list

Pos	Product description	Product name	Pcs	m
1	F 2007	Stainless steel straps		4
2	A 200	Buckles for straps	4	
3	ES 1500	Suspension clamp with bracket	1	
4	P3X 95	Piercing connector	4	
5	CSB	Cable tie	7	
6	CA 1500	Anchoring bracket	1	
7	PA-1500	Anchoring clamp	1	

Point 9: LV-ABC double anchoring deviation 100° and surge arresters



Typical applications
Line branches; overvoltage protection

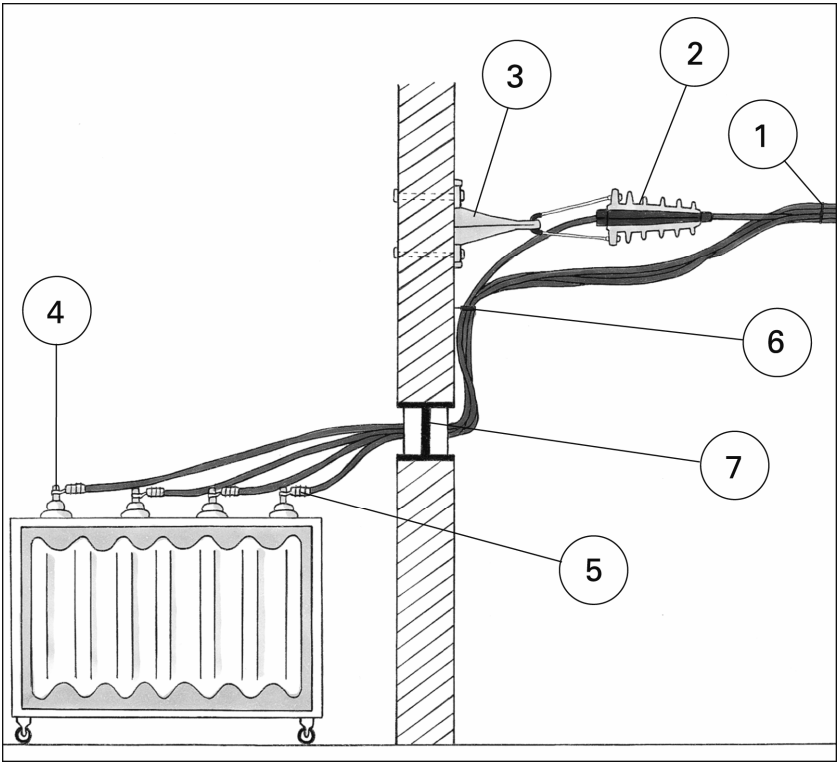
Application variants
Support, support size, number of masts;
support material (wood, steel, concrete);
line cross section

Network data LV-ABC line: 3x70+54,6 mm² Maximum line deviation: 50°

Material list

Pos	Product description	Product name	Pcs	m
1	F 2007	Stainless steel straps		2
2	A 200	Buckles for straps	2	
3	CSB	Cable tie	6	
4	CA 1500	Anchor bracket	1	
5	PA-1500	Anchoring clamp	2	
6	LVA-440-CS	Surge arrester	3	
7	P3X 95	Piercing connector	4	

Point 10: Transformer house connection



Typical applications
Transformer connection to the LV-ABC lines

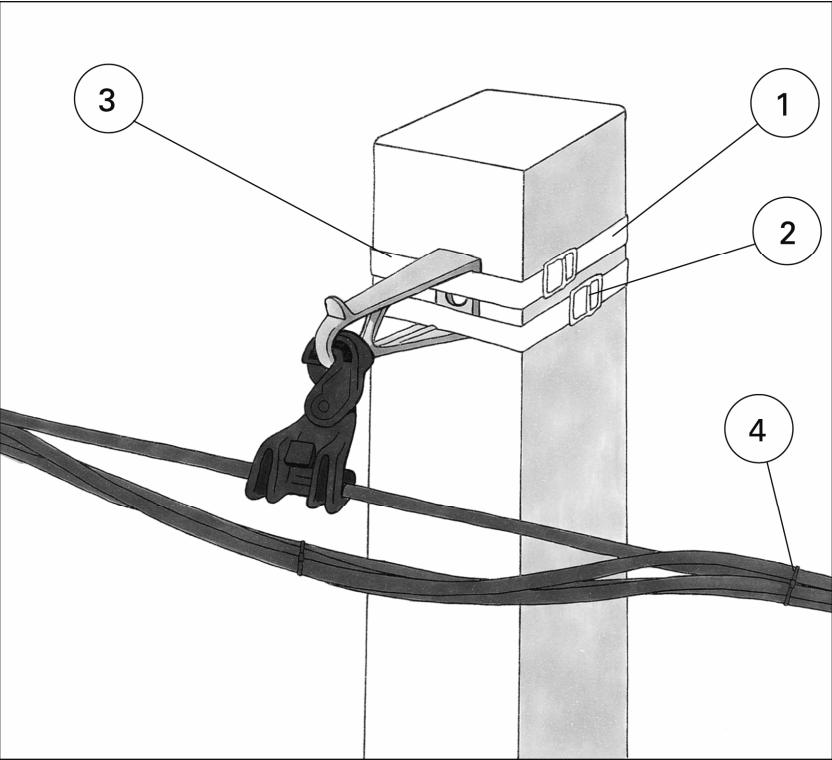
Application variants
House geometry; number of lines, line cross section, switchgear connection (if present)

Network data LV-ABC line: 3x70+54,6 mm²

Material list

Pos	Product description	Product name	Pcs
1	CSB	Cable tie	1
2	CA 1500	Anchor bracket	1
3	PA-1500	Anchoring clamp	1
4	CPTAU 70	Pre-insulated lugs	3
5	CPTAU 54	Pre-insulated lugs	1
6	BRPF 70-150-1F	Wall mounted saddles	1
7	RDSS 75 + Clips 75	Duct sealing	1

Point 11: LV-ABC main suspension



Typical applications
LV-ABC suspension

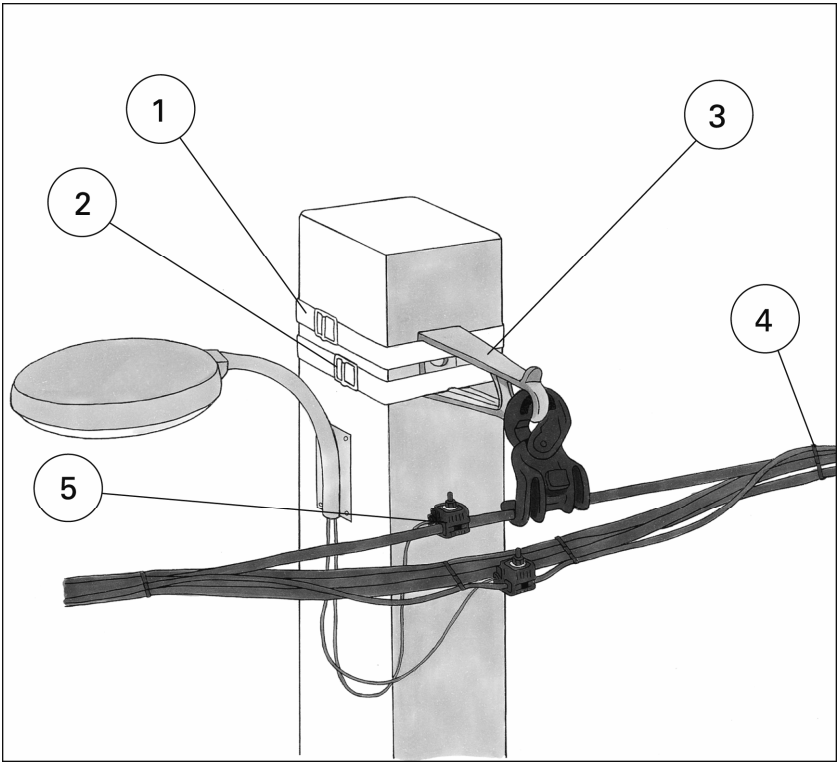
Application variants
Support, support material (wood, steel, concrete); line cross section

Network data LV-ABC line: 3x70+54,6 mm²

Material list

Pos	Product description	Product name	Pcs	m
1	F 2007	Stainless steel straps		2
2	A 200	Buckles for straps	2	
3	ES 1500	Suspension clamp with bracket	1	
4	CSB	Cable tie	3	

Point 12: LV-ABC suspension and lamp connection



Typical applications
Street lighting connection

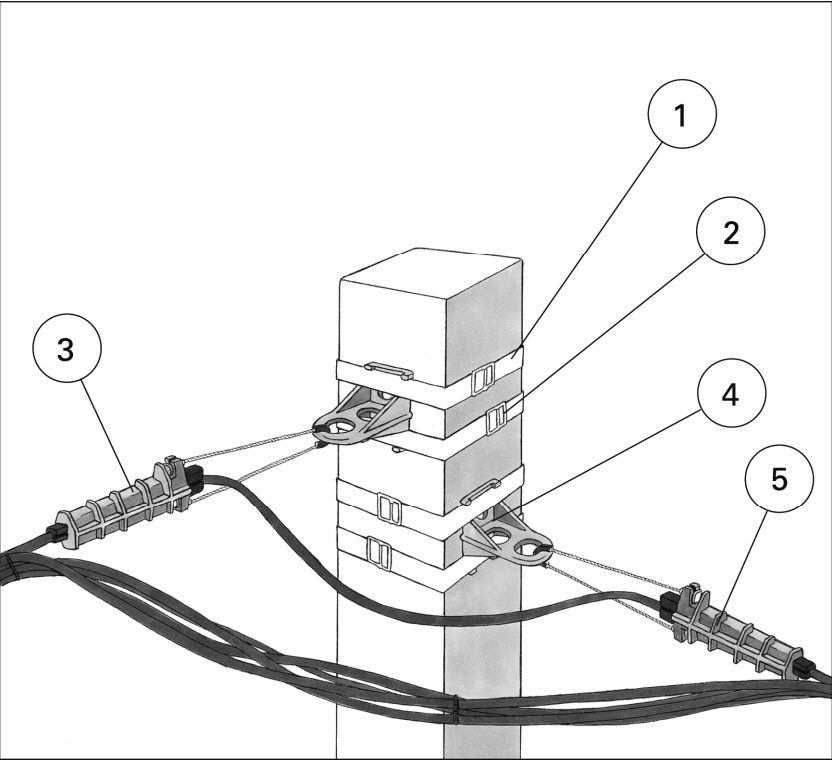
Application variants
Support, support material (wood, steel, concrete); line cross section

Network data LV-ABC main line: 3x70+1x25+54,6 mm² Lamp: 2x2,5 mm² Cu mm²

Material list

Pos	Product description	Product name	Pcs	m
1	F 2007	Stainless steel straps		2
2	A 200	Buckles for straps	2	
3	ES 1500	Suspension clamp with bracket	1	
4	CSB	Cable tie	5	
5	KZEP-13	Piercing connector	2	

Point 13: LV-ABC double anchoring deviation 90°



Typical applications
Lines branches; overvoltage protection

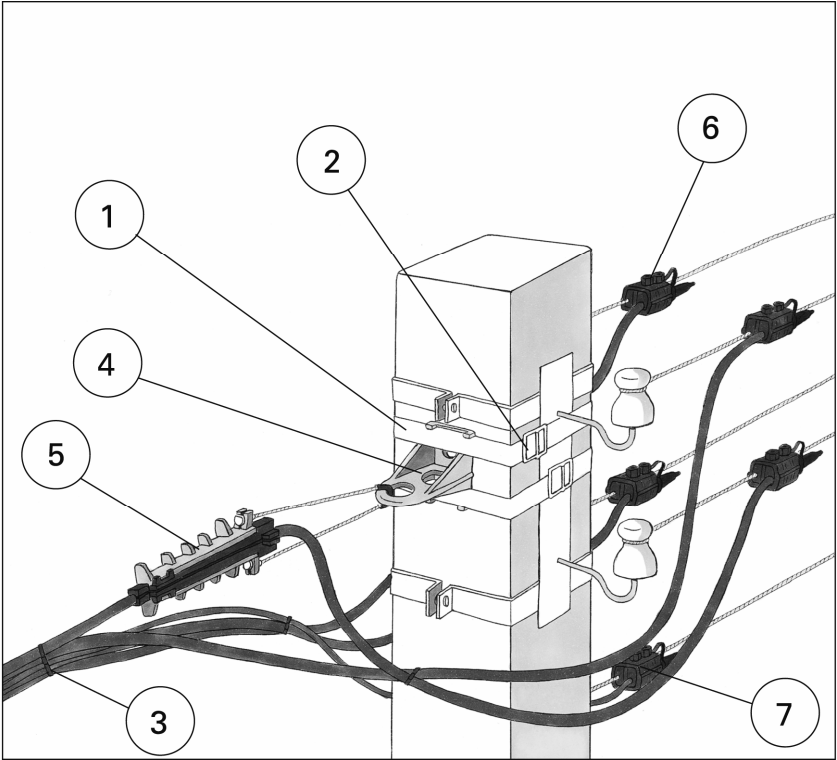
Application variants
Support, support material (wood, steel, concrete); line cross section

Network data LV-ABC line: 3x70+1x25+54,6 mm² Line deviation: 90°

Material list

Pos	Product description	Product name	Pcs	m
1	F 2007	Stainless steel straps		4
2	A 200	Buckles for straps	4	
3	CSB	Cable tie	3	
4	CA 1500	Anchor bracket	2	
5	PA-1500	Anchoring clamp	2	

Point 14: LV-ABC anchoring and connection to bare overhead line



Typical applications
LV-ABC bare line transition

Application variants
Support, support material (wood, steel, concrete); line cross section

Network data LV-ABC line: 3x70+1x25+54,6 mm² Bare line: 4x70+25 mm²

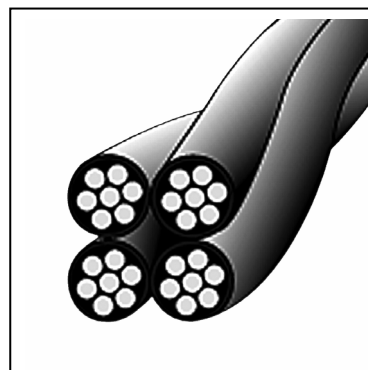
Material list

Pos	Product description	Product name	Pcs	m
1	F 2007	Stainless steel straps		2
2	A 200	Buckles for straps	2	
3	CSB	Cable tie	3	
4	CA 1500	Anchor bracket	1	
5	PA-1500	Anchoring clamp	1	
6	CDR/CN 1S 95 UK	Bare LV-ABC connector	4	
7	RDP 25/CN	Bare LV-ABC connector	1	

Dimensions of LV-ABC lines with self-supporting messenger

According to
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)
1-AES (CSN 34761-4F)



Dimensions of phase conductors

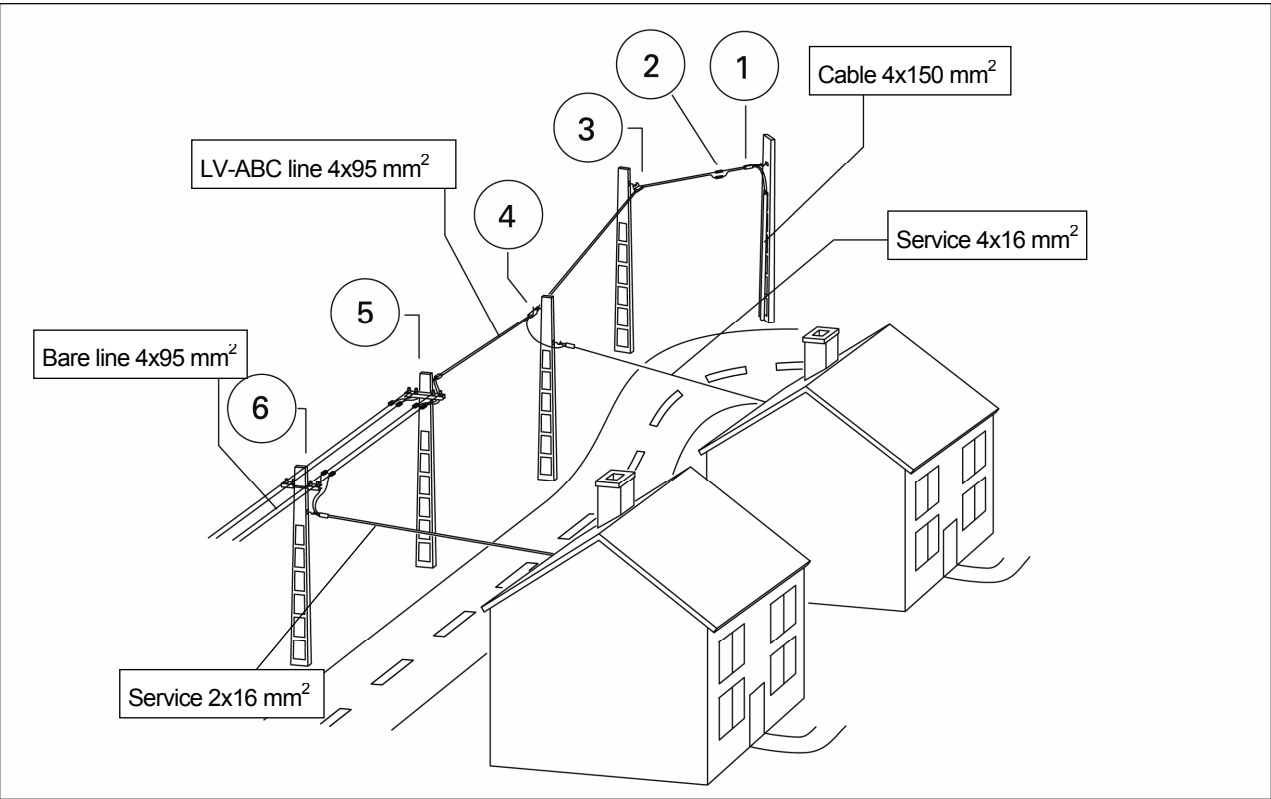
Cross section mm ²	Conductor diameter		Thickness of insulation		Core diameter		Current carrying capacity (A)*	Breaking load kN
	min. mm	max. mm	nom. mm	min. mm	min. mm	max. mm		
16	4,6	5,1	1,2	1,00	7,8		-	2,60
25	5,6	6,5	1,3	1,07	10,0		107	4,17
35	6,6	7,5	1,3	1,07	11,0		132	5,78
50	7,7	8,6	1,5	1,25	12,5		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 + public lighting conductors + neutral cross section mm²

	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

Self supporting LV ABC system **Sample network layout**



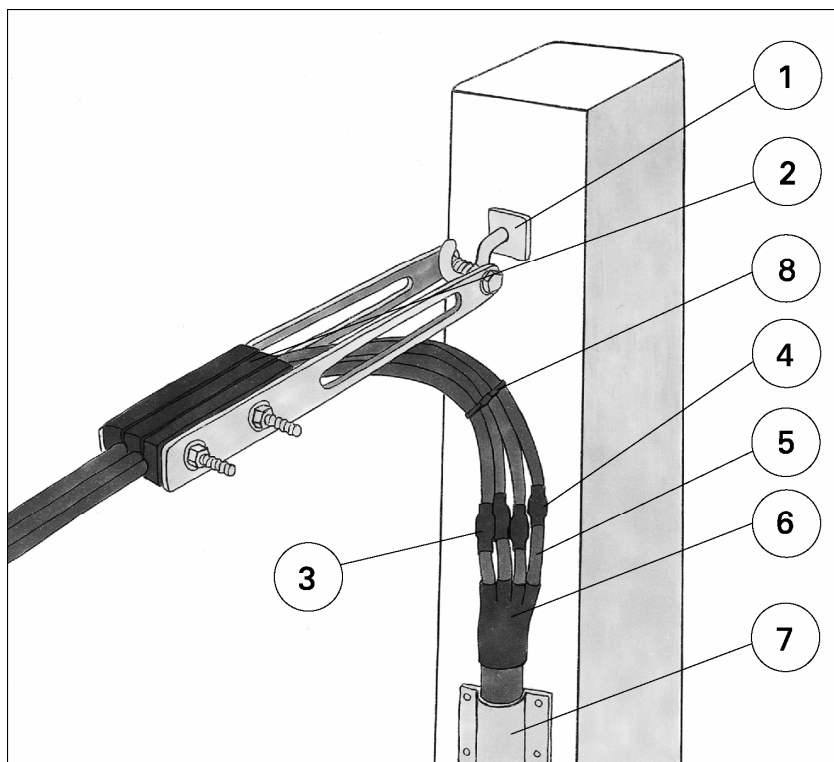
LV accessories application points		Page
1	Anchoring and cable connection	22
2	Joints	23
3	Suspension deviation 30° - 60°	24
4	Main suspension and service line tap	25
5	Anchoring and connection to bare overhead line	26
6	Bare main and service line tap	27

The network layout shows a low voltage network with 6 application points all described in detail on the following pages.

Cable cross sections are fixed (see drawing) and all connectors and fittings are chosen to match these dimensions. Refer to the 'Connectors and Fittings for Low Voltage Insulated Overhead Lines' catalogue to select the correct product for a different cross section.

The sections for insulated neutral messenger LV-ABC lines and LV-ABC lines with bare neutral messenger start on page 4 and 28, respectively. Refer to these sections if you are looking for a configuration not covered by this section.

Point 1: LV-ABC anchoring and cable connection



Typical applications

Transformer feed lines; factory supply lines; bypass systems (railways, bridges, roads)

Application variants

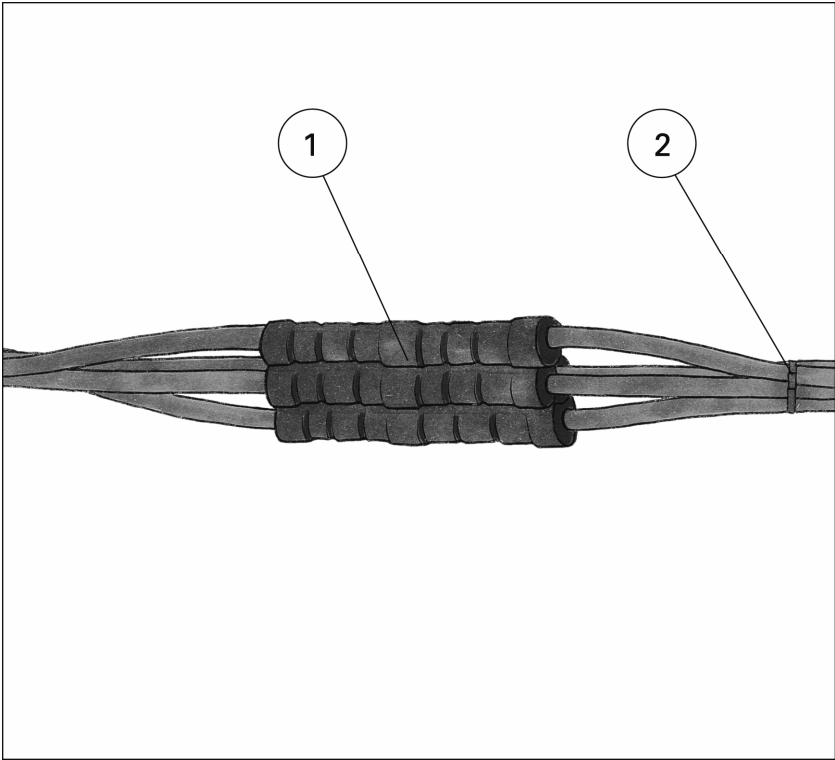
Support, support size, number of masts; support material (wood, steel, concrete); cable cross section, construction

Network data LV-ABC line: 4x95 mm² Cable: 4x150 mm²

Material list

Pos	Product description	Product name	Pcs	m
1	HEL-5552	Hook bolt	1	
2	HEL-5504	Anchoring clamps	1	
3	HEL-6893ZAK	Mechanical connector	4	
4	WCSM 43/12-150/S	Sealing tubing	4	
5	CGPT 18/6-0	Protection tubing		4
6	502 K 016/S	Breakout	1	
7	GPC 60x60 L2750	PVC cable protection	1-3	
8	CSB	Cable tie	1	

Point 2: LV-ABC joints



Typical applications
Joining two LV-ABC lines

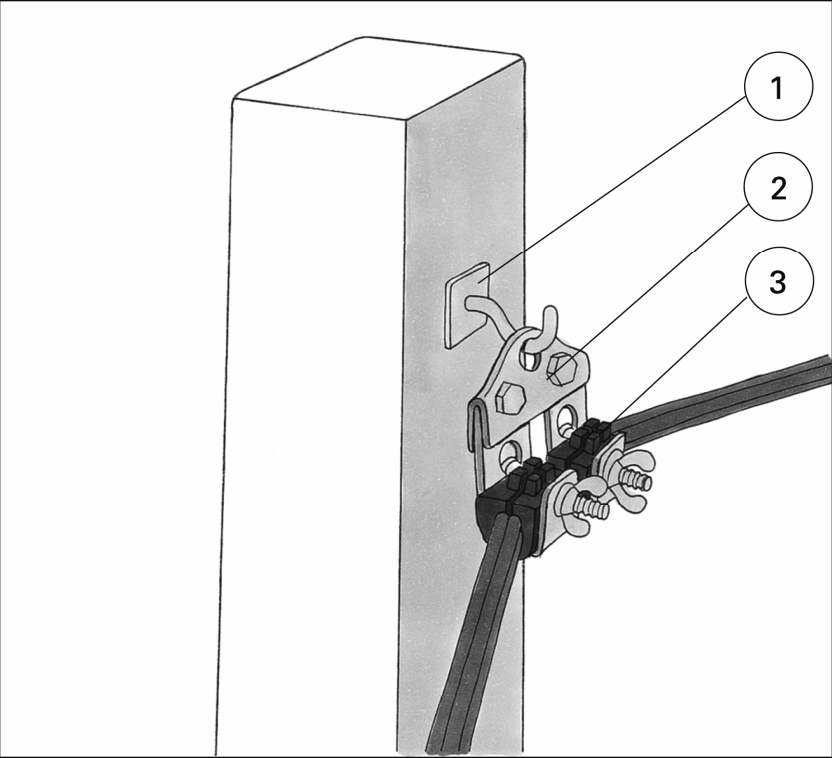
Application variants
Cable cross section

Network data LV-ABC line 4x95 mm²

Material list

Pos	Product description	Product name	Pcs
1	MJPT-95 Alus	Pre-insulated connector	4
2	CSB	Cable tie	2

Point 3: LV-ABC suspension deviation 30° - 60°



Typical applications
LV-ABC line fixing to the support poles.

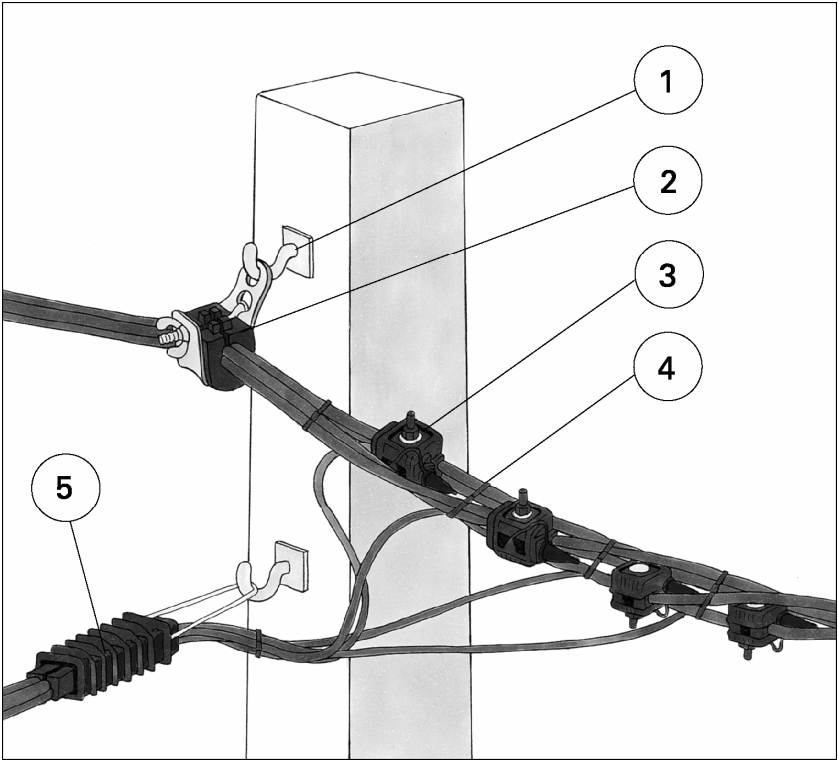
Application variants
Support size, number of masts; support material (wood, steel, concrete); line cross section

Network data LV-ABC line: 4x95 mm²

Material list

Pos	Product description	Product name	Pcs
1	HEL-5552	Hook bolt	1
2	PSY	Suspension plate	1
3	PS 495	Suspension clamp	2

Point 4: Suspension and service line tap



Typical applications

Service connection

Application variants

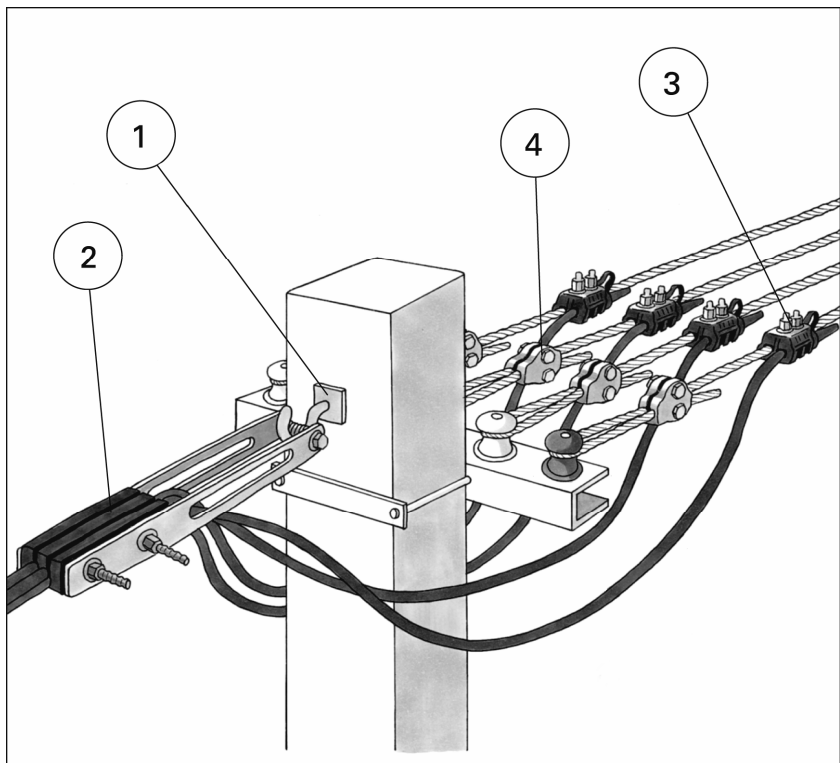
Masts; cable cross section, number of phases (one or three)

Network data LV-ABC line: 4x95 mm² LV-ABC Tap: 4x16 mm²

Material list

Pos	Product description	Product name	Pcs
1	HEL-5551	Hook bolt	2
2	PS 495	Suspension clamp	1
3	P2X 95	Piercing connector	4
4	CSB	Cable tie	6
5	PA-25x100	Anchoring clamp	

Point 5: LV-ABC anchoring and connection to bare overhead line



Typical applications
LV-ABC bare line transition

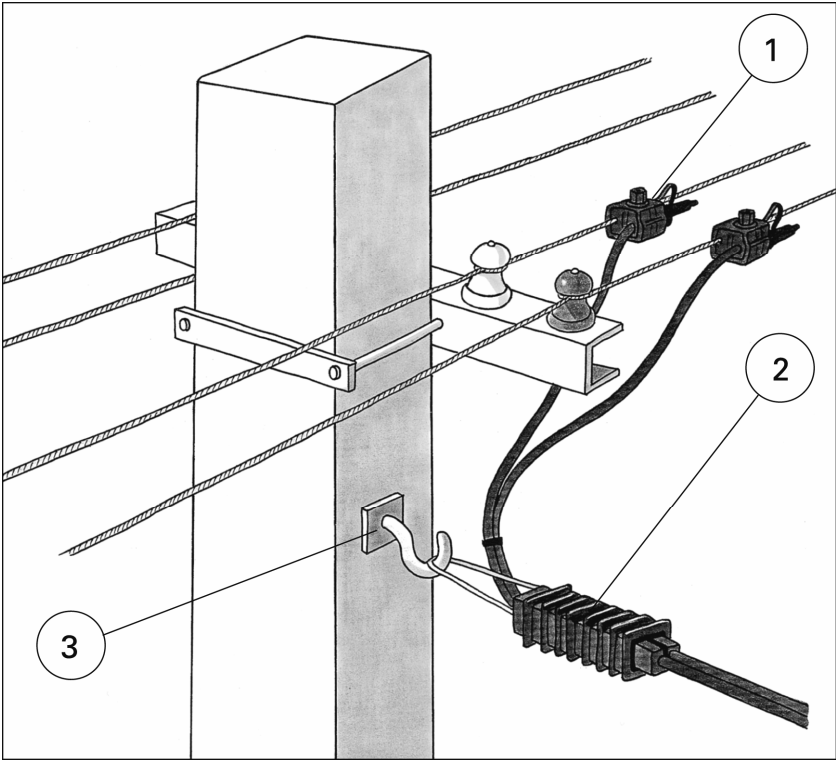
Application variants
Support, support material (wood, steel, concrete); line cross section

Network data LV-ABC line: 4x95 mm² Bare line: 4x95 mm²

Material list

Pos	Product description	Product name	Pcs
1	HEL-5552	Hook bolt	1
2	HEL-5505	Anchoring clamps	1
3	CDR/CN 1S 95 UK	Bare-LV-ABC connector	4
4	HEL-38031	Dead end clamp	4

Point 6: Bare main and service line tap



Typical applications
Service connection (Old bare line with LV-ABC service line)

Application variants
Masts; cable cross section, number of phases (one or three)

Network data Bare line: 4x95 mm² Service: 2x16 mm²

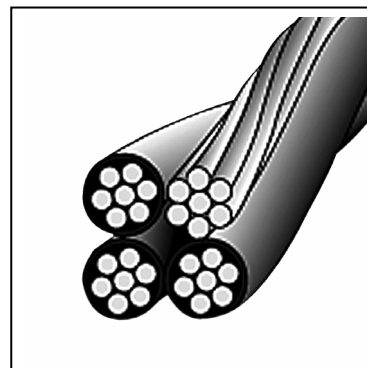
Material list

Pos	Product description	Product name	Pcs
1	RDP 25/CN	Bare-LV-ABC connector	2
2	PA-25x100	Anchoring clamp	1
3	HEL-5552	Hook bolt	1

Dimensions of LV-ABC lines with bare neutral messenger

According to
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 ²	Conductor diameter		Thickness of insulation		Core diameter		Current carrying capacity (A)*	Breaking load kN
	min. mm	tolerance mm	nom. mm	min. mm	min. mm	max. mm		
16	4,4	±0,05	1,4		7,1	7,3	70	-
25	5,9	±0,20	1,4		8,3	9,1	90	-
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

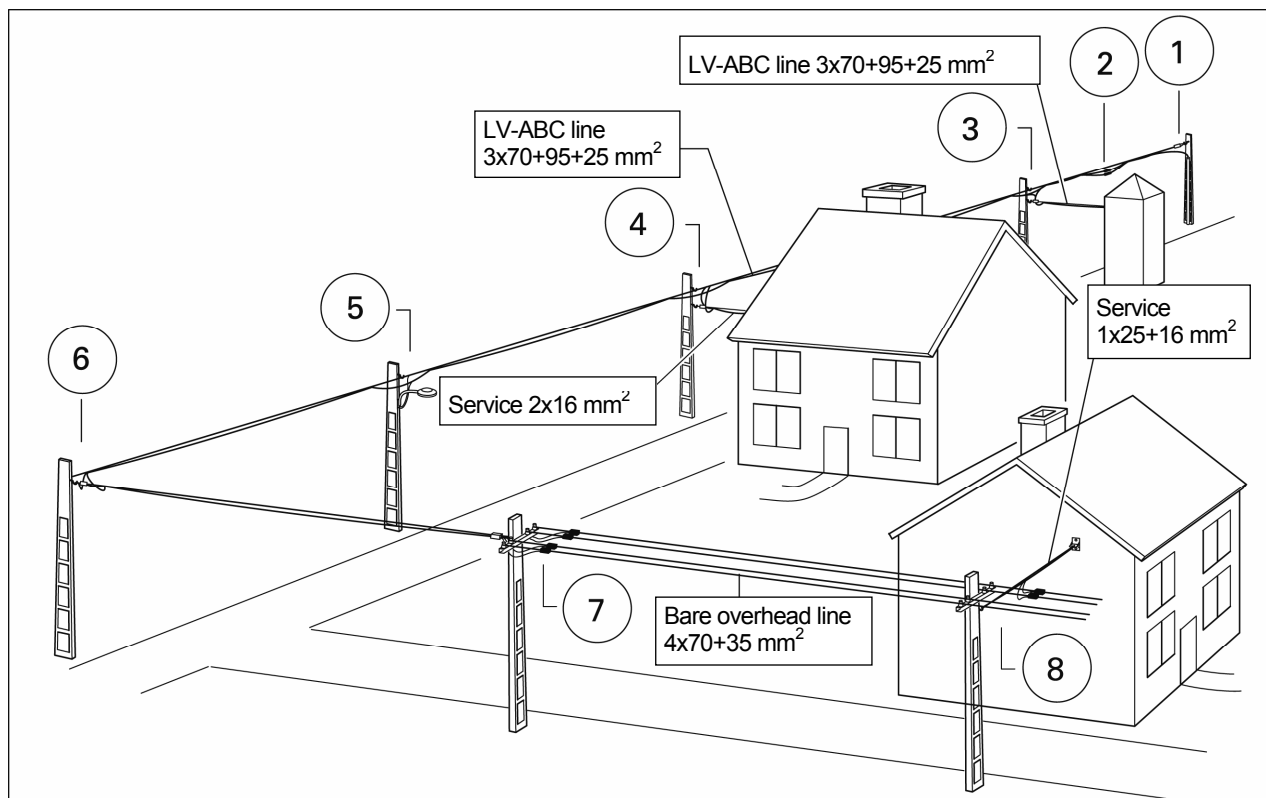
Dimensions of neutral messenger conductors

Cross section mm ²	Conductor diameter		Thickness of insulation		Core diameter		Current carrying capacity (A)	Breaking load kN
	min. mm	max. mm	nom. mm	min. mm	min. mm	max. mm		
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 ²	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

LV ABC system with bare neutral messenger Sample network layout



LV accessories application points

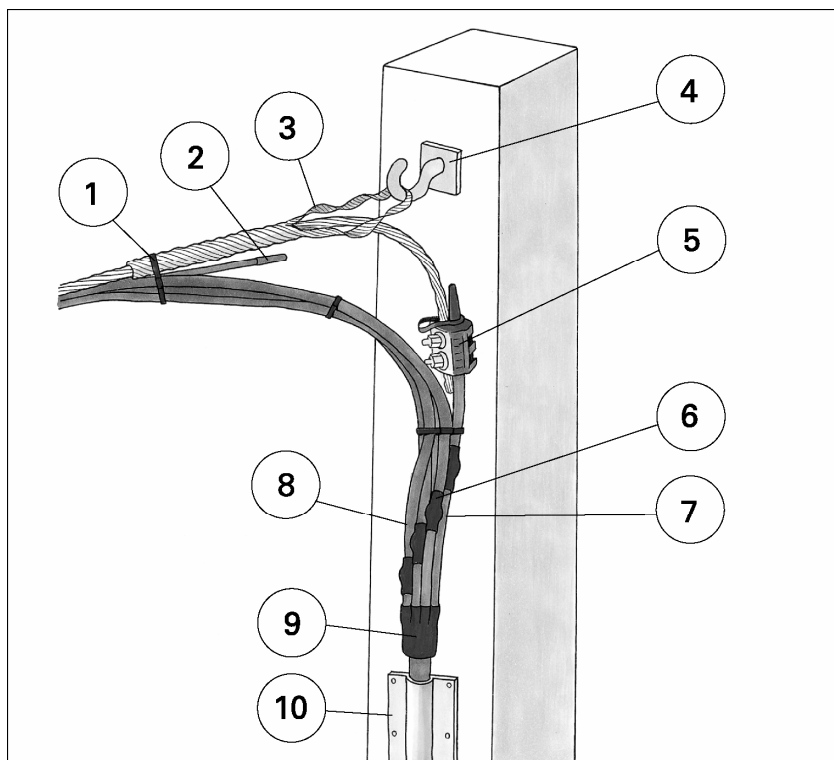
		Page
1	LV-ABC anchoring and cable connection	30
2	LV-ABC joints	31
3	LV-ABC suspension and main tap	32
4	LV-ABC main suspension and service line tap with surge arrester	33
5	LV-ABC suspension and lamp connection	34
6	LV-ABC double anchoring with surge arrester	35
7	LV-ABC anchoring and connection to bare overhead line	36
8	Bare suspension and main tap	37

The network layout shows a low voltage network with 8 application points all described in detail on the following pages.

Cable cross sections are fixed (see drawing) and all connectors and fittings are chosen to match these dimensions. Refer to the 'Connectors and Fittings for Low Voltage Insulated Overhead Lines' catalogue to select the correct product for a different cross section.

The sections for LV-ABC lines with insulated neutral messenger and start on page 4 and 20, respectively. Refer to these sections if you are looking for a configuration not covered by this section.

Point 1: LV-ABC anchoring and cable connection



Typical applications

Transformer feed lines; factory supply lines; bypass systems (railways, bridges, roads)

Application variants

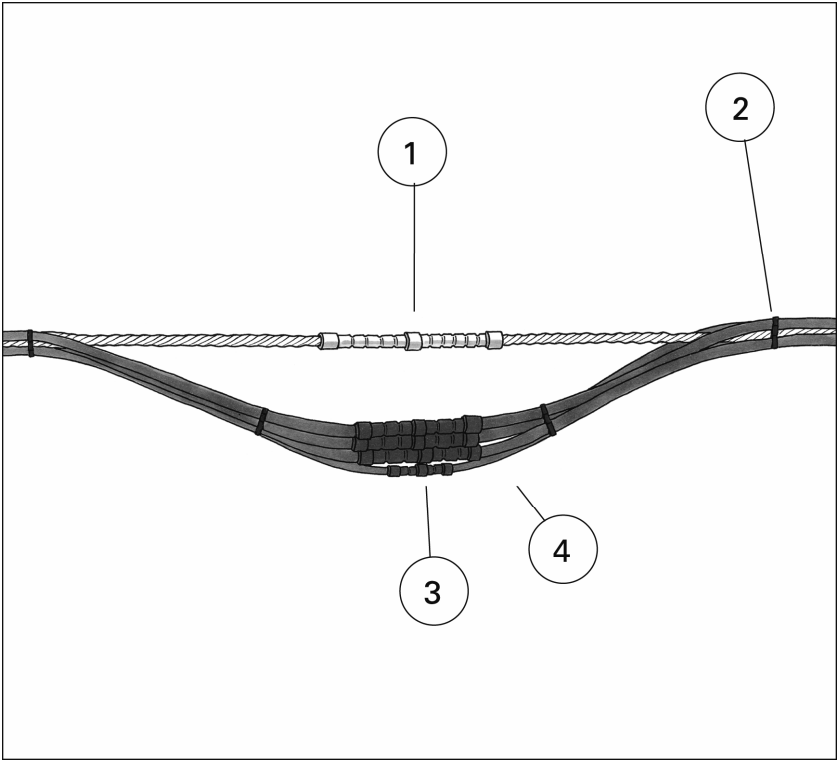
Support, support size, number of masts; support material (wood, steel, concrete); cable cross section, construction

Network data LV-ABC line: $3 \times 70 + 95 + 25 \text{ mm}^2$ Cable: $4 \times 120 \text{ mm}^2$

Material list

Pos	Product description	Product name	Pcs	m
1	CSB	Cable tie	3	
2	CECT 6-35	Elastomeric end cap	1	
3	DUL-ASDE-1045	Heliformed dead end	1	
4	HEL-5552	Hook bolt	1	
5	CDR/CN 1S 95 UK	Bare LV-ABC connector	1	
6	WCSM 33/8	Sealing tubing	4	
7	HEL 6893ZAK	Mechanical connector	4	
8	CGPT 18/6-0	Protection tubing		4
9	502 K 016/S	Breakout	1	
10	GPC 60x60 L2750	PVC cable protection	1-3	

Point 2: LV-ABC joints



Typical applications
Joining two LV-ABC lines

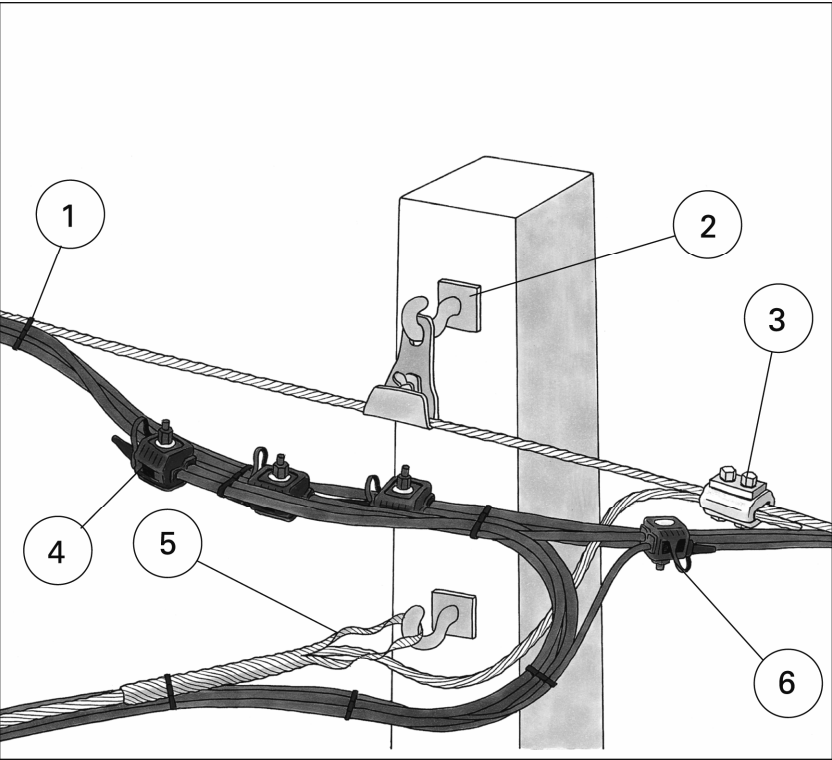
Application variants
Cable cross section

Network data LV-ABC line: 3x70+95+25 mm²

Material list

Pos	Product description	Product name	Pcs
1	HEL-73350	Full tension connector	1
2	CSB	Cable tie	4
3	MJPT-95	Pre-insulated connector	3
4	MJPT-25	Pre-insulated connector	1

Point 3: LV-ABC suspension and main tap



Typical applications
Transformer feed lines; line branches

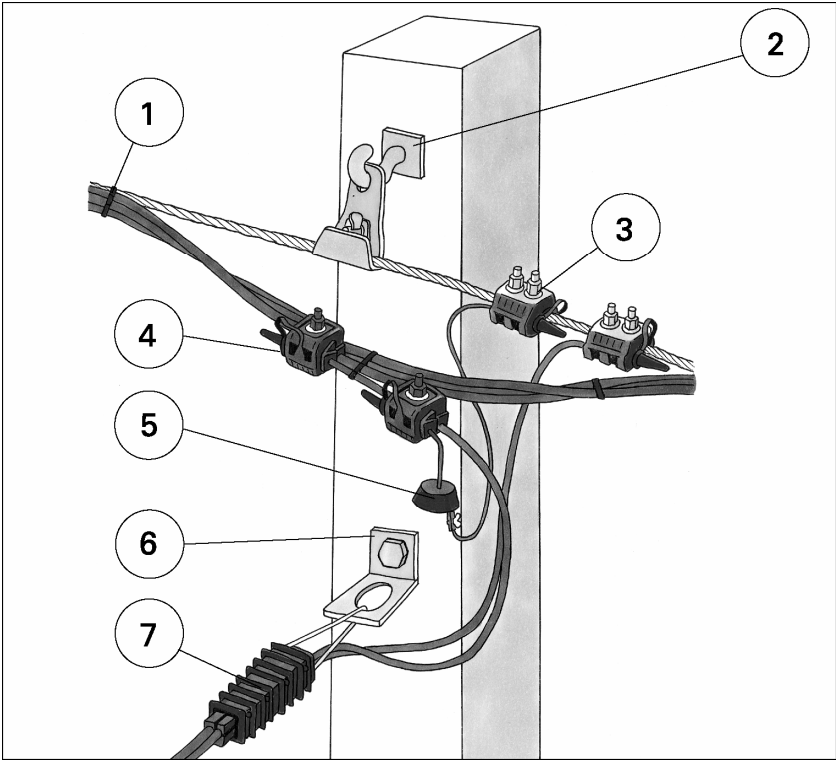
Application variants
Support size, number of masts; support material (wood, steel, concrete); line cross section

Network data LV-ABC main: 3x70+95+25 mm² LV-ABC tap: 3x70+95+25 mm²

Material list

Pos	Product description	Product name	Pcs
1	CSB	Cable tie	8
2	HEL-5552	Hook bolt	2
3	HEL-3590	Parallel groove connector	1
4	P3X 95	Piercing connector	3
5	DUL-ASDE-1045	Heliformed dead end	7
6	P2X 95	Piercing connector	1

Point 4: LV-ABC main suspension and service line tap with surge arrester



Typical applications

Service connection

Application variants

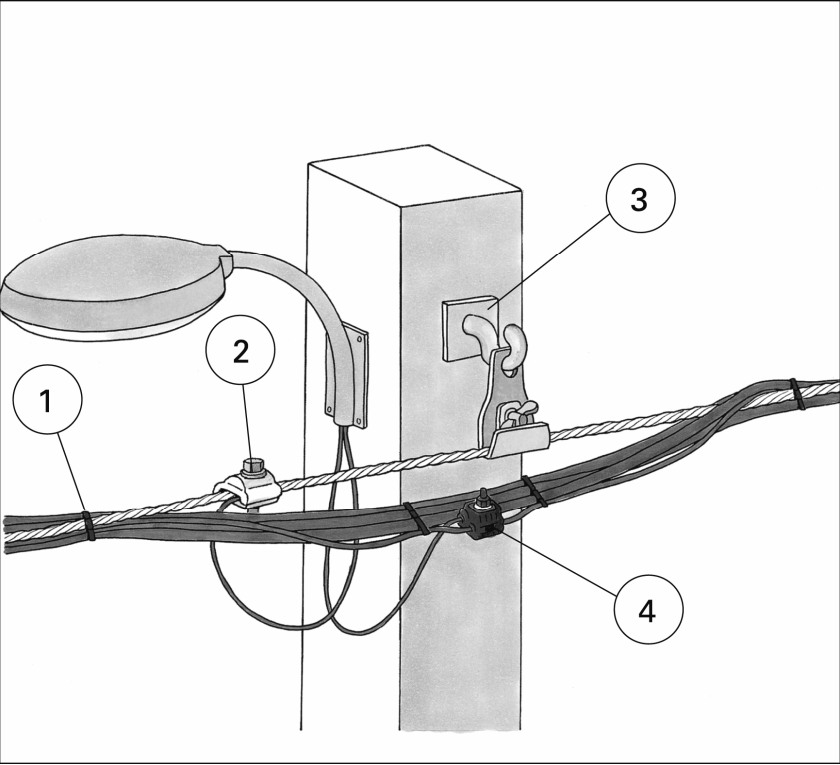
Masts; cable cross section, number of phases (one or three)

Network data LV-ABC line: 3x70+95+25 mm² LV-ABC service tap: 2x16 mm² (Service line)

Material list

Pos	Product description	Product name	Pcs
1	CSB	Cable tie	4
2	HEL-5551	Hook bolt	1
3	RDP 25/CN	Bare LV-ABC connector	2
4	P2X 95	Piercing connector	2
5	LVA 280 CS	Surge arrester	1
6	CAB 25	Anchor bracket	1
7	PA 25x100	Anchoring clamp for service line	1

Point 5: LV-ABC suspension and lamp connection



Typical applications
Street lighting connection

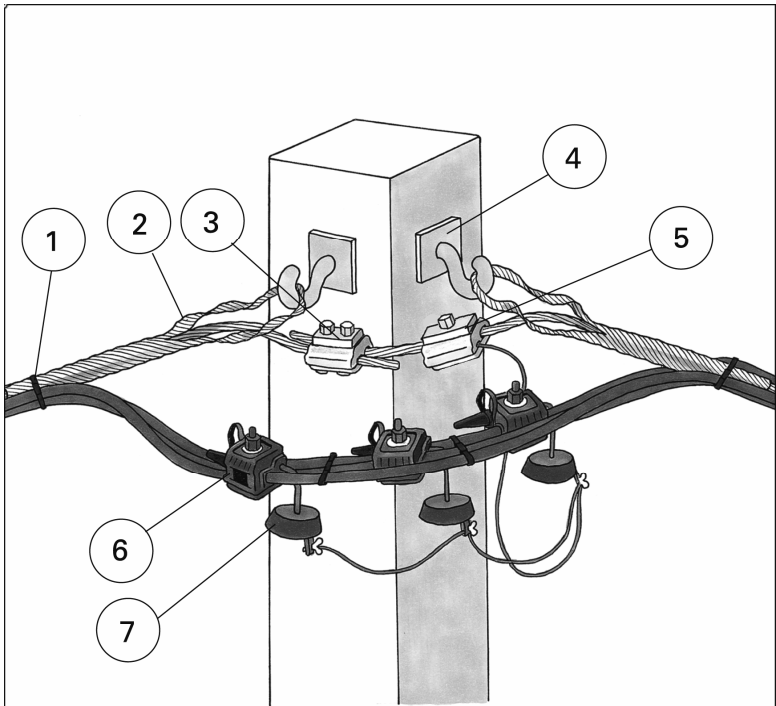
Application variants
Support, support material (wood, steel, concrete); line cross section

Network data LV-ABC main line: 3x70+95+25 mm² Lamp: 2x2,5 mm² Cu

Material list

Pos	Product description	Product name	Pcs
1	CSB	Cable tie	5
2	HEL-3920	Parallel groove connector	1
3	HEL-5551	Hook bolt	1
4	KZEP-13	Piercing connector	1

Point 6: LV-ABC double anchoring with surge arrester



Typical applications
Bigger line deviation and over voltage protection

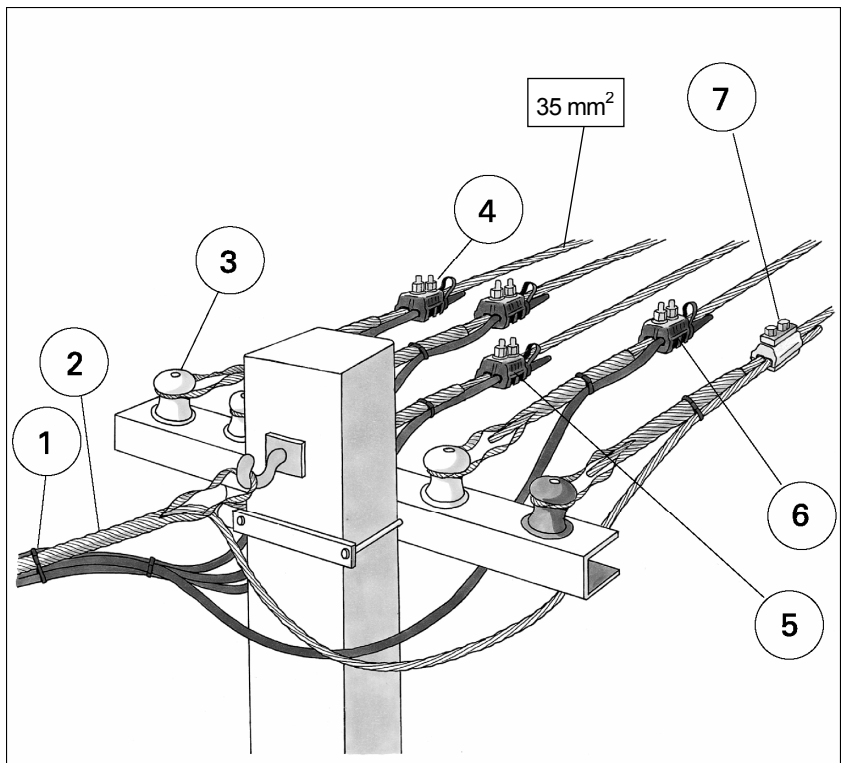
Application variants
Support, support material (wood, steel, concrete); line cross section

Network data LV-ABC line: 3x70+95+25 mm²

Material list

Pos	Product description	Product name	Pcs
1	CSB	Cable tie	8
2	DUL-ASDE-1045	Heliformed dead end	2
3	HEL-3590	Parallel groove connector	1
4	HEL-5552	Hook bolt	2
5	HEL-3919	Parallel groove connector	1
6	P2X 95	Piercing connector	3
7	LVA 280 CS	Surge arrester	3

Point 7: LV-ABC anchoring and connection to bare overhead line



Typical applications
LV-ABC bare line transition

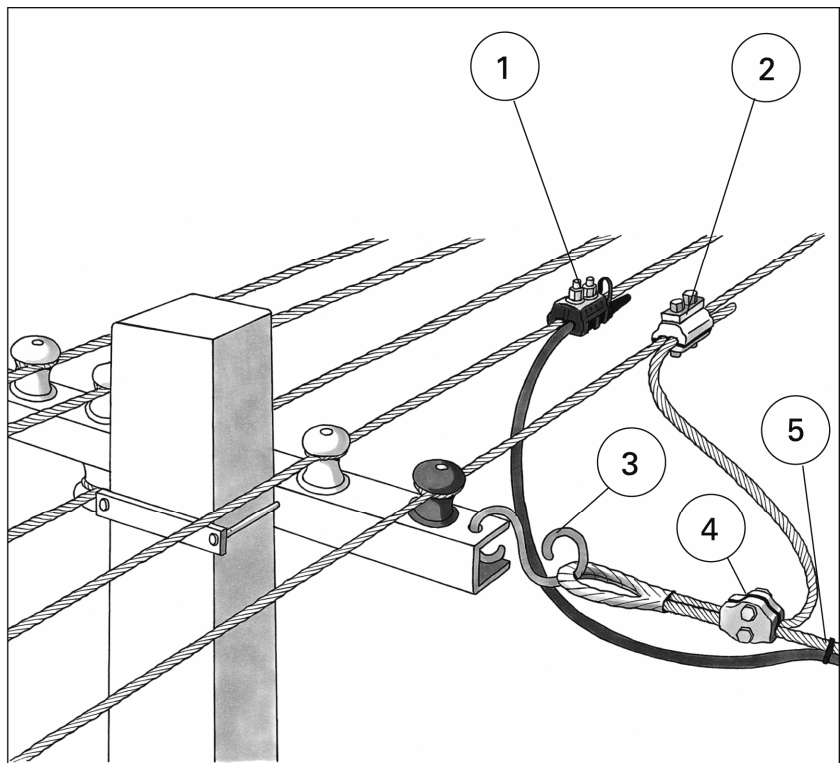
Application variants
Support, support material (wood, steel, concrete); line cross section

Network data LV-ABC line: 3x70+95+25 mm² Bare line: 4x50+35 mm²

Material list

Pos	Product description	Product name	Pcs
1	CSB	Cable tie	4
2	DUL-ASDE-1045	Heliformed dead end	1
3	DUL-ASDE-0655	Heliformed dead end	4
4	RDP 25/CN	Bare LV-ABC connector	1
5	DUL-ASDE-0740	Heliformed dead end	1
6	CDR/CN 1S 95 UK	Bare LV-ABC connector	3
7	HEL-3590	Parallel groove connector	1

Point 8: Bare main and service line tap



Typical applications

Service connection (Old bare line with LV-ABC service line)

Application variants

Masts; cable cross section, number of phases (one or three)

Network data Bare: 4x50+35 mm² Service tap: 1x25+16 mm²

Material list

Pos	Product description	Product name	Pcs
1	RPD 25/CN	Bare LV-ABC Connector	1
2	HEL-3589	Parallel groove connector	1
3	HEL-5642	Hook	1
4	HEL-38027	Dead end clamp	1
5	CSB	B Cable tie	6

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