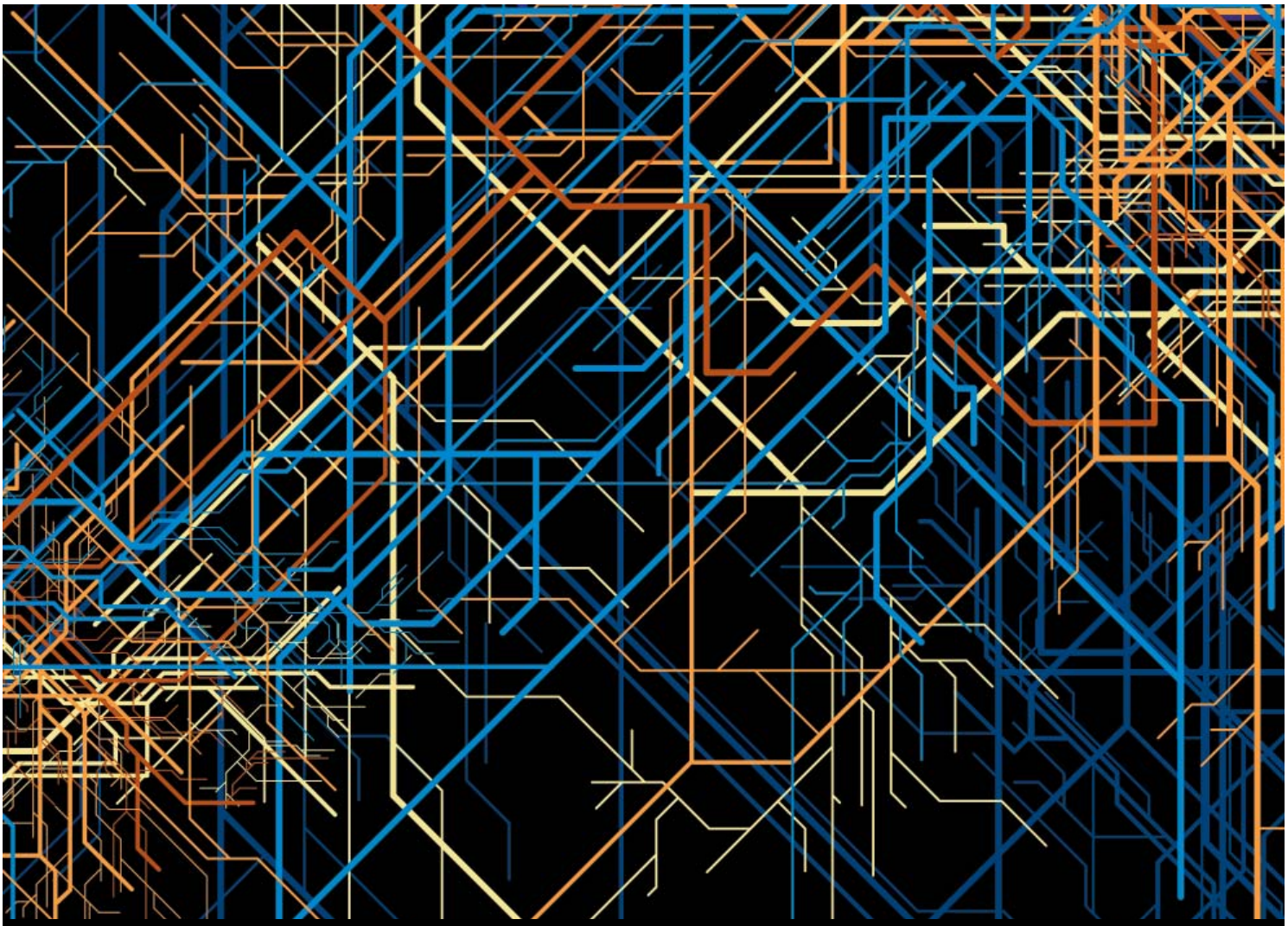

Kabeldon cable accessories 1– 420 kV
Product catalog 2011

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Power and productivity
for a better world™

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Introduction

Our factory is situated in Alingsås, Sweden. The production is automated and meets stringent quality and environmental requirements.

We work to create safe electrical distribution via power cable networks. To achieve this, we develop, manufacture and market a broad range of cable accessories, switching devices and enclosures.

Our main groups of customers are power supply companies, network companies, industrial companies and OEMs.
Our primary areas of expertise are electrical connections in cable systems and control of electrical fields. Our own testing plant is an important aid to product development.

Catalog

The entire product range is presented in three main parts including product facts and ordering information in tabular form.

- Cable accessories ≤ 1 kV
- Cable accessories 12-36 kV
- Cable accessories 52-420 kV

An alphabetical list of contents and a list of contents by product category can be found in the end of this catalogue. The product catalogue is also available on CD and at our website.

A separate product catalog for Kabeldon low voltage switchgear system is available on request.

We reserve the right to alter the design and range of our products without prior notice.

Our business idea is:

"We provide companies that work with electric power with solutions which enable them to joint and connect cables easily and safely, and distribute electricity".

Quality and the environment are among our top-priorities. They are important and self-evident parts of the strategic plan.

We work continuously to improve our processes. Important foundations for this work are:

- **ISO 9001 quality standard**
- **ISO 14001 environmental standard.**

ISO 9001 BUREAU VERITAS Certification

ISO 14001 BUREAU VERITAS Certification

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Fundamental technologies

We work on the basis of four fundamental technologies within which we have accumulated substantial expertise over many years.

Electrical connections

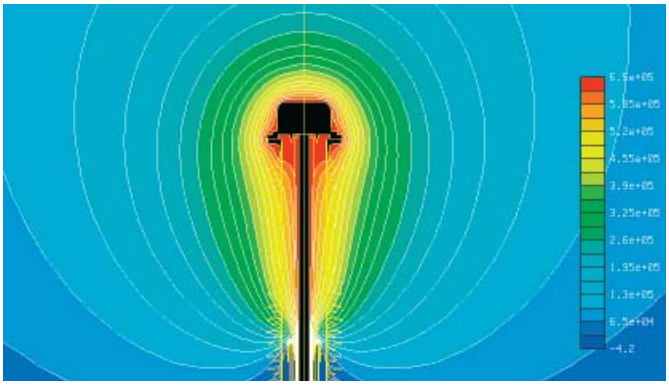
The safe and secure transfer of electric current between cable conductors, or between a cable conductor and a device, requires an electrical connection of good quality. We test and develop various methods, but in most cases we use bolt technology, that gives us the possibility of offering complete solutions in line with our philosophy of easy and safe installation.

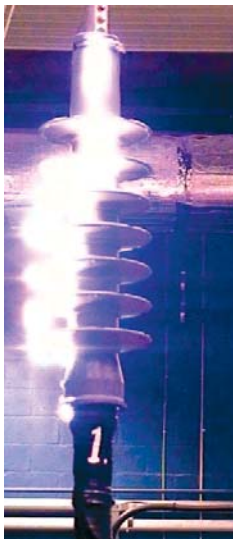
Controlling electrical fields

At high voltages the electrical fields must be controlled so that the strength of the insulation or the surrounding material is not put at risk. Depending on the voltage level, we work with different methods, e.g. geometrical, refractive or resistive field control. Geometrical field control is achieved with premolded stress cones and splicing blocks. Resistive and refractive field control are achieved with special field controlling materials integrated into premolded termination blocks.

Development of creepage current resistant materials

Outdoors, cable accessories are exposed to major stresses, e.g. UV radiation from the sun and creepage currents caused byprecipitation and pollution. Cable accessories are installed everywhere on the face of the planet: in humid tropical environments, in extreme cold or in the swirling salt mist of coastal regions. We develop materials and designs for outdoor use that are only minimally affected by external factors. Practical endurance tests are an important part of our development work. In addition to Weather-O-Meter, salt-mist-chamber tests and other destructive long-term tests, the products are tested under outdoor weather conditions.





Design of low voltage networks

Electrical distribution in power cable networks calls for safe and rugged products to connect cables and to withstand external factors such as humidity, vibration, etc., for a long time without causing malfunctions.

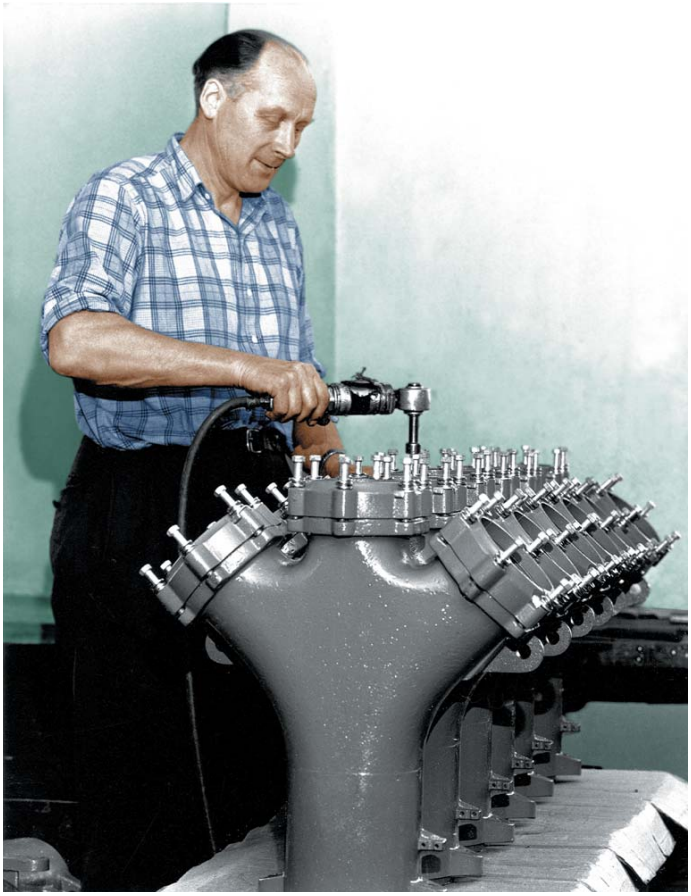
Lengthy experience of manufacturing switching devices and hot-dip galvanized enclosures, together with good customer relations, means that we can quickly adapt product development to suit the needs of the market.

Reasons for choosing Kabeldon cable accessories

A power cable network must be capable of supplying electric power without interruption. If a failure does occur, it is usually the junction points in the network that are at fault, rarely the cable. So it pays to choose cable accessories with care.

Unique, long experience

Long experience brings great expertise. We have been manufacturing cable accessories for paper-insulated cables for about 100 years. When XLPE insulated cables began to be used more than 50 years ago, we were involved from the outset. Since then we have always been in the forefront of developments.



Manufacturing outdoor cable terminations for paper-insulated cables in 1962.

Leading research and development

- Our watchwords are simplicity and safety.
- Our core competence is our expertise in electrical connections in power cable systems.

Successful product development requires proper resources. We have an advanced chemistry laboratory, a profound expertise in the field of polymers and well-equipped high-voltage and high-current laboratories.

Better economy

Kabeldon cable accessories provide greater safety. This means major savings in the long term, as well as lower costs from simplified routines for purchase, delivery and storage.

Professional training

The technology of cables and their installation is constantly developing.

We offer a broad range of courses in cable technology and cable accessories. Our instructors also take part in our development projects, so you can be sure that they have access to the latest technology.

We arrange training programmes and practical exercises in the assembly of cable accessories up to 420 kV.

All course participants will receive a diploma or a training certificate after passing a theoretical and practical test.

If you would like to know more about the courses, please contact our training department.

Standards

Definition of voltages

Cables and cable accessories are classified according to the voltages at which they operate. A rapid survey at standards all over the world shows that the designations are a little different. However, IEC designations gives a clear picture of used vocabulary. The voltages normally used in this context are:

U_0 = the rated r.m.s.(root mean square) power-frequency voltage between each conductor and screen or sheath for which cables and accessories are designed.

U = the rated r.m.s power-frequency voltage between two different conductors for which the cables and accessories are designed.

U_m = the maximum r.m.s power-frequency voltage between two different conductors for which the cables and accessories are designed. It is the highest voltage that can be sustained under normal operating conditions at any time and at any point in a system. It excludes temporary voltage variations due to fault conditions and the sudden sconnection of large loads.

Standards and type testing

Electrical components must meet numerous requirements in areas such as functional safety, technical performance, personal safety and so on. For cable accessories, compliance with the quality requirements is checked by type and routine testing. We perform these tests to various standards, both international and national.

These are the standards on which our tests are usually based:

IEC

(International Electrotechnical Commission) An international standard.

EN

(European Norm)

HD

(Harmonization Document)
These standards were developed by CENELEC for the European countries. The aim is to use the same standards throughout Europe, to eliminate obstacles to trade. In most cases, these standards harmonize with IEC standards. Each European country publishes the standard as its own, and there may be some national deviations and special requirements.

Tests in the high voltage laboratory.

IEEE

(The Institute of Electrical and Electronics Engineers)
This standard is mainly used in the USA.

Earlier Swedish standards are being replaced by standards drawn up by CENELEC. For example, Swedish standard SEN 24 14 34 edition 2, 1977 for XLPE-insulated cables is replaced by SS 424 14 45 edition 1, which is identical to HD 629.1 S1.

Some customers require special tests that are not included in the usual standards. We are usually able to meet their requirements.

EBR

(Electricity Building Rationalisation) is a Swedish system for the rational planning, construction and maintenance of electricity distribution plants and facilities in the range 0.4-145 kV.

Standards

Voltage range U_m 1.2 kV

In this voltage range, the function of cable accessories is to provide mechanical protection and insulation. There is no need for controlling the electrical field.

In the past, there was no international standard, only national standards. CENELEC therefore produced an international standard, HD 623 S1, which is equivalent to Swedish standard, SS 424 14 44.

When the CENELEC standard is adopted in a country, it can be supplemented with one or more national options, for example requirements for impact resistance at low ambient temperature.

Voltage range U_m 7.2-42 kV

IEC: Current standards are IEC 61442, which covers test methods, and IEC 60502-4, which sets out the testing requirements.

IEC contains $U_m \leq 36$ kV.

CENELEC: Current standards are EN 61442 which covers test methods and is identical to IEC 61442.

HD 629.1 S2, which sets out the testing requirements. The main difference between IEC and CENELEC is that CENELEC stipulates a longer period of temperature cycling under voltage.

A test conducted in accordance with CENELEC also satisfies the IEC requirements. Standard HD 629.2 S1 applies to accessories for paper-insulated cables and transition joints.

To include the less common voltages which occur in certain European countries, CENELEC has included more voltage classes than IEC. In addition, CENELEC runs up to U_m42 kV.

CENELEC voltage classes

U_0	U	U_m
3.6	6	7.2
3.8	6.6	7.2
6	10	12
6.35	11	12
8.7	15	17.5
12	20	24
12.7	22	24
18	30	36
19	33	36
20.8	36	42

IEEE: The currently applicable standards are Std. 48 for terminations covering insulation classes 2.5-765 kV, and Std. 404 for joints rated at 2.5-500 kV. The test voltage for joints is generally lower than for equivalent terminations.

The voltage classes in IEEE are notidentical with those in IEC. Some of the definitions also differ slightly between IEEE and IEC. This can make direct comparisons difficult.

Voltage range U_m 52-420 kV

IEC standard 60840 covers cable systems with voltages above 36 kV up to 170 kV. The third edition of the standard now also treats routine testing of cable accessories.

IEC standard 62067 covers cable systems with voltages above 170 kV up to 550 kV. The standard also states methods and requirements for the routine testing of cable accessories.

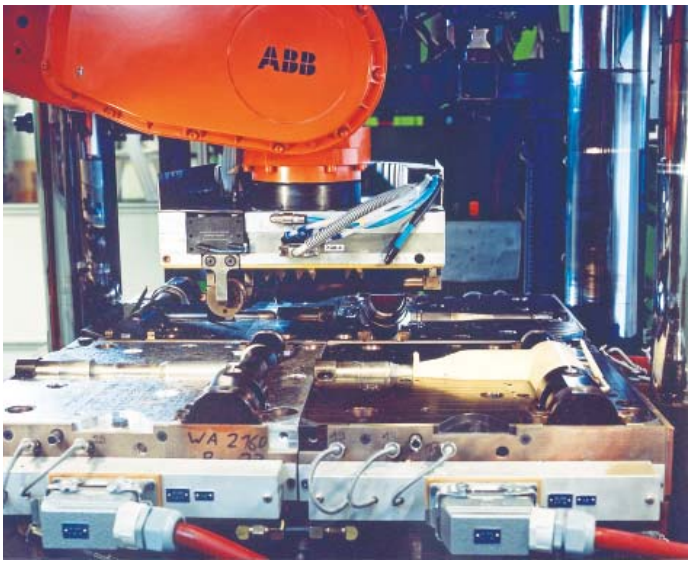
Both IEC 60840 and IEC 62067 deal with testing of outer protection for buried joints and screen separation kits. These tests are to qualify the electrical performance of the outer protection with special emphasis on watertightness.

IEC voltage classes

U_0	U	U_m
26	45-47	52
36	60-69	72.5
64	110-115	123
76	132-138	145
87	150-161	170
127	220-230	245
160	275-287	300
190	330-345	362
220	380-400	420

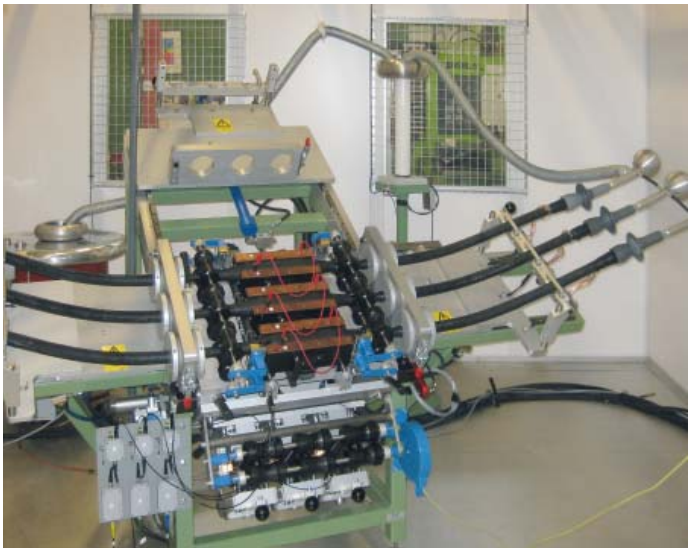
We supply cable accessories for various types of cables.

Manufacturing and testing

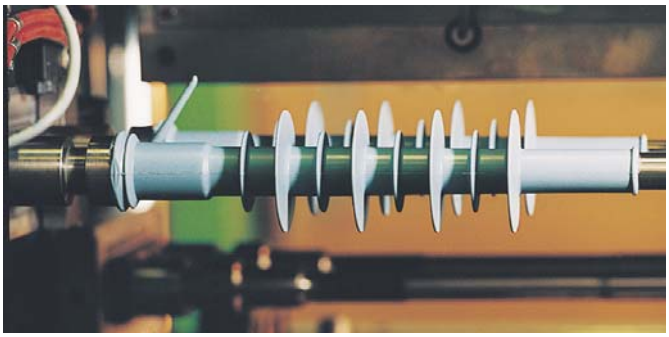


Manufacturing of premolded connectors. The different layers are vulcanized together.

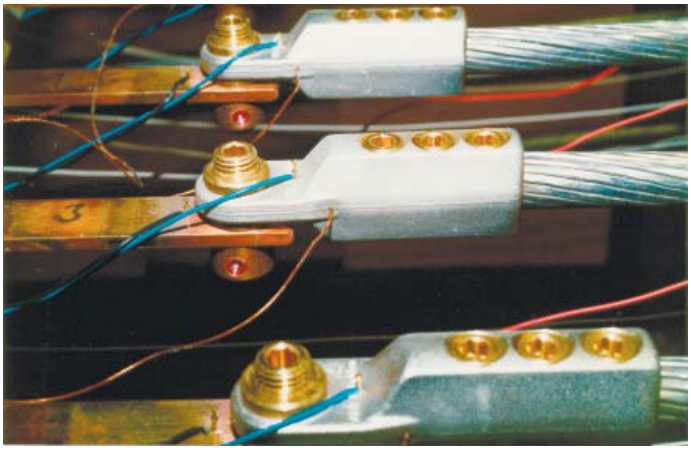
The three layers of the joint are vulcanized together in a unique manufacturing process.



The premolded cable joints are routine tested after manufacturing.



A snapshot of a cable termination manufacture.



We test and develop electrical connections with reliable bolt connector technology.

Research and development are the basis for the manufacturing of our products.

Kabeldon cable accessories 1-420 kV

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Cable joint, branch, SAGA 11 Y 15
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Cable connection, AK-ADAS 21

Introduction
Cable accessories ≤ 1 kV

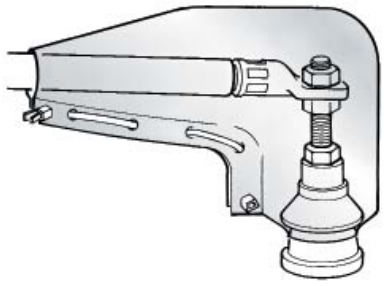
The most important tasks of the cable accessories are to create a safe electrical connection, insulation and provide mechanical protection.

The product range includes accessories designed on different principles with different properties.

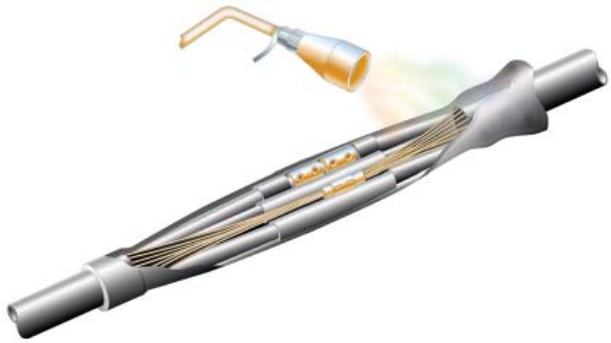
Accessories which utilize tape technology are simple to use, flexible and unaffected by the dimensions of the cable. Cable accessories which utilize heat-shrink technology offer a simple alternative.

Protective hood type LPH.

Cable connection AK-ADAS.



Connection protection type KAL.

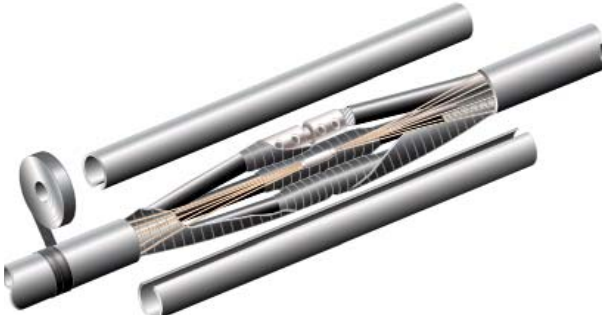


Heat-shrink joint SMKC.

Cast resin products are the obvious choice in slightly more challenging environments.The robust joint is able to cope with a water depth of 10 metres, and can be used for both power and control cables.

Cast resin joint type SMARTA.

Protective hood type LXAC.



Tape joint type SMILA / SMULA.

Cast resin branch joint type SAGA.

Cable joint with cast resin for plastic and paper-insulated cables, and control cables
SMARTA

Use
For jointing 1 kV plastic and paper-insulated 3-, 4- and 5-core cables as communication cables and the transition between plastic and paper-insulated cables.

Standards
Meets the requirements of:
– SS 424 14 44 Edition 1
– EBR KJ 24:89

Design
The joint consists of a transparent casting mould with flexible sealing rings between the casting mould and the cable. Compounding cast resin and hardener are mixed in a sealed bag. After hardening the joint becomes resistant. Please note, the lower the temperature is, the longer the hardening time will be. Hardening time is reduced if cast resin is stored warmly until use. SMARTA ought not to be installed if temperature is below -10° C.

When jointing paper-insulated cable, and at the transition between paper and plastic cables, accessory kit PPC must be used.

Note that, when jointing plastic-insulated to paper-insulated cables, connectors with a partition must be used.

The joint is also excellent to use when jointing cables with an integrated tube for opto fibre, which must be jointed without heating. The material for jointing the opto tube is not included. Can be used in down to 10 metres water depth.

To be ordered separately
– Connectors
– PPC (see below)

Designation	Conductor cross section		Control cable max number of cores		Cable diameter	Casting mould		Weight
	Cu	Al	with	without		Length	Diameter	
	mm²		individual screen		mm	mm		kg/item
SMARTA 10-5	2.5-10	–	14	27	5-27	240	35	0.8
SMARTA 11-5	6-16	–	27	39	15-30	340	40	1.2
SMARTA 12	25-70	25-50	91	–	25-50	540	72	3.6
SMARTA 13	95-150	70-150	–	–	30-65	660	96	7.6
SMARTA 14	185-240	185-240	–	–	35-70	840	105	10.5

To be ordered separately

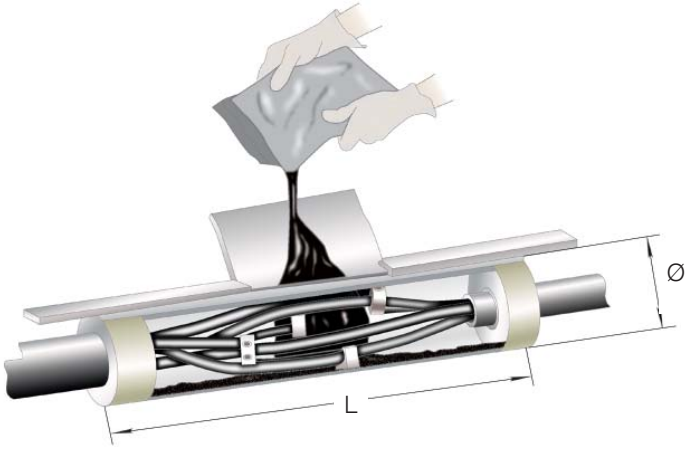
Accessory kit	Used for	Weight
		kg/item
PPC 11	SMARTA 10-5 / SMARTA 11-5	0.2
PPC 12	SMARTA 12	0.3
PPC 13	SMARTA 13	0.4
PPC 14	SMARTA 14	0.5

Cable joint, branch for plastic-insulated cables
SAGA 11 Y

Use
Branching of 1 kV plastic-insulated 3- and 4-core cables.

Standards
Meets the requirements of:
- SS 424 14 44 Edition 1
- EBR KJ 24:89

Design
The joint consists of a transparent casting mould with flexible sealing rings between the casting mould and the cable. Compounding cast resin and hardener are mixed in a sealed bag. After hardening the joint becomes resistant. Hardening time is reduced if cast resin is stored warmly until use.



Please note, the lower the temperature is, the longer the hardening time will be.SAGA 11 Y ought not to be installed if the temperature is below -10° C.

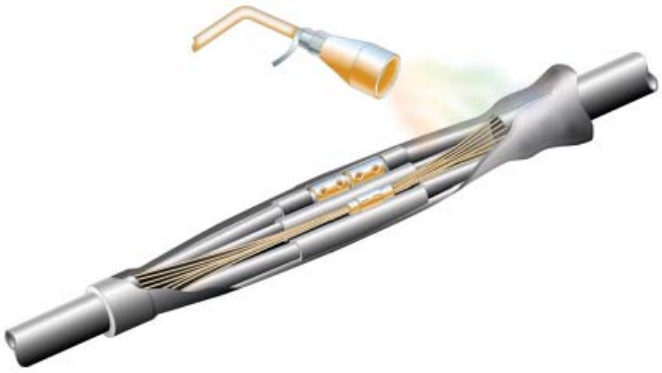
Branching takes place with the help of clamps, which penetrate the insulation on the main cable. The clamps, which are included in the kit, are tightened with a torque wrench.

Can be used in down to 10 metres water depth.

Designation	Conductor cross section		Diameter		Dimensions		Weight
	Main cable	Branch cable	Main cable	Branch cable	L	Ø	
	mm²		mm		mm		kg/item
SAGA 11 Y	16-50	10-50	15-30	5-25	500	96	4.5

Cable joint, heat-shrink for plastic-insulated cables
SMKC

Use
For jointing 1 kV plastic-insulated cables with 3-, 4- and 5-cores, with or without screen.



Standards
Meets the requirements of:
– SS 424 14 44 Edition 1
– EBR KJ 24:89

Design
SMKC 11-5 contains one outer and five inner sleeves.
SMKC 12-14 contain one outer and four inner sleeves.

The sleeves are made of cross-linked polyethylene, coated internally with a hot-melt adhesive and are installed with heat.

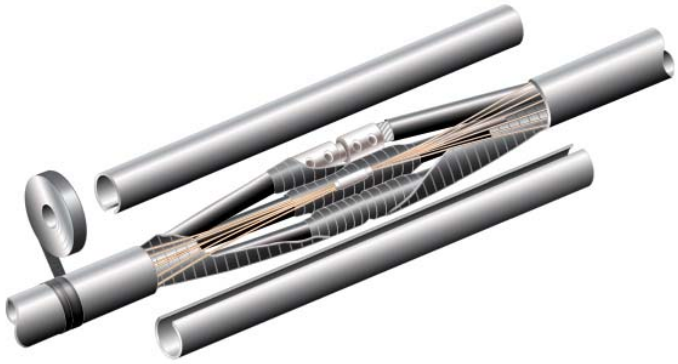
To be ordered separately
– Connectors

Designation	Conductor cross section plastic cable			Outer sleeve		Weight
					before/after heat shrinkage	
	Al	Cu	Al/Cu	Length	Ø max/min	
	mm²			mm		kg/item
SMKC 11-5	–	2.5-16	–	380	34/14	0.2
SMKC 12	25-50	25-70	50/25	550	66/20	0.4
SMKC 13	70-150	95-150	150/70-95	790	83/26	0.5
SMKC 14	185-240	185-240	240/120-150	950	110/40	0.9

Cable joint, tape for plastic-insulated cables
SMILA and SMULA

Use
For jointing 1 kV plastic-insulated cables with 3-, 4- and 5-cores, with or without screen.

SMILA is used for jointing cables with screen. Otherwise SMULA is used.



Standards
Meets the requirements of:
- SS 424 14 44 Edition 1
- EBR KJ 24:89

Design
The kit contains insulating vulcanizing tape and electrical tape. SMILA also includes a copper net. Insulating vulcanizing tape is used for insulation of the connectors. The stripped cable sheaths and electrical tape are used as outer protection.

The joints are packed in kits. Two SMILA 12 or SMULA 12 kits are used to joint 70-150 mm² cables, and three kits are used for 185-240 mm² cables.

To be ordered separately
- Connectors

Designation	Conductor cross section		Cable joint Length	Weight
	Al	Cu		
	mm²		mm	kg/item
SMILA 11	–	2.5-16	420	0.2
SMILA 12	25-50	25-70	570	0.3
For larger cable cross sections, use SMILA 12 as below:				
SMILA 12 (two)	70-150	95-150	770	0.6
SMILA 12 (three)	185-240	185-240	920	0.9
SMULA 11	–	2.5-16	420	0.1
SMULA 12	25-50	25-70	570	0.3
For larger cable cross sections, use SMULA 12 as below:				
SMULA 12 (two)	70-150	95-150	770	0.6
SMULA 12 (three)	185-240	185-240	920	0.9

Protective hood for plastic-insulated cables
LPH

Use
Termination outdoors for 1 kV plastic-insulated underground cables with 3-, 4- or 5-cores, 2.5-95 mm2.

Standards
Meets the requirements of:
– SEN 24 14 34

Design
The cable termination consists of a hood made of weather-proof and oil-resistant rubber. The cable cores are bent downwards and fixed with tape before the hood is pushed on. Cable cores can be protected against UV-radiation by using aIS insulating hose.

IS
Insulating hose for plastic cables, overhead cables or for connection to aerial bundled cables. Meets the requirements of SEN 24 21 11 and is UV- and cold-resistant.

Designation	Conductor cross section			Internal dia-meter	Internal height	Weight
	3-core	4-core	5-core			
	mm²			mm	mm	kg/item
LPH 2532	16	10	–	30	83	0.1
LPH 4052	50	35	10	49	137	0.1
LPH 6070	95	70	16	67	176	0.3
LPH 70	–	95	–	68	175	0.3

To be ordered separately

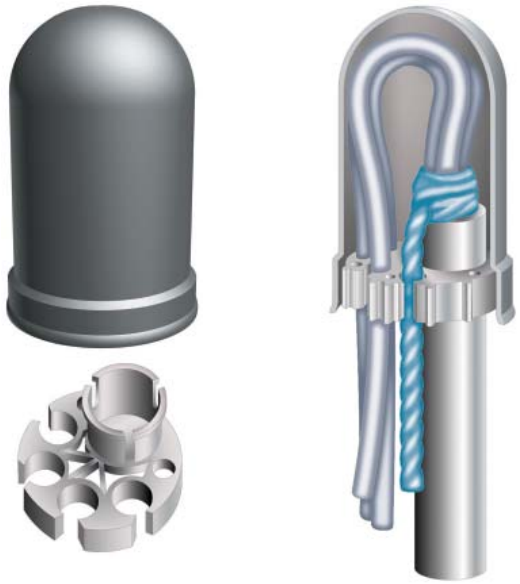
Designation	Conductor cross section	Thickness	Length	Weight
	mm²	mm	m/roll	kg/roll
IS 16	2.5-16	0.7	25	0.7
IS 50	25-50	1.0	25	1.5
IS 95	70-95	1.2	25	2.3

Protective hood for plastic-insulated cables
LXAC

Use
Outdoor termination for 1 kV plastic-insulated underground cables, 2-, 3- or 4-cores 2.5-35 mm2.

Standards
Meets the requirements of:
– SEN 24 14 34

Design
The cable termination consists of a bushing and hood made from impact-resistant black polyethylene. The cable cores are bent downwards and pushed into grooves in the bushing before the hood is pushed on. Cable cores can be protected against UV-radiation by using IS insulating hose.



IS
Insulating hose for plastic cables, overhead cables or for connection to aerial bundled cables. Meets the requirements of SEN 24 21 11 and is UV- and cold-resistant.

Designation	Conductor cross section polymeric cable 3-, and 4-core	Max cable diameter	External diameter Ø	Height	Weight
	mm²	mm	mm	mm	kg/item
LXAC 116	16	27	60	100	0.1
LXAC 135	35	31	75	125	0.1

To be ordered separately

Designation	Conductor cross section	Thickness	Length	Weight
	mm²	mm	m/roll	kg/roll
IS 16	2.5-16	0.7	25	0.7
IS 50	25-50	1.0	25	1.5

Connection protection for plastic-insulated cables
KAL

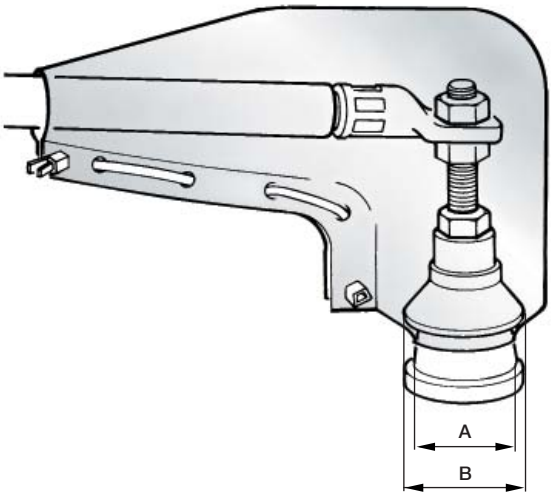
Use
Enclosed connection protection for transformer bushings 1.2 kV.

Standards
Electrical breakdown strength > 40 kV.

Design
KAL is made from UV-resistant PVC latex and consists of an inner yellow and an outer black layer.

These layers provide double insulation, at the same time as the inner yellow layer functions as a warning signal in the event of wear or damage to the protection.

Each kit includes three hoods.



Designation	Max cable diameter	Max bushing diameter		Weight
		A	B	
	mm	mm		kg/kit
KAL 11	15	35	50	0.70
KAL 12	20	50	75	1.25

Cable connection , prefabricated
AK-ADAS

Use
For the extension of Al cable, for example in conjunction with connection in cable distribution cabinets, service distribution boards and switchgears. Dimensioned in accordance with the cable loading and short-circuit data.

Standards
Meets the requirements of:
- SEN 24 50 10 Edition 1
- SEN 24 50 12 Edition 1

Design
Flexible XLPE-insulated Cu conductor compressed onto a prefabricated Al/Cu cable connection. The aluminium part is designed for crimping with the Elpress system. The length of all the connectors are 700 mm.

Designation	Fits aluminium conductor cross section	Conductor cross section of connector	Weight
	mm²	mm²	kg/kit
AK-ADAS 5025-7	50	25	0.2
AK-ADAS 7035-7	70	35	0.3
AK-ADAS 9550-7	95	50	0.5
AK-ADAS 12070-7	120	70	0.5
AK-ADAS 15070-7	150	70	0.6
AK-ADAS 185120-7	185	120	0.9
AK-ADAS 240120-7	240	120	1.0

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Introduction
Cable accessories 12-36 kV

Kabeldon cable accessories for 12-36 kV are characterized by simple solutions with a reliable function. Long experience and continuous product development enable us to offer products that meet future requirements for reliable and dependable systems.

At the time when XLPE cable was introduced in the beginning of the 1960s, we already appreciated the importance of the cable accessories having a constant, active pressure over the cable, in this way following the physical changes in the cable in service. The solution at the time was to use tapes with different properties. Our patented field-control material and the first premolded products were introduced in the 1970s. The technology has since been a guiding force for our product development.

Our current range includes cable joints, cable terminations and screened separable cable connectors in line with this concept. The fact that the products are premolded means that they are manufactured in a single piece and that important functions such as electrical field-control, insulation and sealing are already built in at the factory. The use of flexible materials gives an active pressure, which follows variations in the cable under load.

Manufacturing the products from soft rubber also means that fewer sizes are required to cope with different cable dimensions. All of this, in combination with the bolt technology that we use in our cable connectors and cable lugs, gives a reliable and dependable system.

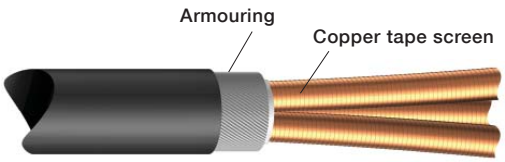
Cable accessories with four important functions: control of electrical fields, control of creepage currents, moisture barriers and mechanical protection.

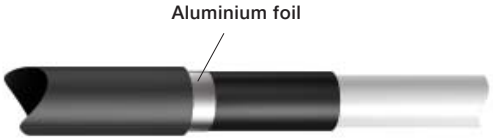
Easy and safe installation with products from ABB in Alingsås, Sweden.

More than one million premolded cable joints, terminations and connectors have already been installed by customers in electricity distribution networks all over the world. Our cable terminations and screened separable cable connectors are also purchased by customers who manufacture switchgears and other installations. In addition to the products presented in this catalogue, we offer especially adapted products and solutions for different markets and cables and a range of cable preparation tools. Please do not hesitate to contact us if you have any other needs or queries.

Quick guide to choosing cable accessories for XLPE-insulated cables 12-36 kV

The kits shown in this section of the catalogue can be used on cables with copper wire screen or copper tape as described. For other types of screen, the accessories must be adapted as follows:





3-core cables with copper tape screen with and without armouring		Page No.	Three 1-core cables with Al foil screen		Page No.
			Indoor termination		
			1.	Termination type SOT	26-32
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			1.	Termination type SOT-31	26-32
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			Insulated connector		
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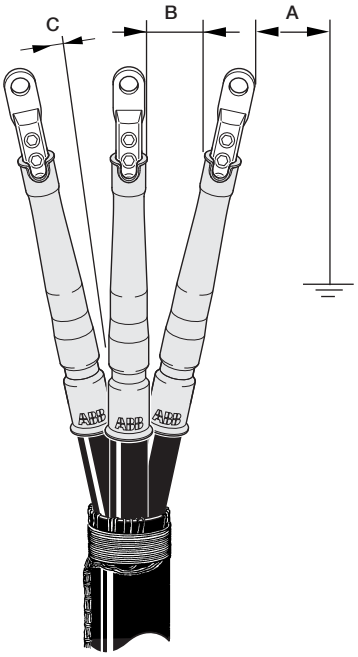
			2.	Earthing kit type JSA	66
			Prefabricated joint		
			1.	Three joints type SOJ-1	49-55
			2.	Screen connection kit type JSA 14-16	67
Taped joint			**Taped joint**		
1.	Joint type SMXB -3	56-58	1.	Joint type SMXB -3	56-58
2.	Screen connection kit type JSA 10-13	67	2.	Screen connection kit type JSA 14-16	67
3.	Armouring kit type ARM	68			

Dimensional drawings for installation of cable termination

Minimum air gap

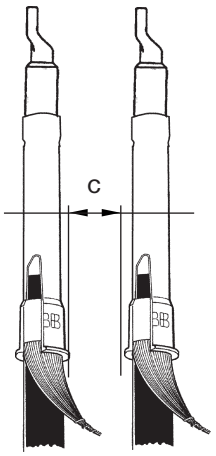
Max voltage	Indoor			Outdoor	
kV	Phase to earth A	Phase to phase B	Phase to phase C	Phase to earth A	Phase to phase B
10	90	90	10	130	130
12	120	120	10	160	160
24	220	250	30	270	270
36	320	370	50	380	380



Minimum air gap between cores* in parallel

	10 kV	12 kV	24 kV	36 kV
C	10 mm	10 mm	30 mm	50 mm

* The cable terminations must be placed in the same height.



Cable termination indoor, premolded
SOT 10 kV

Use
Premolded cable termination for XLPE-insulated cables with Al or Cu conductor for 6.6/10 kV, indoors.

It can also be installed in an indoor humid environment.

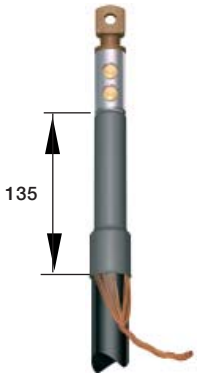
Standards
Meets the requirements of:
– CENELEC, HD 629.1 S1

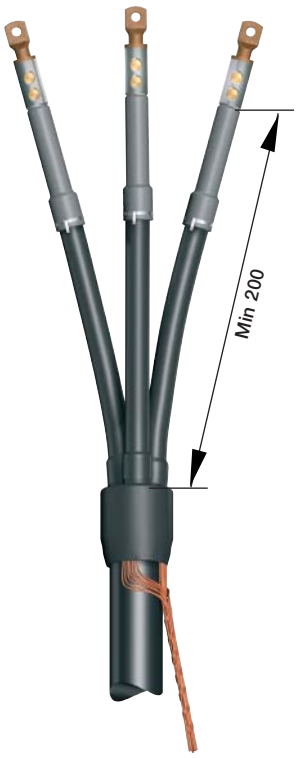
Design
Premolded cable termination made of silicone rubber with integrated field control.

The length of the termination is approx.145 mm which also makes it suitable for installations in narrow spaces.

The terminations are supplied in kits for 3-phase cables.

Kits with outdoor terminations for 3-core cables include branch seal and protective heat shrink hoses.





Designation	XLPE-Ø	Conductor cross section	Weight
	mm	mm²	kg/kit
3-core / three 1-core			
SOT 101-3	10.5-15	10-35	0.2
SOT 102-3	12.9-25.8	50-185	0.2
SOT 103-3	21.4-34.9	185- 500	0.2

Cable termination, indoor and outdoor, premolded
SOT 12-36 kV

Use
Premolded termination for XLPE-insulated cables 1- or 3-core with Al or Cu conductors for 12-36 kV. The indoor termination can also be installed in a humid indoor environment.

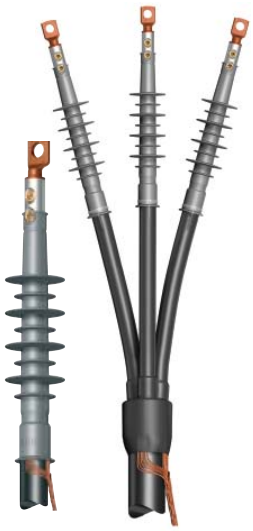
Standard
Meets the requirements of:
- CENELEC, HD 629.1 S1
- IEEE 48 1996*

Design
Premolded cable termination made of silicone ubber with integrated field control and top sealing. The outdoor variant has permanent sheds which give a prolongued creepage distance.

The terminations are supplied in kits for 1- or 3-phase cables.

Kits with outdoor terminations for 3-core cables include branch seal and protective heat shrink hoses.

SOT 1- and 3-core indoor.



SOT 1- and 3-core outdoor.

Conductor cross section			XLPE-Ø	Designation	Weight	Designation	Weight
12 kV	24 kV	36 kV					
mm²			mm		kg/kit		kg/kit
				Indoor terminations incl. branch seal for 3-core			
10-35	10	–	11-15	SOT 241A-3C	0.9	–	–
50-95	25-50	–	15-28	SOT 241-3C	0.9	–	–
120-185	70-120	–	15-28	SOT 241-3D	1.3	–	–
240-400	150-400	–	24-39	SOT 242-3D	1.4	–	–
				Indoor termination 3-core / 3 x 1-core		**Indoor termination 1-phase kit**	
10-35	10	–	11-15	SOT 241 A-3	0.60	SOT 241 A	0.20
50-185	25-120	–	15-28	SOT 241-3	0.60	SOT 241	0.19
240-500	150-400	–	24-39	SOT 242-3	0.70	SOT 242	0.23
630**	500-630**	–	38-54	SOT 242 B-3	0.90	SOT 242 B	0.30
				Outdoor termination incl. crutch seal for 3-core		**Outdoor termination 1-phase kit**	
10-35	10	–	11-15	SOT 243 A-3	1.90	SOT 243 A	0.31
50-120	25-70	–	15-24	SOT 243-3	1.80	–	–
150-300	95-240	–	22-33	SOT 244-3	2.00	–	–
400-500	300-400	–	31-40	SOT 245-3	2.50	–	–
				Outdoor termination 3 x 1-core		**Outdoor termination 1-phase kit**	
50-120	25-70	–	15-24	SOT 243-31	0.80	SOT 243	0.27
150-300	95-240	–	22-33	SOT 244-31	0.90	SOT 244	0.30
400-500	300-400	–	31-40	SOT 245-31	1.11	SOT 245	0.38
500-630**	500-630**	–	38-54	SOT 246-31	1.50	SOT 246	0.51
				Indoor/outdoor termination 3 x 1-core		**Indoor/outdoor termination 1-phase kit**	
–	–	95-300	26-39	SOT 361-31	1.40	SOT 361	0.42
–	–	400-630**	38-54	SOT 362-31	1.60	SOT 362	0.52

* The standard is valid for outdoor terminations (SOT 243 A-SOT 246).
**Can be mounted on cables with 800 and 1000 mm2, by using silicone rubber tape IA 2342 as top seal, see tapes.
For secting accessories see the following pages.

Kits complete with bolt cable lug
SOT 12-36 kV

Cable termination including a bi-metallic bolt cable lug SKSB for Al and Cu conductors. The cable lug is equipped with shear-off bolts.

Cable cross section			Designation	Weight	Designation	Weight
12 KV	24 KV	36 kV				
mm²				kg/kit		kg/kit
			1-core indoor		**3 -core / 3 x 1-core indoor**	
16-35	16	–	SOT 241A S1	0.35	SOT 241A-3 S1	1.05
50-70	25-70	–	SOT 241 S1	0.34	SOT 241-3 S1	1.02
95-150	95-120	–	SOT 241 S2	0.44	SOT 241-3 S2	1.32
185	–	–	SOT 241 S3	0.59	SOT 241-3 S3	1.50
–	150	–	SOT 242 S2	0.48	SOT 242-3 S2	1.44
240	185-240	–	SOT 242 S3	0.63	SOT 242-3 S3	1.89
300-400	300-400	–	SOT 242 S4	0.98	SOT 242-3 S4	2.94
500-630	500-630	–	SOT 242B S5	0.78	SOT 242B-3 S5	5.25
			1-core outdoor		**3-core outdoor**	
16-35	16	–	SOT 243A S1	0.46	SOT 243A-3 S1	1.56
50-70	25 - 70	–	SOT 243 S1	0.42	SOT 243-3 S1	1.42
95-120	–	–	SOT 243 S2	0.52	SOT 243-3 S2	1.52
150	95 - 150	–	SOT 244 S2	0.55	SOT 244-3 S2	1.65
185-240	185 - 240	–	SOT 244 S3	0.70	SOT 244-3 S3	1.80
300	–	–	SOT 244 S4	1.05	SOT 244-3 S4	2.15
400	300 - 400	–	SOT 245 S4	1.13	SOT 245-3 S4	2.51
500	–	–	SOT 245 S5	1.83	SOT 245-3 S5	3.15
630	500 - 630	–	SOT 246 S5	1.96	–	–
			3 x 1-core outdoor			
16-35	16	–	SOT 243 A-31 S1	1.38	–	–
50-70	25-70	–	SOT 243-31 S1	1.26	–	–
95-120	–	–	SOT 243-31 S2	1.56	–	–
150	95 - 150	–	SOT 244-31 S2	1.65	–	–
185-240	185 - 240	–	SOT 244-31 S3	2.10	–	–
300	–	–	SOT 244-31 S4	3.15	–	–
400	300 - 400	–	SOT 245-31 S4	3.40	–	–
500	–	–	SOT 245-31 S5	5.50	–	–
630	500 - 630	–	SOT 246-31 S5	5.90	–	–
			1-core indoor/outdoor			
–	–	95-150	SOT 361 S2	0.67	–	–
–	–	185-240	SOT 361 S3	0.82	–	–
–	–	300	SOT 361 S4	1.17	–	–
–	–	400	SOT 362 S4	1.27	–	–
–	–	500 - 630	SOT 362 S5	1.97	–	–
			3 x 1-core indoor/outdoor			
–	–	95-150	SOT 361-31 S2	2.10	–	–
–	–	185-240	SOT 361-31 S3	2.46	–	–
–	–	300	SOT 361-31 S4	3.50	–	–
–	–	400	SOT 362-31 S4	3.80	–	–
–	–	500 - 630	SOT 362-31 S5	5.95	–	–

Premolded cable terminations for 1-core cables with Cu-tape screen SOT 12-36 kV

Use

Premolded cable termination for XLPE-and EPR-insulated cables with Al or Cu conductors and Cu-tape screen for 12-36 kV.

Standard

Meets the requirements of:

- CENELEC HD 629.1 S1
- IEEE 48 1996

Design

Premolded cable termination made of silicone rubber with integrated field control and top sealing.

The outdoor variant has permanent sheds which give a prolonged creepage distance.

The indoor termination can also be installed in a humid indoor environment.

The kits includes copper braids and constant force springs for connection of the copper tape screen to earth.

One kit includes material for three single core ends.

Note:

- Cable lugs have to be ordered separately.

Conductor cross section					Diameter over insulation	Designation	Size of copper braid
7.5 kV	12 kV	17.5 kV	24 kV	36 kV	Ø		
mm²					mm		mm²
Indoor terminations for three 1-core cables with Cu-tape screen							
16-50	–	–	–	–	10.5-15	SOT 101-3 R	10
70-185	–	–	–	–	12.9-25.8	SOT 102-3 R	10
240-400	–	–	–	–	21.5-34.9	SOT 103-3 S	22
–	16-35	–	–	–	11-15	SOT 241A-3 R	10
–	50-120	25-95	–	–	15-28	SOT 241-3 R	10
–	150-185	120-185	35-120	–	15-28	SOT 241-3 S	22
500-630	240	–	–	–	24-39	SOT 242-3 S	22
–	300-630	240-500	150-400	–	24-39	SOT 242-3 T	22
–	–	–	–	70-185	26-39	SOT 361-3 T	22
–	–	–	–	240-300	26-39	SOT 361-3 U	35
Outdoor terminations for three 1-core cables with Cu-tape screen							
25-50	16-35	–	–	–	11-15	SOT 243A-3 R	10
70-185	50-150	25-120	–	–	15-24	SOT 243-3 R	10
–	–	–	35-70		15-24	SOT 243-3 S	22
240-400	185-240	150-185	95-120	–	22-33	SOT 244-3 S	22
–	300-400	240-300	150-240	–	22-33	SOT 244-3 T	22
500-630	500-630	400-500	300-400	–	31-40	SOT 245-3 T	22
–	–	–	–	70-185	26-39	SOT 361-3 T	22
–	–	–	–	240-300	26-39	SOT 361-3 U	35

Cable terminations, Premolded for 3-core cables with Cu-tape screen SOT 12-36 kV

Use
Premolded cable termination for XLPE-insulated cables 3-core with Al or Cu conductors and Cu-tape screen for 12-36 kV.

Standard
Meets the requirements of:
- CENELEC HD 629.1 S1
- IEEE 48 1996

Design
Premolded cable termination made of silicone rubber with integrated field control and top sealing.

The outdoor variant has permanent sheds which give a prolonged creepage distance. The indoor termination can also be installed in a humid indoor environment.

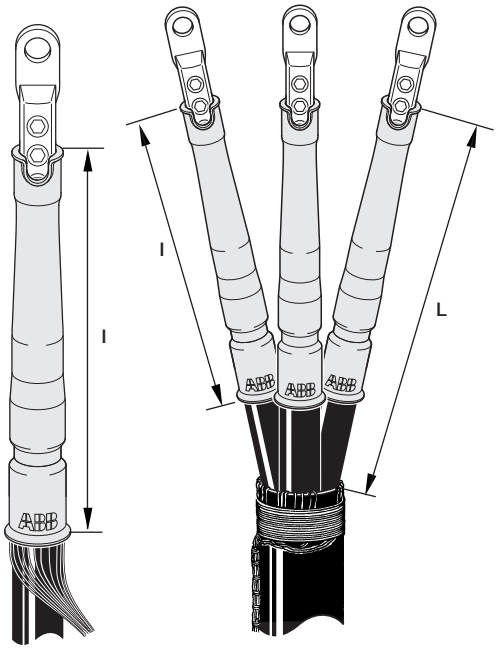
The kits includes copper braids and constant force springs for connection of the copper tape screen to earth.

The kits also include branch seal and protective hoses of heat shrink type.

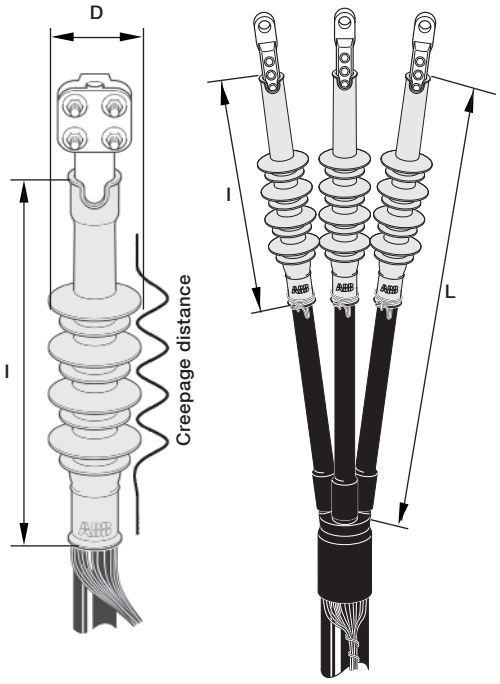
Note:
- Cable lugs have to be ordered separately.

Conductor cross section					Diameter over insulation	Designation	Size of copper braid
7.5 kV	12 kV	17.5 kV	24 kV	36 kV	Ø		
mm²					mm		mm²
Indoor terminations for 3-core cables with Cu-tape screen							
16-50	–	–	–	–	10.5-15	SOT 101-3 RC	3 x 10
70	–	–	–	–	12.9-25.8	SOT 102-3 RC	3 x 10
95-185	–	–	–	–	12.9-25.8	SOT 102-3 RD	3 x 22
240-400	–	–	–	–	21.4-34.9	SOT 103-3 SD	3 x 22
–	16-35	–	–	–	11-15	SOT 241A-3 RC	3 x 10
–	50	25-35	–	–	15-28	SOT 241-3 RC	3 x 10
–	70-120	50-95	–	–	15-28	SOT 241-3 RD	3 x 10
–	150-185	120-150	35-120	–	15-28	SOT 241-3 SD	3 x 22
–	240	185	–	–	24-39	SOT 242-3 SD	3 x 22
–	300-400	240-400	150-400		24-39	SOT 242-3 TD	3 x 22
–	–	–	–	70-185	26-39	SOT 361-3 TB	3 x 22
–	–	–	–	240-300	26-39	SOT 361-3 UB	3 x 35
Outdoor terminations for 3-core cables with Cu-tape screen							
25-50	16-35	–	–	–	11-15	SOT 243A-3 RA	3 x 10
70	50	25-35	–	–	15-24	SOT 243-3 RA	3 x 10
95-185	70-150	50-120	–	–	15-24	SOT 243-3 RB	3 x 10
–	–	–	35-70	–	15-24	SOT 243-3 SB	3 x 22
240-400	185-240	150-185	95-120	–	22-33	SOT 244-3 SB	3 x 22
–	300-400	240-400	150-400	–	25-33	SOT 244-3 TB	3 x 22
–	–	–	300-400	–	31-40	SOT 245-3 TB	3 x 22
–	–	–	–	70-185	26-39	SOT 361-3 TB	3 x 22
–	–	–	–	240-300	26-39	SOT 361-3 UB	3 x 35

Dimensional drawings and accessories
SOT 12-36 kV



SOT, indoor



SOT, outdoor

Designation	I	L	D	Creepage distance
	mm			
SOT 241/242/242 B	235	min 300	–	–
SOT 243/244/245	330	min 430	70/75/80	min 520
SOT 246/361/362	390	min 500	80/85	min 725

To be ordered separately

Designation	Description	See page
SKSA, SKSB, SCL-B	Cable lug	70
UKR	Universal clamp for fastening cable to a pole, etc.	120
JSA, JXT	Earthing kits when the cable does not have a Cu wire screen	66
FK	Overhead line clamp	69
PSSK	Screen separation kit (indoor)	64

Cable termination with geometrical field control for indoor use
APIT 12–36 kV

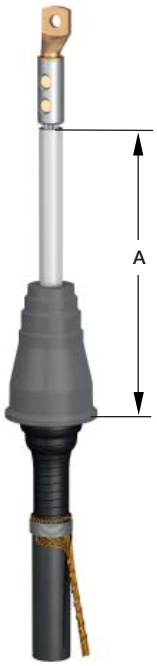
Use
For installation of XLPE-insulated cables with especially high demands on function, such as environments with voltage harmonics.

Standard
Meets the requirements of:
- CENELEC HD 629.1
- IEEE 48-1975

Design
The cable termination consists of a premolded stress relief cone with integrated deflector for geometrical field control.

The cable‘s conducting layer is transferred to the stress relief cone for optimal function.

Note:
- Cable lugs and any branch sealing for 3-core cable are ordered separately.



Designation	XLPE-diameter	12kV			24kV			36kV			Weight
		Cable cross section	Creepage distance	Length A	Cable cross-section	Creepage distance	Length A	Cable cross section	Creepage distance	Length A	
	mm	mm²	mm	mm	mm²	mm	mm	mm²	mm	mm	kg/each
APIT 4	25.0–28.0	240	170	160	120-150	310	300	50-70	460	450	3.0
APIT 5	27.5–30.5	300	170	160	185-240	310	300	95-120	460	450	2.9
APIT 6	30.5–33.6	400	170	160	300	310	300	150-185	460	450	2.9
APIT 7	33.0–36.6	500	170	160	400	310	300	240	460	450	2.8
APIT 8	35.7–39.7	630	170	160	500	310	300	300	460	450	2.8
APIT 9	39.3–43.1	800	170	160	–	–	–	400	460	450	2.6
APIT 10	42.5–48.1	1000	170	160	630-800	310	300	500	460	450	2.5
APIT 11	48.0–54.0	1200	170	160	1000	310	300	630-800	460	450	2.5
APIT 12	54.0–60.0	–	–	–	1200	310	300	1000	460	450	2.5
APIT 13	60.0–66.0	–	–	–	–	–	–	1200	460	450	2.5

To be ordered separately

Designation	Description	See page
SKSA, SKSB, SCL-B	Cable lug	70
UKR	Universal clamp for fastening cable to a pole, etc.	120
JSA	Earthing kits when the cable does not have a Cu wire screen	66
FK	Overhead line clamp	69
TSH, SSH	Branch seal kit and prolongation protective hoses	65
PSSK	Screen separation kit	64

Cable termination with geometrical field control for outdoor use
APSEA 12–36 kV

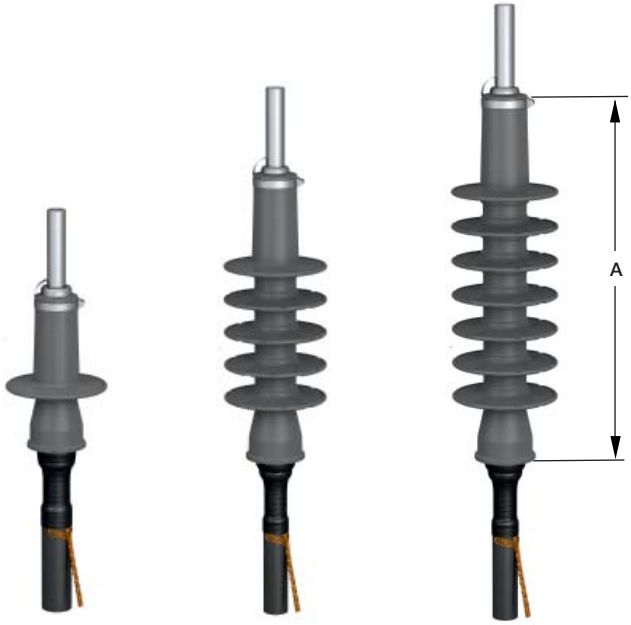
Use
For installation of XLPE-insulated cables with especially high demands on function, such as environments with voltage harmonics.

Standard
Meets the requirements of:
- CENELEC HD 629.1
- IEEE 48-1975

Design
The cable termination is made of rubber with prefabricated geometrical field control in the stress relief cone.

The cable‘s conducting layer is connected to the stress relief cone for optimal function. The creepage distance is built up with separate sheds that are mounted outside the stress cone and also the top cap that insulate towards the cable lug will ensure the right creepage distance and withstand external factors such as humidity.

Note:
- Cable lugs and branch sealing, for 3-core cable are ordered separately.



APSEA 12 kV APSEA 24 kV APSEA 36 kV

Designation	XLPE diameter	Conductor cross section	Creepage distance	Length A	Weight
	mm	mm²	mm	mm	kg/kit
Cable terminations, 12 kV					
APSEA 121-3	25.0–28.0	240	300	255	4.0
APSEA 122-3	27.5–30.5	300	300	255	3.9
APSEA 123-3	30.0–33.6	400	300	255	3.9
APSEA 124-3	33.0–36.3	500	300	255	3.8
APSEA 125-3	35.7–39.7	630	300	255	3.8
APSEA 126-3	39.3–43.1	800	300	255	3.6
APSEA 127-3	42.5–48.1	1000	300	255	3.5
APSEA 128-3	48.0–54.0	1200	300	255	3.5
Cable terminations, 24 kV					
APSEA 241-3	25.0–28.0	120–150	830	470	9.0
APSEA 242-3	27.5–30.5	185–240	830	470	9.0
APSEA 243-3	30.0–33.6	300	830	470	8.7
APSEA 244-3	33.0–36.3	400	830	470	8.5
APSEA 245-3	35.7–39.7	500	830	470	8.3
APSEA 247-3	42.5–48.1	630	830	470	7.8
APSEA 248-3	48.0–54.0	1000	830	470	7.5
APSEA 249-3	54.0–60.0	1200	830	470	7.5

The table is continued on next page

Designation	XLPE diameter	Conductor cross section	Creepage distance	Length A	Weight
	mm	mm²	mm	mm	kg/kit
Cable terminations, 36 kV					
APSEA 361-3	25.0–28.0	50–70	1100	580	10.0
APSEA 362-3	27.5–30.5	95–120	1100	580	10.0
APSEA 363-3	30.0–33.6	150–185	1100	580	9.8
APSEA 364-3	33.0–36.3	240	1100	580	9.7
APSEA 365-3	35.7–39.7	300	1100	580	9.5
APSEA 366-3	39.3–43.1	400	1100	580	9.5
APSEA 367-3	42.5–48.1	500	1100	580	9.3
APSEA 368-3	48.0–54.0	630–800	1100	580	8.8
APSEA 369-3	54.0–60.0	1000	1100	580	8.5
APSEA 3610-3	60.0–66.0	1200	1100	580	8.5

Top caps are available with the following sizes of top hole

For terminations of sizes* 1–7 and XLPE-diameter 25–48.1 mm, choose:

Top hole diameter	Top cap designation
mm	
28	THS 28
37	THS 37
47	THS 47
60	THS 60

For terminations of sizes* 8-10 and XLPE-diameter 48–66 mm, choose:

Top hole diameter	Top cap designation
mm	
28	THSA 28
37	THSA 37
47	THSA 47
60	THSA 60

* The third numeral in product designation indicates the size.
Example: APSEA 121-3 is size 1 and APSEA 3610-3 is size 10.

The top cap is selected with regards to the size of the cable termination and the outer diameter of the cable lug or top bolt.

Top cap, THS and THSA

To be ordered separately

Designation	Description	See page
SKSA, SKSB, SCL-B	Cable lug	70
A/K-TBF SKR	Top bolt	99
UKR	Universal clamp for fastening cable to a pole, etc.	120
JSA, JXT	Earthing kits when the cable does not have a Cu wire screen	66
TSH	Branch seal kit	65
PSSK	Screen separation kit	64

Cable connectors, premolded screened separable
CSE-A 12-24 kV, 250 A, 400 A, 630 A
CSS-A 12–24 kV, 250 A

Application areas
Premolded screened separable connectors for XLPE insulated 1- or 3-core cables with aluminum or copper conductors for 12–24 kV. Can be installed both indoors and outdoors.

Fits standard bushings of outer cone type according to EN 50181. Connectors with rated current:
- 250 A: series 200 interface type A with plug-in Ø 7.9 mm.
- 400 A: series 400 interface type B with plug-in Ø 14 mm.
- 630 A: series 400, interface type C with bolt M16.

Standard
Meets the requirements of:
- CENELEC, HD 629.1 S2

Design
CSE-A och CSS-A are manufactured in rubber with three layers; a conductive inner layer, an insulation layer and a conductive outer layer, that are vulcanized together for the best possible interface between the layers.

The cable connectors include both a capacitive test point with protection and an integrated earthing wire.

- Delivered in 3-phase kits, complete with cable lugs, bolt connection and stress grading adapter,designed to ensure a reliable installation.

Note:
- For 3-core cable with common Cu-screen wires, a screen separation kit must be used. separately.
- For 3-core cables, a screen separation kit is ordered.

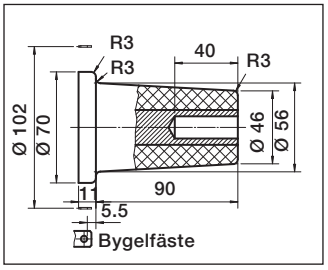
CSE-A 12250
CSE-A 24250.

CSS-A 12250
CSS-A 24250.

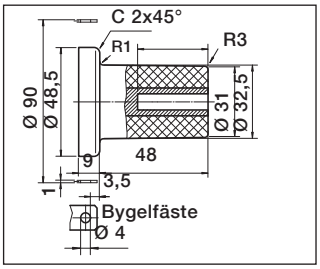
CSE-A 12400
CSE-A 24400

CSS-A 12630
CSS-A 24630

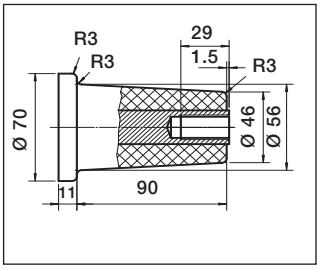
Conductor cross section	Designation	XLPE diameter	Rated current	Weight
mm²		mm	A	kg/unit
Straight cable connector with capacitive test point, 12 kV				
10–16	CSS-A 12250-01	10-12	250	2.2
25–95	CSS-A 12250-02	13-22	250	2.2
Straight cable connector with capacitive test point, 24 kV				
10-16	CSS-A 24250 01	13–22	250	2.2
25-95	CSS-A 24250 02	17–25.5	250	2.2
Elbow cable connector with capacitive test point, 12 kV				
10–16	CSE-A 12250-01	10–12	250	2.2
25–95	CSE-A 12250-02	13–22	250	2.2
25–70	CSE-A 12400-01	13–20	400	6.1
95–300	CSE-A 12400-02	18.5–30.5	400	6.6
25–70	CSE-A 12630-01	13–20	630	5.1
95–300	CSE-A 12630-02	18.5–30.5	630	5.5
400–630	CSE-A 12630-03	30.5–45	630	7.7
Elbow cable connector with capacitive test point, 24 kV				
10–16	CSE-A 24250-01	13–22	250	2.2
25–95	CSE-A 24250-02	17–25.5	250	2.2
25–70	CSE-A 24400-01	17–24	400	6.1
95–300	CSE-A 24400-02	22.5–35	400	6.6
25–70	CSE-A 24630-01	17–24	630	5.1
95–300	CSE-A 24630-02	22.5–35	630	5.5
400–630	CSE-A 24630-03	30.5–45	630	7.7



Standard bushing EN 50181
200 series, 250 A
Contact type: Plug-in ca Ø 7,9 mm Interface type: A



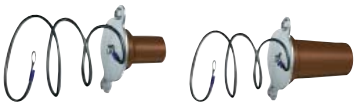
Standard bushing EN 50181
400 series, 400 A
Contact type: Plug-in Ø14
Interface type: B



Standard bushing EN 50181
400 series, 630 A
Contact type: Bult M16
Interface type: C

Accessories for CSE-A 12–24 kV

IH-A 24250, IH-A 24400, IH-A 24630
Insulating hood of flexible rubber with outer conductive layer and a preinstalled insulating rod. To be mounted on the bushing in a 250 A switchgear or a transformer to insulate it when a cable is temporarily disconnected but other cables are energized.



IP 250, IP 400, IP 630
Screened insulating plug for installation in the connector so that the cable can be energized even when disconnected from the switchgear or transformer.

PSSK
Screen separation kit, heat-shrink for 3-core cable:

- PSSK: for cables with Cu-wire screen
- PSSK-E: for Ericsson cable AXCAL TT Pro with Al-wire screen.
- PSSK L: reinforced and prolongued kits that may burried under ground.

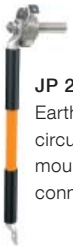
MA 250
Measurement adapter used for mega ohm Ω measurements and to perform different measurements up to 5 kV DC, for example determination of phases.

MA-A 630
Measurement adapter used for mega ohm Ω measurements and to perform different measurements up to 5 kV DC, for example determination of phases.

PC 630/250
Parallel coupling piece.Replaces the plug in CSE-A 630 A when making a parallel connection to CSE-A 250 A.

Designation	Description	Quantity	Weight kg/kit
IH-A 24250	Insulating hood, 250 A	3 per kit	2.3
IH-A 24400	Insulating hood, 400 A	3 per kit	5.2
IH-A 24630	Insulating hood, 630 A	3 per kit	5.2
IP 250	Screened insulating plug, 250 A	1 per kit	0.8
IP 400	Screened insulating plug, 400 A	1 per kit	2.2
IP 630	Screened insulating plug, 630 A	1 per kit	2.2
PSSK 1	Screen separation kit, heat-shrink for 3-core cable	1 per kit	1.0
PSSK 1 E	Screen separation kit, heat-shrink for 3-core cable, for Ericsson cable	1 per kit	1.0
PSSK 1 L	Screen separation kit, heat-shrink for 3-core cable, reinforced and extended	1 per kit	1.0
PSSK 2	Screen separation kit, heat-shrink for 3-core cable	1 per kit	1.0
PSSK 2 E	Screen separation kit, heat-shrink for 3-core cable, for Ericsson cable	1 per kit	1.0
PSSK 2 L	Screen separation kit, heat-shrink for 3-core cable, reinforced and extended	1 per kit	1.0
MA 250	Measurement adapter, 250 A	1 per kit	0.3
MA-A 630	Measurement adapter, 630 A	3 per kit	0.2
PC 630/250	Parallel coupling piece	3 per kit + hex bit socket	3.0

Accessories for CSE-A 12–24 kV



JP 250
Earth circuit connector for short-circuit protective earthing. For mounting on the disconnected connector CSE-A for 250 A.

JPB 630
Universal earthing device with two fields of application for 630 A and 12-36 kV:

- As earthing-for-work device mounted at the back of a connected cable connector
  CSE-A for 630 A.
- As short-circuit protective earthing mounted in front of a disconnected cable connector CSE-A for 630 A.

JPA V
Tool for earthing device, JPB 630.

PG 630
Bushing for voltage testing.

CU 250
Coupling piece to connect two connectors. The kit consists of a double epoxy bushing with fixing lugs bail restrain to CSE-A and a bolt connector SH-SKR 35 to connect the screen of the cable.

LBR 250
Extended bail restrain for CSE-A 250 for installation in Schneider switchgear MGRM6.

PC 630-3
Parallel coupling piece.

JP 400
Earth circuit connector for short-circuit protective earthing. For mounting on the disconnected connector.

Designation	Description	Quantity	Weight kg/kit
PC 630-3	Parallel coupling piece, 630 A	3 per kit + hex bit socket	3.3
JP 250	Earth circuit connector, 250 A	3 per kit is delivered in a case	2.7
JP 400	Earth circuit connector, 400 A	1 per kit	2.2
JPB 630	Earth circuit connector, 630 A	1 per kit	5.0
JPA V	Tool for earthing device, JPB 630	1 per kit	1.8
PG 630	Bushing for voltage testing, 630 A	1 per kit	1.5
CU 250	Parallel coupling piece between two cable connectors, 250 A	1 per kit	0.2
LBR 250	Extended bail restrain	3 per kit	0,01

Cable connectors, premolded screened separable
CSE-A 36 kV

Use
Premolded screened separable connectors for XLPE insulated 1- or 3-core cables with Al or Cu conductor for 36 kV. Can be installed both indoors and outdoors.

Fits standard bushings of outer cone type according to EN 50181. Connectors with rated current:
- 400 A: series 400 interface type B with plug-in Ø 14 mm.
- 630 A: series 400, interface type C with bolt M16.

Standards
Meets the requirements of:
- CENELEC, HD 629.1 S2

Design
The connector is manufactured in rubber with three layers; a conductive inner layer, an insulating layer and a conductive outer layer, that are vulcanized together for the best possible interface between the layers.

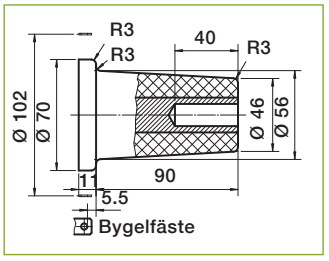
The connectors include both a capacitive test point with protection and an integrated earthing wire.

- Delivered in 3-phase kits, complete with cable lugs, bolt connection and stress grading adapter, designed to ensure a reliable installation.

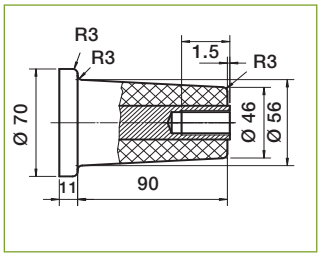
Note:
- For 3-core cables with common Cu-screen wires, a screen separation kit must be used. See screen separation kit.

CSE-A 36400

CSE-A 36630



Standard bushing EN 50181
400 series, 400 A
Contact type: Plug-in Ø14
Interface type: B



Standard bushing EN 50181
400 series, 630 A
Contact type: Bolt M16
Interface type: C

Conductor cross section	Designation	XLPE diameter	Rated current	Weight
mm²		mm	A	kg/unit
50-70	CSE-A 36400-01	24.5–34	400	6.1
95-300	CSE-A 36400-02	27.5–42	400	6.6
50-70	CSE-A 36630-01	24.5–34	630	6.1
95-300	CSE-A 36630-02	27.5–42	630	6.6
400-630	CSE-A 36630-03	38.0–55	630	8.7

Accessories
CSE-A 36 kV

IH-A 42400, IH-A 42630
Insulating hood, of flexible rubber withouter conductive layer and a preinstalled insulating rod. To be mounted on the bushing in a switchgear or a transformer 400 A and 630 A respectively, to insulate it when a cable is temporarily disconnected but other cables are energized.

JPB 630
Universal earthing device with two fields of application for 630 A and 12-36 kV:
- As earthing-for-work device mounted at the back of a connected cable connector CSE-A for 630 A.
- As short-circuit protective earthing mounted in front of a disconnected cable connector CSE-A for 630 A.

IP 400, IP 630
Screened insulating plug for installation in the connector so that the cable can be energized even when disconnected from the switchgear or transformer.

PSSK L
Screen separation kit, Reinforced and prolonged kits that may burried under ground.

JPA V
Tool for earthing device, JPB 630.

PG-A 630
Bushing for voltage testing, 36 kV.

MA-A 630
Measurement adapter, 630 A for mega ohm Ω measurements to perform different measurements up to 5 kV DC, e.g. determination of phases.

PC 630-3 L
Parallel coupling piece, 36 kV.

JP 400
Earth circuit connector for short-circuit protective earthing. For mounting on the disconnected connector.

Designation	Description	Qty.	Weight kg/item
IH-A 42400	Insulating hood, for 400 A	3	5.5
IH-A 42630	Insulating hood, for 630 A	3	5.5
IP 400	Screened insulating plug, for 400 A	1	2.2
IP 630	Screened insulating plug, for 630 A	1	2.2
MA-A 630	Measurement adapter, 630 A	3	0.2
JPB 630	Earth circuit connector, 630 A	1	1.4
PSSK 1 L	Screen separation kit for 3-core cable	1	1.0
PSSK 2 L	Screen separation kit for 3-core cable	1	1.0
HBS 10	Hex bit socket	1	0.1
PC 630-3 L	Parallel coupling piece between two CSE-A	3	1.2
JPA V	Tool for earthing device, JPB 630	1	1.8
PG-A 630	Bushing for voltage testing, 630 A	1	1.5
JP 400	Earth circuit connector, 400 A	1	5.5

Screened separable connectors for cables with Cu-tape screen
CSE-A 12–36 kV

Application areas

Premolded screened separable connectors for XLPE and EPR insulated 1- or 3-core 12–36 kV cables, with aluminium or copper conductors with copper tape screens,with or without aluminium or steel wire armouring. Can be installed both indoors and outdoors.

Fits standard bushings of outer cone type according to EN 50181. Connectors with rated current:

- 250 A: series 200 interface type A with plug-in Ø 7.9 mm.
- 630 A: series 400, interface type C with bolt M16.

CSE-A 12250
CSE-A 24250

CSE-A 12630
CSE-A 24630

CSE-A 36630

Standard

Meets the requirements of:

- CENELEC, HD 629.1 S2

Design

CSE-A is manufactured in rubber with three layers; a conductive inner layer, an insulation layer and a conductive outer layer, that are vulcanized together for the best possible interface between the layers. The cable connectors include both a capacitive test point with protection and an integrated earthing wire.

Delivered in 3-phase kits, complete with cable lugs, bolt connection, earthing kit and stress grading adapters. The adapters are designed to ensure a reliable installation.

For 3-core cables, a branch seal kit is included.

Cable connectors 12 kV, 3 x1core

Conductor cross section	Designation	Rated current	XLPE diameter	Weight
mm²		A	mm	kg/unit
25-95	CSE-A 12250-02 R	250	13–22	2.7
25-70	CSE-A 12630-01 R	630	13–20	5.6
95-300	CSE-A 12630-02 S	630	19–29	6.0
400	CSE-A 12630-03 T	630	30.5–37	8.2

Cable connectors 12 kV, 3-core cables

Conductor cross section	Designation	Rated current	XLPE diameter	Oversheath diameter	Weight
mm²		A	mm	mm	kg/unit
25–50	CSE-A 12250-02 RA	250	13–22	31–50	2.9
70–95	CSE-A 12250-02 RB	250	13–22	44–70	2.9
25–70	CSE-A 12630-01 RA	630	13–20	31–50	5.8
95–185	CSE-A 12630-02 SB	630	19–29	47–70	6.2
240–300	CSE-A 12630-02 TB	630	25–30.5	58–94	6.2
400	CSE-A 12630-03 TB	630	30.5–37	58–94	8.4

Screened separable connectors for cables with Cu-tape screen
CSE-A 12–36 kV

Cable connectors 24 kV, 3 x 1-core cables

Conductor cross section	Designation	Rated current	XLPE diameter	Weight
mm²		A	mm	kg/unit
35–95	CSE-A 24250-02 S	250	19–25.5	2.7
35–70	CSE-A 24630-01 S	630	19–24	5.6
95–300	CSE-A 24630-02 T	630	25–35	6.0
400	CSE-A 24630-03 T	630	30.5–37	8.2

Cable connectors 24 kV, 3-core cable

Conductor cross section	Designation	Rated current	XLPE diameter	Oversheath Ø	Weight
mm²		A	mm	mm	kg/unit
35–95	CSE-A 24250-02 SB	250	19–25.5	47–70	2.9
35–70	CSE-A 24630-01 SB	630	19–24	47–70	5.8
95–300	CSE-A 24630-02 TB	630	25–35	58–94	6.2
400	CSE-A 24630-03 TB	630	30.5–37	65–110	8.4

Cable connectors 36 kV, 3 x 1-core cables

Conductor cross section	Designation	Rated current	XLPE diameter	Weight
mm²		A	mm	kg/unit
50–70	CSE-A 36630-01 S	630	19–29	6.8
95–300	CSE-A 36630-02 T	630	27.5–37	7.3
400	CSE-A 36630-03 U	630	38–50	9.4

Cable connectors 36 kV, 3-core cable

Conductor cross section	Designation	Rated current	XLPE diameter	Oversheath Ø	Weight
mm²		A	mm	mm	kg/unit
50–70	CSE-A 36630-01 SB	630	19–29	58–94	6.8
95–300	CSE-A 36630-02 TB	630	27.5–37	65–110	7.3

Shrouded termination for XLPE insulated cables, 630 A
TB-A 12, 12 kV

Use
Shrouded cable termination for connecting XLPE insulated cables, 12 kV in switchgear, type ABB SafeLink.

Standard
Meets the requirements of:
– CENELEC, HD 629.1

Design
TB-A is a shrouded termination made of rubber. Supplied in complete 3-core kits including cable terminations,two-piece boots, cable lugs with shear-off bolts, grease, cleaning cloth and installation instructions.
Due to the smart installation method the upper part of the two-piece boot will stick to the bushing.

For measuring, the lower part of the boot can easily be pulled down to expose the palm of the bushing.

Note:
– For 3-core cables with common Cu-screen wires, a screen separation kit must be used.

Connector cross section	Designation	Length	Weight
mm²		mm	kg/kit
Three 1-core or one 3-core kits			
10 – 35	TB-A 12630-1	400	2.65
50 – 150	TB-A 12630-2	400	2.90
185 – 300	TB-A 12630-3	450	3.10

Shrouded termination for XLPE-insulated cables, 630 A
KAP 630, 12-24 kV

Use

For XLPE-insulated 1- or 3-core cables with Al or Cu conductor for 12-24 kV.

KAP can be used to connect a cable to gas-insulated SF6 switchgear and in other compact installations, as well as for substation transformers.

To be used indoors only.

The connectors are supplied in kits of three.

Standards

Meets the requirements of:
- SEN 24 14 34
- SS 424 14 17 Edition 4

Design

KAP is an insulated connector made of rubber. It is supplied complete with cable termination and bolt cable lug. The covers are provided with a removable plastic plug to allow direct voltage testing on the conductor.

Note:

- For plug-in connector 250 A or 400 A, choose CSE-A.

Designation	Conductor cross section		Specification	Weight
	12 kV	24 kV		
	mm²			kg/item
KAP 630-11	50-120	50-120*	Bolt M16	2.2
KAP 630-12	150-185	–	Bolt M16	2.5
KAP 630-22	240–300	150-300	Bolt M16	2.5
KAP 630-P11	50–120	50-120*	Connection in parallel	2.5
KAP 630-P12	150–185	–	Connection in parallel	2.5
KAP 630-P22	240-300	150-300	Connection in parallel	2.5
KAP 630-S12	–	–	Surge arrester	7.7
KAP 630-S24	–	–	Surge arrester	10.5

* For 35 mm² contact us.

Technical data of surge arresters for KAP

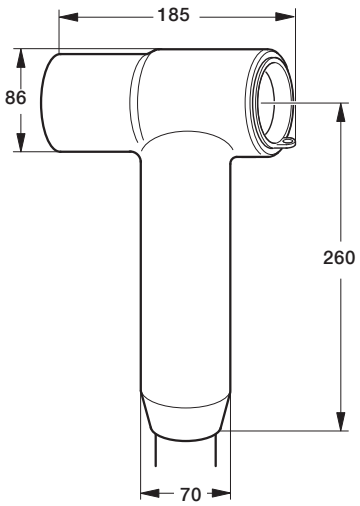
Designation	Maximum Voltage	Voltage class	Residual voltage at impulse				Temporary over voltage capability kV					
	U_m	U	current 8/20 µs kV				1 seconds		3 seconds		10 seconds	
	KV	kV	1 kA	5 kA	U kV	10 kA	A	B	A	B	A	B
KAP 630-S12	12	10	26.0	29.0	30.7	34.0	13.6	13.2	13.4	12.9	13.1	12.6
KAP 630-S24	24	20	52.0	58.0	61.4	68.0	27.2	26.3	26.7	25.7	26.2	25.1

A = Before impulse current.
B = After 4/10 µs 100 kA impulse current.
Value A & B has been determined with a test sample preheated at 60° C.
according to IEC 60099-4 and refer to an ambient temperature of up to 45° C.

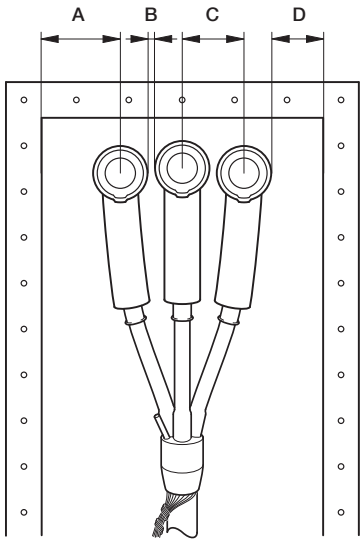
To be ordered separately for 3-core cable

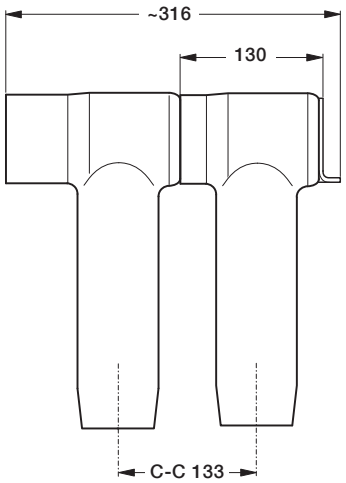
Designation	Description	See page
PSSK, PSSK-E	Screen separation kit	64

Dimensional drawings
KAP 630



KAP 630





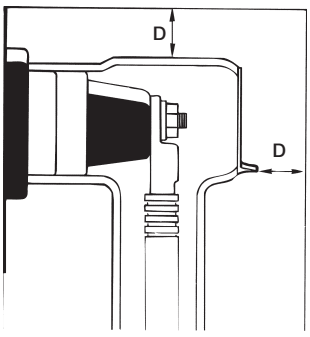
KAP 630 P

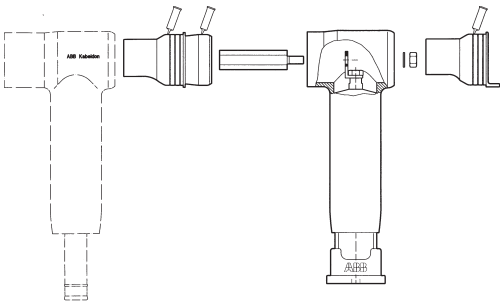
Recommended minimum distances

The indicated recommended minimum distances are generally applicable. For applications in which type testing has been performed, other minimum distances may be applied. This is the case, for example, for gas-insulated Ring Main Unit (RMU).

Recommended minimum air gap

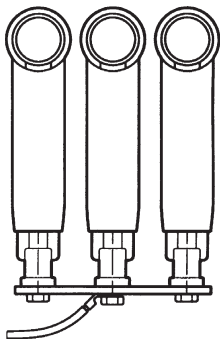
Voltage	Insulation level	A	B	C	D
kV	kV	mm			
12	75	50	10	90	10
24	125	90	30	110	50





KAP 630-S

KAP 630 with surge arrester.



Insulating boot
KAP 300 U, 12-24 kV

Use
For XLPE-insulated 1- or 3-core cableswith Al or Cu conductor, for 12-24 kV.

KAP 300 U is especially well suited for the renovation of, for example, oil-filled transformer boxes, when replacing paper-insulated cable with XLPE cable. An indoor termination type SOT (must be ordered separately) is installed together with KAP 300 U on the XLPE cable, thus insulating the connection point when the oil is drained from the cable box.

KAP 300 U can also be mounted straight.

To be used indoors only.

Standards
Meets the requirements of:
- SEN 24 14 34
- SS 424 14 17 Edition 4

Design
An insulating boot made of rubber. The covers are fitted with a removable plastic plug to allow direct voltage testing on the conductor.

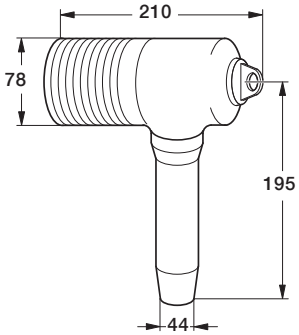
Note:
- See dimensional drawings on the next page for minimum distance to earth.
- Termination and cable lug are not included.

Designation	Conductor cross section 12 -24 kV	Specification	Weight
	mm²		kg/item
KAP 300-U	25-300	Bolt	2.0

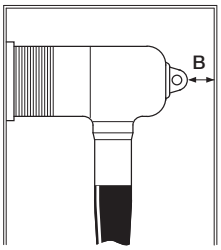
To be ordered separately for 3-core cable

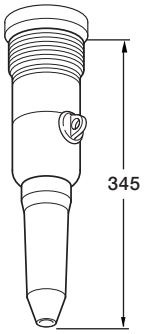
Designation	Description	See page
PSSK, PSSK-E	Screen separation kit	64
SKSB, SCL-B	Bolt cable lug	70
SOT	Cable termination	26

Dimensional drawings
KAP 300 U

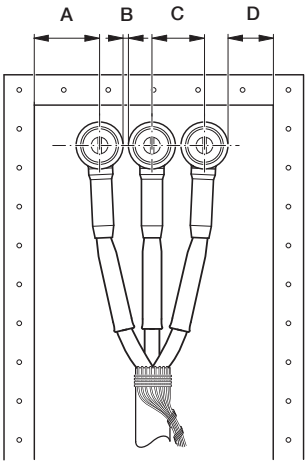


Elbow KAP 300 U.





Straight KAP 300 U.



Recommended minimum distances

The indicated recommended minimum distances are generally applicable.

Recommended minimum air gap

Voltage	Insulation level	A	B	C	D
kV	kV	mm			
12	75	50	10	90	10
24	125	110	50	130	50

Cable joint, premolded with cold shrink outer sheath
SOJ 12-24 kV

Use
Premolded cable joint for XLPE-insulated 1- or 3-core cables with Al or Cu conductor, 12-24 kV.


SOJ CSS

Standards
- CENELEC, HD 629.1 S1
- SS 424 14 45 Edition 1
- VDE 0278
- KEMA S8
- IEEE 404 1993

Design
The joint body is made of rubber in three layers: a conductive outer layer, an insulating and a conductive inner layer.

The kit contains all mounting material.

Note:
- For 16-35 mm² cables ADAPTER must be ordered separately, see following pages.
- WIM 3 used as complement when jointing 3-core watertightened cable, see following pages.

Outer sheath is selected as below:
SOJ CSS
Contains cold-shrink outer sheath and connectors with shear-off bolts for conductor and screen.

SOJ CS
Contains cold-shrink outer sheath. Connectors are not included.

Cable cross section		XLPE- diameter	Designation	CSS	CS	Designation	CSS	CS
12 kV	24 kV		1-core	Weight	Weight	3-core	Weight	Weight
mm²		mm		kg/kit	kg/kit		kg/kit	kg/kit
50-70	–	15-19.5	SOJ 121-1	2.5	2.4	SOJ 121-3	5.0	4.7
95-150	–	18.5-24	SOJ 122-1	2.6	2.5	SOJ 122-3	5.5	5.2
185-240	–	23-28	SOJ 123-1	3.4	3.2	SOJ 123-3	7.0	6.2
300-400	–	27-34	SOJ 124-1	4.7	4.2	SOJ 124-3	–	7.3
500-630	–	33.5-46	SOJ 125-1	5.5	4.8	–	–	–
–	50-70	19-23.5	SOJ 241-1	3.3	3.2	SOJ 241-3	5.8	5.5
–	95-150	22.5-28	SOJ 242-1	3.6	3.5	SOJ 242-3	6.9	6.5
–	185-240	27-35	SOJ 243-1	4.3	4.0	SOJ 243-3	8.8	8.0
–	300	27-35		4.5	4.0	–	–	–
–	400	33.5-46	SOJ 244-1	5.3	4.8	–	–	–
–	500-630	33.5-46		5.5	4.8	–	–	–

To be ordered separately

Accessories	Use	SOJ CSS	SOJ CSS	See page
ADAPTER	Cables with different dimensions	–	X	53
JSA 10-13	Cables with copper tape screen	–	X	67
JSA 14-16	Cables with aluminium foil screen	–	X	67
TS	Additional kit for sector shaped 3-core cables	X	X	53
SH-SKRM	Bolt connector	–	X	71
STOP	Crutch-seal for three 1-core cables	X	X	53

Premolded cable joint for radially watertightened cable
SOJ 12-24 kV

Use
Premolded cable joint for XLPE-insulated 1- or 3-core cables with Al or Cu conductor and radially watertightened aluminium foil for 12-24 kV.

Standards
- CENELEC, HD 629.1 S1
- SS 424 14 45 edition 1
- VDE 0278
- KEMA S8
- IEEE 404 1993


SOJ CSWS


SOJ RWI


SOJ RWIT

Design
The joint body is made of rubber in three layers: a conductive outer layer, an insulating and a conductive inner layer. The kit contains all mounting material.

There are different variations of the cable joints depending on the cable construction according to the following:

SOJ CSWS
Used for jointing watertightened 1-core cables with copper wire screen. Contains cold-shrink cable sheath, Al foil tube and also connectors for conductor and screen.

SOJ RWI
Used for jointing three 1-core cables, Prysmian type WISKI™ or similar. Contains copper braids to connect screens, Al foil tubes for radially watertightness and also outer sheath RULLE. Connectors and items for jointing of separate earth wire are not included.

SOJ RWIT
Used for jointing three 1-core cables Prysmian type WISKI™ or similar, to a standard 3-core cable. Contains copper braids to connect screens, STOP longitudinal watertightness and outer sheath RULLE.

Connectors and articles for jointing a separate earth wire are not included.

Note:
- For 16-35 mm² cables, ADAPTER must be ordered separately, see the table below.

Cable cross section		XLPE-	Designation	CSWS	Designation	RWI	RWIT
12 kV	24 kV	diameter	1-core	Weight	3 x 1-core	Weight	Weight
mm²		mm		kg/kit		kg/kit	kg/kit
50-70	–	15-19.5	SOJ 121-1 50	3.0	SOJ 121-31	7.3	5.0
95-150	–	18.5-24	SOJ 122-1 95 150	3.2	SOJ 122-31	7.9	5.5
185-240	–	23-28	SOJ 123-1 240	4.0	SOJ 123-31	10.3	7.0
300-400	–	27-34	SOJ 124-1 400	5.3	–	–	–
500-630	–	33.5-46	SOJ 125-1 630	6.1	–	–	–
–	50-70	19-23.5	SOJ 241-1 50	3.9	SOJ 241-31	10.0	5.5
–	95-150	22.5-28	SOJ 242-1 95 150	4.2	SOJ 242-31	10.9	6.5
–	185-240	27-35	SOJ 243-1 240	4.9	SOJ 243-31	13.0	8.0
–	300-400	33.5-46	SOJ 244-1 400	5.9	–	–	–
–	500-630	33.5-46	SOJ 244-1 630	6.1	–	–	–

To be ordered separately

Accessories	Use	SOJ CSWS	SOJ RWI	SOJ RWIT	See page
Adapter	Adapter kit for cables with different dimensions	X	X	X	53
TS	Additional kit for sector shaped cables			X	53
SH-SKRM	Bolt connector		X	X	71

Premolded cable joint with or without outer sheath, RULLE SOJ 12-24 kV

Use
Premolded cable joint for XLPE-insulated 1- or 3-core cables with Al or Cu conductor for 12-24 kV.

SOJ R

Standards
- CENELEC, HD 629.1 S1
- SS 424 14 45 edition1
- VDE 0278
- KEMA S8
- IEEE 404 1993

Design
The joint body is made of rubber in three layers: a conductive outer layer, an insulating and a conductive inner layer.

The kit contains all mounting material.

Outer sheath is selected as below:
SOJ R
- Contains outer sheath RULLE, a two-layer tape of EPDM-rubber and mastic, which is wrapped around the joint.
- Connectors are not included.

SOJ SL
- Supplied without outer sheath. NB! An outer sheath approved by us must be added, for example type ARM.
- Connectors are not included.

Note:
- For 16-35 mm² cables ADAPTER must be ordered separately, see the table below!
- WIM 3 / WIM 4 – used as complement when jointing 3-core watertightened cable, see the table below.

Cable cross section		XLPE	Designation	R	Designation	SL	Designation	R	Designation	SL
12 kV	24 kV	diameter	1-core	Weight	1-core	Weight	3-core	Weight	3-core	Weight
mm²		mm		kg/kit		kg/kit		kg/kit		kg/kit
50-70	–	15-19.5	SOJ 121-1	2.6	SOJ 121-1 SL	1.0	SOJ 121-3	4.7	SOJ 121-3 SL	2.0
95-150	–	18.5-24	SOJ 122-1	3.0	SOJ 122-1 SL	1.1	SOJ 122-3	5.6	SOJ 122-3 SL	2.3
185-240	–	23-28	SOJ 123-1	3.1	SOJ 123-1 SL	1.2	SOJ 123-3	6.4	SOJ 123-3 SL	2.7
300-400	–	27-34	SOJ 124-1	4.3	SOJ 124-1 SL	1.6	SOJ 124-3	8.9	SOJ 124-3 SL	4.2
500-630	–	33.5-46	SOJ 125-1	5.9	SOJ 125-1 SL	2.2	–	–	–	–
–	50-70	19-23.5	SOJ 241-1	3.2	SOJ 241-1 SL	1.3	SOJ 241-3	6.2	SOJ 241-3 SL	2.8
–	95-150	22.5-28	SOJ 242-1	3.9	SOJ 242-1 SL	1.5	SOJ 242-3	7.0	SOJ 242-3 SL	3.4
–	185-300	27-35	SOJ 243-1	4.5	SOJ 243-1 SL	1.8	SOJ 243-3	9.1	SOJ 243-3 SL	4.5
–	400	33.5-46	SOJ 244-1	6.4	SOJ 244-1 SL	2.2	–	–	–	–

To be ordered separately

Accessories	Use	SOJ R	SOJ SL	See page
Adapter	Cables with different dimensions	X	X	53
JSA 10-13	Cables with copper tape screen	X	X	67
JSA 14-16	Cables with aluminium foil screen	X	X	67
TS	Additional kit for sector shaped 3-core cables	X	X	53
WIM	Diffusion seal	X	X	54
ARM	Armouring kit	–	X	68
STOP	Branch seal for three 1-core cables	X	–	53
SH-SKRM	Bolt connector	X	X	71

Premolded cable joints, for cables with Cu-tape screen
SOJ 12-24 kV

Use
Premolded cable joint for XLPE and EPR insulated 1- or 3-core cable with Al or Cu conductors and Cu-tape screen for 12-24 kV.

Standards
- SS 424 14 45 edition 1
- VDE 0278
- CENELEC, HD 629.1 S1
- KEMA S8
- IEEE 404 1993

Design
The joint body is made of rubber in three layers: a conductive outer layer, an insulating layer and a conductive inner layer.

The kit consists of:
- Jointing sleeves
- Installation material
- Copper stockings and constant force springs to restore the copper tape screen.
- Cast resin armouring kit to restore the outer jacket of the cable.

Note:
- Connectors for the cable conductors are not included and must be ordered separately.

Cable cross section		XLPE	Designation
12 kV	24 kV	diameter	
mm²		mm	
50-70	–	15-19.5	SOJ 121-3 EA
95-150	–	18.5-24	SOJ 122-3 EA
185-240	–	23-28	SOJ 123-3 EA
300-400	–	27-34	SOJ 124-3 EA
–	50-70	19-23.5	SOJ 241-3 EA
–	95-150	22.5-28	SOJ 242-3 EA
–	185-300	27-35	SOJ 243-3 EA

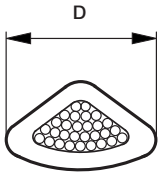
To be ordered separately

Accessories	Use	See page
Adapter	Cables with different dimensions	53
TS	Additional kit for sector shaped 3-core cables	53
WIM	Diffusion seal	53
ARM	Armouring kit	68
STOP	Branch seal for three 1-core cables	53
SH-SKRM	Bolt connector	71

Accessories for SOJ 12-24 kV

Additional kit TS

Additional kit for sector shaped 3-core cables, for use when the D-dimension over the insulation is above the value as below.



Designation	Fitting joint	D	Weight
		mm	kg/item
TS 121	SOJ 121-3	20	0.1
TS 242	SOJ 242-3	29	0.1
TS 243	SOJ 243-3	39	0.1

Adapter kit, ADAPTER

Adapter for cables from 10 mm² and for jointing cables with a smaller cross section. Manufactured and tested to cope with one step down to the nearest joint size (each kit contains one adapter).

Designation	Fitting joint	Minimum conductor cross section	XLPE diameter	Weight
		mm²	mm	kg/item
ADAPTER 1*	SOJ 121,241	10	Minimum 10	0.1
ADAPTER 2	SOJ 122	50	15.0-19.5	0.1
ADAPTER 3	SOJ 123	95	18.5-24.0	0.1
	SOJ 242	50	19.0-23.5	0.1
ADAPTER 4	SOJ 124	185	23.0-28.0	0.1
	SOJ 243	95	22.5-28.0	0.1
ADAPTER 5	SOJ 125	300	27.0-34.0	0.1
	SOJ 244	185	27.0-35.0	0.1
ADAPTER 6	SOJ 125	185	23.0-28.0	0.1
	SOJ 244	95	22.5-28.0	0.1

* Minimum diameter over connector is 12 mm.

Crutch seal, STOP

For sealing when three 1-core cables are jointed to a 3-core cable.

Designation	Voltage	Suitable for 1-core cables with conductor cross section	Weight
	kV	mm²	kg/item
STOP 1	12	50-185	0.2
	24	50-95	0.2
STOP 2	12	> 240	0.2
	24	> 120	0.2

Accessories
SOJ 12-24 kV

Diffusion seal, WIM

Used as complement to SOJ CS, SOJ CSS or SOJ R when jointing 3-core watertightened cables with diffussion barrier of aluminium.

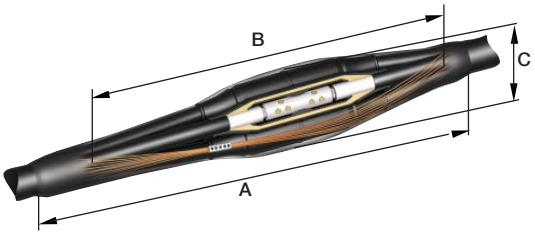
WIM 3

Designation	Fitting joint	Type of cable	Weight kg/kit
WIM 3	SOJ 121-3, 122-3, 123-3, SOJ 241-3, 242-3, 243-3	3-core with Al foil in direct contact with screen	0.5
WIM 5	SOJ 121-1, SOJ 122-1	1-core with Al-foil in direct contact with screen	0.4
WIM 6	SOJ 123-1, SOJ 124-1, SOJ 125-1, SOJ 241-1, SOJ 242-1, SOJ 243-1, SOJ 244-1	1-core with Al-foil in direct contact with screen	0.4

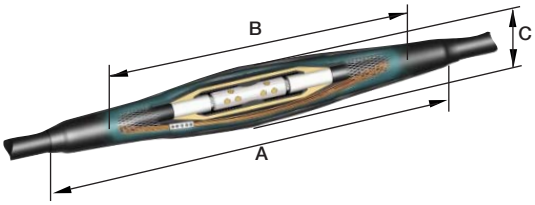
To be ordered separately

Accessories	Type of jointing / cable type	CSS	CS	R	SL	RWI	RWIT	See page
TS	Additional kit for sector shaped 3-core cables	X	X	X	X		X	53
Adapter	Cables with different dimensions	X	X	X	X	X	X	53
STOP	3 x 1-core to a 3-core			X				53
WIM	Radial watertightness cable	X	X	X				54
JSA 10-13	Cable with copper tape screen	X	X	X				67
JSA 14-16	Cable with aluminium foil screen only	X	X	X				67
ARM	Armoured cable or when extra mechanical protection is required				X			68
SH-SKRM	Bolt connector	X	X	X	X	X		71

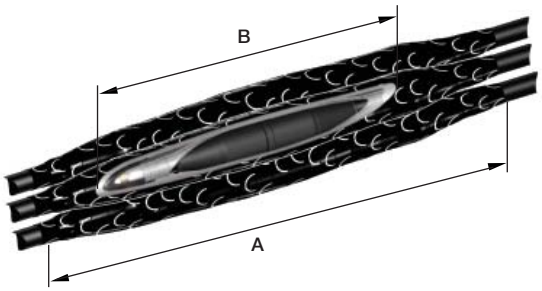
Dimensional drawings
SOJ 12-24 kV



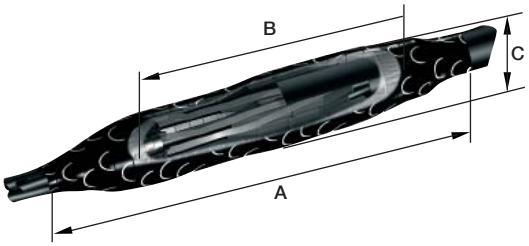
SOJ with outer sheath cold shrink.



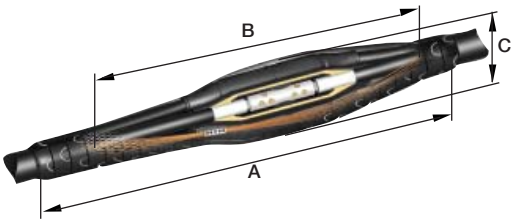
SOJ with outer sheath cold shrink for watertightened 1-core cables.



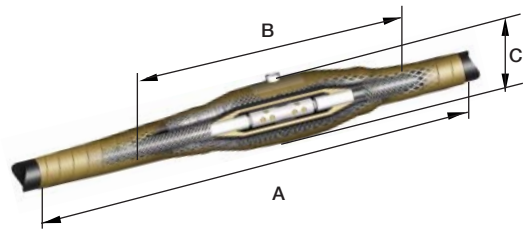
SOJ with outer sheath RULLE on 3 x 1-core WISKI™ cables.



SOJ with outer sheath RULLE on 3 x 1-core WISKI™ cables to a 3-core XLPE-cable.



SOJ with outer sheath RULLE.



SOJ with outer sheath cast resin armouring.

Designation	Dimensions		
	A*	B*	C*
	mm		
1-core			
SOJ 121-1	980-1060	770-860	60
SOJ 122-1	980-1100	770-900	65
SOJ 123-1	1050-1220	940-960	75
SOJ 124-1	1050-1370	940-1080	75
SOJ 125-1	1050-1400	940-1200	90
SOJ 241-1	1050-1220	900-940	75
SOJ 242-1	1050-1220	900-940	80
SOJ 243-1	1050-1370	940-1080	85
SOJ 244-1	1050-1400	940-1200	90
3-core			
SOJ 121-3	1200-1350	1000	120
SOJ 122-3	1350	1150	125
SOJ 123-3	1390-1500	1190	140
SOJ 124-3	1500	1310	165
SOJ 241-3	1350	1140	145
SOJ 242-3	1320-1390	1190	160
SOJ 243-3	1500	1310	180

*Estimated dimensions depending on installation and type of outer sheath.

Tape cable joint
SMXB 12-36 kV

Use
For jointing XLPE-insulated 1- and 3-core cables with Al or Cu conductor 12-36 kV.

Standard
Meets the requirements of:
- SEN 24 14 34
- SS 424 14 17 Edition 4
- VDE 0278

Design
The joint kit consists of tapes, stress grading pads FSD and a copper net. Only crimp connectors can be used.

Note:
- For crimp connectors for conductor and screen and welding equipment please contact your supplier.

Designation	Weight kg/item	Designation	Weight kg/item
1 x 3-core or 3 x 1-core cables		**1 x 1-core cable**	
SMXB 1-3	2.6	SMXB 1-1	0.9
SMXB 2-3	3.7	SMXB 2-1	1.1
SMXB 3-3	4.0	SMXB 3-1	1.4
SMXB 4-3	4.3	SMXB 4-1	1.6
SMXB 5-3	4.5	SMXB 5-1	2.0
SMXB 6-3	5.9	SMXB 6-1	2.2
SMXB 7-3	6.7	SMXB 7-1	2.5
SMXB 8-3	9.7	SMXB 8-1	3.6
SMXB 9-3	12.9	SMXB 9-1	5.1
For selecting size see next page.		SMXB 10-1	3.8
		SMXB 11-1	5.1
		SMXB 12-1	6.7
		SMXB 13-1	7.8

Recommendation tables
SMXB 12-36 kV

For compression of aluminium conductors

Voltage	Insulation thickness	Cross section													
		10	25	35	50	70	95	120	150	185	240	300	400	500	630
kV	mm	mm²													
One 3-core or three 1-core cables		Cable joint SMXB No.													
12	3.4	1	1	1	1	1	2	2	2	3	3	6	7	7	8
24	5.5	2	3	4	4	4	5	5	6	6	6	8	8	8	9
One 1-core cable															
36	8.0	–	10	10	10	10	10	10	10	11	11	11	11	11	12

For compression of copper conductors

Voltage	Insulation thickness	Cross section														
		25	30	50	70	95	120	150	185	240	300	400	500	630	800	1200
kV	mm	mm²														
One 3-core or three 1-core cables		Cable joint SMXB No.														
12	3.4	1	1	1	1	1	1	2	2	3	3	7	7	7	–	–
24	5.5	3	3	3	3	3	5	5	5	6	6	7	8	8	–	–
One 1-core cable																
36	8.0	10	10	10	10	10	10	10	11	11	11	11	11	11	13	13

For thermite welding of aluminium or copper conductors

Voltage	Insulation thickness	Cross section					
		400	500	630	800	1000	1200
kV	mm	mm²					
One 3-core or three 1-core cables		Cable joint SMXB No.					
12	3.4	7	7	7	–	–	–
24	5.5	7	8	8	–	–	–
One 1-core cable							
36	8.0	11	11	11	11	12	12

Accessories
SMXB

STOP

Crutch seal for sealing when 3 x 1-core cables are jointed to a 3-core cable.

Designation	Voltage	Suitable for 1-core cables with conductor cross section	Weight
	kV	mm²	kg/item
STOP 1	12	50-185	0.2
	24	50-95	0.2
STOP 2	12	>240	0.2
	24	>120	0.2

WIM

Diffusion seal kits for restoring radial watertightness on cables with diffusion barrier of aluminium.

WIM 3

Designation	Fitting joint	Type of cable	Weight
			kg/kit
WIM 1	SMXB 1-1, 2-1, 3-1, 4-1	1-core with Al-foil	0.5
WIM 2	SMXB 5-1, 6-1, 7-1, 8-1,9-1,10-1,11-1,12-1	1-core with Al-foil	0.5
WIM 3	SMXB 1-3, 2-3, 3-3, 4-3, 5-3, 6-3	3-core with Al-foil in direct contact with screen	0.3

Cable cabinet 250 A
HDC-A 12-24 kV

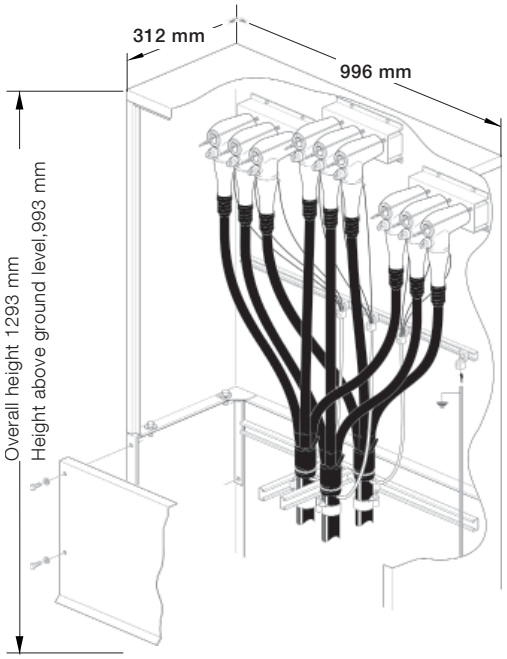
Use
For jointing or branching XLPE-insulated 1-core or 3-core, 12-24 kV cables with conductor cross sections 10-95 mm², 250 A.

When branching in a cable grid, a branching point may be necessary to enable selected cable runs to be sectionalized during maintenance. With HDC-A, a solution is provided that makes this possible. Up to 3 cables can be connected in parallel.

Standards
- Enclosure meets the requirements of mechanical impact tests according to: IEC 60439-5
- Cable connectors meets the requirements of electrical tests according to CENELEC, HD 629.1 S2

Design
The enclosure is made of hot-dip-galvanized sheet steel plates with a foundation base plate and additional corrosion protection on parts that will be burried under ground.

The screened separable cable connectors are connected with coupling pieces pre-mounted in the cabinet.



The cable cabinet is supplied with:
- 9 screened separable connectors
- Standard locks and padlock shackles

Note:
- For 3-core cables, screen separation kit must be used! To be ordered separately.

Designation basic configuration	Voltage level	XLPE-diameter	Conductor cross section	Weight
	kV	mm	mm²	kg /unit
HDC-A 12250	12	13-22	25-95*	117
HDC-A 24250	24	17-25.5	25-95*	117

* For smaller cables, contact us.

Accessories for cable cabinet
HDC 12-24 kV, 250 A

IP 250
Screened insulating plug for installation in the connector so that the cable can be energized even when the connection is disconnected.

JP 250-HDC
Earth circuit connector for short-circuit protective earthing. For mounting on the disconnected connector. 3 pieces in a case.

IH-A 24250
Insulating hood made of flexible rubber with outer conductive layer and an already installed insulating rod. To be mounted at the bushing in HDC-A 250 for insulation when a cable is temporary disconnected and remaining cables are under voltage.

MA 250
Measurement adapter used for mega ohm Ω measurements and to perform differentmeasurements up to 5 kV DC, for example determination of phases.

KA 250
Transversal anchor bar.

PSSK: for cables with Cu-wire screen, heat-shrink.
PSSK E: for Ericsson's cables with Al-wire screen, heat-shrink.

UKRA 90
Universal clamp.

Designation	Description	Qty	Weight
		kit	kg/unit
IP 250	Screened insulating plug	1	0.8
JP 250-HDC	Earthing circuit connector	3	3.0
IH-A 24250	Insulating hood	3	2.3
MA 250	Measurement adapter	1	0.3
KA 250	Busbar	1	0.5
PSSK 1	Screen separation kit for 3-core cable 10-70/12 kV, 10-35/24 kV	1	1.0
PSSK 1 E*	Screen separation kit for 3-core cable 10-70/12 kV, 10-35/24 kV	1	1.0
UKRA 90	Clamp for fixing cables	1	0.23

* Special screen separation for Ericsson's 3-core cable with Al-wire screen.

Cable cabinet 630 A
HDC-A 12–36

Use
For jointing or branching of XLPE-insulated, 12-36 kV 1-core or 3-core cables with conductor cross sections 25–630 mm², 630 A.

When branching in a cable grid, a branching point may be necessary to enable selected cable runs to be sectionalized during maintenance. With HDC-A a solution is provided that makes this possible. Up to four cables can be connected in parallel.

Standard
The cable cabinet meets the requirements for mechanical impact testing according to IEC 60439-5.

The cable connectors meets the electrical requirements according to CENELEC, HD 629.1 S2.

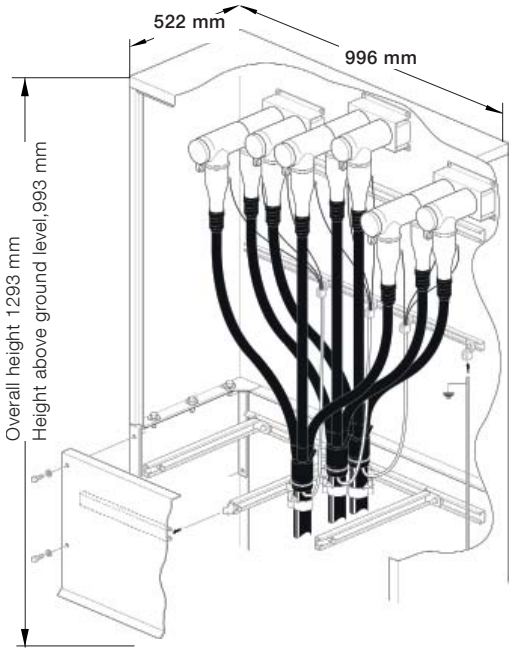
Design
The enclosure is made of hot-dip-galvanized sheet steel plates with a foundation base plate and additional corrosion protection on parts that will be burried under ground.

The screened separable cable connectors are connected with coupling pieces pre-mounted in the cabinet.

The cable cabinet is supplied with:
- Six screened separable cable connectors
- Lock and padlock hasp

Required when connecting more cables:
- 6 screened separable cable connectors type CSE-A.
- Parallel coupling piece type PC.

Note:
- For 3-core cables, screen separation kit type PSSK must be used. To be ordered separately.



The third cable connector is to be ordered separately.

Designation basic configuration	Voltage level kV	Rated voltage A	Conductor cross section mm²	Weight kg /unit
HDC-A 12630-01	12	630	25-70	140
HDC-A 12630-02	12	630	95-300	140
HDC-A 12630-03	12	630	400-630	140
HDC-A 24630-01	24	630	25-70	140
HDC-A 24630-02	24	630	95-300	140
HDC-A 24630-03	24	630	400-630	140
HDC-A 36630-01	36	630	50-70	140
HDC-A 36630-02	36	630	95-300	140
HDC-A 36630-03	36	630	400-630	140

Accessories for cable cabinet
HDC-A 12-36 kV, 630 A

CSE-A
Screened separable connector 630 A for connection of an external cable.

IH-A 24630, IH-A 42630
Insulating sealing hood of flexible rubber with outer conductive layer and an already installed insulating hood. To be installed in HDC-A 630 instead of cable in order to temporarily insulating 630 A switchgear or transformer bushings.

PG 630
Bushing for voltage testing of the cable. Adapted to cable connectors 12-24 kV.

PG-A 630
Bushing for voltage testing of the cable. Adapted to cable connectors 36 kV.

PC 630-3
Parallel coupling piece. Replaces the plug in CSE-A when making a parallel connection to another CSE-A 12-24 kV.

PC 630-3 L
Parallel coupling piece. Replaces the plug in CSE-A when making a parallel connection to another CSE-A 36 kV.

JPB 630 HDC
Universal earthing device with two fields of application for 630 A and 12-36 kV:
- As earthing-for-work device mounted at the back of a connected cable connector.
- As short-circuit protective earthing mounted in front of a disconnected cable connector.

PC 630/250
Connector for connecting a CSE-A 250, in parallel with a previously mounted CSE-A 630. 3 pieces in kit, tool is included.

MA-A 630
Measurement adapter used for mega ohm Ω measurements and to perform different measurements up to 5 kV DC, for determination of phases.

Designation	Description	Qty. per kit	Weight kg/kit
CSE-A	Screened separable connector. For information, see pages 36-43	3	–
IH-A 24630	Insulating sealing hood, 12-24 kV	3	5.2
IH-A 42630	Insulating sealing hood, 36 kV	3	5.2
PG 630	Bushing for voltage testing of the cable, 12-24 kV	1	1.5
PG-A 630	Bushing for voltage testing of the cable, 36 kV	1	2.0
PC 630-3	Parallel coupling piece, 630, 12-24 kV	3	1.1
PC 630-3 L	Parallel coupling piece, 630, 36 kV	3	1.1
JPB 630-HDC	Earthing-for-work device	3	5.0
PC 630/250	Parallel coupling piece between CSE-A 630 and CSE-A 250	3	3.0
MA-A 630	Measurement adapter	3	0.1

IP 630
Screened insulating plug for installation in the screened separable connector so that the cable can be energized even when the connector is disconnected from the switchgear or transformer.

JPA V
Tool for earthing-for-work device.

UKRA 90
Universal clamp.

PSSK L
Screen separation kit for cables with Cu-wire screen, heat shrink. To be ordered separately.

Designation	Description	Qty.	Weight
		per kit	kg/kit
IP 630	Insulating plug	1	0.8
JPA V	Tool for JPB 630-HDC	1	1.8
PSSK 1 L	Screen separation 3-core cable 10-70/12 kV, 10-35/24 kV	1	1.0
PSSK 2 L	Screen separation 3-core cable 95-300/12 kV, 50-300/24-36 kV	1	1.0
UKRA 90	Clamp for fixing cables	1	0.23
KA 630	Transversal anchor bar, add two when using 1-core cables	1	0.8

Screen separation kit for CSE-A and KAP
PSSK

Use
For XLPE/EPR 3-core cables with common copper wire screen or Ericsson cables with aluminium wire screen. The screen of the 3-core cable is split up to each phase. Used to prevent flashover between the phases, for example in a switchgear bay. Used together with screened separable connector CSE-A or shrouded termination KAP.

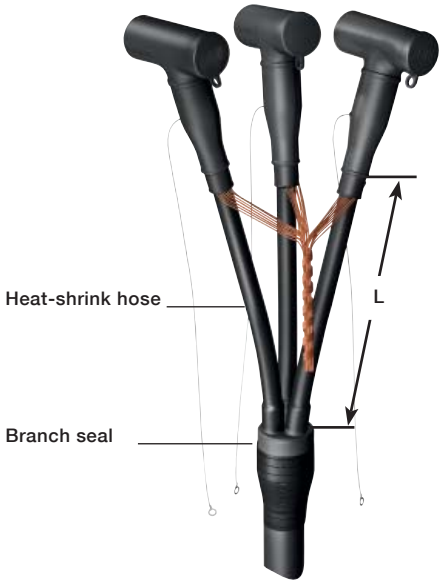
When a connector type CSE-A is installed, each core screen is connected to the outer conductive layer.

Standard
Meets the requirements of EBR KJ 25:99.

Design
A copper stocking with a screen cross section of 25 mm² is fitted on each phase and connected to the screen wires of the cable.

A heat shrink branch seal and protective hoses are used as an outer sheath. It can also be cut for shorter installation. PSSK L can be buried under ground. To achieve water tightness; mastic, vulcanizing tape and protective tape are applied to the lower part of the crutch seal.

Note!
– Cable connectors are ordered separately.



PSSK L

Designation	Conductor cross section			Length	Weight
	12 kV	24 kV	36 kV	L	
	mm²			mm	Kg/item
PSSK 1	10-70	10-35	–	1200	1.0
PSSK 2	95-300	50-300	–	1200	1.0
PSSK 1 E*	10-70	10-35	–	1200	1.0
PSSK 2 E*	95-300	50-300	–	1200	1.0
PSSK 1 L	10-70	10-35	–	2000	1.0
PSSK 2 L	95-300	50-300	50-300	2000	1.0

* Special kits to be used with Ericsson's cables with Al-screen wires.

Branch seal kit for XLPE-insulated 3-core cables with copper wire
TSH

Use
TSH, branch seal for sealing the branch when installing cable terminations SOT on XLPE-insulated 3-core cables, indoor or outdoor.

SSH are kits with protective hoses to be used as prolongation of the branch seal when necessary.

Design
Branch seal and protective hoses of heat-shrink material as per below, lashing wire for mechanical reinforcement of the branch, earth wire and non-corrosive band strip for connection of earth potential to termination.

- TSH 1 L and TSH 2 L include 3 heat-shrink hoses, length 1.2 m.
- TSH 1 S and TSH 2 S include 1 heat-shrink hose, length of 1.2 m to be cut in suitable lengths for current installation.

Protective hoses for prolongation of branch seal
- SSH 1 L and SSH 2 L include 3 heat-shrink hoses, length 1.2 m.
- SSH 1 S and SSH 2 S include 3 heat-shrink hoses, length 0.4 m.

Designation	Outer diameter cable		Core diameter		Cable cross section		Length	Weight
	Min	Max	Min	Max	12 kV	24 kV		
	mm		mm		mm²		m	kg/kit
TSH 1 L	22	60	9	27	10-95	10-50	Approx. 1.25	0.5
TSH 1 S	22	60	9	27	10-95	10-50	Approx. 0.45	0.3
TSH 2 L	47	110	16	50	120-300	70-300	Approx. 1.25	1.0
TSH 2 S	47	110	16	50	120-300	70-300	Approx. 0.45	0.7
SSH 1 L	–	–	9	27	10-95	10-50	1.2	0.4
SSH 1 S	–	–	9	27	10-95	10-50	0.4	0.1
SSH 2 L	–	–	16	50	120-300	70-300	1.2	0.6
SSH 2 S	–	–	16	50	120-300	70-300	0.4	0.2

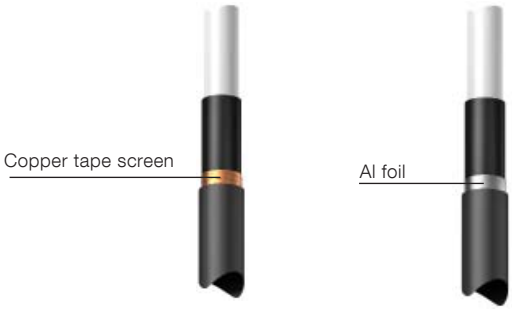
Earthing kit for cable terminations
JXT 1-3 and JSA 4-6

Earthing kits for XLPE-insulated cables with earth screen of copper tape or aluminium foil. The kits are designed for Kabeldon terminations and connectors. There is enough material in the kits for three 1-core cable terminations.

There are also complete kits for 1-core cables.

For cables with copper tape screen
JXT 1-3 contains copper stockings which are connected to the screen with constant force springs.

For cables with aluminium foil screen
JSA 4-6 contains copper braids which are connected to the screen with a plate and constant force springs.

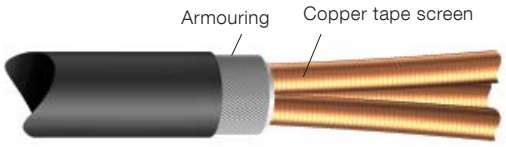


Note:
- If the cable has only copper wire screen, no earthing kit is needed.
- For cables with other screen types, or 3-core cable with Cu-tape screen, contact us for information.

Cable	For cables with copper tape screen			For cables with aluminium foil screen		
Ø Screen mm	15 – 25	20 – 30	31 – 50	20-30	25-40	20 – 30
Earthing kit	**JXT 1**	**JXT 2**	**JXT 3**	**JSA 4**	**JSA 5**	**JSA 6**
Cable accessories				IV-tape	IV-tape	Shrink sleeve
SOT 241	X			X		X
SOT 242		X			X	
SOT 242 B			X			
SOT 243	X			X		
SOT 244		X		X		X
SOT 245			X		X	
SOT 246			X			
SOT 361			X		X	
SOT 362			X			
CSS-A 12250-01	X			X		X
CSS-A 12250-02	X			X		X
CSS-A 24250-01	X			X		X
CSS-A 24250-02	X			X		X
CSE-A 12250-01	X			X		X
CSE-A 12250-02	X			X		X
CSE-A 24250-01	X			X		X
CSE-A 24250-02	X			X		X
CSE-A 12400-01	X			X		X
CSE-A 12400-02		X		X		X
CSE-A 24400-01		X		X		X
CSE-A 24400-02		X		X		X
CSE-A 12630-01	X			X		X
CSE-A 12630-02		X		X		X
CSE-A 12630-03			X		X	
CSE-A 24630-01		X		X		X
CSE-A 24630-02		X		X		X
CSE-A 24630-03			X		X	
CSE-A 36400-01		X			X	X
CSE-A 36400-02			X		X	
CSE-A 36630-01		X			X	X
CSE-A 36630-02			X		X	
CSE-A 36630-03			X		X	
KAP 630-11	X			X		X
KAP 630-12	X			X		X
KAP 630-22		X			X	

Screen connection for cable joints
JSA 10-16

Screen connection kits for XLPE-insulated cables with earth screen of copper tape or aluminium foil. The kits are designed for Kabeldon cable joints type SOJ and SMXB. There is enough material in the kits for one 3-core joint or three 1-core joints.



Cables with copper tape screen
JSA 10-13 contains copper stockings which are connected to the screen with constant force springs. Connections to armouring (if any) are made with lashing wire.

Cables with aluminium foil screen
JSA 14-16 contains copper braids which are connected to the screen with a plate and constant force springs.

Note:
- If the cable has only copper wire screen, no earthing kit is needed.
- For cables with other screen types, or 3-core cables with Cu-tape screen, contact us for information.

Cable	For cables with copper tape screen				For cables with aluminium foil screen		
Ø XLPE mm	17 – 20	19 – 27	25 – 35	31 – 48	19 – 27	25 – 35	31 – 48
Earthing kit for 1-core	**JSA 10-1**	**JSA 11-1**	**JSA 12-1**	**JSA 13-1**	**JSA 14-1**	**JSA 15-1**	**JSA 16-1**
Earthing kit for 3-core	**JSA 10-3**	**JSA 11-3**	**JSA 12-3**	**JSA 13-3**	**JSA 14-3**	**JSA 15-3**	**JSA 16-3**
Cable joint							
SOJ 121	X						
SOJ 122		X			X		
SOJ 123			X			X	
SOJ 124			X			X	
SOJ 125				X			X
SOJ 241		X			X		
SOJ 242		X			X		
SOJ 243			X			X	
SOJ 244				X			X
SMXB 1	X						
SMXB 2		X			X		
SMXB 3			X			X	
SMXB 4		X			X		
SMXB 5		X			X		
SMXB 6			X			X	
SMXB 7				X			X
SMXB 8				X			X
SMXB 9				X			X
SMXB 10			X			X	
SMXB 11				X			X

Armouring kit
ARM

Use

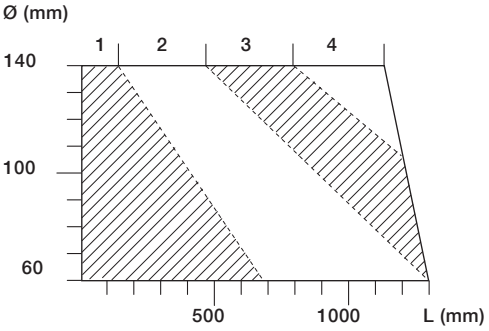
For restoring a steel wire or steel tape armoured cable. ARM can be used with SOJ and SMXB joints, as well as other joints.

Design

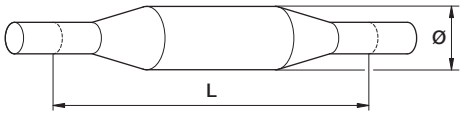
The kit consists of plastic mesh, spiral, funnel with holder, transparent tape and cast resin. The mesh and spiral are placed over the joint and sealed with the tape. The cast resin, which contains a base and hardener in a partitioned bag, is mixed and poured into the funnel until the mesh is full.

The maximum storage temperature for the cast resin is 30 °C.

Selecting ARM for unknown application requires the length of joint ”L” and diameter over joint ”Ø” as below.



ARM kit size



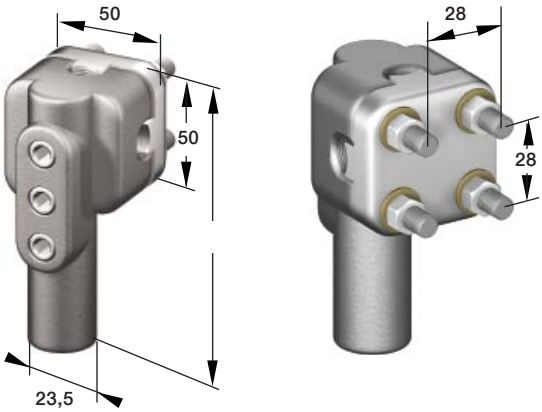
E.g. Ø 115 and L 850 mm give ARM 3.

Kabeldon cable joints type SOJ and SMXB are completed with ARM as following:

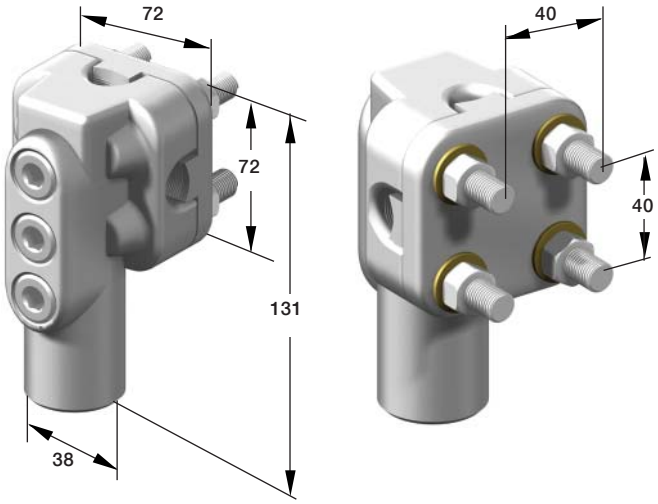
Cable joint	ARM 1	ARM 2	ARM 3
SOJ 121-3	X		
SOJ 122-3		X	
SOJ 123-3		X	
SOJ 124-3			X
SOJ 241-3	X		
SOJ 242-3		X	
SOJ 243-3		X	
SMXB 1-3	X		
SMXB 2-3		X	
SMXB 3-3		X	
SMXB 4-3	X		
SMXB 5-3		X	
SMXB 6-3			X
SMXB 7-3			X
SMXB 8-3			X

Designation	Weight
	kg/item
ARM 1	3.5
ARM 2	6.5
ARM 3	8.0
ARM 4	10.0

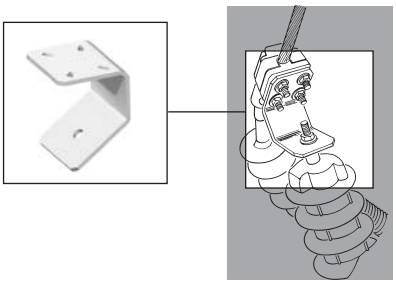
Cable connection
Overhead line clamps



FK 120
Overhead line clamp. A greased tin-plate must be used when connecting to a Cu conductor outdoors.



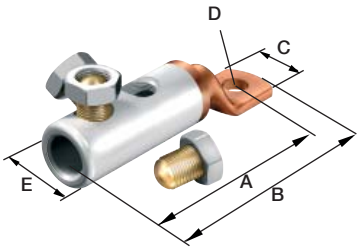
FK 300
Overhead line clamp. A greased tin-plate must be used when connecting to a Cu conductor outdoors.



FKFB
Bracket to connect overhead line clamp FK to surge arrester.

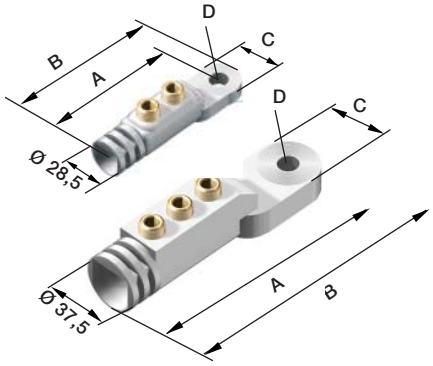
Designation	Conductor Al or Cu		Tightening torque	Aerial line Al		Weight
	size	max Ø		size	max Ø	
	mm²	mm		mm²	mm	kg/item
FK 120	50-120	13	25 Nm	31-99	5-12	0.5
FK 300	50-300	21	25 Nm för 50-100 mm² 45 Nm för 100-300 mm²	62-234	10-20.5	0.9
FKFB	–	–	–	–	–	0.1

Cable connection
Cable lugs



SKSB
Bi-metallic bolt cable lug for Al and Cu conductors up to 36 kV.

- Meets the requirements of: IEC 61238-1
- The cable lug is equipped with a turnable two-sided shear-off bolt and a specially designed nut.
  The bolt is rotated in the appropriate direction, and the nut is then assembled. When the specified torque is reached, the bolt will shear-off and the installation is completed.
- Single core kits.

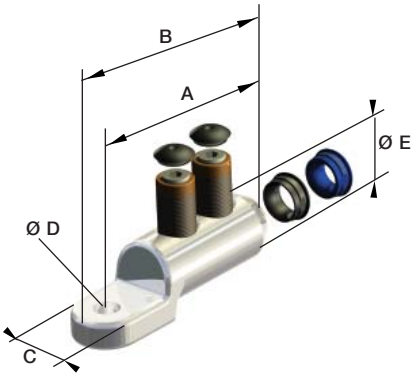


SKSA 95-13, 300-13
Bolt cable lug for indoor and outdoor connection of Al or Cu conductors. Can be connected to an Al or Cu busbar.
A greased cupal washer must be used when connecting to a Cu conductor outdoors.

- Meets the requirements of: IEC 61238-1
- Single core kits.

CW 3013, CW 3817
Cupal washer, to be used when connecting an aluminium cable lug to a copper busbar outdoors. The washers are coated with contact grease.

- Supplied in bags of three.



SCL-B
Bolt cable lug for cable terminations for 12–36 kV, type SOT, APIT and APSEA.For indoor and outdoor connection of both Cu and Al-conductors.

- Meets the requirements of EN 61238-1.
- The cable lug is manufactured in an aluminium alloy surface-treated with tin.
- Shear-off bolts are made of brass. Breaks off once the correct torque is reached. Thanks to its design, the bolts will always break off directly at the edge of the cable lug.

The kit also includes:

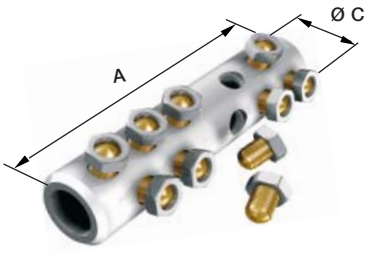
- Adapter rings for different conductor cross sections.
- Covers used as protection over bolts.

Designation	Conductor cross section Al / Cu			Tightening	Dimensions					Weight
	Sektor shaped	Solid round	max Ø	torque	A	B	C	D(Ø)	E(Ø)	
	mm²	mm²	mm	Nm	mm					kg/unit
SKSB 70-12	25-70	16-70	11	15[1)]	90	103	25	13	21.5	0.15
SKSB 150-12	95	95-150	16	20[1)]	103	118	30	13	27	0.25
SKSB 240-12	120-185	185-240	20	30[1)]	125	140	30	13	33.5	0.40
SKSB 400-16	240	300-400	25.5	40[1)]	166	185	37	17	41.5	0.75
SKSB 630-16	–	500-630	33	45[1)]	201	227	55	17	49	1.45
SKSA 95-13	–	25-95	11.6	25[1)]	88	103	30	13	–	0.10
SKSA 300-13	–	50-300	20.6	25[2)]45[3)]	140	160	40	13	–	0.30
SCL-B 95-12	50-95	10-95	–	–	58	70	24	13	24	0.10
SCL-B 150-12	35-120	25-150	–	–	74	91	28	13	28	0.25
SCL-B 240-12	50-185	50-240	–	–	115	100	33	13	33	0.30
SCL-B 300-16	95-240	95-300[4)]	–	–	101	120	38	16.5	38	0.35
SCL-B 630-16	–	300-630[5)]	–	–	165	180	50	16.5	50	0.90

1) The bolt will be sheared-off at the right tightenening torque.
2) The bolt will be sheared-off at the right tightened torque for cables 50-95 mm²
3) The bolt will be sheared-off at the right tightened torque for cables 120-300 mm²
4) Solid round conductor up to 400 mm²
5) Solid round conductor up to 800 mm²

Designation	Outer diameter	Hole diameter	Thickness	Weight
	mm	mm	mm	g/unit
CW 3013	30	13	2	5
CW 3817	38	17	2	8

Cable connection
Connectors



SH-SKRM
Bolt connector with partition and shear-off bolt for Al and Cu conductors up to 36 kV.

- Meets the requirements of IEC 61238-1.
- The connector is equipped with turnable two-sided shear-off bolts and a specially designed nut. The bolt is rotated in the appropriate direction, and the nut is then assembled. When the specified torque is reached, the bolt will shear off and the installation is completed.
- Single core kits.

Designation	Conductor cross section Al / Cu			Tightening torque	Dimensions			Weight
	Sector shaped	Round stranded	Solid round		A	ØB	ØC	
	mm²				mm			kg/unit
SH-SKRM 70	25-70	16-70	11	15	100	–	21.5	0.25
SH-SKRM 150	95	95-150	16	20	114	–	27	0.35
SH-SKRM 240	120-185	185-240	20	30	144	–	33.5	0.60
SH-SKRM 400	240	300-400	25.5	40	175	–	41.5	0.90
SH-SKRM 630	–	500-630	33	45	210	–	49	1.20

* Only fits tape joints type Kabeldon SMXB.

Bird protection for
pole-mounted transformers, support insulators, etc

Use

Used for bird protection on the high-voltage bushings for pole-mounted transformers. To prevent short-circuits caused by larger birds, HU is also placed on the surge arresters, but for total protection HU should be combined with an insulated down-conductor. This is done with insulation spiral HUS.

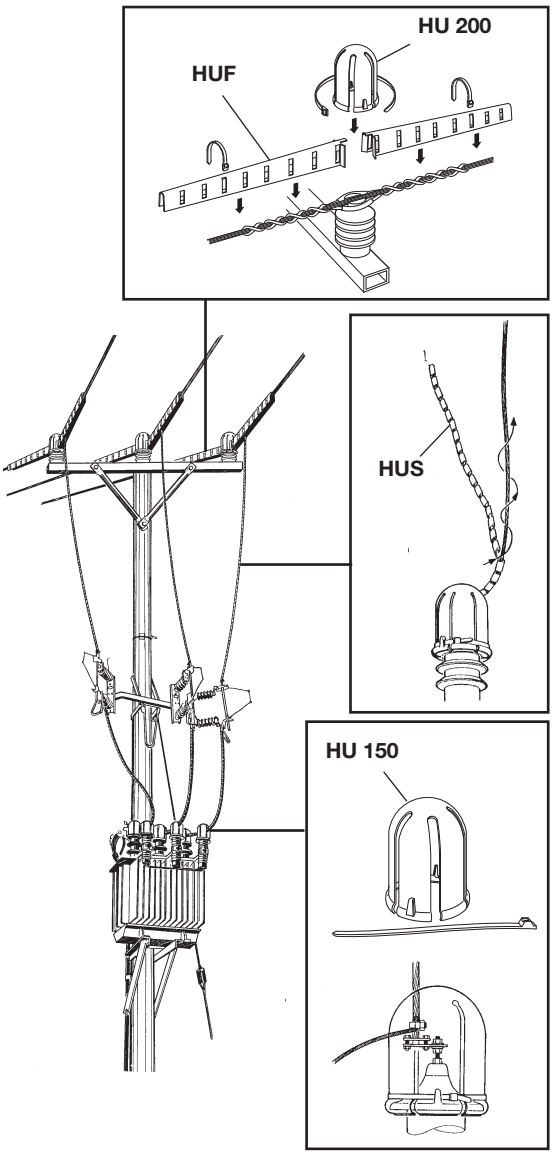
On post insulators, HU is used in combination with two wings HUF, which protect the overhead line closest to the insulator from short-circuiting.

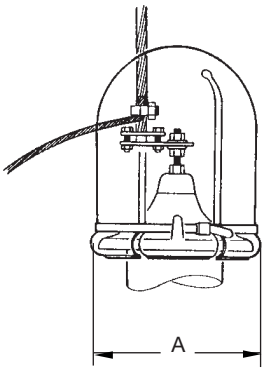
Standards

HU is designed for bushings with a diameter of 120-220 mm according to DIN 42531 standard.

Design

All components are made of UV-resistant plastic.





Designation	Bushing diameter A		Pieces/kit	Length	Weight
	min	max			
	mm			m	kg/item
HU 150	120	160	3	–	0.6
HU 200	160	220	3	–	0.8
HUF	–	–	6	0.6	1.1
HUS	–	–	1	30	1.8

Cable termination, indoor for paper-insulated cable
OTIA 12 kV

Use
Indoor termination for paper-insulated 3-core cables 12 kV.

Standard
Meets the requirements of:
– SEN 24 14 34

Rated pressure
0,3 MPa (overpressure)

Design
The housing is made of cross-linked HD-polyethylene (XLPE) with a transparent lower part, so that the oil level can be seen.

A spring-loaded gasket type FPA provides a seal between cable and housing, as well as electrical contact between cable screen and housing.

A GEX expansion vessel can be connected to the filling opening for the oil.

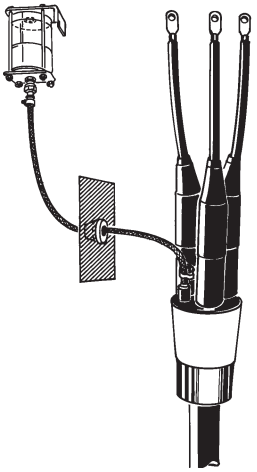
The paper-insulated cable is jointed in the upper part of the housing to a flexible connecting cable. The length is 900 mm and must be pressed with the Elpress press system. The Pfisterer press system can be used for Al conductors (for Simel press system, please contact us). As an alternative, bolt connection is available for Cu conductors of certain cross sections.

Designation	Conductor cross section		Suitable spring loaded gasket	Weight
	Al	Cu		
	mm²			kg/item
OTIA 152	35-240	25-240	FPA	4.1

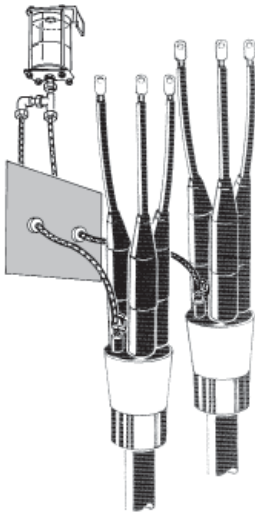
To be ordered separately

Designation	Description	See page
GEX	Expansion vessel	74
AK-ASA, K-ASA, K-ASB	Connecting cable	74
SKSB	Cable lug	70
FPA	Spring-loaded gasket	81

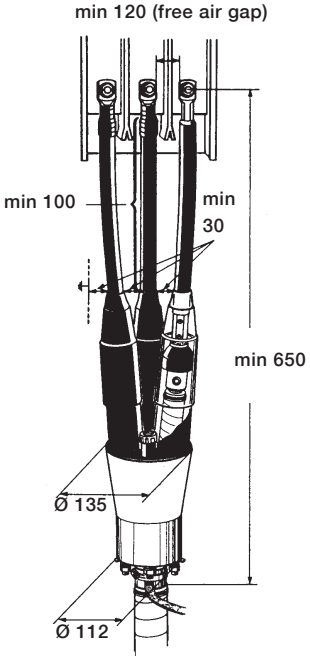
Accessories
OTIA 12 kV



GEX 01
Expansion vessel for one OTIA 152.



GEX 02
Expansion vessel for two OTIA 152.



OTIA 152

Designation	For use with	Weight
		kg/item
GEX 01	One OTIA	2.0
GEX 02	Two OTIA	2.0

Flexible connecting cable. Each kit contains one connecting cable (length 900 mm).

Beteckning	Conductor cross section		Cross section of connecting conductor Cu flexible	Max short-circuit current	Max continuous rating	Weight
	Al	Cu				
	mm²		mm²	kA	A	kg/item
Press type connecting cable						
AK-ASA 3535-9	35	–	35	6.2	200	0.6
AK-ASA 5035-9	50	–	35	6.2	200	0.6
AK-ASA 7035-9	70	–	35	6.2	200	0.6
AK-ASA 95150-9	95	–	150	16.6	350	1.2
AK-ASA 120150-9	120	–	150	16.6	350	1.2
AK-ASA 150150-9	150	–	150	16.6	350	1.2
AK-ASA 185150-9	185	–	150	16.6	350	1.2
AK-ASA 240150-9	240	–	150	26.1	500	1.8
K-ASA 185150-9	–	185	150	26.1	500	1.8
K-ASA 240150-9	–	240	150	26.1	500	1.8
Bolt type connecting cable						
K-ASB 7035-9	–	35-70	35	6.2	500	0.8
K-ASB 150150-9	–	95-150	150	16.6	500	1.2

Cable joint and repair cable joint for paper-insulated cable SMTD 12 kV

Use
For jointing paper-insulated lead-sheathed cables with Al or Cu conductor 12 kV.

Standards
Meets the requirements of:
- SEN 24 14 34
- SEN 24 14 23
- VDE 0278

Rated pressure
0.3 MPa

Design
The joint tube is a plastic-coated steel tube. The joint insulation consists of transparent polyester film and insulating oil. The oil prevents discharges in the paper-insulated cable. Spring-loaded gaskets provide a seal between the cable and the joint tube,as well as electrical contact between cable screens and joint tube. Type FPA or FP for belted cables and FPMP for separately lead-sheathed cables.

The length of the SMTD 152 LK and SMTD 153 K joint tube allows crossing of the conductors, in order to obtain the right phase sequence. The repair joint SMTD 152 RK should be completed with three extension cores, of paper- or XLPE-insulated cable (not included).

Note:
- Insulating bitumen compound and insulating oil need not be heated at temperatures exceeding +10°C.

Designation	Type	Maximum Conductor cross section Al/Cu	Suitable spring-loaded gasket	Joint tube Ø	Weight
		mm²		mm	kg/item
SMTD 152 K	Standard	3x240	FPA	100	25
SMTD 152 LK*	Extended	3x240	FPA	100	27
SMTD 153 K	Standard	3x300	FP, FPMP	150	52
SMTD 152 RK**	Repair	3x240	FPA	100	39

* Extended type, allows crossing of the conductors, in order to obtain the right phase sequence.
** For jointing with XLPE-conductor, three insulating materials type IG 1718 must be added.

To be ordered separately

Designation	Description	Required Qty.	See page
FPA, FP, FPMP	Spring loaded gasket	2	81
SH-SKRM	Bolt connector	3*	71

* 6 connectors should be used for SMTD 152 RK.

Supplementary kit for SMTD
(For conversion to a transition joint)

PXS

PXSA

A. Select the basic kit, SMTD joint (see page before) and spring-loaded gasket according to the dimension of the paper-insulated cable.
B. Select a XLPE kit, PXS or PXSA, in accordance with the following table.

Designation	Conductor cross section	Diameter across insulation	Type of termination for XLPE cable	Joint tube Ø	Weight
	mm²			mm	kg/item
PXS 02	10-240	≤ 32	Tape	100	2.9
PXS 03	10-300	≤ 32	Tape	150	5.5
PXSA 12 A	10-35	11-15	SOT termination	100	2.6
PXSA 12	50-185	15-26	SOT termination	100	2.6
PXSA 12 W*	50-185	15-26	SOT termination	100	2.6
PXSA 22	240	25-32	SOT termination	100	2.7
PXSA 22 W*	240	25-32	SOT termination	100	2.7
PXSA 23	240-300	25-32	SOT termination	150	5.2

* For 3 x 1-core XLPE-cables with Al foil screen.

To be ordered separately

Designation	Description	Required Qty.	See page
SH-SKRM	Connector with a partition	3	71

Cable joint, transition
SMTXB 12 kV

Use
For jointing a paper-insulated 3-core cable with an XLPE-insulated 1- or 3-core cable with Al or Cu conductor 12 kV.

Standards
Meets the requirements of:
- SEN 24 14 34
- VDE 0278

Rated pressure
0,3 MPa

Design
The joint tube is a plastic-coated steel tube. The joint insulation consists of transparent polyester film and insulating oil. The oil prevents discharges in the paper-insulated cable. A crutch seal provides a seal between the steel joint tube and the XLPE-insulated cable, which is also covered with either a premolded termination (SOT) or silicone tape.

Spring-loaded gaskets provide a seal between the cable and the joint tube, as well as electrical contact between cable screen and joint tube. Type FPA or FP for belted cables and FPMP for separately lead-sheathed cables. A sealing ring for three 1-core cable is included in the kit.

Note:
Insulating bitumen compound and insulating oil need not be heated at temperatures exceeding +10°C.

Designation	XLPE-diameter	Conductor cross section XLPE-cable		Conductor cross section paper-insulated gasket cable maximum	Suitable spring-loaded gasket	Tube	Weight
		PXSA	PXS			Ø	
	mm	mm²		mm²		mm	kg/item
SMTXB 1502	≤ 32	–	10-240	240	FPA	100	28
SMTXB 1502 L*	≤ 32	–	10-240	240	FPA	100	30
SMTXB 1503	≤ 32	–	10-300	300	FP, FPMP	150	57
SMTXB 1522	15-26	50-185	–	240	FPA	100	28
SMTXB 1522 L*	15-26	50-185	–	240	FPA	100	30
SMTXB 1522 W*	15-26	50-185	–	240	FPA	100	28
SMTXB 1532	25-32	240	–	240	FPA	100	28
SMTXB 1532 L*	25-32	240	–	240	FPA	100	30
SMTXB 1532 W*	25-32	240	–	240	FPA	100	28
SMTXB 1533	25-32	240-300	–	300	FP, FPMP	150	57

* L = Extended type, allows crossing of the conductors, in order to obtain the right phase sequence.
** For 3 x 1-core XLPE-cables with Al foil screen.

To be ordered separately

Designation	Description	Required Qty.	See Page
FPA, FP, FPMP	Spring-loaded gasket	1	81
SH-SKRM	Connector with a partition	3	71

Options

Designation	Steel tube internal Ø mm	Description	Qty.	See Page
GC	100	Clamps for 3 x 1-core XLPE-cables Ø 40-45 mm	1 kit	82

Cable joint, transition
SMTXD 24-36 kV

Use
For jointing a paper-insulated 3-core cable and XLPE-insulated 1-core or 3-core cable with Al or Cu conductor 24-36 kV.

Standards
Meets the requirements of:
- SEN 24 14 34
- VDE 0278

Rated pressure
0,3 MPa

Design
The joint tube is a plastic-coated steel tube. The insulation consists of impregnated crepe paper tape and insulating oil. The oil prevents discharges in the paper-insulated cable. The outer conductive layer of the cable is restored by conductive, impregnated crepe paper and copper net.

A crutch seal provides a seal between the steel tube and the XLPE-insulated cable, which is also covered with an oil barrier of silicone tape.

Spring-loaded gaskets provide a seal between the cable and the joint tube, as well as electrical contact between cable screens of PILC cable and joint tube. Type FP for belted cables and FPMP for separately lead-sheathed cables. A sealing ring for three 1-core cable is included in the kit.

Note:
- Insulating bitumen compound and insulating oil need not be heated at temperatures exceeding +10°C.

Designation	XLPE cable conductor cross section		PILC cable lead sheath		Suitable spring-loaded gasket	Joint tube	Weight
	12/20 (24) kV	18/30 (36) kV	Diameter	Cross section		Ø	
	mm²		mm	mm²		mm	kg/item
SMTXD 3613	10-150	10-50	20-85	10-300	FP, FPMP	150	76
SMTXD 3623	185-240	70-150	20-85	10-300	FP, FPMP	150	76
SMTXD 3633	300	240	20-85	10-300	FP, FPMP	150	76

To be ordered separately

Designation	Description	Required Qty.	See page
FP and FPMP	Spring-loaded gasket	1	81
SH-SKRM	Connector with a partition	3	71

Cable joint for paper-insulated cable
SMTA and SMTPA 24-52 kV

Use
For jointing paper-insulated 3-core cables with Al or Cu conductor 24-52 kV.

Standards
Meets the requirements of:
- SEN 24 14 34
- SEN 24 14 23

Rated pressure
0,3 MPa

Design
The joint tube is a plastic-coated steel tube. The insulation consists of impregnated crepe paper tape and insulating oil. The oil prevents discharges in the paper-insulated cable. The outer conductive layer of the cable is restored by conductive, impregnated crepe paper and copper net.

Spring-loaded gaskets provide a seal between the cable and the joint tube, as well as electrical contact between cable screen and joint tube. Type FPA or FP for belted cables and FPMP for separately lead-sheathed cables

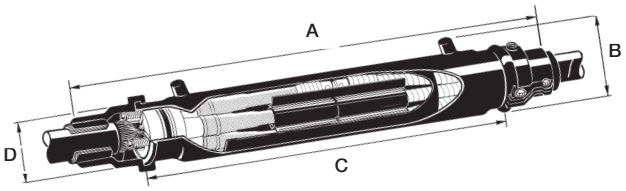
Note:
- Insulating bitumen compound and insulating oil need not be heated at temperatures exceeding +10°C.

Designation	Maximum conductor cross section Al/Cu			Diameter of cable lead sheath		Suitable spring-loaded gasket	Joint tube	Weight
	24 kV	36 kV	52 kV	min	max		Ø	
	mm²			mm			mm	kg/item
For belted cable								
SMTA 24362	3x120	3x70	–	12	63	FPA	100	25
For belted and separate lead-sheathed cable								
SMTPA 24523	3x300	3x240	3x150	20	85	FP/FPMP	150	62

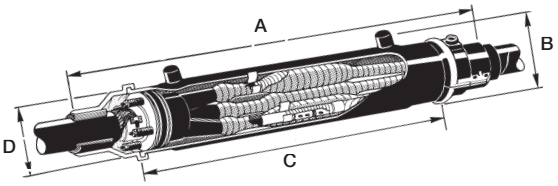
To be ordered separately

Designation	Description	Required Qty.	See page
FPA, FP, FPMP	Spring-loaded gasket	2	81
SH-SKRM	Bolt connector	3	71

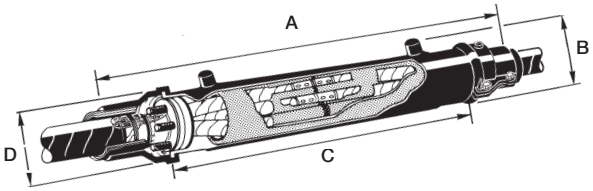
Dimensional drawings, SMT...
All dimensions in mm



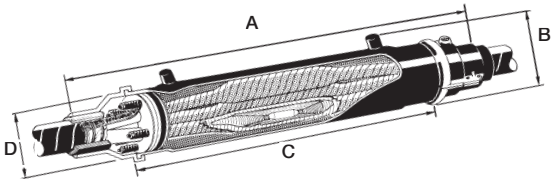
Designation	Dimensions in mm			
	A	B	C	D
SMTXB 1502	1135	175	900	100
SMTXB 1502 L	1335	175	1100	100
SMTXB 1503	1500	228	1200	150
SMTXB 1522	1135	175	900	100
SMTXB 1522 L	1335	175	1100	100
SMTXB 1522 W	1135	175	900	100
SMTXB 1532	1135	175	900	100
SMTXB 1532 L	1335	175	1100	100
SMTXB 1532 W	1135	175	900	100
SMTXB 1533	1500	228	1200	150



Designation	Dimensions in mm			
	A	B	C	D
SMTXD 3613	1500	228	1200	150
SMTXD 3623	1500	228	1200	150
SMTXD 3633	1500	228	1200	150



Designation	Dimensions in mm			
	A	B	C	D
SMTD 152 K	1135	175	900	100
SMTD 152 LK	1335	175	1100	100
SMTD 153 K	1500	228	1200	150
SMTD 152 RK	1935	175	1700	100



Designation	Dimensions in mm			
	A	B	C	D
For belted cable				
SMTA 24362	1335	175	1100	100
For belted or separate lead-sheathed cable				
SMTPA 24523	1500	228	1200	150

Spring-loaded gaskets for paper-insulated cables
FPA, FP, FPMP

FPA
Ø 100 mm for belted cables.

FP
Ø 150 mm for belted cables.

FPMP
Ø 150 mm, 3-hole gasket,non-magnetic design for separate lead-sheathed cables.

Designation	Diameter over lead sheath	Weight
	mm	kg/item
FPA 1021	18-21	1.2
FPA 1024	21-24	1.2
FPA 1027	24-27	1.1
FPA 1030	27-30	1.1
FPA 1033	30-33	1.1
FPA 1036	33-36	1.1
FPA 1039	36-39	1.0
FPA 1042	39-42	1.0
FPA 1045	42-45	1.0
FPA 1048	45-48	1.0
FPA 1051	48-51	1.0
FPA 1054	51-54	0.9
FPA 1057	54-57	0.9
FPA 1060	57-60	0.9
FPA 1063	60-63	0.9
FPA 1065	63-66	0.9

Designation	Diameter over lead sheath	Weight
	mm	kg/item
FP 1530	25-30	4.2
FP 1535	30-35	4.2
FP 1540	35-40	4.3
FP 1545	40-45	4.1
FP 1550	45-50	4.2
FP 1555	50-55	3.9
FP 1560	55-60	4.1
FP 1565	60-65	4.0
FP 1570	65-70	3.9
FP 1575	70-75	3.8
FP 1580	75-80	3.9
FP 1585	80-85	4.0

Designation	Diameter over lead sheath	Weight
	mm	kg/item
FPMP 1523	20-23	4.5
FPMP 1526	23-26	4.4
FPMP 1529	26-29	4.4
FPMP 1532	29-32	4.4
FPMP 1535	32-35	4.2
FPMP 1538	35-38	4.1
FPMP 1540	38-40	4.2

Accessories for paper-insulated cable joints and transition joints

GC
The kit contains one sealing ring, bolts and two roomy clamp halves for Ø 100 mm joint tubes. The clamps are made from glass fibre reinforced polymer. The bolt and washer are molded into the material. Used on the XLPE side of the transition joints; SMTXB 1502/1522/1532 when installing 1-core cables with an outer diameter greater than 40 mm.

IA 2502 - 2519
Bituminized paper for filling, for example in cable clamps.

RKM 402
Funnel for oil filling.

IA 1003
Stress controlling tape.

IA 2112 - 2113
Impregnated crepe paper tape.

IKP
Impregnated carbon crepe paper (conductive).

Designation	Use	Length	Width	Thickness	Weight
		m	mm	mm	kg/item
GC	SMTXB with Ø 100 joint tube	Cable Ø 40-45	–	–	0.72
IA 2502	For filling cable clamps	3	83	0.5	0.20
IA 2508	For filling cable clamps	14	200	0.5	1.40
IA 2518	For filling cable clamps	10	83	0.5	0.50
IA 2519	For filling cable clamps	14	100	0.5	0.75
RKM 402	For oil filling	–	–	–	0.10
IA 1003	Paper-insulated cable joint	–	–	–	0.13
IA 2112	Paper-insulated cable joint	9	10	–	0.40
IA 2113	Paper-insulated cable joint	9	24	–	0.60
IKP	–	–	–	–	0.30

Accessories for paper-insulated cable joints and transition joints

IG 1201
Cold insulating bitumen compound for cable clamps.

IG 1601, IG 1604
Insulating oil, for joints and terminations for paper-insulated cables 12-52 kV. Need not be heated at temperatures exceeding +10°C.

IG 1717, 1718
Insulating film made of transparent polyester for transition joints and for paper-insulated cables 12-24 kV, type SMTXB and SMTD.

IK 1002
Linen yarn.

IK 1003
Polyester tape.

Designation	Length	Width	Volume	Weight
	m	mm	l	kg/item
IG 1201	–	–	–	1.3
IG 1601	–	–	1.0	1.0
IG 1604	–	–	4.0	4.1
IG 1717	1.7	457	–	0.3
IG 1718	1.5	711	–	0.2
IK 1002	5	–	–	0.2
IK 1003	4x1.5	2.5	–	0.1

Other accessories
Tapes

IA 2333 - 2338
Insulating vulcanizing tape.

IA 2339
Insulating vulcanizing tape.

IA 2342
Silicon rubber tape.

IA 2343
Silicon rubber tape.

IA 2352
Semiconducting tape.

IA 2362
Filling tape.

IA 2441 - 2444
Protective tape.

RULLE
Two-layer insulating tape made of EPDM and butyl rubber.

IA 2421
Electrical tape.

Designation	Length	Width	Thickness	Weight
	m	mm	mm	kg/item
IA 2333	9	38	0.8	0.50
IA 2337	9	19	0.5	0.20
IA 2338	9	38	0.5	0.40
IA 2339	2	25	0.76	0.10
IA 2342	9	25	0.5	0.16
IA 2343	2.5	25	0.5	0.30
IA 2352	4.5	19	0.8	0.10
IA 2362	1.5	38	3.2	0.30
IA 2421	10	19	0.18	0.06
IA 2441	10	25	0.4	0.20
IA 2443	10	50	0.4	0.30
IA 2444	30.5	50	0.4	0.90
RULLE 1	3.5	60	2.0	0.60
RULLE 2	5.5	60	2.0	0.90

Other accessories

IK 1105, 1106, 1107, 1108, 1109
Abrasive cloth.

IK 1405, IK 1406
Lashing wire (tin-coated copper wire).

IK 1401, IK 1407
Lashing wire (tin-coated copper wire).

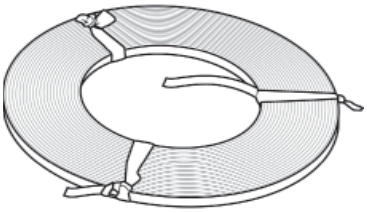
IK 2221
Silicone grease, 25 g.

IK 2233
Grease, type AP paste, 10 g.

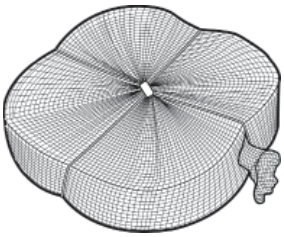
IK 1502
Lashing wire (galvanized steel wire).

Designation	Length	Diameter	Coarseness	Weight
	m	mm		kg/item
IK 1105	1	–	100	0.1
IK 1106	1	–	80	0.1
IK 1107	1	–	120	0.1
IK 1108	1	–	220	0.1
IK 1109	1	–	400	0.1
IK 1405	5	1.4	–	0.1
IK 1406	9.5	1.4	–	0.2
IK 1401	2	1.4	–	0.1
IK 1407	6	1.0	–	0.2
IK 1502	4	1.5	–	0.1
IK 2221	–	–	–	0.03
IK 2233	–	–	–	0.02

Other accessories

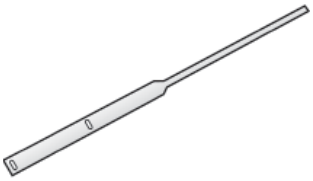


IA 1701
Earthing braid, sold by the metre, 10 mm².



IA 1706
Copper net for e.g. SMXB, sold by the metre, approx. 10 mm².

IA 1710
Earthing braid with lining, 22 mm².



MBR 250
Stainless marking tape, 100 units/kit.

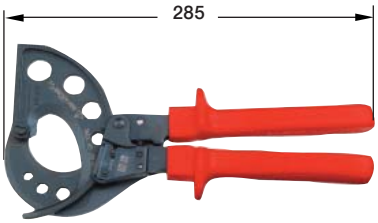
IK 2230
Washing cloth, 3 alcohol-soaked paper cloths 200 x 300 mm.

SKALUS
Peeling string for XLPE-insulation.

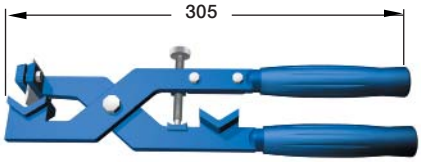
Designation	Length	Width	Thickness	Weight
	m	mm	mm	
IA 1701	–	16	1.0	0.10 kg/m
IA 1706	–	80	1.0	0.06 kg/m
IA 1710	0.4	27	0.1	0.09 kg/unit
IK 2230	–	–	–	0.03 kg/unit
MBR 250	0.25	–	1.0	0.50 kg/kit
SKALUS	2	–	1.0	0.02 kg/unit

Tools
All dimensions in mm

730 R
Torque wrench for bolt connectors, bolt cable lugs, overhead line clamps, etc. Supplied with 7 mm socket head, extension and 8 mm internal hexagon head.
Torque range 6-50 Nm.

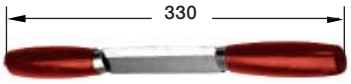


Intercable No. RKS 1607 054
Cable shears for cutting cable Ø max 54 mm.



RKM 1055
Splitting tool for longitudinal splitting off XLPE-insulation with Ø 10-55 mm.

RKM 670
Cable knife, 30 mm blade.

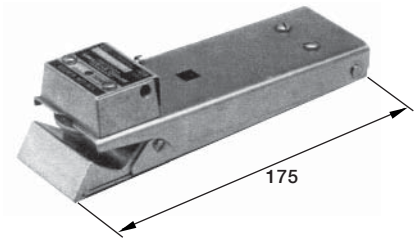


RKM 672
Sheath removing knife with two handles for plastic sheated cable. plastmantlad kabel.

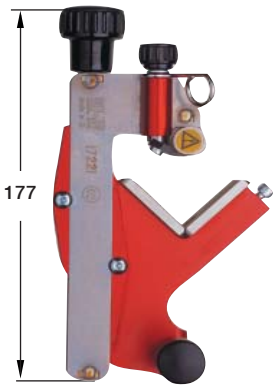
Designation	Description
730 R	Torque wrench
RKS 1607 054	Cable shears
RKM 1055	Peeling tool
RKM 1055 K	Spare blade for RKM 1055
RKM 670	Cable knife
RKM 672	Sheath removing knife

Tools
All dimensions in mm

Intercable No. AV 6220
Sheath removing tool for PE-sheathed cable Ø > 20 mm.



Model 1700 Series
Peeling tool for strippable outer conductive layer on XLPE-insulated cable Ø 13-51 mm.



Intercable No. FBS 1722 1
Stripping tool for the vulcanized, outer conducting layer of XLPE-insulated cable Ø 10-52 mm.
The tool is supplied in a rigid case with a tube of silicone grease.

GB-M20
Cutting tool for cable sheath and XLPE-insulation:
Diameter: Ø 15-50 mm
Cutting depth: ≤ 8 mm

Designation	Description
AV 6220	Sheath removing tool
Model 1700 Series	Peeling tool
FBS 1722 1	Stripping tool
GB-M20	XLPE stripping tool

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Cable accessories 52-420 kV

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Introduction
Cable accessories 52-420 kV

ABB in Alingsås has long experience in the area of 52-420 kV and has always led the field in research and development. We were among the first in the world to use stress cone technology to control electrical fields.

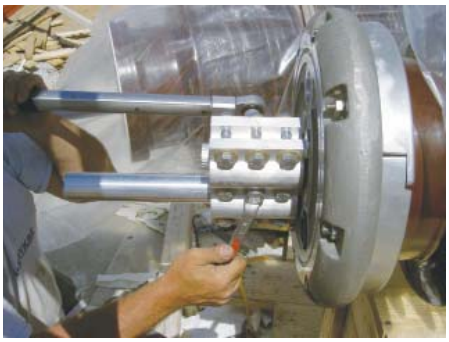
One reason for our success is that we have constantly developed accessories for all types of cables. This has given us an experience base that is both broad and deep. We have also developed our accessories to facilitate for optical fibre in power cables, and even integrated cross bonding in cable joints. This involves system designers to improve their systems.

One feature that sets our range of accessories for this voltage range apart is their modular design. This makes the accessories exeptionally easy to install. The installers become familiar with the components, and this reduces the risk of mistakes.

Unless otherwise specified, the cable accessories are supplied as standard with bolt connections for conductors. Another advantage is that our cable terminations can be assembled on the ground under controlled conditions and then lifted into place, - simple and safe!

We offer training courses for installers and supervisors. For training prospectus, contact our training department.

Installation of composite cable terminations, APECB.



Our cable terminations can be assembled horizontally on the ground and then lifted into place, both easily and safely!

Assembly of premolded cable joint JS 245 kV.

We develop accessories for most cable designs, including cables with optical fibre.

Outdoor cable termination
porcelain, APED 36-84 B
composite, APED 36 P and APED 72 P

Use
Suitable for installations in which the termination is to be used as a fixed connection point and for installations where there is a risk of very high continuous creepage currents.

Standard
Meets the requirements of:
– SS, IEC, IEEE

Design
The cable termination consists of a porcelain or composite insulator installed on a box body made of Al castings. The box body consists partly of insulating material, which provides insulated installation. The base part must be installed on a bracket.

The field control component is a premolded stress cone.
The insulator has sheds of the short-long type and is filled with synthetic insulating oil.

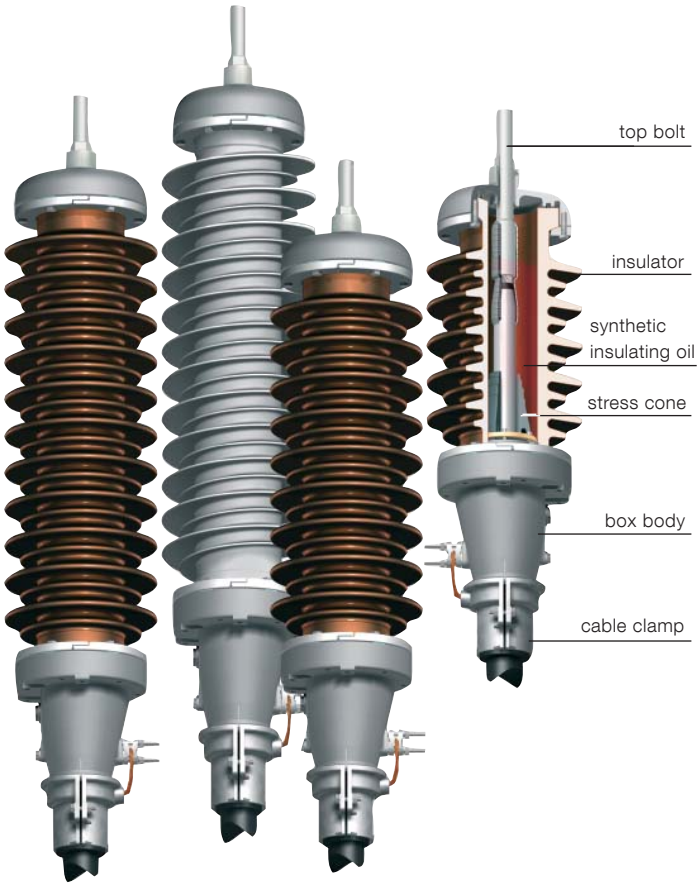
The porcelain insulator is available in brown. The composite insulator is available in grey.

A supporting plate with three stand-off insulators are used for an insulated mounting.

The maximum permissible diameter across the oversheath of the cable is 85 mm.

The diameter across the prepared insulation must be 25-66 mm. Maximum cable cross section is 1200 mm^2.

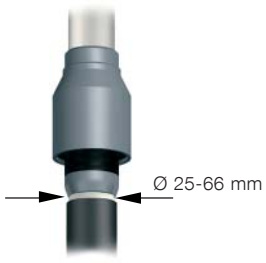
The top bolt with a diameter of 30 mm, is included in the kit. Select between bolt (standard), press or welding type.



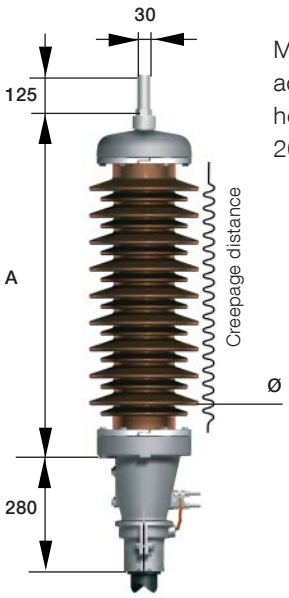
Installation
Installation can be simplified by assembling the termination horizontally on the ground before lifting it into place.

The following cable data should be stated when ordering:
– Voltage
– Conductor cross section
– Conductor material Cu or Al
– Diameter across prepared insulation
– Screen, cross section and type
– Outer diameter of the cable
– Insulator, porcelain or composite

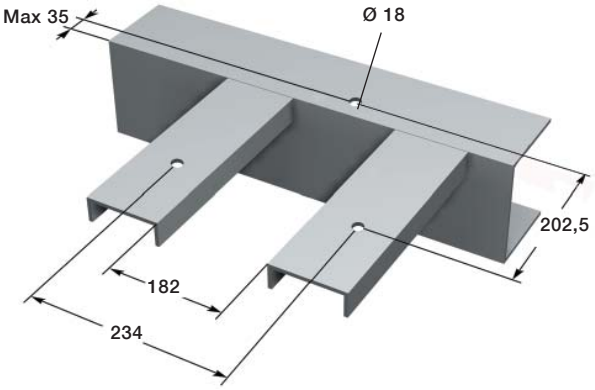
Top bolt:
– Diameter and material (Cu or Al) for connecting to overhead power line
– Connection technology, bolt (standard), press or weld



Technical specification
APED 52-72



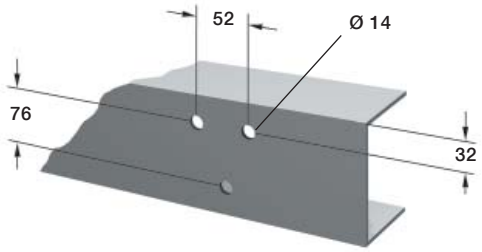
Max. permissible forces acting on the top bolt, horizontally and vertically: 2000 N.



Attachment to bracket for insulated mounting
Three 18 mm holes for M16 bolts.

There are two versions of insulators for APED 36-84 kV:

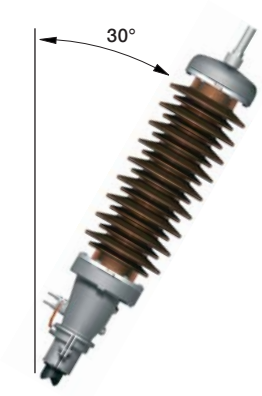
- With suffix B: Brown porcelain in traditional design.
- With suffix P: Composite insulator with grey silicone rubber and a fibreglass reinforced epoxy, resin hollow core, light-weight and less sensibility for outer damages. (only for 36 and 72 kV).



Attachment to beam
Three 14 mm hole for M10 bolts.

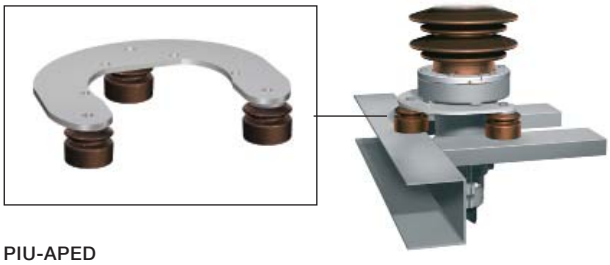
Designation	Voltage	Insulator	Creepage distance	Dimensions		Net
			min	A	Ø	weight
	kV		mm	mm		kg/item
APED 360 B	12-36	Porcelain	915	530	267	38
APED 521 B	52	Porcelain	1340	645	267	48
APED 722 B	72	Porcelain	2200	925	267	60
APED 843 B	84	Porcelain	2635	1040	0,5	67
APED 360 P	36	Composite	950	570	270	27
APED 722 P	72	Composite	2330	950	270	33

Applications and accessories
APED 52-72



Inclination up to 30°.

GAP-APED
Rod gap.



PIU-APED
Post insulator kit for fixing to a supporting plate for insulated installation.

RE-APED-T
Re-assembly kit for APED-T
(for XLPE Ø 25-48.1mm).

RE-APED-M
Re-assembly kit for APED-M
(for XLPE Ø 48-66 mm).

To be ordered separately

Designation	Description	Use	See page
GAP-APED	Rod gap	Protects against over-voltage.	93
GAP-APED	Post insulator kit	When insulated mounting.	93
RE-APED-M RE-APED-T	Re-assembly kit	Used for re-assembly of a termination. (Stress cone and top bolt to be ordered separately as required).	93
JSA	Earthing kit	For cable with metallic sheath, e.g. lead. Not needed when cable has only Cu wire screen.	116
SCK	Screen connection	For Al-foil radial waterproof cable. Not needed if cable has only Cu wire screen.	116

Outdoor cable termination porcelain, APECB 84-420 B composite, APECB 84-420 P

Use
For installations in which the termination is to be used as a fixed connection point and in installations where there is a risk of very high continuous creepage currents.

Standard
Meets the requirements of:
– SS, IEC, IEEE

Design
The cable termination consists of an insulator installed on a box body made of Al castings. The box body consists partly of insulating material, which provides insulated installation. The base part must be installed on a bracket.

For 420 kV a post-insulator kit is included to provide insulated installation.

The field control component is a pre-molded stress cone.
The insulator has sheds of short-long type and is filled with synthetic insulating oil. The porcelain insulator is available in brown. The composite insulator is available in grey.

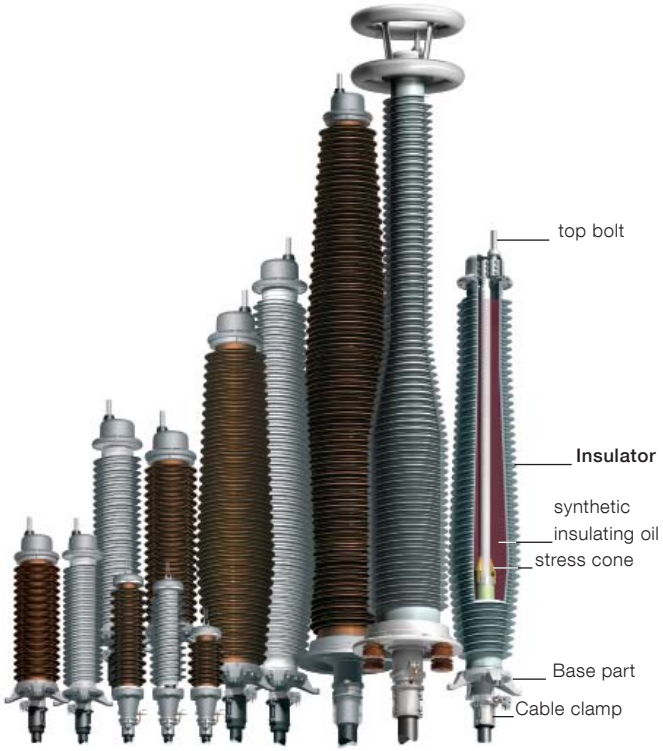
For the maximum permitted diameter across the oversheath of the cable and the diameter across prepared insulation, see the table below.

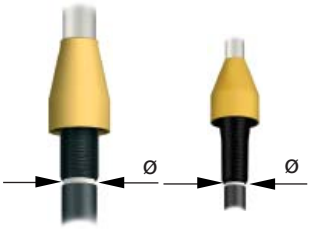
A bolt clamp in the top fitting is used to connect the conductor to the top bolt. Top bolt and bolt clamp are included in the kit.

Installation
Installation can be simplified by assembling the termination horizontally on the ground before lifting it into place.

When ordering, please state the following data:
– Voltage
– Conductor cross section, diameter
– Diameter across prepared insulation
– Screen, cross section and type (optical fibres)
– Outer diameter of cable
– Insulator, porcelain or composite

Top bolt:
– Diameter and material (Cu or Al) for connecting to overhead power line



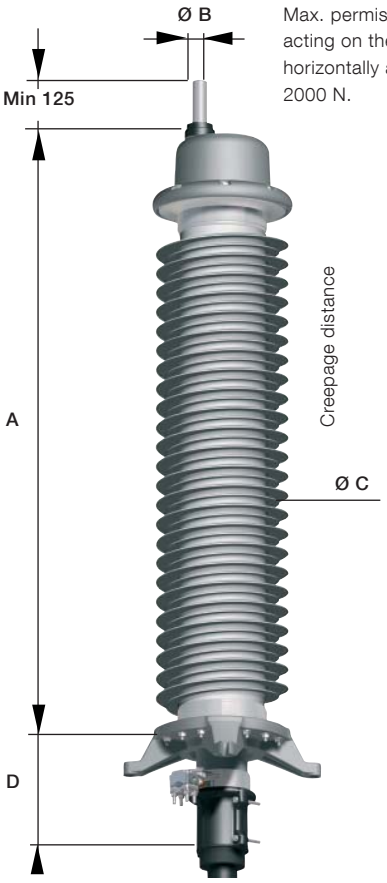


APECB 245
APECB 300
APECB 420

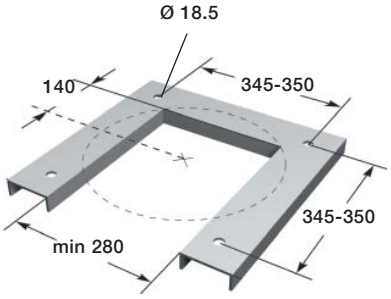
APECB 84
APECB 145
APECB 170

Voltage	XLPE-diameter		Outer sheath
	Ø mm		Ø mm
kV	min	max	
≤ 170	45.5	107	170
245	73	120	170
300	73	120	170
420	80	124	170

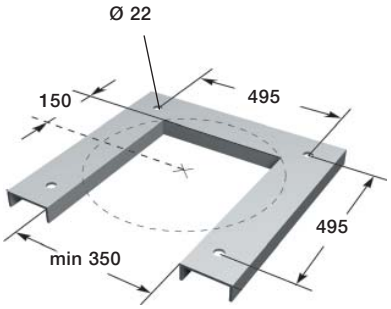
Technical specification
APECB 84-420, APECB 84-420 P



Max. permissible forces acting on the top bolt, horizontally and vertically: 2000 N.



Fixing to bracket for 84-300 kV
Insulated or non-insulated: four 18 mm holes for M16 bolts.



Fixing to bracket for 420 kV
Non-insulated: four 18 mm holes for M16 bolts.
Insulated: four 22 mm holes for M20 bolts.

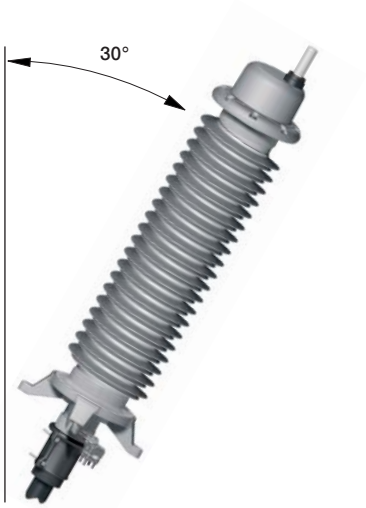
There are two versions of insulators for APECB 84-420 kV:

- With suffix B: Brown porcelain in traditional design.
- With suffix P: Composite insulator with grey silicone rubber and a fibreglass reinforced epoxy, resin hollow core, light-weight and less sensibility for outer damages.

Designation	Voltage	Insulator	Dimensions				Creepage distance	Net weight
			A	ØB	ØC	D	min	
	kV		mm				mm	kg/item
APECB 841 B	84	Porcelain	1300	40/50/54/60	386	235	2710	160
APECB 1452 B	145	Porcelain	1620	40/50/54/60	386	235	3870	185
APECB 1703 B	170	Porcelain	1860	40/50/54/60	386	235	4570	220
APECB 1704 B	170	Porcelain	2120	40/50/54/60	396	235	5500	230
APECB 1705 B	170	Porcelain	2620	40/50/54/60	396	235	7250	325
APECB 2456 B	245	Porcelain	2570	40/50/54/60	520	235	8300	515
APECB 3006 B	300	Porcelain	2570	40/50/54/60	520	235	8300	515
APECB 4201 B	420	Porcelain	4575	40/50/54/60	760	500	14700	1700
APECB 841 P	84	Composite	1320	40/50/54/60	359	235	2820	100
APECB 1452 P	145	Composite	1620	40/50/54/60	359	235	3750	105
APECB 1703 P	170	Composite	1820	40/50/54/60	359	235	4500	110
APECB 1704 P	170	Composite	2140	40/50/54/60	359	235	5950	120
APECB 1705 P	170	Composite	2720	40/50/54/60	359	235	8000	135
APECB 2456 P	245	Composite	3030	40/50/54/60	490	235	9360	290
APECB 3006 P	300	Composite	3030	40/50/54/60	490	235	9360	290
APECB 4201 P	420	Composite	4600	40/50/54/60	600	395	14900	600

* When the cable diameter is greater than 120 mm, add: Ø 170 at the end of the designation (e.g. APECB 841 Ø 170).

Applications and accessories
APECB 84-420, APECB 84-420 P



Inclination up to 30°.

GAP-APECB
Rod gap.

OKT
Opto kit for cables with integrated optical fibres in the earth screen.

PIU-APEC
Post insulator kit for fixing APECB 420 kV when insulated mounting. Included in the kit.

To be ordered separately

Designation	Description	Use	See page
GAP-APECB	Rod gap	Protection against over-voltage 84-170 kV.	96
OKT	Optofibre kit	For optical fibres in the screen of the cable 84-420 kV.	96
JSA	Earthing kit	For cable with metallic sheath, e.g. lead. Not needed if cable has only Cu wire screen.	116
SCK	Screen connection	For Al-foil radial waterproof cable. Not needed if cable has only Cu wire screen.	116

Outdoor flexible cable termination
APSEA 52-72

Use
Flexible cable termination, suitable for installations in which the termination can be installed in any angle. The termination is not self-supporting.

Standard
Meets the requirements of:
– SS and IEC

Design
The cable termination is made up of modules comprising a field controlling stress relief cone, sheds to increase the creepage distance and a top cap.

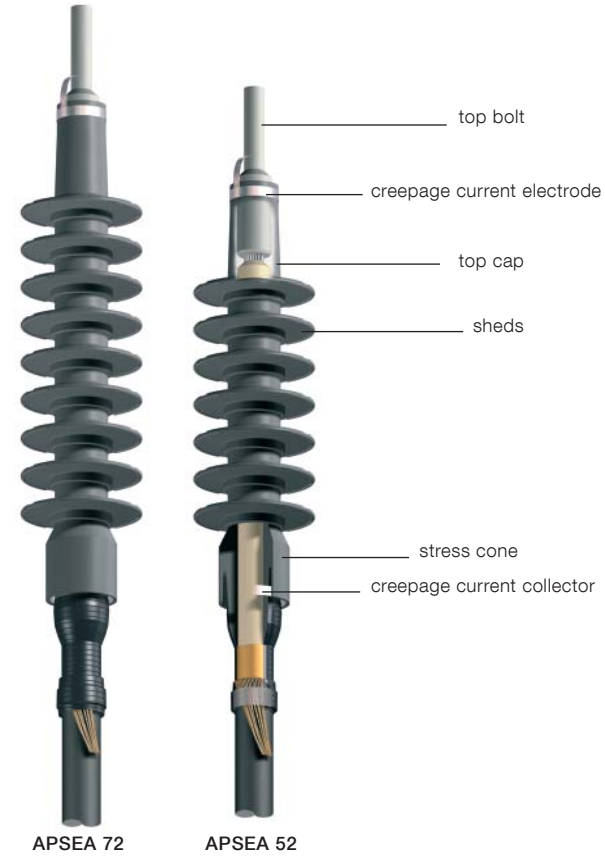
The modules are made of proven weather and leakage current resistant rubber.The diameter across the prepared insulation is 33-66 mm. Top bolt or cable lug is to be ordered separately. Top bolt; see following pages.

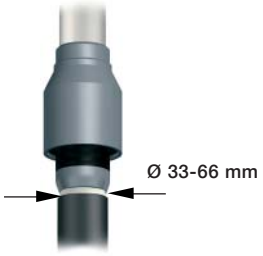
Installation
The termination is installed easily, entirely without heat. The stress cone and sheds are to be threaded onto the cable and “snapped“ together.

Installation can be simplified by assembling the termination horizontally on the ground before lifting it into place.

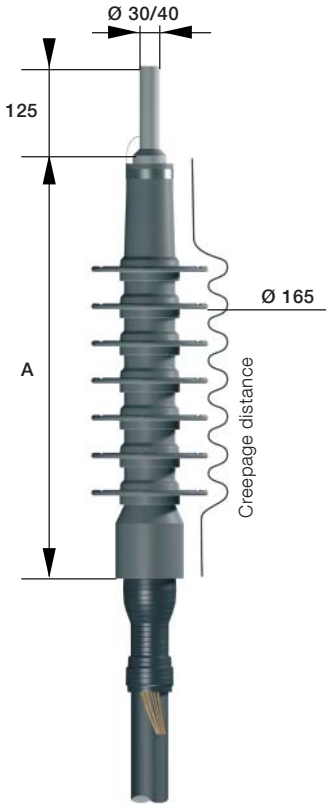
The following cable data should be stated when ordering:
– Voltage
– Conductor cross section
– Conductor material Cu or Al
– Diameter across prepared insulation
– Screen, cross section and type
– Outer diameter of the cable

Top bolt:
– Diameter and material (Cu or Al) for connecting to overhead power line
– Connection technology, bolt (standard),press or weld





Technical specification
APSEA 52-72



Designation	Voltage	Prepared insulation Ø	Creepage distance min	Length A	Net weight
	kV	mm	mm	mm	kg/item
APSEA 521 U	52	33-36	1150	580	4
APSEA 522 U	52	36-39.5	1150	580	4
APSEA 523 U	52	39.5-43	1150	580	4
APSEA 524 U	52	43-48	1150	580	4
APSEA 525 U	52	48-54	1150	580	4
APSEA 526 U	52	54-60	1250	650	4
APSEA 527 U	52	60-66	1250	650	4
APSEA 721 U	72	33-36	1420	690	5
APSEA 722 U	72	36-39.5	1420	690	5
APSEA 723 U	72	39.5-43	1420	690	5
APSEA 724 U	72	42.5-48.1	1420	690	5
APSEA 725 U	72	48-54	1790	870	5
APSEA 726 U	72	54-60	1790	870	5
APSEA 727 U	72	60-66	1790	870	5

Applications and accessories
APSEA 52-72

Can be installed in any angle.

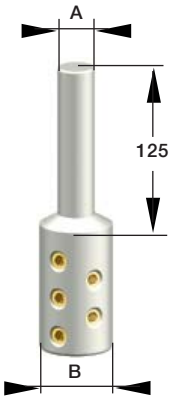
Top cap, THS, THSA

Select top cap based on the APSEA size and with a hole that matches the outer diameter of the available cable lug or top bolt.

XLPE Ø range	Ø Top hole	Top cap designation
33-48 mm (APSEA 521-524, APSEA 721-724)		
	28	THS 28
	37	THS 37
	47	THS 47
	60	THS 60
48-66 mm (APSEA 525-527, APSEA 725-727)		
	28	THSA 28
	37	THSA 37
	47	THSA 47
	60	THSA 60

Top bolts, to be ordered separately

Designation Top bolts	Cable conductor material	Cable cross section	Diameter A	Diameter B	Net weight
		mm²	mm		kg/item
A-TBF 30 120 SKR	Al	120	30	45	0.5
A-TBF 30 185 SKR	Al	150, 185	30	45	0.5
A-TBF 30 240 SKR	Al	240	30	50	0.8
A-TBF 30 400 SKR	Al	300, 400	30	55	0.8
A-TBF 30 500 SKR	Al	500	30	60	0.9
A-TBF 30 630 SKR	Al	630	30	60	0.9
A-TBF 40 800 SKR	Al	800	40	65	1.2
A-TBF 40 1000 SKR	Al	1000	40	65	1.2
A-TBF 40 1200 SKR	Al	1200	40	65	1.1
K-TBF 30 120 SKR	Cu	120	30	45	1.6
K-TBF 30 185 SKR	Cu	150, 185	30	45	1.6
K-TBF 30 240 SKR	Cu	240	30	50	2.4
K-TBF 30 400 SKR	Cu	300, 400	30	55	2.4
K-TBF 30 500 SKR	Cu	500	30	60	2.8
K-TBF 30 630 SKR	Cu	630	30	60	2.8
K-TBF 40 800 SKR	Cu	800	40	65	4.0
K-TBF 40 1000 SKR	Cu	1000	40	65	3.8
K-TBF 40 1200 SKR	Cu	1200	40	65	3.5



A/K-TBF SKR
Top bolt

To be ordered separately

Designation	Description	Use	See page
Cable lug	Cable lug	–	70
UKR	Universal clamp	For fixing cables.	120
JSA	Earthing kit	For cable with metallic sheath, e.g. lead. Not needed if cable has only Cu wire screen.	116
SCK	Screen connection	For Al-foil radial waterproof cable. Not needed if cable has only Cu wire screen.	116

Cable termination for connection to gas-insulated switchgear APEGA 84-420 (GIS) transformers APEGA 84-420 (TRF)

Use
Suitable for installations where the termination is to be used as a fixed connection point in gas-insulated switchgear, in transformers without a separate cable box or where the cable box is filled with transformer oil.

Standard
Meets the requirements of:
– SS, IEC, IEEE

Design
The cable termination consists of an epoxy insulator standing on a base made of aluminium alloy.

The field controlling component is a stress cone made of rubber.

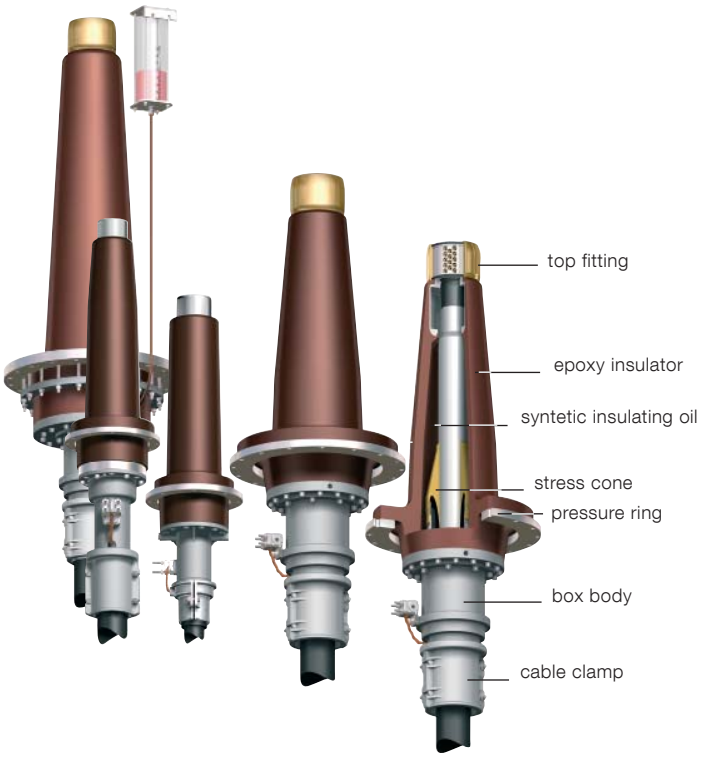
The insulator is filled with synthetic insulating oil. A flange for insulated mounting is integrated in the epoxy insulator. A pressure ring is also included, see next page.

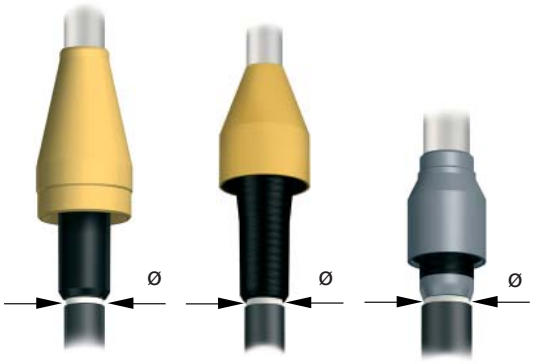
For the maximum permissible diameter across the sheath of the cable and the diameter across the prepared cable insulation, see the table.

Installation
Installation can be simplified by assembling the termination horizontally on the ground before lifting it into place.

The following cable data should be stated when ordering:
– Voltage
– Conductor cross section
– Conductor material Cu or Al
– Diameter across prepared insulation
– Screen, cross section and type (if optical fibre)
– Outer diameter of the cable

Type of connector:
– Bolt (standard)
– Weld (up to 170 kV)





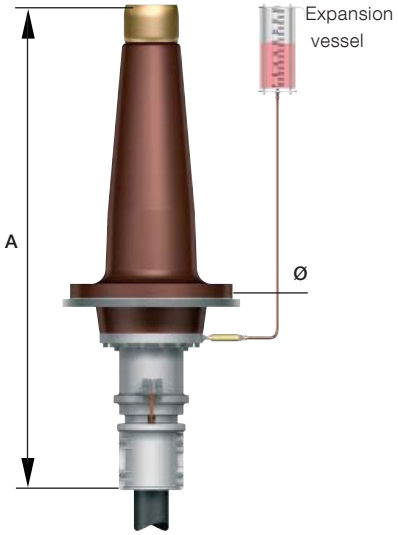
APEGA 245
APEGA 300
APEGA 420

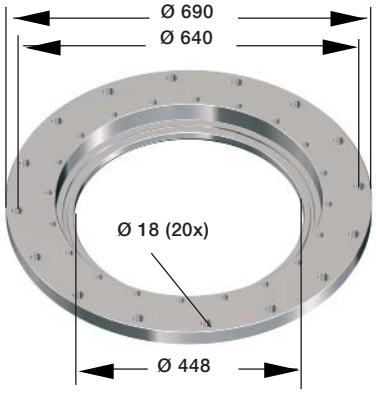
APEGA 170

APEGA 84

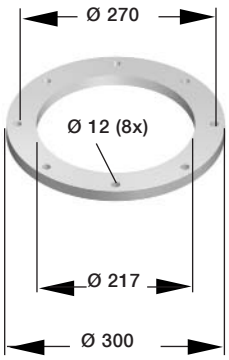
Voltage	Cable insulation		Oversheath
	Ø mm		Ø mm
kV	min	max	
84	25	66	85
170	45.5	100	150
245	73	120	160
300	73	120	160
420	80	124	160

Technical specification
APEGA 84-420

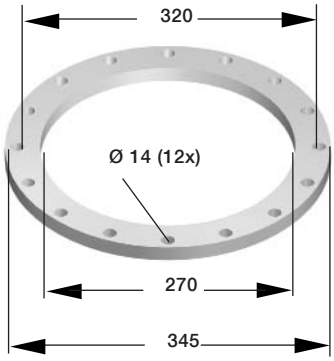




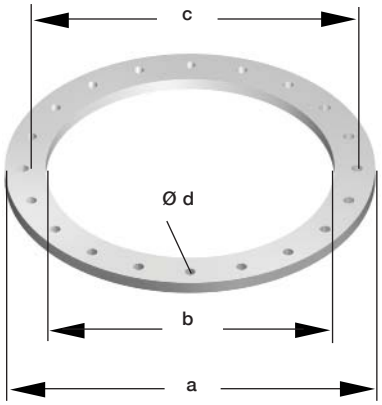
AF 420
Adapter flange for APEGA 420.



Pressure ring for APEGA 84.



Pressure ring for APEGA 170.

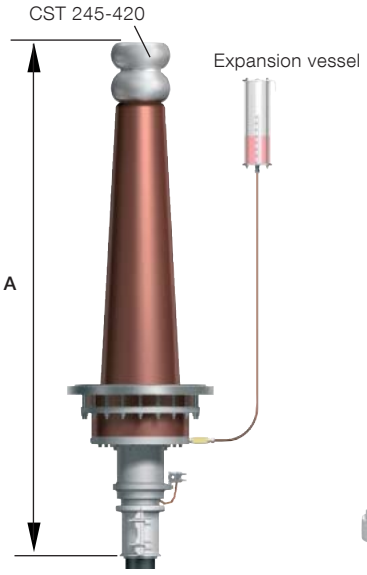


Pressure ring for APEGA 245-420.

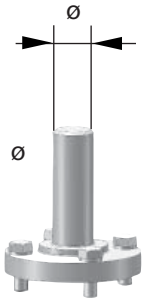
APEGA	a	b	c	d
245-300	612	450	582	18 (16x)
420	570	464	535	14 (20x)

Designation	Voltage	Standard	Dimensions		Net weight
			A	Ø	
	kV		mm	mm	kg/item
APEGA 841	84	IEC 62271-209	~ 1030	245	55
APEGA 1703	170	IEC 62271-209	~ 1460	298	75
APEGA 2456	245	IEC 62271-209	~ 1670	450	270
APEGA 3006	300	IEC 62271-209	~ 1670	450	270
APEGA 4202	420	IEC 62271-209	~ 2175	614	400

Technical specification
for connecting APEGA 84-420 to a transformer

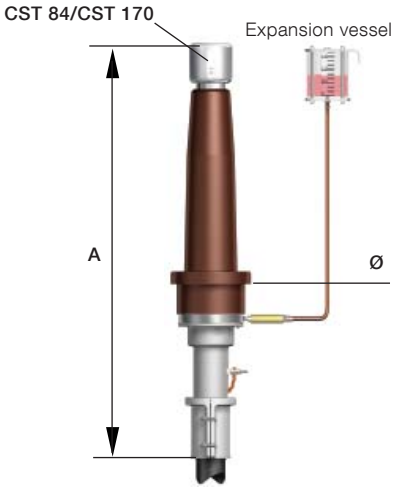


Dimension drawing for APEGA 245-420 kV.

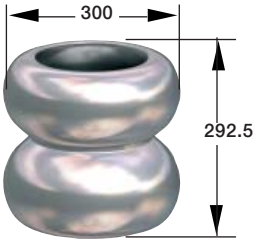


CBT 84-170
For installing APEGA 84-170 kV in transformer.

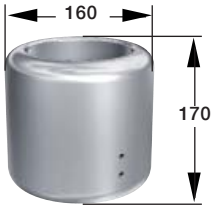
CBT 245-420
For installing APEGA 245-420 kV in transformer.



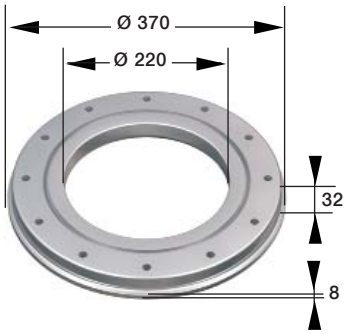
Dimension drawing for APEGA 84-170 kV.



CST 245-420
Corona shield for installing APEGA 245-420 kV in transformer.



CST 84, CST 170
Corona shield for installing APEGA 84 kV and APEGA 170 kV in transformer.



AFT 1703
Adapter flange for welding between APEGA 170 kV and transformer box.

Designation	Voltage level	Dimensions standard	Dimensions		Weight
			A	Ø	
	kV		mm		kg/item
APEGA 841 TRF *	84	EN 50299	1150	245	55
APEGA 1703	170	EN 50299	1580	298	75
APEGA 2456	245	EN 50299	1830	450	270
APEGA 3006	300	EN 50299	1830	450	270
APEGA 4202	420	EN 50299	2335	614	400

*Corona shield CST 84, included in the kit.

To be ordered separately

Designation	Description	Application area	Ø
			mm
CST 170	Corona shield	For installing APEGA 170 kV in transformer	
CST 245-420	Corona shield	For installing APEGA 245-420 kV in transformer	
AFT 1703	Adapter flange	Adapter flange to be welded between termination and transformer	
CBT 84-170	Connection bolt	For installing APEGA in transformer	20/30/40
CBT 245-420	Connection bolt	For installing APEGA in transformer	30/40/50/60

Applications and accessories
APEGA 84-420

SPT 1
Circlip pliers for installation of top fitting.

SPV 1
Panduit pliers for bundle tape APEGA 170 kV.

DMT 1
Top fitting removal kit.

OKT
Optofibre kit for cables with integrated optical fibres in the earth screen.

RE-APEGA
Re-assembly kit.

To be ordered separately

Designation	Description	Use	See page
SPT 1	Circlip pliers	When installing top fitting.	104
SPV 1	Panduit pliers	For installation of bundle tape around stress cone.	104
OKT	Optofibre kit	For cables with integrated optical fibres in the earth screen	104
RE-APEGA	Re-assembly kit	Used for re-assembly of a termination. (Stress cone and top bolt must be ordered separately as required).	104
DMT 1	Top fitting removal kit	When removing top fitting.	104
JSA	Earthing kit	For cable with metallic sheath, e.g. lead. Not needed if cable has only Cu wire screen.	116
SCK	Screen connection	For Al-foil radial waterproof cable. Not needed if cable has only Cu wire screen.	116

Premolded one-piece cable joints without screen interruption JS 52-123 with screen interruption JX 52-123

Use
For jointing XLPE- or EPR-insulated 52-123 kV cables with Al or Cu conductor and different cable sheaths.

Standard
Meets the requirements of:
– IEC 60840 including Annex H

Design
Premolded three-layer rubber body: conductive/insulating/conductive.

The joint is available either with (JX) or without (JS) screen interruption.

The joints are supplied with bolt connector and heat-shrink oversheath.

There are joints for different types of cable screen
P For aluminium laminated cables.
C For cables with copper wire screen.
M For cables with metal screen, lead, corrugated copper, corrugated aluminium or corrugated stainless steel.

The following cable data should be stated when ordering:
– Voltage
– Conductor cross section
– Conductor material Cu or Al
– Diameter across prepared insulation
– Diameter across conductor
– Screen, cross section and type
– Outer diameter of the cable

Note:
– A torque wrench, mounting kit, installation cone and installation tool, RKM 145 are needed for assembling.
– For diameter across the prepared insulation and conductor cross section, see the table.
– For corrugated copper and stainless steel the flux is not included in the soldering kit. For flux contact your local supplier.

JS
Premolded cable joint without screen interruption.

JX
Premolded cable joint with screen interruption.

Voltage	XLPE-Ø		Conductor cross section
	min	max	
kV	mm		mm²
52	33	75	150-1600
72	33	75	150-1600
123	46	100	150-2500

Technical specification
JS 52-123

Designation	XLPE-diameter	Dimensions		Net Weight
		L	Ø	
	mm	mm		kg/kit
Copper wire screen				
JS-A 05210 C	33-38	1860	140	25
JS-A 05211 C	38-42	1860	140	25
JS-A 05212 C	42-47	1860	150	25
JS-A 05213 C	47-54	1860	150	25
JS-A 05214 C	54-63	1860	170	25
JS-A 05215 C	63-75	1860	170	25
Metal-PE laminated (PAL)				
JS-A 05210 P	33-38	1860	140	25
JS-A 05211 P	38-42	1860	140	25
JS-A 05212 P	42-47	1860	150	25
JS-A 05213 P	47-54	1860	150	25
JS-A 05214 P	54-63	1860	170	25
JS-A 05215 P	63-75	1860	170	25
Metal screen lead, corrugated copper				
JS-A 05210 M	33-38	1860	140	25
JS-A 05211 M	38-42	1860	140	25
JS-A 05212 M	42-47	1860	150	30
JS-A 05213 M	47-54	1860	150	30
JS-A 05214 M	54-63	1860	170	30
JS-A 05215 M	63-75	1860	170	30

Designation	XLPE-diameter	Dimensions		Net Weight
		L	Ø	
	mm	mm		kg/kit
Copper wire screen				
JS-A 07210 C	33-38	1860	140	25
JS-A 07211 C	38-42	1860	140	25
JS-A 07212 C	42-47	1860	150	25
JS-A 07213 C	47-54	1860	150	25
JS-A 07214 C	54-63	1860	170	25
JS-A 07215 C	63-75	1860	170	25
Metal-PE laminated (PAL)				
JS-A 07210 P	33-38	1860	140	25
JS-A 07211 P	38-42	1860	140	25
JS-A 07212 P	42-47	1860	150	25
JS-A 07213 P	47-54	1860	150	25
JS-A 07214 P	54-63	1860	170	25
JS-A 07215 P	63-75	1860	170	25
Metal screen lead, corrugated copper				
JS-A 07210 M	33-38	1860	140	25
JS-A 07211 M	38-42	1860	140	25
JS-A 07212 M	42-47	1860	150	30
JS-A 07213 M	47-54	1860	150	30
JS-A 07214 M	54-63	1860	170	30
JS-A 07215 M	63-75	1860	170	30

Designation	XLPE-diameter	Dimensions		Weight
		L	Ø	
	mm	mm		kg/kit
Copper wire screen				
JS-A 12310 C	46-51	1860	170	28
JS-A 12311 C	51-57	1860	170	28
JS-A 12312 C	57-63	1860	180	30
JS-A 12313 C	63-72	1860	190	30
JS-A 12314 C	72-84	1860	212	32
JS-A 12315 C	84-100	1860	220	32
Metal-PE laminated (PAL)				
JS-A 12310 P	46-51	1860	176	29
JS-A 12311 P	51-57	1860	180	29
JS-A 12312 P	57-63	1860	195	31
JS-A 12313 P	63-72	1860	198	31
JS-A 12314 P	72-84	1860	218	33
JS-A 12315 P	84-100	1860	226	33

Designation	XLPE-diameter	Dimensions		Weight
		L	Ø	
	mm	mm		kg/kit
Metal screen lead, corrugated copper				
JS-A 12310 M	46-51	1860	176	29
JS-A 12311 M	51-57	1860	180	29
JS-A 12312 M	57-63	1860	195	31
JS-A 12313 M	63-72	1860	198	31
JS-A 12314 M	72-84	1860	218	33
JS-A 12315 M	84-100	1860	226	33

Technical specification
JX-A 52-123

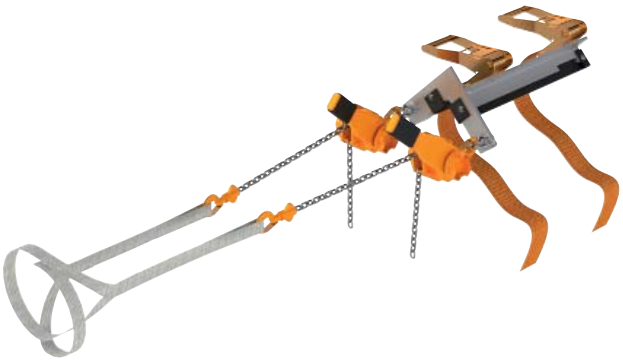
Designation	XLPE-diameter	Dimensions		Net Weight
		L	Ø	
	mm	mm		kg/kit
Copper wire screen				
JX-A 05210 C	33-38	2200	200-235	55
JX-A 05211 C	38-42	2200	200-235	55
JX-A 05212 C	42-47	2200	200-235	55
JX-A 05213 C	47-54	2200	200-235	55
JX-A 05214 C	54-63	2200	200-235	55
JX-A 05215 C	63-75	2200	200-235	55
Metal-PE laminated (PAL)				
JX-A 05210 P	33-38	2200	200-235	55
JX-A 05211 P	38-42	2200	200-235	55
JX-A 05212 P	42-47	2200	200-235	55
JX-A 05213 P	47-54	2200	200-235	55
JX-A 05214 P	54-63	2200	200-235	55
JX-A 05215 P	63-75	2200	200-235	55
Metal screen lead, corrugated copper				
JX-A 05210 M	33-38	2200	200-235	60
JX-A 05211 M	38-42	2200	200-235	60
JX-A 05212 M	42-47	2200	200-235	60
JX-A 05213 M	47-54	2200	200-235	60
JX-A 05214 M	54-63	2200	200-235	60
JX-A 05215 M	63-75	2200	200-235	60

Designation	XLPE-diameter	Dimensions		Net Weight
		L	Ø	
	mm	mm		kg/kit
Copper wire screen				
JX-A 07210 C	33-38	2200	200-235	55
JX-A 07211 C	38-42	2200	200-235	55
JX-A 07212 C	42-47	2200	200-235	55
JX-A 07213 C	47-54	2200	200-235	55
JX-A 07214 C	54-63	2200	200-235	55
JX-A 07215 C	63-75	2200	200-235	55
Metal-PE laminated (PAL)				
JX-A 07210 P	33-38	2200	200-235	55
JX-A 07211 P	38-42	2200	200-235	55
JX-A 07212 P	42-47	2200	200-235	55
JX-A 07213 P	47-54	2200	200-235	55
JX-A 07214 P	54-63	2200	200-235	55
JX-A 07215 P	63-75	2200	200-235	55
Metal screen lead, corrugated copper				
JX-A 07210 M	33-38	2200	200-235	60
JX-A 07211 M	38-42	2200	200-235	60
JX-A 07212 M	42-47	2200	200-235	60
JX-A 07213 M	47-54	2200	200-235	60
JX-A 07214 M	54-63	2200	200-235	60
JX-A 07215 M	63-75	2200	200-235	60

Designation	XLPE-diameter	Dimensions		Weight
		L	Ø	
	mm	mm		kg/kit
Copper wire screen				
JX-A 12310 C	46-51	2200	235-300	60
JX-A 12311 C	51-57	2200	235-300	60
JX-A 12312 C	57-63	2200	235-300	60
JX-A 12313 C	63-72	2200	235-300	60
JX-A 12314 C	72-84	2200	235-300	65
JX-A 12315 C	84-100	2200	235-300	65
Metal-PE laminated (PAL)				
JX-A 12310 P	46-51	2200	235-300	60
JX-A 12311 P	51-57	2200	235-300	60
JX-A 12312 P	57-63	2200	235-300	65
JX-A 12313 P	63-72	2200	235-300	65
JX-A 12314 P	72-84	2200	235-300	65
JX-A 12315 P	84-100	2200	235-300	65

Designation	XLPE-diameter	Dimensions		Weight
		L	Ø	
	mm	mm		kg/kit
Metal screen lead, corrugated copper				
JX-A 12310 M	46-51	2200	235-300	60
JX-A 12311 M	51-57	2200	235-300	60
JX-A 12312 M	57-63	2200	235-300	65
JX-A 12313 M	63-72	2200	235-300	65
JX-A 12314 M	72-84	2200	235-300	65
JX-A 12315 M	84-100	2200	235-300	65

Equipment for installation of JS and JX 52-123



RKM 145
Installation tool for cable joints JS and JX 52-123 kV.

Installation cone
Installation cone for cable joints JS and JX 52-123 kV.

Joint size	Voltage level	Cable Insulation diameter	Installation Cone
	kV	mm	
JS-A/JX-A 05210 C/P/M	52	33-38	4550,0272
JS-A/JX-A 05211 C/P/M	52	38-42	4550,0273
JS-A/JX-A 05212 C/P/M	52	42-47	4550,0274
JS-A/JX-A 05213 C/P/M	52	47-54	4550,0275
JS-A/JX-A 05214 C/P/M	52	54-63	4550,0276
JS-A/JX-A 05215 C/P/M	52	63-75	4550,0277
JS-A/JX-A 07210 C/P/M	72	33-38	4550,0272
JS-A/JX-A 07211 C/P/M	72	38-42	4550,0273
JS-A/JX-A 07212 C/P/M	72	42-47	4550,0274
JS-A/JX-A 07213 C/P/M	72	47-54	4550,0275
JS-A/JX-A 07214 C/P/M	72	54-63	4550,0276
JS-A/JX-A 07215 C/P/M	72	63-75	4550,0277
JS-A/JX-A 12310 C/P/M	123	46-51	4550,0278
JS-A/JX-A 12311 C/P/M	123	51-57	4550,0279
JS-A/JX-A 12312 C/P/M	123	57-63	4550,0280
JS-A/JX-A 12313 C/P/M	123	63-72	4550,0281
JS-A/JX-A 12314 C/P/M	123	72-84	4550,0282
JS-A/JX-A 12315 C/P/M	123	84-100	4550,0283

To be ordered separately

Designation	Description	Weight
		kg/unit
RKM 145	Installation tool	31
Installation cone	Installation cone	~ 0.5

Premolded one-piece cable joints without screen interruption JS 245 with screen interruption JX 245

Use

For jointing XLPE-insulated 245 kV cables with Al or Cu conductor and various types of cable sheaths.

Standard

Meets the requirements of:

– IEC 62067 including Annex D

Design

Premolded one-piece joint body. The joint is available either with (JX) or without (JS) screen interruption. The joints are supplied complete with bolted cable connector for both conductor and screen.

There are joints for different types of cable screen

P For aluminium laminated cables.

C For cables with copper wire screen.

M For cables with metal screen, lead, corrugated copper, corrugated aluminium or corrugated stainless steel.

The following cable data should be stated when ordering:

– Voltage
– Conductor cross section
– Conductor material Cu or Al
– Diameter of prepared insulation
– Diameter of conductor
– Screen, cross section and type
– Outer diameter of the cable
– If optical fibres in screen

Note:

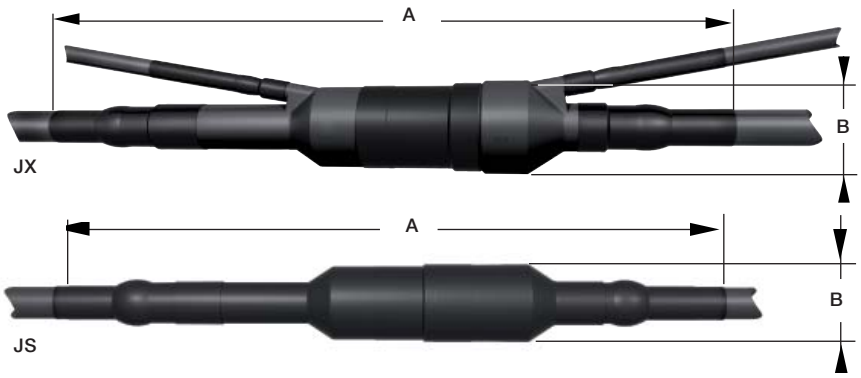
– Torque wrench and installation tool RKM 245 are needed for assembling (installation cone is included).
– For corrugated copper and stainless steel the flux is not included in the soldering kit. For flux contact your local supplier.

JS
Premolded cable joint without screen interruption.

JX
Premolded cable joint with screen interruption.

Voltage	XLPE-Ø		Oversheath	Conductor cross section
	min	max	max Ø	
kV	mm		mm	mm²
245	74	120	143	500-2500

Technical specification, tools and accessories
JS 245 and JX 245



JS 245 and JX 245

Joint body size	XLPE-diameter	Joint body size	XLPE-diameter
	mm		mm
10	74-81	13	92-102
11	79-87	14	100-110
12	85-94	15	108-120

Description	Designation	Dimensions		Net Weight
		A	B	
		mm		kg
Joints with prefabricated PUR casted CU casing as outer protection	JS-A 245 P	2690	326	170-200
	JS-A 245 M	3250	325	180-210
	JS-A 245 C	3250	325	170-200
Joints with prefabricated PUR casted CU casing as outer protection and integrated screen interruption	JX-B 245 P	2730	355	170-200
	JX-B 245 M	3060	370	180-210
	JX-B 245 C	2730	355	170-200
Joints with outer protection of heat-shrink	JS-B 245 C	2280	290	170-200

RKM 245
Installation tool.

OKJ
Kit for optical fibers in screen.

To be ordered separately

Designation	Description
RKM 245	Installation tool including installation cone
OKJ	Kit for optical fibres
Soldering kit	For soldering of the casing halves, only P and C versions, if required

Premolded cable joint 145-170 kV without screen interruption SMPGB with screen interruption SMPGB-C

Use
Suitable for jointing XLPE and EPR insulated cables with Al and Cu conductors and different types of cable sheaths.

Standard
Meets the requirements of:
– IEC 60840 including Annex H

Design
The cable joint consists of a joint tube with two premolded adapters and a bolt cable clamp. For diameter across the prepared insulation and conductor diameter, see the table below.

Bolt technology facilitates jointing of the conductor. A torque wrench, installation cone and installation tools RKM 170 are needed for assemblying.

SMPGB

SMPGB-C M

SMPGB-C P

The joint is available in two different types:
SMPGB: without screen interruption with heat-shrink oversheath.
SMPGB-C: with screen interruption for cross-bonding of cable screens with heat-shrink oversheath.

The joint is available for different types of cable screens and sheaths.
SMPGB 170 C: for cables with copper wire screen only
SMPGB 170 P: for aluminium laminated cables.
SMPGB 170 M: for metalic sheath of lead, or corrugated copper, corrugated aluminium or corrugated stainless steel. For corrugated copper and stainless steel the flux is not included in the soldering kit. For flux contact your local supplier.

The following cable data should be stated when ordering:
– Voltage
– Conductor cross section
– Conductor material Cu or Al
– Diameter across prepared insulation
– Diameter over conductor
– Screen, cross section and type
– Outer diameter of the cable

Voltage level	Cable insulation Ø		Conductor
	min	max	Ø mm
kV	mm		min/max
145	48	107	16-65
170	61	107	16-65

Technical specification
SMPGB 145-170 kV

Designation	L	Ø
	mm	
SMPGB		
145	1300-1950	205
145 P	1600-2250	210
145 M	1620-2220	245
170	1300-1950	205
170 P	1600-2250	210
170 M	1620-2220	245
SMPGB-C		
145 P	1800-2300	410
145 M	1800-2300	410
170 P	1800-2300	300
170 M	1800-2300	340

SMPGB

SMPGB-C P

SMPGB-C M

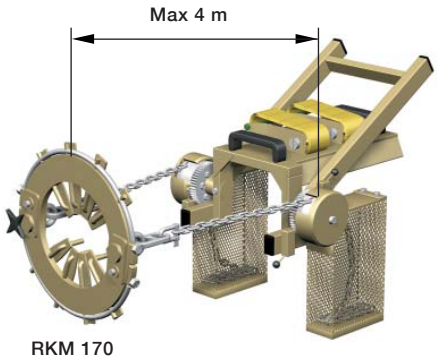
Designation	Insulation diameter	Conductor diameter	Screen cross sectional area
	mm	mm	mm²
SMPGB 145	48-107	16-65	10-400
SMPGB 170	61-107	16-65	10-400
SMPGB 145 P	48-107	16-65	10-400
SMPGB 170 P	61-107	16-65	10-400
SMPGB 145 M	48-107	16-65	10-400
SMPGB 170 M	61-107	16-65	10-400
SMPGB-C 145 P	48-107	16-65	10-400
SMPGB-C 170 P	61-107	16-65	10-400
SMPGB-C 145 M	48-107	16-65	10-400
SMPGB-C 170 M	61-107	16-65	10-400

Tools and accessories
SMPGB 145-170 kV

Selection of installation cone and adapters according to XLPE diameter

Joint size	Voltage	Cable Insulation diameter	Installation cone
	kV	mm	
14501	145	48-51	4209,2384
14502	145	50-53	4209,2385
14503	145	52-56	4209,2386
14504	145	55-59	4209,2387
14505	145	58-62	4209,2388
14506	145	61-65	4209,2331
14507	145	63-68	4209,2332
14508	145	66-71	4209,2333
14509	145	69-76	4209,2334
14510	145	74-82	4209,2335
14511	145	80-91	4209,2336
14512	145	89-100	4209,2337
14513	145	98-107	4209,2400
1701	170	61-65	4209,2331
1702	170	63-68	4209,2332
1703	170	66-71	4209,2333
1704	170	69-76	4209,2334
1705	170	74-82	4209,2335
1706	170	80-91	4209,2336
1707	170	89-100	4209,2337
1708	170	98-107	4209,2338

Installation cone
For installing adapter.



RKM 170
Installation tool for SMPGB joint 145-170 kV.

To be ordered separately

Designation	Description	Weight
		kg/item
RKM 170	Installation tool	42
Installation cone	Installation cone	~ 0.5

Premolded cable joint
without screen interuption SMPGB 420
with screen interuption SMPGB-C 420

Use
For jointing XLPE-insulated cables with aluminium and copper conductor and various types of cable sheaths.Two types of cable joints are available:
- SMPGB without screen interruption
- SMPGB-C with integrated screen interruption for cross bonding of cable screens.

SMPGB 420

SMPGB-C 420

Standard
Meets the requirements of:
- IEC 62067 including Annex D

Design
The cable joint consists among other things of jointing tubes with two premolded adapters made in rubber, a bolt connector and a casing as protective oversheath.

See table below for diameter across the prepared insulation. Torque wrench and installation tool RKM 420 are needed when assemblying.

The joint is available in two different types:
SMPGB: without screen interuption.
SMPGB-C: with screen interruption for cross-bonding of cable screens.

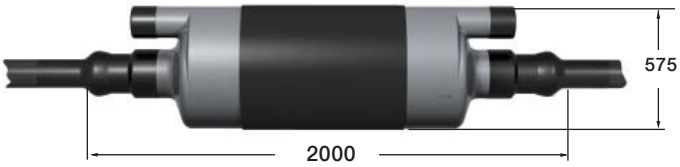
The joint is available for different types of cable screens and oversheaths.
SMPGB 420 PAL: for aluminium laminated cable.
SMPGB 420 Pb: for metalic sheath of lead,or corrugated copper, corrugated aluminium or orrugated stainless steel. For corrugated copper and stainless steel the flux is not included in the soldering kit. For flux contact your local supplier.

The following cable data should be stated when ordering:
- Voltage
- Diameter across prepared insulation
- Conductor cross section
- Conductor material Cu or Al
- Screen, cross section and type

Designation	Insulation diameter	Conductor cross section	Screen cross section
	mm	mm²	mm²
SMPGB 420 Pb	80-124	630-2500	95–500
SMPGB 420 PAL	80-124	630-2500	95–500
SMPGB-C 420 Pb	80-124	630-2500	95–500
SMPGB-C 420 PAL	80-124	630-2500	95–500

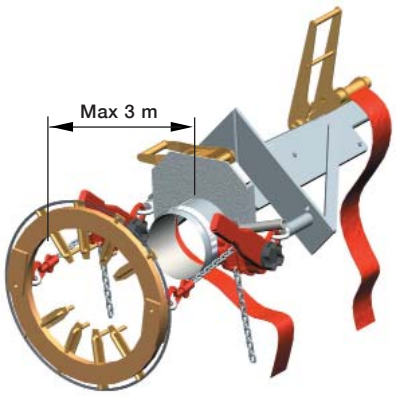
Technical specification, tools and accessories for SMPGB 420 and SMPGB-C 420

All dimensions in mm



SMPGB 420

SMPGB-C 420



RKM 420
Installation tool.

OKJ
Kit for optical fibers in cable screen.

To be ordered separately

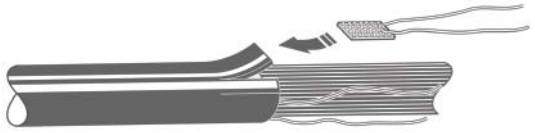
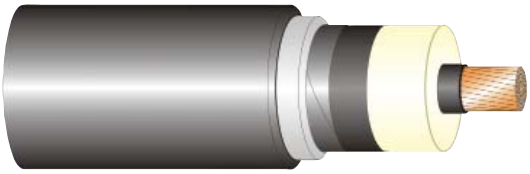
Designation	Description	Net weight kg/kit
RKM 420	Installation tool for SMPGB 420 kV	74
OKJ	Kit for splicing of optical fibres	
PD kit SMPGB 420	Integrated PD-measuring sensor	

Earthing kits for cable terminations
JSA, SCK

The earthing kit connects the screen of the cable to the termination. The earthing kit is designed to handle the total screen cross section. It also provides the cable with a sealing.

For corrugated screen made of:
- Aluminium use JSA 1 Al
- Copper use JSA 1 Pb
- Stainless steel; contact us

Note:
The earthing kit increases the cable outer diameter by 20 mm.

 Cable with copper wire screen only.	No earthing kit is needed.
 Cable with copper wire screen and metal-PE laminate.	 Use earthing kit SCK 2.
 Metal-sheathed cable with or without screen.	 Use earthing kit JSA 1 Pb. wires.
 Cable with copper tape screen and cable with armouring.	Contact us.

Designation	Diameter over oversheath	No of plates	Total Cu equivalent cross section in earthing kit	No of Cu braids	For cables with
	mm		mm²		
JSA 1 Al	-	-	130	6	Corrugated aluminium
JSA 1 Pb	40-120*	-	130	6	Lead sheathed or corrugated copper
JSA 1 Pb 10	120-150*	-	220	10	Lead sheathed or corrugated copper
JSA 1 Pb 15	150-200*	-	330	15	Lead sheathed or corrugated copper
SCK 2-1	13-26	1	-	-	Metal-PE laminated as radial watertightness
SCK 2-2	26-46	2	-	-	Metal-PE laminated as radial watertightness
SCK 2-3	46-66	3	-	-	Metal-PE laminated as radial watertightness
SCK 2-4	66-86	4	-	-	Metal-PE laminated as radial watertightness
SCK 2-5	86-106	5	-	-	Metal-PE laminated as radial watertightness
SCK 2-6	106-126	6	-	-	Metal-PE laminated as radial watertightness
SCK 2-7	126-145	7	-	-	Metal-PE laminated as radial watertightness

* Applicable for metalic sheath < 4 mm. For thicker metallic sheath contact us.

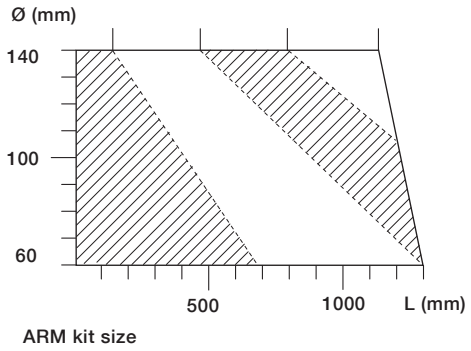
Accessories
ARM, SKKB

ARM

For restoring the armouring when jointing armoured cables.

The kit consists of plastic mesh, spiral, funnel with holder, transparent tape and cast resin. The mesh and spiral are placed over the joint and sealed with the tape. The cast resin, which contains base and hardener in a partitioned bag, is mixed and poured into the funnel until the mesh is full.

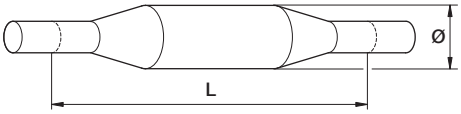
The maximum storage temperature for the casting resin is 30° C.



E.g. Ø 115 and L 850 mm give ARM 3.
Other dimensions on request.

Selection guide for ARM

Selecting ARM for unknown applications requires the length of joint “L“ and diameter over join “Ø“ as below:



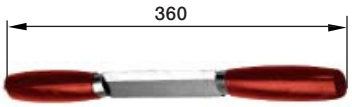
SKKB

SKKB is a cross bonding kit for cables up to 170 kV. It can be mounted with advantage on already laid cable, where the load condition has changed and losses need to be reduced. Also gives the opportunity to optimize the cable system when cross-bonding can be placed at a free position along the cable.

Designation	Cable Ø	Use
ARM	–	Armouring kit for armoured cable
SKKB 5 PAL	< 50	Al laminate as radially watertightness
SKKB 10 PAL	50-100	Al laminate as radially watertightness
SKKB 15 PAL	100-150	Al laminate as radially watertightness
SKKB 5 MET	< 50	For metallic screen with or without Cu screen wires
SKKB 10 MET	50-100	For metallic screen with or without Cu screen wires
SKKB 15 MET	100-140	For metallic screen with or without Cu screen wires
SKKB 5 CUW	< 50	Cu screen
SKKB 10 CUW	50-100	Cu screen
SKKB 15 CUW	100-150	Cu screen

Tools and oil
All dimensions in mm

RKM 670
Cable knife, 30 mm blade.



RKM 672
Sheath removing knife, with two handles, for XLPE cable.

AV 6220
Sheath removing tool for PE-sheathed cable
Ø > 20 mm.

RKM-PM
Oil filling equipment (30 litres).

730R
Torque wrench for bolt connectors, bolt cable lugs, overhead line clamps, etc. Supplied with 7 mm socket head, extension arm and 8 mm internal hexagon head. Torque range 6-50 Nm.

RKM-FV
Vessel heater. Fits RKM-PM and 60-litre drum.

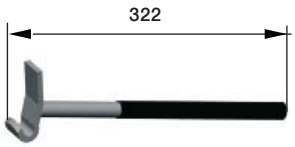
RKM 130
Torque wrench for bolt connectors, bolt cable lugs, overhead line clamps, etc. Torque wrench can be used with standard 1/2" sockets. Torque range 25-130 Nm.

IG 180X
Synthetic insulating oil.

Designation	Description
RKM 670	Cable knife
RKM 672	Sheath removing knife
AV 6220	Sheath removing tool
730 R	Torque wrench 6-50 Nm
RKM 130	Torque wrench 25-130 Nm
RKM-PM	Manual oil filling equipment
RKM-FV	Vessel heater

Designation	Description	Contents	Vessel
		litre	
IG 1801	Synthetic insulating oil	4	Tin
IG 1803	Synthetic insulating oil	2	Tin
IG 1804	Synthetic insulating oil	5	Tin
IG 1805	Synthetic insulating oil	60	Drum
IG 1806	Synthetic insulating oil	190	Drum

Tools
All dimensions in mm



MB 1
Cable sheath breaker.

SV140, SV190, SV 215
Tools for installation of stress cones as following:
- SV 140 for SKG
- SV 190 for SKGB
- SV 215 for SKGE

SH 50, SH 80, SH 130
Tool for removing and pealing XLPE-insulation and for removing outer conductive layer.

FK-SH 50, 80, 130
Spare pealing blade to SH 50, SH 80 and SH 130 for peeling XLPE-insulation of cables.

IN-SH 50, 80, 130
Spare removing blade to SH 50, SH 80 and SH 130 for removing XLPE-insulation of cables.

Designation	Description	Diameter across XLPE-insulation
		Ø mm
MB 1	Outer sheath breaker (pack of two)	
SV 140	Installation tool for stress cone, SKG for cable terminations APECB 84-170 and APEGA 170	
SV 190	Installation tool for stress cone, SKGB for cable terminations APECB 245-300 and APEGA 245-300	
SV 215	Installation tool for stress cone, SKGE for cable terminations APECB 420 and APEGA 420	
SH 50	XLPE-shaver	15-50
SH 80	XLPE-shaver	40-80
SH 130	XLPE-shaver	70-130
IN-SH 50, 80, 130	Spare blade for removing XLPE-insulation in SH 50, 80, 130	
FK-SH 50, 80, 130	Spare blade for pealing XLPE-insulation in SH 50, 80, 130	

Universal clamps
UKR 90, UKRA 90

UKR 90

Use

For fixing cables, tubes, hoses, etc. It will fix round profiles with Ø 20-90 mm or angular profiles with circumferences of 60-300 mm.

Design

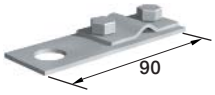
The bracket is made of non-magnetic hot-dip galvanized steel. The band is made of stainless steel SS 2333-02 with rounded edges and has a thickness of 0.2 mm. The band can betightened and locked in one operation. The locking bolt is made of die-cast zinc alloy.

UKRS 90

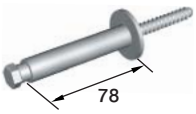
Consists of one UKR 90, a spacer with a wooden bolt for fastening on a wooden pole e.g.

UKR 90
Universal clamp.

UKRS 90
Universal clamp with spacer.



UKJ
Earthing plate.



UKS 90
Spacer.

Applications:

UKRA 90

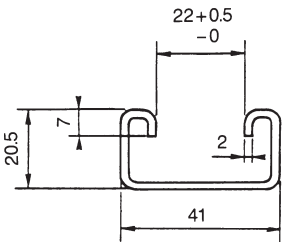
Use

For fixing cables with Ø 20-90 mm to the anchor bars in a cable distribution cabinet, etc.

Design

The bracket is made of non-magnetic hot-dip galvanized steel. The band is made of stainless steel according to SS 2333-02 with rounded edges and has a thickness of 0.2 mm. The band can be tightened and locked in one operation. The locking bolt is made of die-cast zinc alloy. A spring-loaded nut with a reversible locking washer offers a choice of fixed or flexible position and direction.

UKRA 90
Universal clamp with bracket for anchor bar.



Dimensional drawing of the anchor bar.

Designation	Weight
	kg/item
UKR 90	0.17
UKRA 90	0.23
UKS	0.28
UKRS 90	0.45
UKJ	0.14

Universal clamps
UKR 200, UKRA 200

UKR 200

Use

For bundling cables with Ø 50-275 mm.

Design

The bracket is made of non-magnetic hot-dip galvanized steel. The band is made of stainless steel SS 2333-02 with rounded edges and has a thickness of 0.2 mm. The band can be tightened and locked in one operation. The locking bolt is made of die-cast zinc alloy.

UKRF

For fixing cables, etc., to cable ladders. For use together with UKR 200. The height of the ladder profile is approx. 16 mm and will fit within the specified dimensions. The bracket is made of hot-dip galvanized steel.

UKRS 200

Consists of one UKR 200 and a spacer with a wooden bolt for fastening cables on a wall or a wooden pole.

UKRA 200

Use

For fixing cables with Ø of 50-275 mm to the anchor bars.

Design

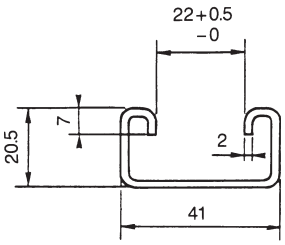
The bracket is made of non-magnetic hot-dip galvanized steel. The band is made of stainless steel SS 2333-02 with rounded edges and a thickness of 0.2 mm. The locking bolt is made of die-cast zinc alloy and can be tightened and locked in one operation. A spring-loaded nut with a reversible locking washer offers a choice of fixed or flexible position and direction.

UKR 200
Universal clamp.

UKRS 200
Universal clamp UKR 200 with spacer.

UKRF
Fixing bracket.

UKRA 200
Universal clamp with bracket for anchor bar.



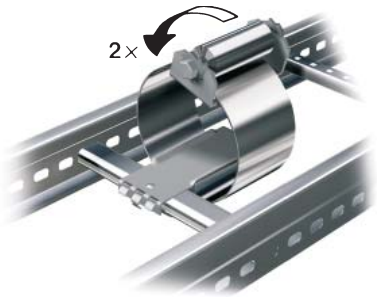
Dimensional drawing of the anchor bar.

Designation	Weight
	kg/item
UKR 200	0.32
UKRA 200	0.45
UKRF	0.21
UKRS 200	0.81

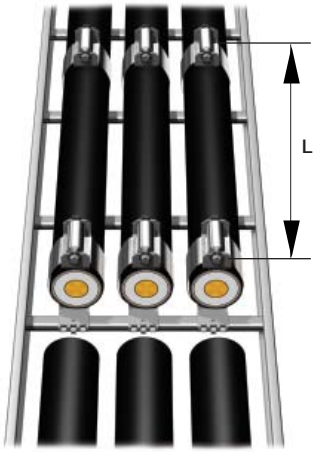
Typical applications when locating cables
UKR 200,UKRA 200

Flat configuration

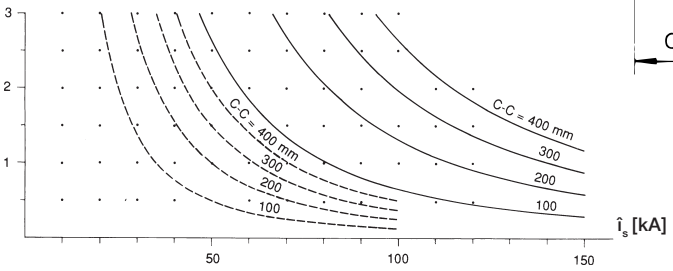
Universal clamp. (Results of testing with 2 turns of steel band).

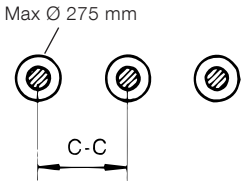


UKR 200 with fixing brackets UKRF.



UKR 200 with one fixing bracket, UKRF.

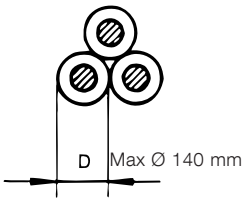


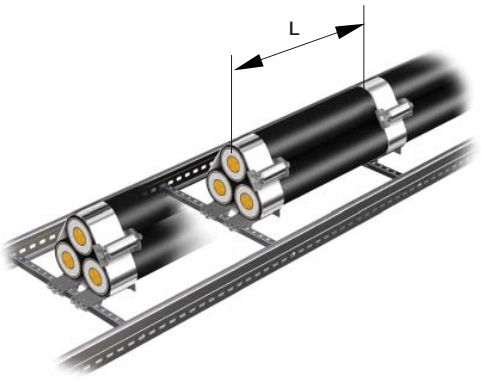


$\hat{I}_s$ (peak value) = Short circuit current
C-C = Distance between cable centres
L max = Distance between clamps

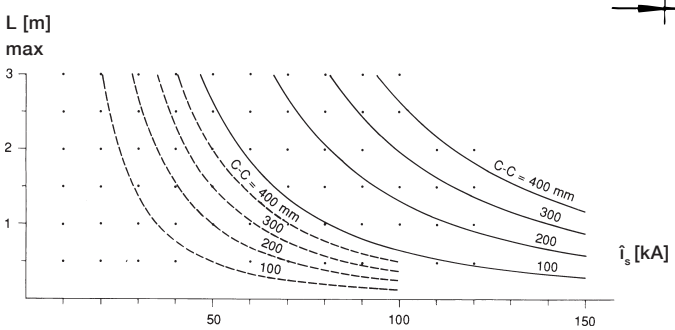
——— UKR 200 with fixing bracket, UKRF
— — — UKRA 200

Trefoil configuration





UKR 200 with two fixing brackets, UKRF.



I = Short circuit current (peak value)
D = Outer diameter of cable
L max = Distance between clamps

——— UKR 200 with fixing bracket, UKRF

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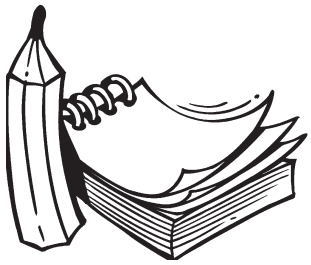

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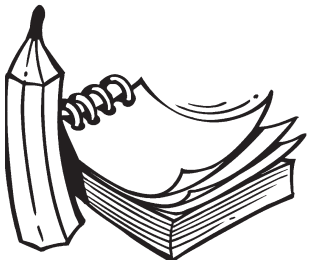

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Document ID: ABA102188

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