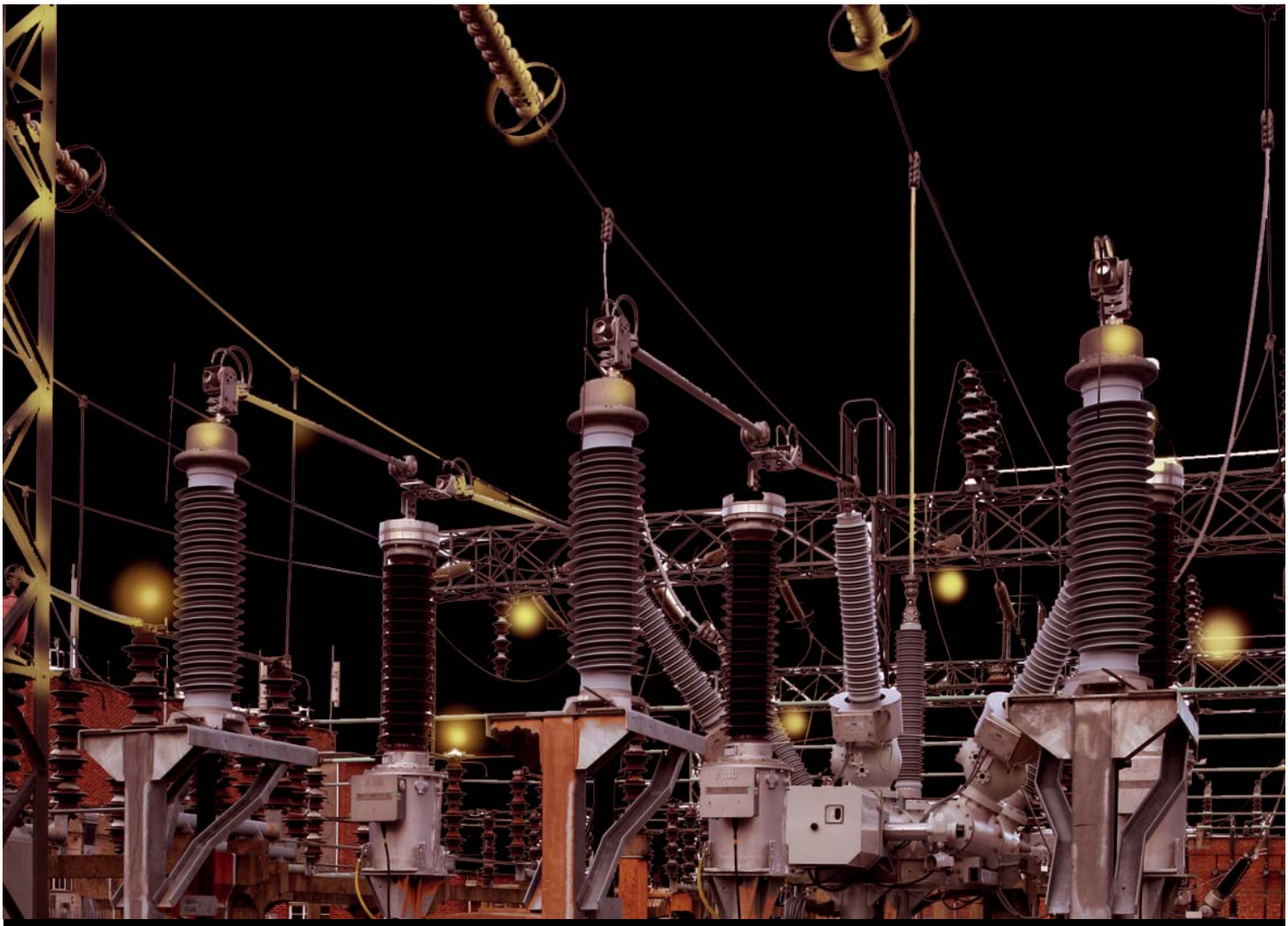

Catalog | May 2015

Cable Accessories 52 – 420 kV

Power and productivity
for a better world™

Table of content


UpRight
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131

Cable Accessories

Cable Accessories factory and Technical Lead Center situated in Alingsås, Sweden.

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, for distribution and transmission.

Our main customers are utilities, EPC and OEM.
Our core competencies are electrical connections in cable systems and manage electric field grading systems. Our own test laboratories are essential for our product developement and quality assurance.

Catalog

This catalog covers cable accessories in the range from 52 to 420 kV.

List of content sorted by name or product category can be found in the end of this catalog. The product catalog can also be downloaded from our website.

Other product catalogs available on request:

- Cable Accessories ≤ 1 kV, XLPE cables
- Cable Accessories 12–42 kV, XLPE cables
- Cable Accessories 12–52 kV, PILC cables

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

Our business idea

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

Satisfying customer needs, Quality and Environment are our priorities. We manufacture energy-efficient products with a long life time and we also work continuously to improve our processes. Important foundations for this work are our quality and environment management systems.

ISO 9001, Quality standard
ISO 14001, Environmental standard
OHSAS 18001, Occupational health and safety

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Our five core competencies

1. Understanding the total cost and value for cable accessories as elements in systems

We as supplier of components that are pieces in a puzzle, the cable system and the related interfaces, need to understand the demand and requirements on the single component in order to optimize the value and performance. The value offer for components is in relationship with the system, we also add value in later stages in this value chain. By knowing the actual expectations and trends we are able to meet the demand in the long term. Our expertise and extensive global footprint ensure we understand the product requirements and future trends.

2. Manufacturing and quality assurance of insulation system based on rubber

With modern manufacturing technology and quality management processes we can keep up the productivity and thereby offer competitive products. We have material expertise as well as test facilities for rubber material development and improvements, by both know-how and know-why we are able deliver insulation systems in the complete range of cable accessories.

3. Workmanship in installation of cable accessories

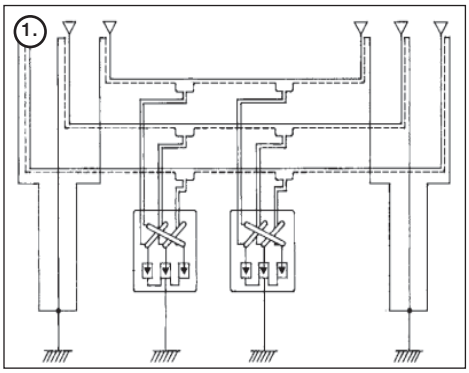
Joints and terminations are regarded as critical components in cable systems, and the workmanship during installation is very important when considering the risk of future failures. When preparing cable several layers need to be removed or treated without damaging other layers, this requires skills and knowledge how to handle tools for this application. Knowledge about what are the critical steps in accessories assembling gives the best foundation for successful and safe installation.

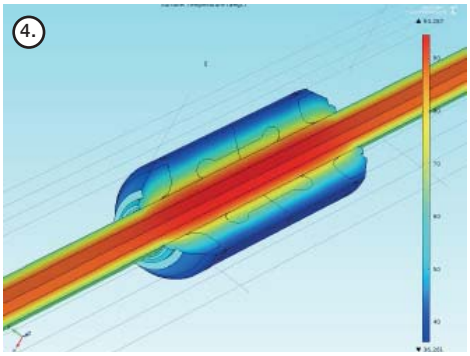
4. Electrical, mechanical and thermal design of insulation systems and connectors

The design of our accessories are based on expertise within electrical, mechanical and thermal performance. It is essential to understand the connection between them since all the three technologies comes down to one parameter namely coupled electrical, mechanical and thermal properties.
We have long extensive experience and use modern FEM software that allows us to calculate coupled electrical and thermal fields as well as thermo-mechanical conditions. Our electrical designs involves geometrical, resistive and refractive field controlling involving advanced field grading rubber materials.

5. Performance of rubber and metal materials in outdoor conditions

Cable accessories are exposed to harsh outdoor climate conditions. Insulators are exposed to UV radiation and pollution, joints are operating underground in wet conditions, and they shall perform for many years without breakdown.
It is essential for us to keep up the expertise within outdoor insulation performance and corrosion protection, with expertise and our test facilities, e.g. Weather-O-Meter test, we can ensure the product deliver what we promise.





Requirements and approvals

Definition of voltages

Cables and cable accessories are classified according to the voltages at which they operate. Between standards all over the world the designations are different. However, IEC designations gives a clear definition of commonly used vocabulary. The voltages 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 disconnection of large loads.

Testing in the high voltage laboratory.

Standards and approvals

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

Common standards:

IEC

(International Electrotechnical Commission) An international standard used worldwide.

IEEE

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

Voltage range U_m 52–420 kV

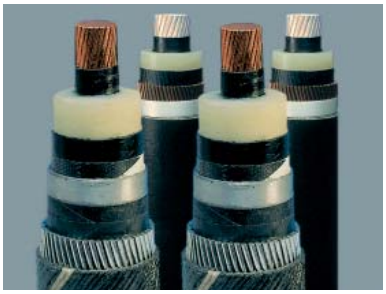
IEC standard 60840 covers cable systems with voltages above 36 kV up to 170 kV.

IEC standard 62067 covers cable systems with voltages above 170 kV up to 550 kV.

Both IEC 60840 and IEC 62067 includes testing of outer protection for buried joints and screen separation designs.

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.

Reasons for choosing ABB Cable Accessories

1

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.

One reason for our success is that we have constantly developed cable accessories for all types of cables. This has given us both broad and deep experience base. We have also developed our accessories to manage optical fiber in power cables, and integrated screen separation in cable joints. This enables system designers to improve and optimize their systems.

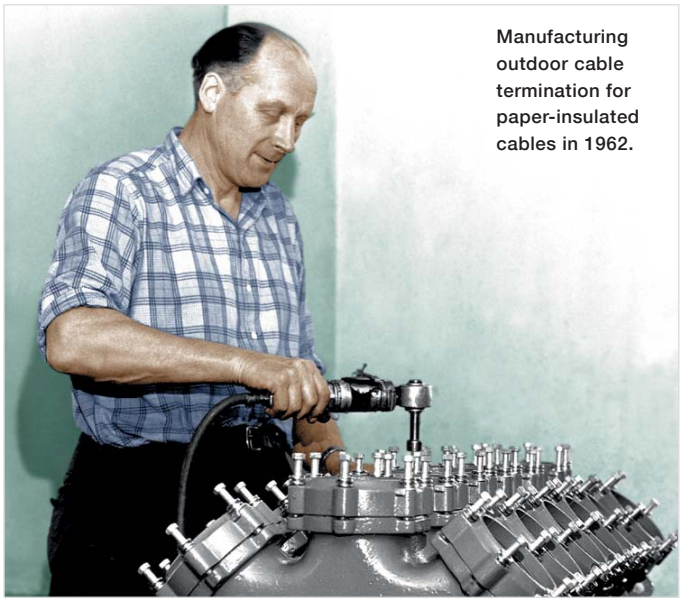
Our products are made with modular design, this makes the accessories exeptionally easy to install. The jointers can easily become familiar with the components, and this reduces the risk of mistakes.

Another advantage is that our cable terminations can be assembled on the ground with controlled conditions and then lifted into place – simple and safe!

Unless otherwise specified, the cable accessories are supplied as standard with bolt connections for conductors.

Experience

Long experience brings great expertise. We have been manufacturing cable accessories for paper-insulated cables for about 100 years. When XLPE-insulated cables were introduced more than 50 years ago, we were involved from the outset. Since then we have been in the forefront of development. We have a long experience in high voltage engineering and have always led the field in research and development.



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

Research and Development

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.

Our corporate research Centers enables us to conduct long term developement of new technologies.

Better Economy

ABB 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.

Also shorter installation time reduces the total cost for the system.

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 are involved 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 successfully passing theoretical and practical tests.

We facilitate the training in our factory or we may arrange in suitable location in agreement with you.

If you would like to know more about the courses, please contact your ABB representative or our training department directly.

Table of content
Cable Accessories 52–420 kV

Premolded one-piece cable joint, 52–123 kV
– straight through JS
– with screen interruption JX

2

Use
For jointing XLPE- or EPR-insulated 52–123 kV cables with Al- or Cu-conductor.

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

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

The cable joint is supplied with bolt connector and heat-shrink outer jacket.

The joint is available in two different basis types
JS Straight cable joint with heat-shrink outer jacket.
JX Cable joint with integrated screen interruption and heat-shrink outer jacket.

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

The following cable data should be stated when ordering, see page 5/1:
– Voltage
– Diameter over prepared insulation
– Conductor cross section
– Conductor material copper or aluminium
– Diameter of conductor
– Screen, sheath design and cross section
– Overall cable diameter
– Optical fibres integrated in screen

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

JS
Premolded straight cable joint.

JX
Premolded cable joint with screen interruption.

Voltage	Cable insulation diameter		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, tools and accessories
JS 52–123 kV and JX 52–123 kV

Voltage U_m	Insulation diameter	Joint size	Net weight
kV	mm		kg/kit
52	33–38	JS-A 05210 C/P/M	25
52	38–42	JS-A 05211 C/P/M	25
52	42–47	JS-A 05212 C/P/M	25–30
52	47–54	JS-A 05213 C/P/M	25–30
52	54–63	JS-A 05214 C/P/M	25–30
52	63–75	JS-A 05215 C/P/M	25–30
72	33–38	JS-A 07210 C/P/M	25
72	38–42	JS-A 07211 C/P/M	25
72	42–47	JS-A 07212 C/P/M	25–30
72	47–54	JS-A 07213 C/P/M	25–30
72	54–63	JS-A 07214 C/P/M	25–30
72	63–75	JS-A 07215 C/P/M	25–30
123	46–51	JS-A 12310 C/P/M	28–29
123	51–57	JS-A 12311 C/P/M	28–29
123	57–63	JS-A 12312 C/P/M	30–31
123	63–72	JS-A 12313 C/P/M	30–31
123	72–84	JS-A 12314 C/P/M	32–33
123	84–100	JS-A 12315 C/P/M	32–33

Voltage U_m	Insulation diameter	Joint size	Net weight
kV	mm		kg/kit
52	33–38	JX-A 05210 C/P/M	55–60
52	38–42	JX-A 05211 C/P/M	55–60
52	42–47	JX-A 05212 C/P/M	55–60
52	47–54	JX-A 05213 C/P/M	55–60
52	54–63	JX-A 05214 C/P/M	55–60
52	63–75	JX-A 05215 C/P/M	55–60
72	33–38	JX-A 07210 C/P/M	55–60
72	38–42	JX-A 07211 C/P/M	55–60
72	42–47	JX-A 07212 C/P/M	55–60
72	47–54	JX-A 07213 C/P/M	55–60
72	54–63	JX-A 07214 C/P/M	55–60
72	63–75	JX-A 07215 C/P/M	55–60
123	46–51	JX-A 12310 C/P/M	60–65
123	51–57	JX-A 12311 C/P/M	60–65
123	57–63	JX-A 12312 C/P/M	60–65
123	63–72	JX-A 12313 C/P/M	60–65
123	72–84	JX-A 12314 C/P/M	60–65
123	84–100	JX-A 12315 C/P/M	60–65

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.

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

OKJ 2 and OKJ 3
Opto fiber kit for cables with integrated optical fibers in the screen. Used for JS and JX 123 kV only.

Opto fiber kits

Cable joint	Suitable opto fiber kit	Article number
JS 123	OKJ 2	6248.0007
JX 123	OKJ 3	6248.0008

Selection guide for installation cone

Voltage level	Insulation diameter	Joint size	Installation Cone
kV	mm		Article number
52	33–38	JS-A/JX-A 05210 C/P/M	4550.0272
52	38–42	JS-A/JX-A 05211 C/P/M	4550.0273
52	42–47	JS-A/JX-A 05212 C/P/M	4550.0274
52	47–54	JS-A/JX-A 05213 C/P/M	4550.0275
52	54–63	JS-A/JX-A 05214 C/P/M	4550.0276
52	63–75	JS-A/JX-A 05215 C/P/M	4550.0277
72	33–38	JS-A/JX-A 07210 C/P/M	4550.0272
72	38–42	JS-A/JX-A 07211 C/P/M	4550.0273
72	42–47	JS-A/JX-A 07212 C/P/M	4550.0274
72	47–54	JS-A/JX-A 07213 C/P/M	4550.0275
72	54–63	JS-A/JX-A 07214 C/P/M	4550.0276
72	63–75	JS-A/JX-A 07215 C/P/M	4550.0277
123	46–51	JS-A/JX-A 12310 C/P/M	4550.0278
123	51–57	JS-A/JX-A 12311 C/P/M	4550.0279
123	57–63	JS-A/JX-A 12312 C/P/M	4550.0280
123	63–72	JS-A/JX-A 12313 C/P/M	4550.0281
123	72–84	JS-A/JX-A 12314 C/P/M	4550.0282
123	84–100	JS-A/JX-A 12315 C/P/M	4550.0283

Premolded cable joints, 145–170 kV
– straight through SMPGB
– with screen interruption SMPGB-C

Use

Suitable for jointing XLPE- and EPR-insulated cables with Al- and Cu-conductors. Suitable for jointing two cables having different dimensions or screen /sheath design.

SMPGB

SMPGB-C P

SMPGB-C M

Standard

Meets the requirements of:
- IEC 60840 including Annex H
- IEEE 404, 138 kV

Design

The cable joint consists of a premolded rubber tube and two premolded rubber adapters and a bolt cable clamp. Bolt technology facilitates jointing of the conductor and also allows jointing of different cross sections.

The cable joint SMPGB M for cables with metal-sheath includes also a prefabricated PUR casted copper casing as protective outer jacket.

For diameter over the prepared insulation and conductor diameter, see the table below.

The joint is available in two different types:

SMPGB Straight cable joint with heat-shrink outer jacket.
SMPGB-C Cable joint with integrated screen interruption and heat-shrink outer jacket.

The joint is available for different types of cable screens and sheaths.

C For cables with copper wire screen.
P For aluminium laminated cables (APL).
M For cables with metal sheath; lead, corrugated copper/aluminium or corrugated stainless steel.

The following cable data should be stated when ordering, see page 5/1:

- Voltage
- Diameter over prepared insulation
- Conductor cross section
- Conductor material copper or aluminium
- Diameter of conductor
- Screen, sheath design and cross section
- Overall cable diameter
- Optical fibres integrated in screen

Note:

- A torque wrench, installation cone and installation tool RKM 170 are needed for assemblying.
- For corrugated copper and stainless steel, the flux is not included in the soldering kit. For flux, please contact your local supplier.

Voltage U_m	Cable insulation diameter		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, SMPGB-C 145–170 kV

SMPGB

Designation	L	Ø
	mm	
SMPGB 145 C	1300–1950	205
SMPGB 145 P	1600–2250	210
SMPGB 145 M	1620–2220	245
SMPGB 170 C	1300–1950	205
SMPGB 170 P	1600–2250	210
SMPGB 170 M	1620–2220	245

SMPGB

SMPGB-C

Designation	L	Ø
	mm	
SMPGB-C 145 P	1800–2300	410
SMPGB-C 145 M	1800–2300	410
SMPGB-C 170 P	1800–2300	300
SMPGB-C 170 M	1800–2300	340

SMPGB-C P

SMPGB-C M

Selection of cable joint according to cable insulation diameter

Voltage	Insulation diameter	Conductor diameter*	Cable joint size	
kV	mm	mm	SMPGB C/P/M	SMPGB-C P/M
145	48–51	16–65	SMPGB 14501 C/P/M	SMPGB-C 14501 P/M
145	50–53	16–65	SMPGB 14502 C/P/M	SMPGB-C 14502 P/M
145	52–56	16–65	SMPGB 14503 C/P/M	SMPGB-C 14503 P/M
145	55–59	16–65	SMPGB 14504 C/P/M	SMPGB-C 14504 P/M
145	58–62	16–65	SMPGB 14505 C/P/M	SMPGB-C 14505 P/M
145	61–65	16–65	SMPGB 14506 C/P/M	SMPGB-C 14506 P/M
145	63–68	16–65	SMPGB 14507 C/P/M	SMPGB-C 14507 P/M
145	66–71	16–65	SMPGB 14508 C/P/M	SMPGB-C 14508 P/M
145	69–76	16–65	SMPGB 14509 C/P/M	SMPGB-C 14509 P/M
145	74–82	16–65	SMPGB 14510 C/P/M	SMPGB-C 14510 P/M
145	80–91	16–65	SMPGB 14511 C/P/M	SMPGB-C 14511 P/M
145	89–100	16–65	SMPGB 14512 C/P/M	SMPGB-C 14512 P/M
145	98–107	16–65	SMPGB 14513 C/P/M	SMPGB-C 14513 P/M
170	61–65	16–65	SMPGB 1701 C/P/M	SMPGB-C 1701 P/M
170	63–68	16–65	SMPGB 1702 C/P/M	SMPGB-C 1702 P/M
170	66–71	16–65	SMPGB 1703 C/P/M	SMPGB-C 1703 P/M
170	69–76	16–65	SMPGB 1704 C/P/M	SMPGB-C 1704 P/M
170	74–82	16–65	SMPGB 1705 C/P/M	SMPGB-C 1705 P/M
170	80–91	16–65	SMPGB 1706 C/P/M	SMPGB-C 1706 P/M
170	89–100	16–65	SMPGB 1707 C/P/M	SMPGB-C 1707 P/M
170	98–107	16–65	SMPGB 1708 C/P/M	SMPGB-C 1708 P/M

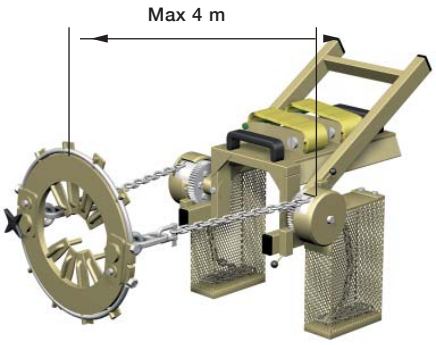
* Manufactured based on the cable specification.

Tools and accessories
SMPGB 145–170 kV, SMPGB-C 145–170 kV

Selection of installation cone according to cable insulation diameter

Voltage	Cable Insulation diameter	Cable joint size	Installation cone
kV	mm		Article number
145	48–51	14501	4209.2384
145	50–53	14502	4209.2385
145	52–56	14503	4209.2386
145	55–59	14504	4209.2387
145	58–62	14505	4209.2388
145	61–65	14506	4209.2331
145	63–68	14507	4209.2332
145	66–71	14508	4209.2333
145	69–76	14509	4209.2334
145	74–82	14510	4209.2335
145	80–91	14511	4209.2336
145	89–100	14512	4209.2337
145	98–107	14513	4209.2400
170	61–65	1701	4209.2331
170	63–68	1702	4209.2332
170	66–71	1703	4209.2333
170	69–76	1704	4209.2334
170	74–82	1705	4209.2335
170	80–91	1706	4209.2336
170	89–100	1707	4209.2337
170	98–107	1708	4209.2338

Tools and accessories, to be ordered separately



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

Installation cone
For installing the adapters.

OKJ 4 and OKJ 5
Opto fiber kit for cables with integrated optical fibers in the screen.

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

Opto fiber kits

Cable joint	Suitable opto fiber kit	Article number
SMPGB 145–170 P	OKJ 4	6248.0009
SMPGB-C 145–170 P	OKJ 4	6248.0009
SMPGB 145–170 M	OKJ 5	6248.0010
SMPGB-C 145–170 M	OKJ 5	6248.0010
SMPGB 145–170	OKJ 4	6248.0009

Premolded one-piece cable joint, 245 kV
– straight through JS
– with screen interruption JX

Use
For jointing XLPE- and EPR-insulated 245 kV cables with Al- or Cu-conductor.

Standard
Meets the requirements of:
- IEC 62067 including Annex D
- IEEE 404

Design
The joint body is made of rubber in three layers: a conductive inner layer, an insulating layer and a conductive outer layer. The cable joint has a prefabricated PUR casted copper casing as a protective outer jacket.

The joint is supplied complete with bolted cable connector for both conductor and screen.

The joint is available in two different types
JS Straight cable joint with heat-shrink outer jacket.
JX Cable joint with integrated screen interruption and heat-shrink outer jacket.

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

The following cable data should be stated when ordering, see page 5/1:
- Voltage
- Diameter over prepared insulation
- Conductor cross section
- Conductor material copper or aluminium
- Diameter of conductor
- Screen, sheath design and cross section
- Overall cable diameter
- Optical fibres integrated in screen

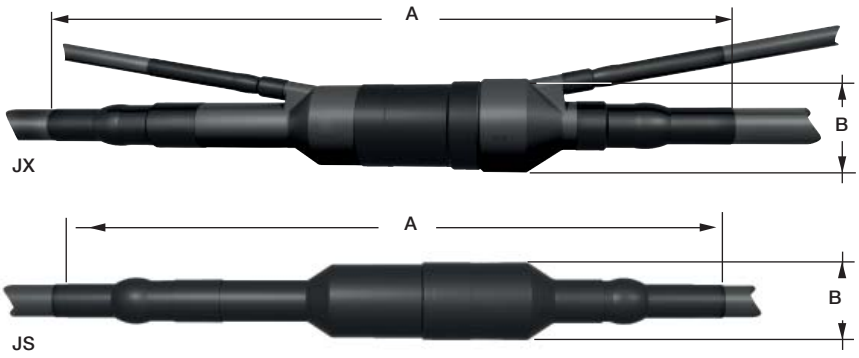
Note:
- Torque wrench and installation tool RKM 245 are needed for assembling (installation cone is included).
- For corrugated aluminium and stainless steel the flux is not included in the soldering kit. For flux, please contact your local supplier.

JS
Premolded straight cable joint.

JX
Premolded cable joint with screen interruption.

Voltage	Cable insulation diameter		Outer sheath	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 kV



Description	Designation	Dimensions		Net weight
		A	B	
		mm		kg
Cable joint with casing	JS-A 245 P	2690	326	170–200
	JS-A 245 M	3250	325	180–210
	JS-A 245 C	3250	325	170–200
Cable joint without casing and with outer heat-shrink protection	JS-B 245 C	2280	290	170–200
Cable joint with casing 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

JS 245 and JX 245

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

Accessories, to be ordered separately

RKM 245
Installation tool.

OKJ 1
Opto fiber kit for cables with integrated optical fibers in the screen.

Designation	Description
RKM 245	Installation tool including installation cone
OKJ 1	Kit for optical fibers
Soldering kit	For soldering of the casing halves if required (only P and C versions)

Premolded cable joints, 420 kV
– straight through SMPGB
– with screen interuption SMPGB-C

Use
For jointing XLPE- and EPR-insulated cables with Al- and Cu-conductor. Suitable for jointing two cables having different dimensions or screen sheath designs.

SMPGB 420

Standard
Meets the requirements of:
- IEC 62067 including Annex D
- IEEE 404

SMPGB-C 420

Design
The cable joint consists of a premolded rubber tube with two premolded rubber adapters, a bolt connector and a prefabricated PUR casted copper casing as outer protection.

See table below for diameter over the prepared insulation.

The joint is available in two different types:
SMPGB Straight cable joint.
SMPGB-C Cable joint with integrated screen interruption.

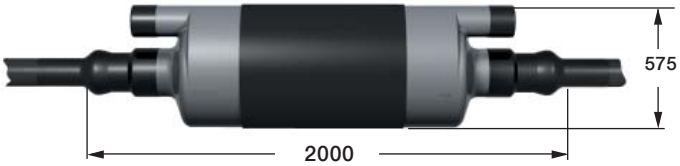
The joint is available for different types of cable screens and cable sheaths.
PAL For aluminium laminated cable (APL).
Pb For cables with metal sheath; lead, corrugated copper/aluminium or corrugated stainless steel.

The following cable data should be stated when ordering, see page 5/1:
- Voltage
- Diameter over prepared insulation
- Conductor cross section
- Conductor material copper or aluminium
- Diameter of conductor
- Screen, sheath design and cross section
- Overall cable diameter
- Optical fibres integrated in screen

Note:
- Torque wrench and installation tool RKM 420 are needed when assemblying.
- For corrugated copper and stainless steel, the flux is not included in the soldering kit. For flux, contact your local supplier.

Cable insulation diameter	Conductor cross section	Screen cross section	Designation
mm	mm²	mm²	
80–124	630–2500	95–500	SMPGB 420 Pb
80–124	630–2500	95–500	SMPGB 420 PAL

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

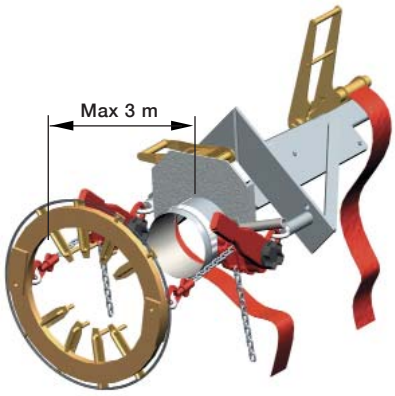


SMPGB 420

SMPGB-C 420

Dimensions in mm

Tools and accessories, to be ordered separately



RKM 420
Installation tool.

OKJ 1
Opto fiber kit for cables with integrated optical fibers in the screen.

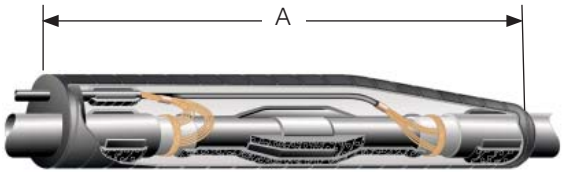
PD kit SMPGB 420
Integrated PD-measuring sensor enables partial discharge measurement.

Designation	Description
RKM 420	Installation tool for SMPGB 420 kV
OKJ 1	Kit for splicing of optical fibers
PD kit SMPGB 420	Integrated PD-measurement sensor for enables partial discharge measurement with SMPGB 420

Screen separation kit
SKKB

SKKB

SKKB is a screen separation kit for cross bonding or earthing of cables up to 245 kV. It can be fitted on already laid cable, where the load condition has changed and losses need to be reduced. It also gives the possibility to optimize the cable system since cross bonding can be fitted at any position along the cable.



Cable outer sheath diameter	Designation	A	Use
mm		mm	
< 50	SKKB 5 PAL	750	Al laminate as radially water barrier
50–100	SKKB 10 PAL	1100	Al laminate as radially water barrier
100–150	SKKB 15 PAL	1100	Al laminate as radially water barrier
< 50	SKKB 5 MET	750	For metallic sheath with or without copper screen wires
50–100	SKKB 10 MET	1200	For metallic sheath with or without copper screen wires
100–140	SKKB 15 MET	1200	For metallic sheath with or without copper screen wires
< 50	SKKB 5 CUW	750	Copper screen
50–100	SKKB 10 CUW	1100	Copper screen
100–150	SKKB 15 CUW	1100	Copper screen

Dry plug-in termination for gas-insulated switchgear or transformer
CD 145–170 kV

Use

Dry cable termination suitable as a fixed connection point in a gas-insulated switchgear, a transformer without a separate cable box or where the cable box is filled with transformer oil.

Standard

Meets the requirements of:
- IEC 60840
- Dimensions according to IEC 62271-209, dry-type design

Design

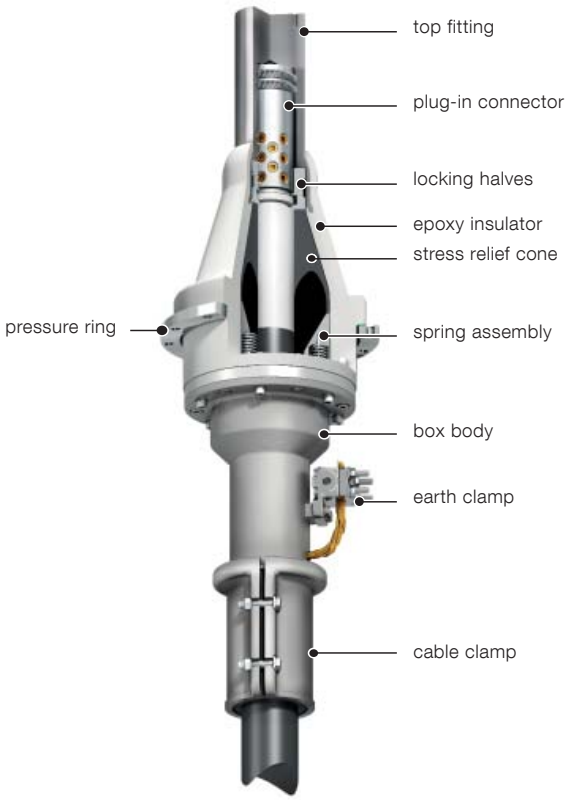
The cable termination is to be ordered in two separate kits:
1. CD 145, CD 170; plug-in connector kit consisting of plug-in connector, locking halves, stress cone, pre-loaded spring assembly, box body, earth clamp and cable clamp.
2. CDI 145, CDI 170; insulator kit consisting of top fitting, epoxy insulator with integrated screen separation and pressure ring.

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

The following cable data should be stated when ordering, see page 5/1:

- Voltage
- Diameter over prepared insulation
- Conductor cross section
- Conductor material, copper or aluminium
- Screen, sheath design and cross section
- Overall cable diameter
- Optical fibres integrated in screen

Insulation diameter		Conductor	Outer sheath	
		Cu/Al	CUW	PAL, MET
min	max		Ø	
mm		mm²	mm	
44	96	300–2000	150	130



1. CD 145–170, connector kit.

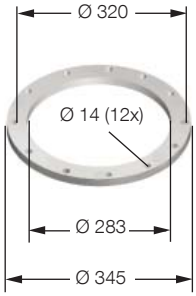
2. CDI 145–170, Insulator kit.

Voltage level	Designation	Description	Standard	Gross weight
kV			dimensions	kg/kit
145	CD 145	Plug-in connector kit	IEC 62271-209	33
145	CDI 145	Insulator kit	IEC 62271-209	30
170	CD 170	Plug-in connector kit	IEC 62271-209	33
170	CDI 170	Insulator kit	IEC 62271-209	30

Technical specification and accessories
CD 145–170 kV

Dimensions in mm

The insulator CDI fits diameter 255 mm as per standard IEC 62271-209.



Pressure ring for CDI 145, included in the kit.

For connecting CD 145–170 kV to a transformer
To be ordered separately

CST 170
Corona shield. (optional)

CBT
Contact bolt. (optional)

ECDI
IEC Extension adapter will extend the insert depth to 757 mm, to meet dimensions according to fluid-type design, Figure 3 in IEC 62271-209.

To be ordered separately

Designation	Description
CST 170	Corona shield
CBT 84-170	Contact bolt for Transformer
ECDI	Extension for CDI 145/170

Accessories, to be ordered separately

IPC
Protective cover for insulator CDI.

SH 80, SH 130
Tool for peeling and stripping of XLPE-insulation and outer conductive layer.

FK-SH 80, FK-SH 130
Spare peeling blade to be used with SH 80 and SH 130.

RKM 145
Installation tool.

OKT
Optical fiber kit for cables with integrated optical fibers in the screen.

IK-SH 80, IK-SH 130
Spare stripping blade to be used with SH 80 and SH 130.

SLK-SH 80, SLK-SH 130
Slot knife for peeling and stripping tool SH80 and SH130. To be used to make the slot in the XLPE-insulation of the cable.

BSL-SH 130
Base plate for slot knife SLK-SH 130 and stripping blade IK-SH 130.

Designation	Description
IPC	Installation protective cover
RKM 145	Installation tool
OKT	Optical fiber kit
JSA, SCK*	Earthing kit, se page 2/30

* NB: if earthing kit is required, this increases the cable outer diameter Ø by 20 mm.

Designation	Description
SH 80, SH 130	Peeling and stripping tool
IK-SH 80, IN-SH 130	Spare stripping blade
FK-SH 80, FK-SH 130	Spare peeling blade
SLK-SH 80, SLK-SH 130	Spare stripping blade
BSL-SH 130	Base plate for slot knife; only for SH 130.

Cable termination for gas-insulated switchgear and transformer
APEGA 84–420 kV

Use
Suitable for installations where the termination is to be used as a fixed connection point in gas-insulated switchgears or in transformers.

Standard
Meets the requirements of:
- IEC 60840, ≤ 170 kV
- IEC 62067, 245–420 kV
- IEEE 48

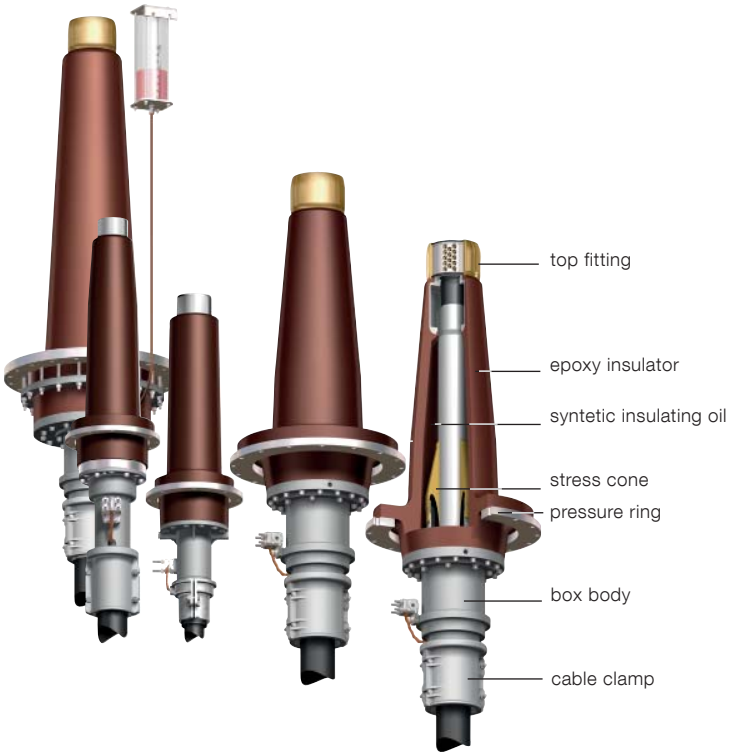
Design
The cable termination consists of an epoxy insulator fitted to a box body made of aluminium. The stress controlling component is a rubber stress cone.
The insulator is filled with synthetic insulating oil. A flange for insulated installation is integrated in the epoxy insulator. A pressure ring is also included, see next page.

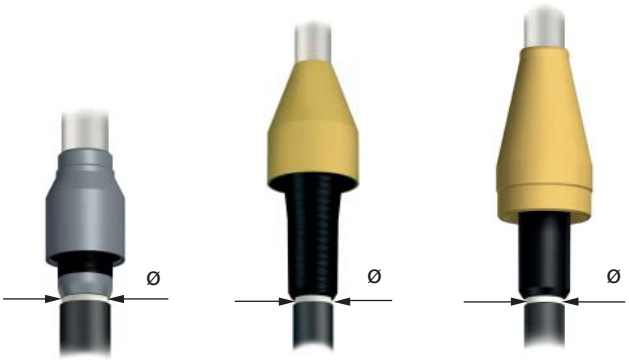
For the maximum permissible diameter över the oversheath of the cable and the diameter over the prepared cable insulation, see the table below.

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, see page 5/1:
- Voltage
- Diameter over prepared insulation
- Conductor cross section
- Conductor material, copper or aluminium
- Screen, sheath design and cross section
- Overall cable diameter
- Optical fibres inegrated in screen

Type of connector:
- Bolt as standard



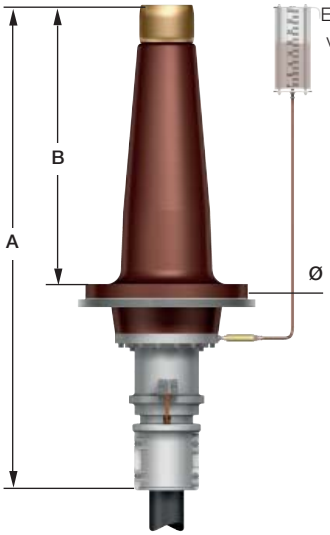


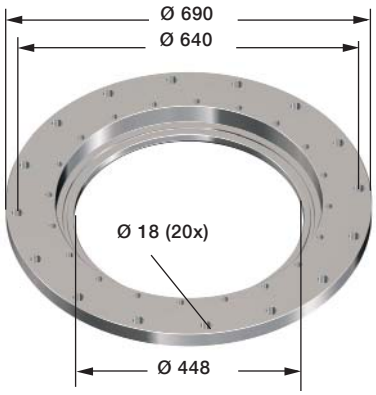
APEGA 84 | APEGA 170 | APEGA 245, APEGA 300, APEGA 420

Voltage	Cable insulation Ø mm		Outer sheath Ø mm
kV	min	max	
84	25	66	85
170	45.5	107	160
245	73	120	160
300	73	120	160
420	82	120	160

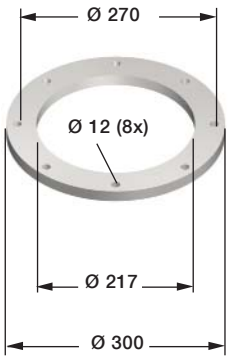
Technical specification
for connecting APEGA 84–420 to a gas-insulated switchgear

Dimensions in mm

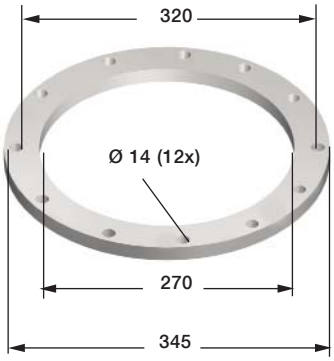




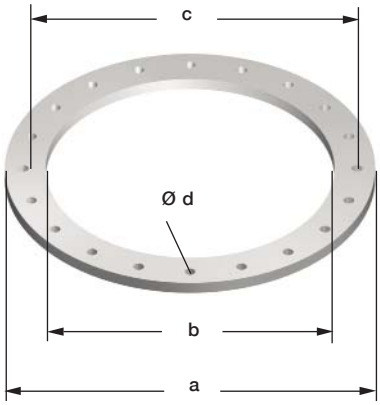
AF 420
Adapter flange for APEGA 420.
Included in the kit.



Pressure ring for APEGA 84.



Pressure ring for APEGA 170.



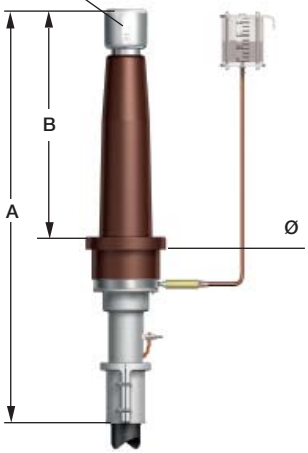
Pressure ring for APEGA 245–420.

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

Voltage	Designation	Standard	Dimensions			Net weight
			A	B	Ø	
kV			mm	mm	mm	kg/item
84	APEGA 841	IEC 62271-209	~ 1030	587	245	55
170	APEGA 1703	IEC 62271-209	~ 1460	757	298	75
245	APEGA 2456	IEC 62271-209	~ 1670	960	450	270
300	APEGA 3006	IEC 62271-209	~ 1670	960	450	270
420	APEGA 4202	IEC 62271-209	~ 2175	1400	614	400

Technical specification
for connecting APEGA 84–420 to a transformer

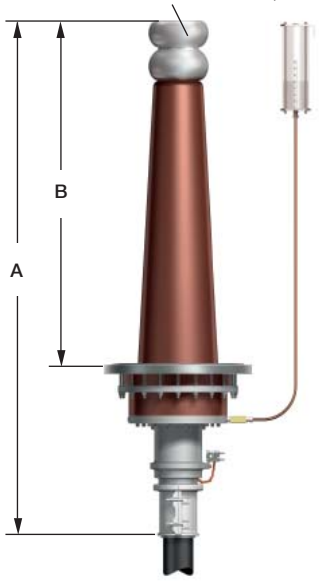
CST 84/CST 170 Expansion vessel



Dimension drawing, APEGA 84–170 kV.

CST 245–420 Expansion vessel

Dimensions in mm



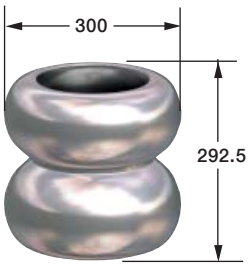
Dimension drawing, APEGA 245–420 kV.

Voltage level	Designation	Dimensions standard	Dimensions			Weight
			A	B	Ø	
kV			mm			kg/item
84	APEGA 841 TRF *	EN 50299	1150	707	245	55
170	APEGA 1703	EN 50299	1580	877	298	75
245	APEGA 2456	EN 50299	1830	1120	450	270
300	APEGA 3006	EN 50299	1830	1120	450	270
420	APEGA 4202	EN 50299	2335	1560	614	400

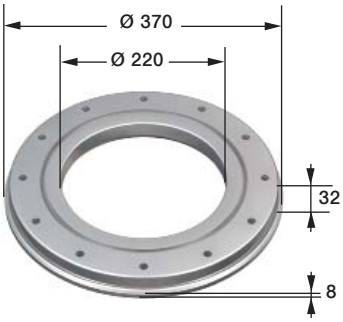
*Corona shield CST 84, included in the kit.

To be ordered separately for connecting APEGA in a transformer

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



CST 245–420
Corona shield for installing APEGA 245–420 kV.



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

CBT 84–170
For installing APEGA 84–170 kV.

CBT 245–420
For installing APEGA 245–420 kV.

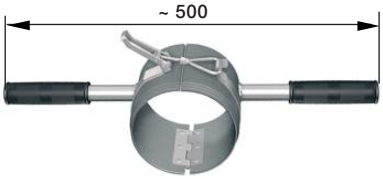
Designation	Description	Application area
CST 170	Corona shield	For installing APEGA 170 kV
CST 245-420	Corona shield	For installing APEGA 245-420 kV
AFT 1703	Adapter flange	Adapter flange to be welded between termination and transformer
CBT 84-170	Connection bolt	For installing APEGA
CBT 245-420	Connection bolt	For installing APEGA

Tools and accessories, to be ordered separately
APEGA 84–420 kV

SPT 1
Circlip pliers for installation of top fitting.

SPV 1
Panduit pliers for bundle tape APEGA 170 kV.

OKT
Optofiber kit for cables with integrated optical fibers in the earth screen.



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

Designation	Description
SPT 1	Circlip pliers when installing top fitting, APEGA 84–170.
OKT	Optofiber kit for cables with integrated optical fibers in the earth screen.
SPV 1	Panduit pliers for installation of bundle tape around stress cone, APEGA 170.
SV 140	Installation tool for stress cone, SKG for cable termination APEGA 170.
SV 190	Installation tool for stress cone, SKGB for cable termination APEGA 245–300.
SV 215	Installation tool for stress cone, SKGE for cable termination APEGA 420.

Designation	Description	See page
JSA*	Earthing kit for cable with metallic sheath, e.g. lead. Not needed if cable has only Cu-wire screen.	2/30
SCK*	Screen connection for Al-foil radial waterproof cable. Not needed if cable has only Cu-wire screen.	2/30

* NB: if earthing kit is required, this increases the cable outer diameter Ø by 20 mm.

Dry pre-assembled outdoor cable termination
TD 145 kV

Use
Suitable for outdoor and indoor installations in which the termination is to be used as a fixed connection point.

Especially suitable for applications where oil is not prefered or when installation time/cost is crucial.

Standard
Meets the requirements of:
– IEC 60840

Design
TD 145 contains of: a pre-assembled cable termination, top bolt and bolt clamp in the top fitting and also cable clamp and earth clamp.

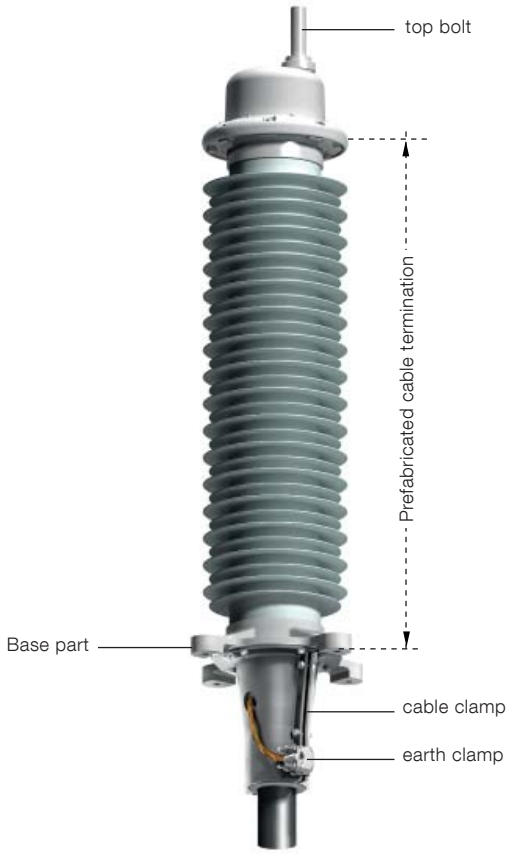
The pre-assembled cable termination consists of a composite insulator with integrated base part and stress cone.

Both the support pipe and the cable clamp are made of fiberglass reinforced polyester that provides an insulated screen/sheath installation.

The field control component is a premolded stress cone. The termination has a minimum creepage distance of 4650 mm, which means it fulfills Pollution class IV according to IEC 60815-3.

A bolt clamp for the cable conductor and a top bolt is included in the kit.

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



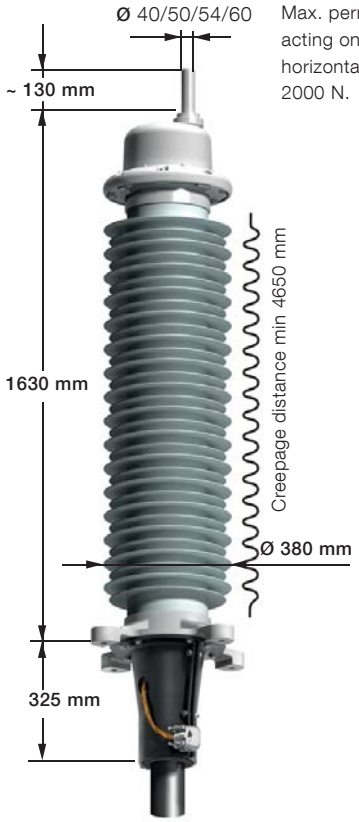
Installation
The termination comes pre-assembled from the factory which remarkably reduces installation time after cable preparation. Installation can be made horizontally or vertically. No filling of insulating compound required at site.

Insulation diameter		Outer sheath	Max conductor cross section
min	max	max Ø	
mm		mm	mm²
53	102	150	2500

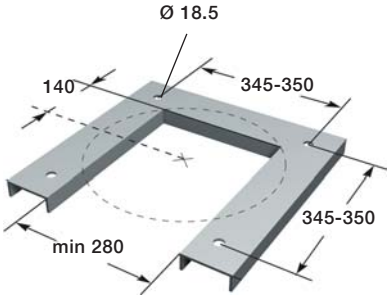
The following cable data should be stated when ordering, see page 5/1:
– Diameter over prepared insulation
– Conductor cross section
– Screen, sheath design and cross section
– Overall cable diameter
– Optical fibres integrated in screen
– Diameter and material of the top bolt, copper or aluminium

Voltage	Insulator	Designation	Creepage distance min	Net weight
kV			mm	kg/item
145	Composite	TD 145	4650	102

Technical specification, applications and accessories
TD 145 kV



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



Dimensions in mm

Fixing to bracket
Insulated or non-insulated: four 18.5 mm holes for M16 bolts.

Inclination up to 45°.

Accessories, to be ordered separately

RKM 145
Installation tool.

Opto kit
Optical fiber kit for cables with integrated optical fibers in the earth screen.

Installation cone.

Designation	Description
RKM 145	Installation tool
Installation cone	Installation cone, see table.
Opto kit	Optical fiber kit for optical fibers in the cable screen

Selection table for installation cone

Inner diameter	Outer diameter	Installation cone
mm	mm	Article number
20	53	4209.2384
22	55	4209.2385
22	58	4209.2386
29	61	4209.2387
38	64	4209.2388
28	67	4209.2331
32	70	4209.2332
36	73	4209.2333
43	78	4209.2334
48	84	4209.2335
51	93	4209.2336
57	102	4209.2337
57	105	4209.2400

Designation	Description	See page
JSA*	Earthing kit for cable with metallic sheath, e.g. lead. Not needed if cable has only Cu-wire screen.	2/30
SCK*	Screen connection for Al-foil (APL) radial waterproof cable. Not needed if cable has only Cu-wire screen.	2/30

* NB: if earthing kit is required, this increases the cable outer diameter Ø by 20 mm.

Outdoor cable termination
APED 52–84 kV

2

Use
Suitable for outdoor and indoor installations in which the termination is to be used as a fixed connection point.

Standard
Meets the requirements of:
- IEC 60840
- IEEE 48

Design
The cable termination consists of a composite or porcelain insulator fitted on a box body made of aluminium.

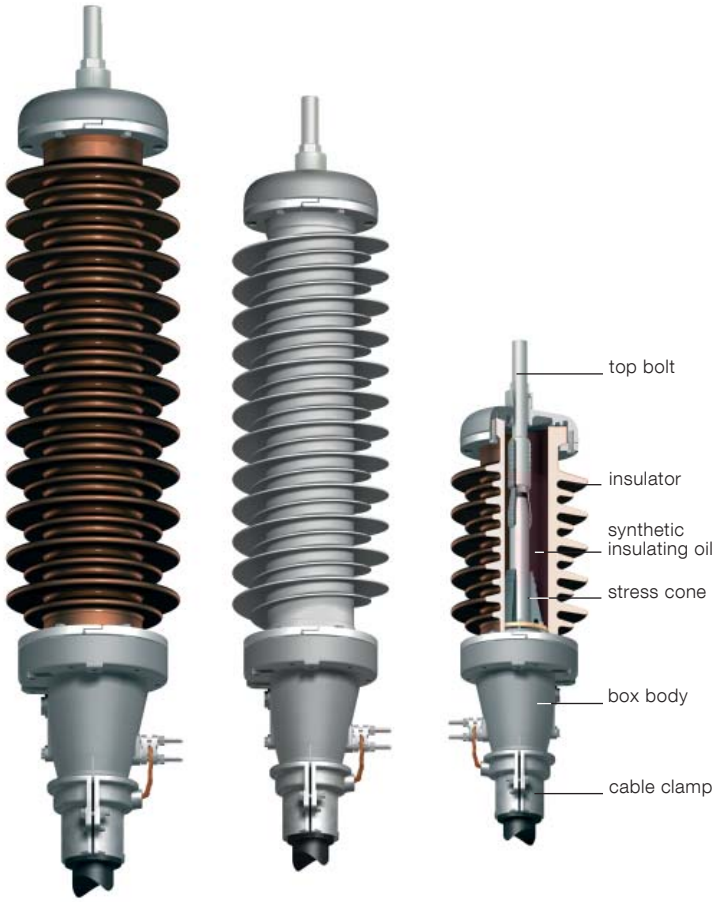
The elecrical stress control component is a premolded rubber stress cone. The insulator has sheds of short-long type and is filled with synthetic insulating oil.

The composite insulator is available in grey. The porcelain insulator is available in brown. A post insulator kit which includes three stand-off insulators and a supporting plate should be used for insulated installation.

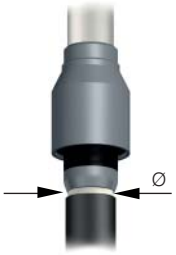
A top bolt with a diameter of 30 mm is included in the kit.

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, see page 5/1:
- Voltage
- Diameter over prepared insulation
- Conductor cross section
- Conductor material copper or aluminium
- Screen, sheath design and cross section
- Overall cable diameter
- Insulator, composite (72.5 kV)
- Insulator, porcelain (52 or 84 kV)
- Top bolt with bolt connection as standard

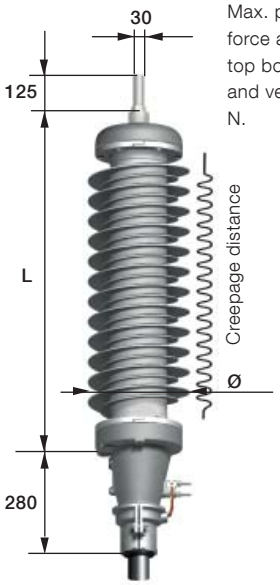


APED 843 B | APED 722 P | APED 521 B

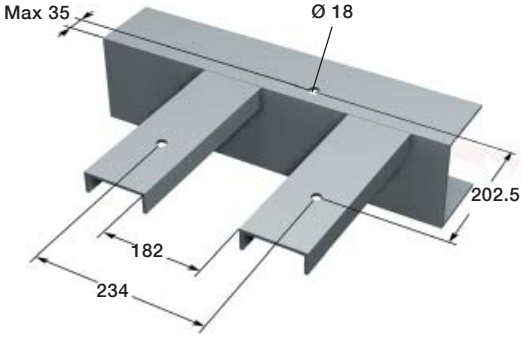


Voltage	Insulation diameter		Cable overall dimeter	Max conductor cross section
U_m	min	max	max Ø	
kV	mm		mm	mm²
52, 72.5, 84	25	66	85	1200

Technical specification and accessories
APED 52–84 kV

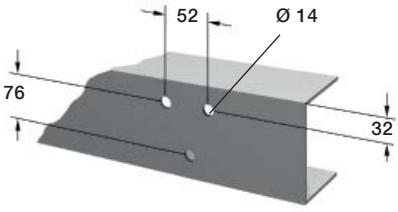


Max. permissible force acting on the top bolt, horizontally and vertically: 2000 N.



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

Dimensions in mm

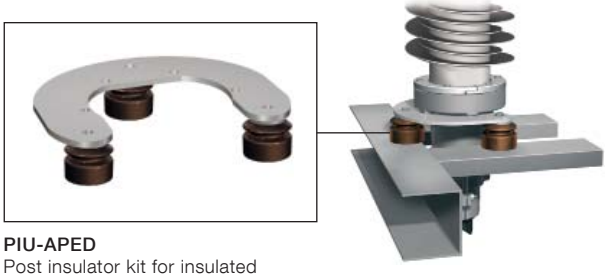


Attachment to beam
Three 14 mm hole for M10 bolts.

Inclination up to 30°.

GAP-APED
Rod gap.

Accessories, to be ordered separately



PIU-APED
Post insulator kit for insulated screen/Sheath installation.

Designation	Description	Use
GAP-APED	Rod gap	Over-voltage protection
PIU-APED	Post insulator kit	Insulated screen/sheath installation

Designation	Description	See page
JSA*	Earthing kit for cable with metallic sheath, e.g. lead. Not needed if cable has only Cu-wire screen.	2/30
SCK*	Screen connection for Al-foil (APL) radial waterproof cable. Not needed if cable has only Cu-wire screen.	2/30

* NB: if earthing kit is required, this increases the cable outer diameter Ø by 20 mm.

There are two versions of insulators for APED 52–84 kV:

- 72 kV with suffix P: Composite insulator with grey silicone rubber sheds and a fiberglass reinforced epoxy resin hollow core. Light-weight and less sensibility for outer damages.
- 52 and 84 kV with suffix B: Brown porcelain in classic design.

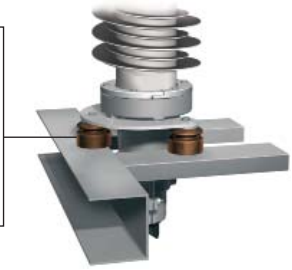
Voltage U_m	Insulator	Designation	Creepage distance	Dimensions		Net weight
			min	L	Ø	
kV			mm	mm		kg/item
72	Composite	APED 722 P	2330	950	270	33
52	Porcelain	APED 521 B	1340	645	267	48
84	Porcelain	APED 843 B	2635	1040	267	67

Applications and accessories
APED 52–84 kV

Inclination up to 30°.

GAP-APED
Rod gap.

Accessories, to be ordered separately



PIU-APED
Post insulator kit for insulated screen/Sheath installation.

Designation	Description	Use
GAP-APED	Rod gap	Over-voltage protection.
PIU-APED	Post insulator kit	Insulated screen/sheath installation.

Designation	Description	See page
JSA*	Earthing kit for cable with metallic sheath, e.g. lead. Not needed if cable has only Cu-wire screen.	2/30
SCK*	Screen connection for Al-foil (APL) radial waterproof cable. Not needed if cable has only Cu-wire screen.	2/30

* NB: if earthing kit is required, this increases the cable outer diameter Ø by 20 mm.

Outdoor flexible cable termination
APSEA 52–72 kV

Use
Flexible cable termination, suitable for outdoor and indoor installations in which the termination can be installed in any direction. The termination is supported mechanically by the conductor at the top.

Standard
Meets the requirements of:
– IEC 60840

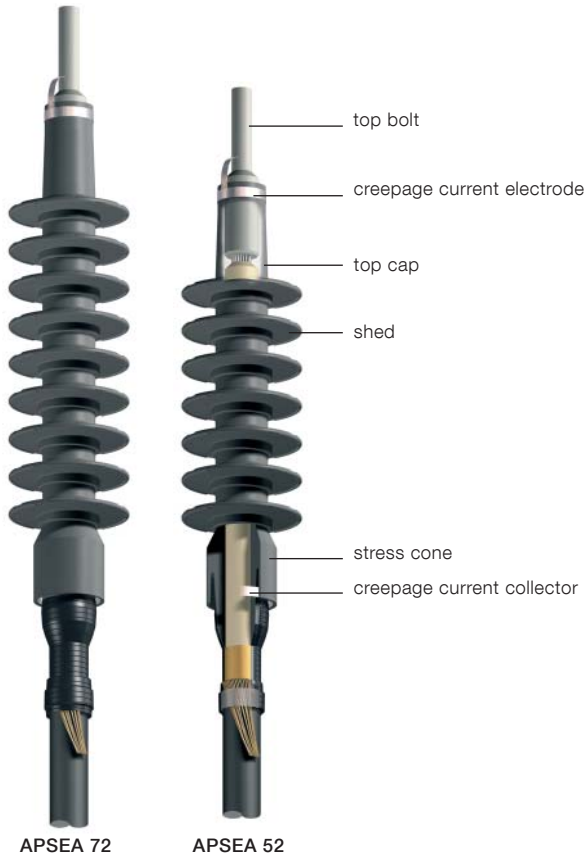
Design
The cable termination is made up of premolded rubber modules comprising a field controlling stress cone, sheds and a top cap.

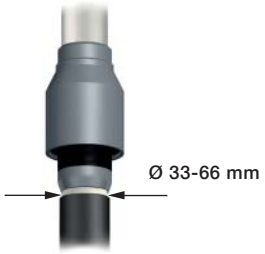
The modules are made of proven weather and leakage current resistant rubber. Suitable for prepared cable insulation diameters from 33 mm to 66 mm.

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

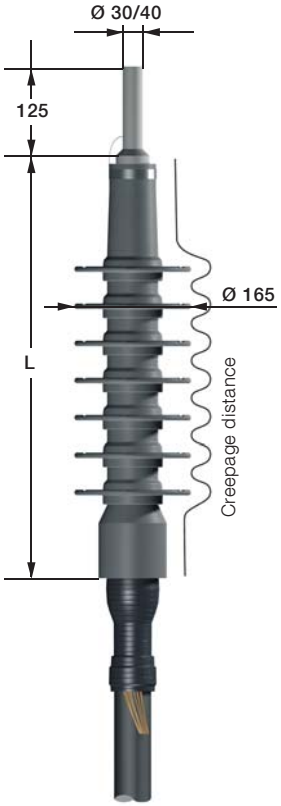
The following cable data should be stated when ordering, see page 5/1:
– Voltage
– Diameter over prepared insulation
– Conductor cross section
– Conductor material copper or aluminium
– Screen, sheath design and cross section
– Overall cable diameter

Note:
Top bolt or cable lug is to be ordered separately, see following pages.





Technical specification and applications
APSEA 52–72 kV



Voltage level	Prepared insulation Ø	Designation	Top cap type	Minimum creepage distance	Length L	Net weight
kV	mm			mm	mm	kg/item
52	33–36	APSEA 521 U	THS	1150	580	4
52	36–39.5	APSEA 522 U	THS	1150	580	4
52	39.5–43	APSEA 523 U	THS	1150	580	4
52	43–48	APSEA 524 U	THS	1150	580	4
52	48–54	APSEA 525 U	THSA	1150	580	4
52	54–60	APSEA 526 U	THSA	1250	650	4
52	60–66	APSEA 527 U	THSA	1250	650	4
72	33–36	APSEA 721 U	THS	1420	690	5
72	36–39.5	APSEA 722 U	THS	1420	690	5
72	39.5–43	APSEA 723 U	THS	1420	690	5
72	43–48	APSEA 724 U	THS	1420	690	5
72	48–54	APSEA 725 U	THSA	1790	870	5
72	54–60	APSEA 726 U	THSA	1790	870	5
72	60–66	APSEA 727 U	THSA	1790	870	5

Extension kits

Designation	Extra creepage distance per kit	Extension kit
	mm	Item number
APSEA 521 U / 721 U	~ 290	6235.0163*
APSEA 522 U / 722 U	~ 290	6235.0164*
APSEA 523 U / 723 U	~ 290	6235.0165*
APSEA 524 U / 724 U	~ 290	6235.0166*
APSEA 525 U / 725 U	~ 135	6235.0167**
APSEA 526 U / 726 U	~ 135	6235.0168**
APSEA 527 U / 727 U	~ 135	6235.0169**

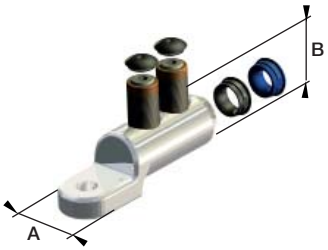
* The kit consists of 2 sheds and 1 adapter.
** The kit consists of 1 shed only.

Can be installed in any direction.

Accessories, to be ordered separately
APSEA 52–72 kV

Cable lugs and top bolts are supplied by the piece.

A/K-TBF SKR
Top bolt. Torque 45 Nm.



SCL-B
Bolt cable lug.

Top bolts and cable lugs

Description	Cable conductor material	Designation	Cable cross section	Diameter		Net weight
				A	B	
			mm²	mm		kg/item
Top bolt	Al	A-TBF 30 120 SKR	120	30	45	0.5
Top bolt	Al	A-TBF 30 185 SKR	150, 185	30	45	0.5
Top bolt	Al	A-TBF 30 240 SKR	240	30	50	0.8
Top bolt	Al	A-TBF 30 400 SKR	300, 400	30	55	0.8
Top bolt	Al	A-TBF 30 500 SKR	500	30	60	0.9
Top bolt	Al	A-TBF 30 630 SKR	630	30	60	0.9
Top bolt	Al	A-TBF 40 800 SKR	800	40	65	1.2
Top bolt	Al	A-TBF 40 1000 SKR	1000	40	65	1.2
Top bolt	Al	A-TBF 40 1200 SKR	1200	40	65	1.1
Top bolt	Cu	K-TBF 30 120 SKR	120	30	45	1.6
Top bolt	Cu	K-TBF 30 185 SKR	150, 185	30	45	1.6
Top bolt	Cu	K-TBF 30 240 SKR	240	30	50	2.4
Top bolt	Cu	K-TBF 30 400 SKR	300, 400	30	55	2.4
Top bolt	Cu	K-TBF 30 500 SKR	500	30	60	2.8
Top bolt	Cu	K-TBF 30 630 SKR	630	30	60	2.8
Top bolt	Cu	K-TBF 40 800 SKR	800	40	65	4.0
Top bolt	Cu	K-TBF 40 1000 SKR	1000	40	65	3.8
Top bolt	Cu	K-TBF 40 1200 SKR	1200	40	65	3.5
Cable lug	Al/Cu	SCL-B 95-12	10–95	24	24	0.10
Cable lug	Al/Cu	SCL-B 150-12	25–150	28	28	0.25
Cable lug	Al/Cu	SCL-B 240-12	50–240	33	33	0.30
Cable lug	Al/Cu	SCL-B 300-16	70–300	38	38	0.35
Cable lug	Al/Cu	SCL-B 630-16	300–630	50	52	0.90

Other accessories

UKR 90
Universal cleat 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.

Description	Use	See page
UKR 90	For fixing cables.	–
JSA 1*	Earthing kit for cable with metallic sheath, e.g. lead. Not needed if cable has only Cu-wire screen.	2/30
SCK 2*	Screen connection for Al-foil (APL) radial waterproof cable. Not needed if cable has only Cu-wire screen.	2/30

* NB: if earthing kit is required, this increases the cable outer diameter Ø by 20 mm.

Outdoor cable termination
APECB 84–420 kV

Use
For installations in which the termination is to be used as a fixed connection point.

Standard
Meets the requirements of:
- IEC 60840, ≤ 170 kV
- IEC 62067, 245–420 kV
- IEEE 48

Design
The cable termination consists of an insulator installed on a box body made of aluminium castings. The box body consists partly of insulating material, which provides an insulated installation. The base part is to be installed on a bracket. For 420 kV a corona shield and a post-insulator kit PIU 420 B/G are included.

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

The composite insulator design includes grey silicone rubber sheds and a fiberglass reinforced epoxy resin hollow core. It is light-weight and less sensitive for outer damages.

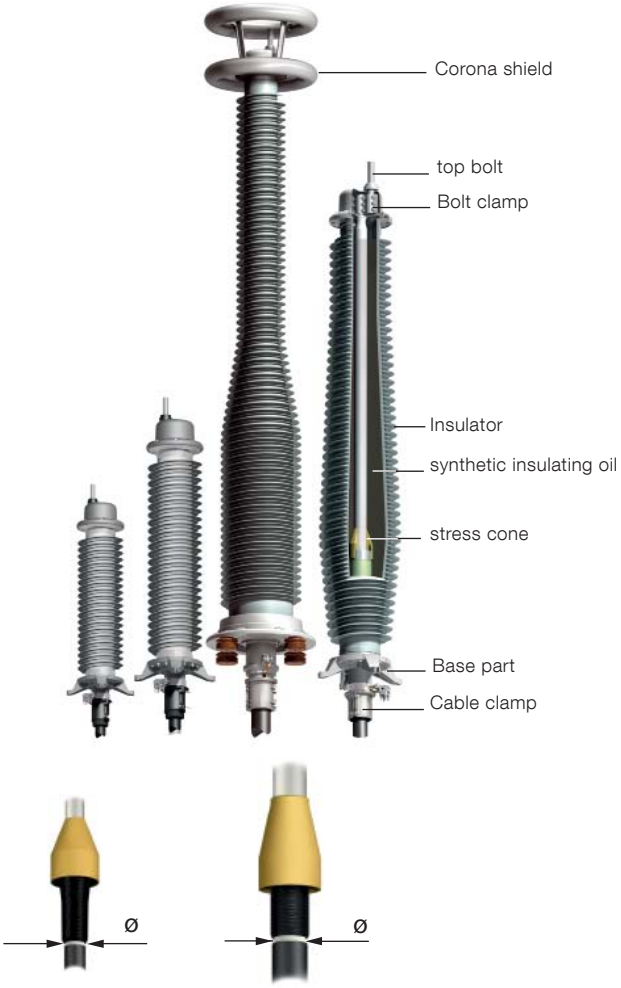
The porcelain insulators are available in brown on request.

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.

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

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, see page 5/1:
- Voltage
- Diameter over prepared insulation
- Conductor cross section and diameter
- Screen, sheath design and cross section
- Overall cable diameter
- Optical fibres integrated in screen
- Diameter and material of the top bolt, copper or aluminium

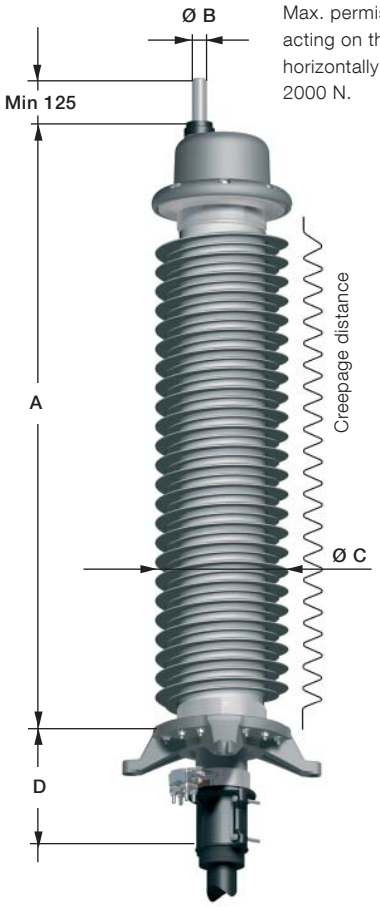


APECB 84
APECB 145
APECB 170

APECB 245
APECB 300
APECB 420

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

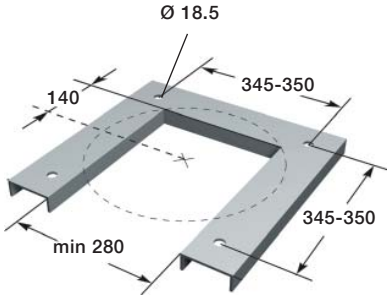
Technical specification
APECB 84–420 kV



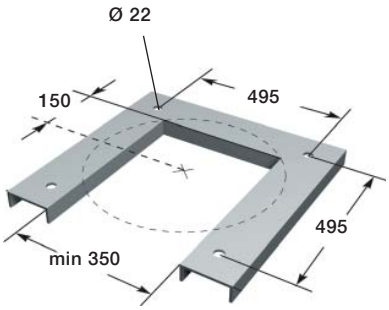
Max. permissible forces acting on the top bolt, horizontally and vertically: 2000 N.

Dimensions in mm

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



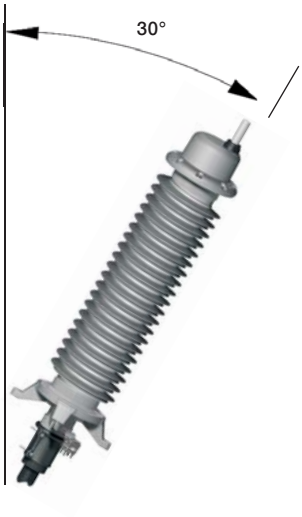
Fixing to bracket for 420 kV
Non-insulated: four 18 mm holes for M16 bolts.
Insulated: four 22 mm holes for M20 bolts.



Voltage	Insulator	Designation*	Dimensions				Creepage distance	Net weight
			A	ØB	ØC	D	min	
kV			mm				mm	kg/item
84	Composite	APECB 841 P	1320	40/50/54/60	359	235	2820	100
145	Composite	APECB 1452 P	1620	40/50/54/60	359	235	3750	105
170	Composite	APECB 1703 P	1820	40/50/54/60	359	235	4500	110
170	Composite	APECB 1704 P	2140	40/50/54/60	359	235	5950	120
170	Composite	APECB 1705 P	2720	40/50/54/60	359	235	8000	135
245	Composite	APECB 2456 P	3030	40/50/54/60	490	235	9360	290
300	Composite	APECB 3006 P	3030	40/50/54/60	490	235	9360	290
420	Composite	APECB 4201 P	4600	40/50/54/60	600	395	14900	600

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

Applications and accessories
APECB 84–420 kV



Inclination up to 30°.

GAP-APECB
Rod gap.

PIU 420 B/G
Post insulator kit for fixing APECB 420 kV when insulated installation. Included in the kit.

Accessories, to be ordered separately

OKT
Optical fiber kit for cables with integrated optical fibers in the earth screen.

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

Designation	Description
GAP-APECB	Rod gap for protection against overvoltage 84-170 kV
PIU-APEC	Post-insulator kit for fixing APECB 420 kV for insulated installation
OKT	Optical fiber kit for integrated optical fibers in the screen of the cable 84–420 kV
SV 140	Installation tool for stress cone, SKG for cable termination APECB 84–170
SV 190	Installation tool for stress cone, SKGB for cable termination APECB 245–300
SV 215	Installation tool for stress cone, SKGE for cable termination APECB 420

Designation	Description	See page
JSA*	Earthing kit for cable with metallic sheath, e.g. lead. Not needed if cable has only Cu-wire screen.	2/30
SCK*	Screen connection for Al-foil (APL)radial waterproof cable. Not needed if cable has only Cu-wire screen.	2/30

* NB: if earthing kit is required, this increases the cable outer diameter Ø by 20 mm.

Earthing kits for cable terminations
JSA, SCK

The earthing kit connects the screen/sheath of the cable to the termination and bonding leads if applicable. 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:

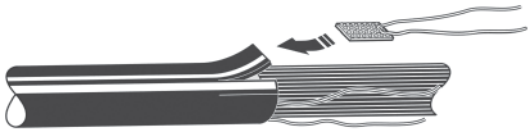
- Aluminium: use JSA 1 Al
- Copper: use JSA 1 Pb
- Stainless steel: contact us.

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

Copper wire screen only.

No earthing kit is needed.

Copper wire screen and metal-PE laminate.



Use kit SCK 2.

Metal-sheathed cable with or without screen.

Use kit JSA 1.

Cable with copper tape screen and cable with armouring.

Contact us.

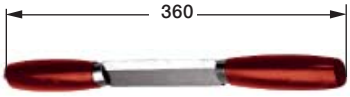
Diameter over outer sheath	Designation	No. of contact plates per kit	Total copper equivalent cross section in earthing kit	No. of copper braids	For cables with
mm			mm²		
40–120*	JSA 1 Al	–	130	6	Corrugated aluminium
120–150*	JSA 1 Al 10	–	220	10	Corrugated aluminium
150–200*	JSA 1 Al 15	–	330	15	Corrugated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

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

Tools
All dimensions in mm

Dimensions in mm

RKM 670
Cable knife, 30 mm blade.

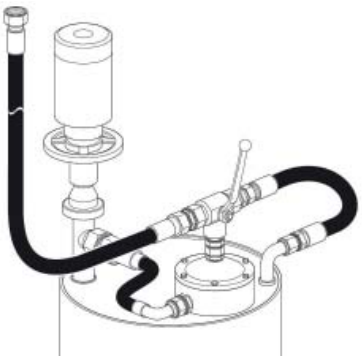


RKM 672
Sheath removing knife, with two handles, for XLPE-insulated cable.

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 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.

RKM-PM
Oil filling equipment (30 litres).

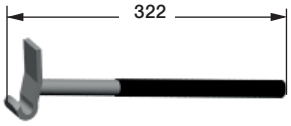


RKM-OFK
Oil filling equipment (60–200 liters barrel).

Designation	Description
RKM 670	Cable knife
RKM 672	Sheath removing knife
730 R	Torque wrench 6–50 Nm
RKM 130	Torque wrench 25–130 Nm
RKM-PM	Manual oil filling equipment
RKM-OFK	Oil filling equipment

Tools
All dimensions in mm

Dimensions in mm



MB 1
Tool for opening cable sheaths.

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

SH 50, SH 80, SH 130
Tool for peeling and stipping XLPE-insulation and for removing outer conductive layer. The tool is available in three sizes depending on the diameter of the cable insulation in the cable as table below.

FK-SH 50, 80, 130
Spare blades to SH 50, SH 80 and SH 130 for peeling of cable insulation of cables.

IK-SH 50, 80, 130
Spare stripping blades to SH 50, SH 80 and SH 130 for stripping XLPE-insulation of cables.

SLK-SH 50, SLK-SH 80, SLK-SH 130
Slot knife for peeling and stripping tool SH. Used for tailoring slot in the cable insulation of the cable. Suitable for plug-in termination CD 145.

BSL-SH 130
Base plate for slot knife SLK-SH 130 and stripping blade IK-SH 130.

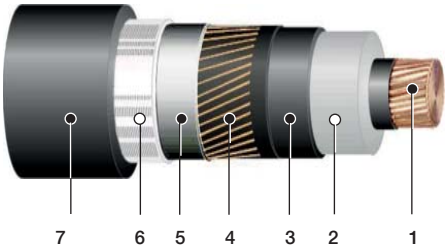
Designation	Description	Quantity per kit
MB 1	Cable sheath breaker	2
SV 140	Installation tool for stress cone, SKG for cable termination APECB 84–170 and APEGA 170	1
SV 190	Installation tool for stress cone, SKGB for cable termination APECB 245–300 and APEGA 245–300	1
SV 215	Installation tool for stress cone, SKGE for cable termination APECB 420 and APEGA 420	1
SH 50	XLPE-shaver, SH 50 for cable insulation 15–50 mm Ø	1
SH 80	XLPE-shaver, SH 80 for cable insulation 40–80 mm Ø	1
SH 130	XLPE-shaver, SH 130 for cable insulation 70–130 mm Ø	1
IK-SH 50, 80, 130	Spare blade for removing XLPE-insulation in SH 50, 80, 130	1
FK-SH 50, 80, 130	Spare blade for peeling XLPE-insulation in SH 50, 80, 130	1
SLK-SH 50, 80, 130	Slot knife for XLPE-shaver SH	1
BSL-SH 130	Base plate for slot knife SLK-SH	1

List of content
Alphabetical order

3

List of content
by category

Data sheet when selecting cable accessories
Request for quotation template



Cable type

5

Electrical data	**U_0** ---------- kV	**U** ---------- kV	**U_m** ---------- kV	
1. Conductor	☐ **Al**	☐ **Cu**		
Cross section	---------- mm^2			
Diameter	---------- mm			
2. Insulation				
Type	☐ XLPE	☐ EPR		
	☐ Circular compacted	☐ Segmented (Milliken)	☐ Other	
Diameter	min ---------- mm	max ---------- mm		
Thickness	---------- mm			
3. Insulation screen (conductive layer)				
Thickness	---------- mm			
Diameter	---------- mm			
4. Screen / metallic sheath				
Cross section ---------- mm^2	Thickness ---------- mm	Diameter ---------- mm		
Material	☐ Copper wire	☐ Copper tape	☐ Lead sheath	
	☐ Al-corrugated sheath	☐ Cu-corrugated sheath	☐ Stainless steel	
FIMT (Fibre In Metallic Tube)	☐ No	☐ Yes ----------	number of tubes	
5. Laminated sheath	☐ No	☐ Yes		
Material	☐ Al	☐ Cu		
Thickness	---------- mm			
Diameter	---------- mm			
6. Armouring	☐ No	☐ Yes	☐ Aluminium	☐ Steel
Material / dimensions	☐ Round wire	No. of wires ----------	Wires diameter ----------	mm
	☐ Flat wire	No. of wires ----------	Wires cross section ----------	mm^2
	☐ Tape	Diameter ---------- mm		
7. Oversheath	Overall diameter ---------- mm			
	Material ----------			

Reference pictures















6

Notes

Contact us

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