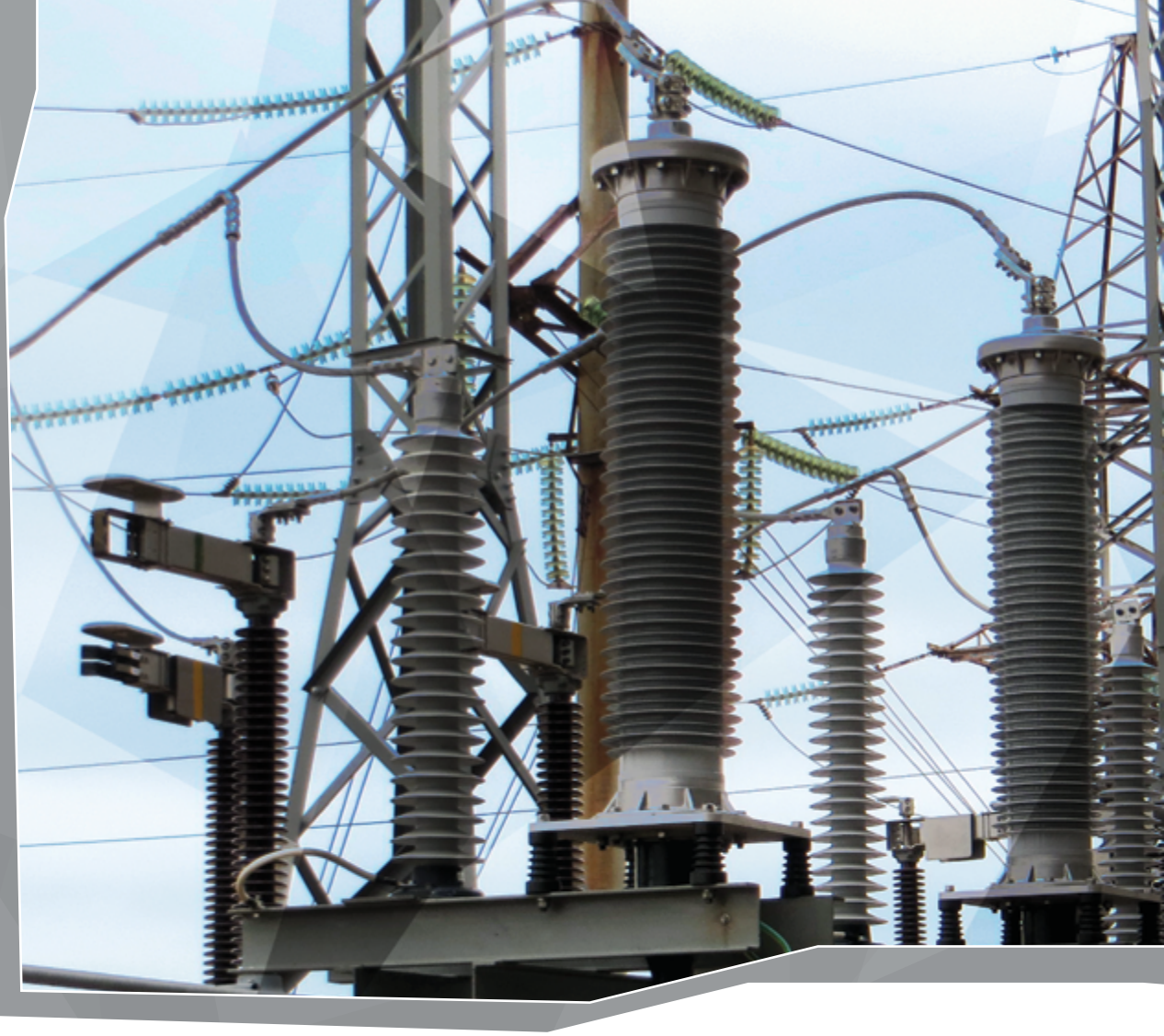
Arkasil



CABLE ACCESSORIES

72-252 kV

www.arkasil.com

Arkasil

HISTORY OF THE COMPANY

The company Arkasil SK LLC was founded in 2010. Starting production of terminations and joints 110 kV in 2011, nowadays we offer a wide range of cable accessories including GIS plug-in terminations for 72-252 kV.

MAIN INFORMATION

Arkasil is the first and the only Russian company offering owned-produced accessories for 72-252 kV XLPE cables. Applicable innovation design methods and more than 10-years experience of our employees in delivery, mounting and tests of HV and EHV cables and cable accessories make Arkasil the leader in the domestic market. Dynamic development of the company, optimization of technological processes and flexible pricing policy allow us to set ambitious objectives and be a serious competitor to international producers of cable accessories world-wide.

Aspiring to leading positions in the market of the cable accessories producers, our company pays much attention to development of new products. As a result of innovation Arkasil has launched different types of accessories for different voltage classes within 8 years.The company continuously carries out different tests of new products for proving of engineering decisions, quality of materials and production processes.

Manufacturing of high-quality products that meet modern standards, satisfying customer needs is our priority. That's why we co-operate only with the leading international and domestic producers of insulation materials and components. Quality management system is developed and implemented in the company in accordance with ISO:9001 requirements. Continuous control of material quality, production processes and complete production control during routine tests ensure our customers the compliance of our products with the stated specification and requirements of international and local standards.

The key factor of company innovative development is the involvement of all employees. The implemented system of continuous improvements ensures the increase of the quality of our products and optimization of production processes.

Due to individual approach to the assigned tasks, flexibility with the customers, strict fulfillment of contractual obligations our company managed to take an essential part of the Russian market. On customers' demands Arkasil develops and implements individual solution for construction of cable lines. Own design department enables us to implement the most sophisticated projects in the shortest possible time taking into account their unique features.

Together with assurance of our products quality we pay much attention to environment and energy efficiency issues. Environment management system is implemented and applied in the company in accordance with ISO 14001:2004.

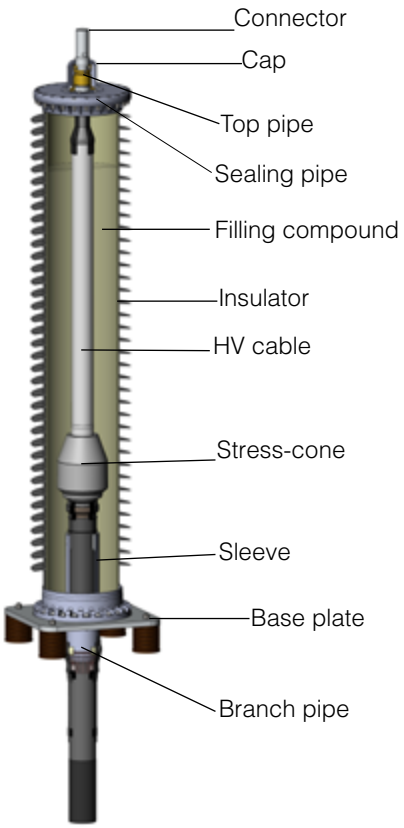
LIST OF CONTENT

Outdoor terminations MKB 72,5, MKB 126, MKB 145, MKB 170, MKB 252

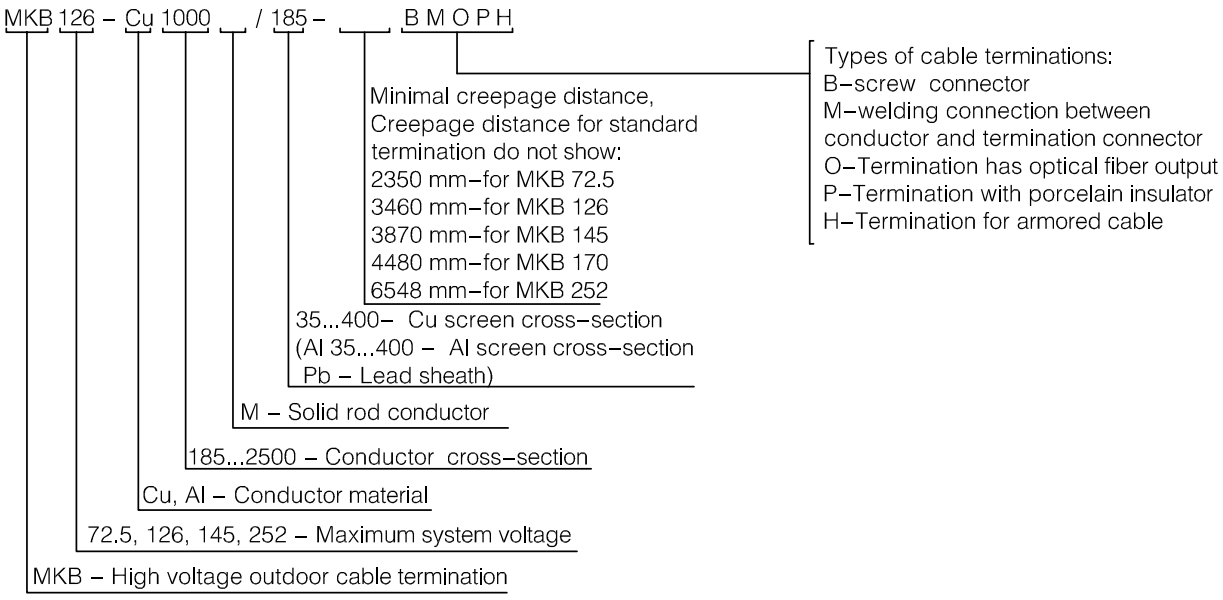
Arkasil terminations 72-252 kV with composite type or porcelain insulator are used for cable lines connection with power-supply systems. Terminations are used for outdoor and indoor installation for XLPE cables 36/60, 64/110, 76/132, 87/150 kV,127/220 kV (conductor cross-section 95-2500 mm^2).Terminations can be installed on XLPE cable with optical fibers (OF) in the screen which are used for temperature monitoring.

Main parts

- composite type insulator with glass fiber, reinforced epoxy resin tube and silicone rubber sheds, the color of sheds - light gray; top and bottom flanges glued and sealed to the composite insulator. Porcelain insulator as an option.
- pre-molded and factory-tested silicone stress cone;
- base plate;
- branch pipe with flange;
- supporting insulators;
- seals and fixing materials;
- polybuthene as an insulating compound;
- optical fiber output for connection to equipment (option).



Marking of high-voltage cable terminations



Area of application

Type		MKB 72,5	MKB 126	MKB 145	MKB 170	MKB 252
Phase voltage	kV	36	64	76	87	127
Line voltage	kV	60	110	132	150	220
Maximum system voltage	kV	72,5	126	145	170	252
Cable conductor cross-section range	mm^2	95 ÷ 1600	185 ÷ 2000	185 ÷ 2500	185÷ 2500	400÷2500
Maximum cable sheath diameter	mm	115	130	130	130	130
Maximum cable insulation diameter	mm	75	93	93	95	110

Installation options	MKB 72,5	MKB 126	MKB 145	MKB 170	MKB 252
On framework	+	+	+	+	+
On tower of overhead line	+	+	+	+	+
Max angle to vertical	45°	45°	45°	30°	30°

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

Technical data

Electrical parameters	MKB 72,5	MKB 126	MKB 145	MKB 170	MKB 252
AC voltage withstand test	90 kV for 30 min	160 kV for 30 min	190 kV for 30 min	218 kV for 30 min	318 kV for 30 min
Partial discharges	<5 pC at 54 kV	<5 pC at 96 kV	<5 pC at 114 kV	<5 pC at 131 kV	<5 pC at 190 kV
Impulse voltage (10+/10- impulses)	325 kV	550 kV	650 kV	750 kV	1050 kV

Climatic characteristics	MKB 72,5	MKB 126	MKB 145	MKB 170	MKB 252
Operation temperature	-45/+50°C	-45/+50°C	-45/+50°C	-45/+50°C	-45/+50°C

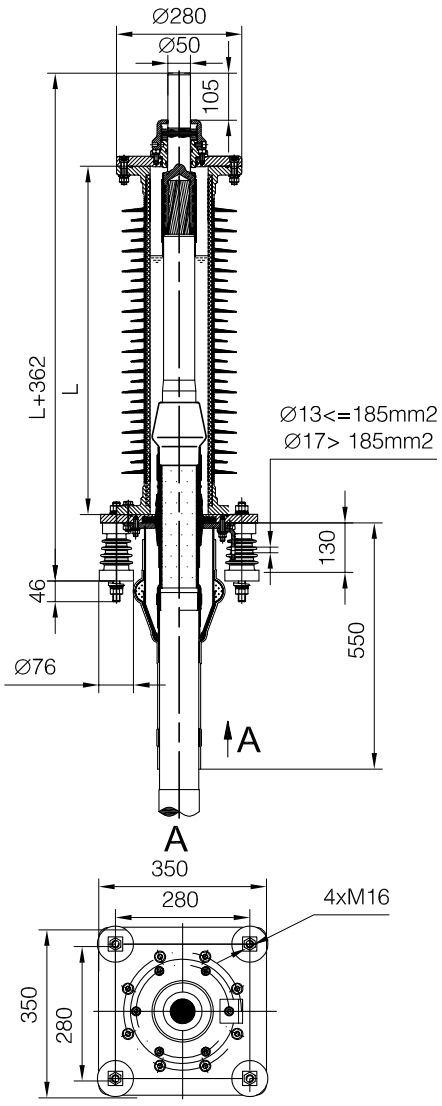
Nominal operating current	Limited by cable specification

Stress cone routine tests	MKB 72,5	MKB 126	MKB 145	MKB 170	MKB 252
AC voltage withstand test	90 kV for 30 min	160 kV for 30 min	190 kV for 30 min	218 kV for 30 min	318 kV for 30 min
Partial discharges	<5pC at 54 kV	<5pC at 96 kV	<5pC at 114 kV	<5 pC at 131 kV	<5pC at 190 kV

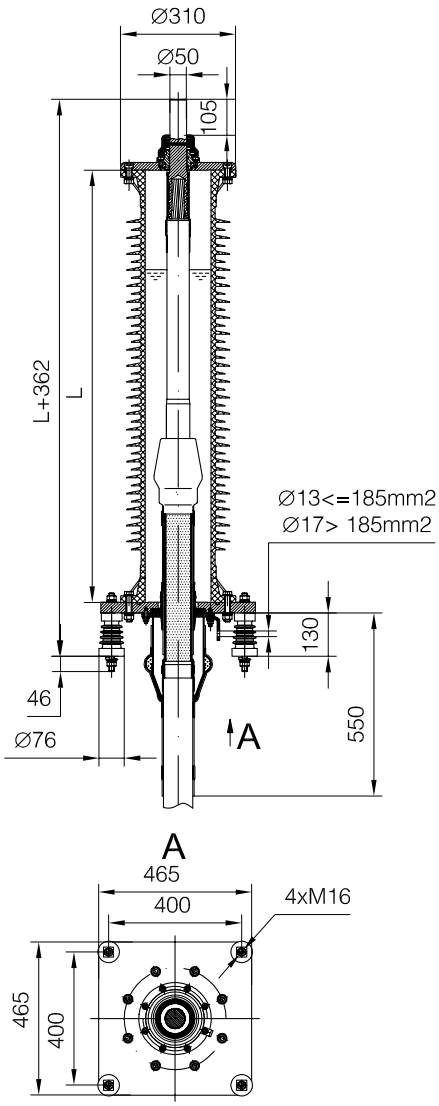
Technical parameters		MKB 72,5		MKB 126				MKB 145			MKB 170			MKB 252			
Hollow insulator type		comp.	porc.	comp.		porc.		comp.		porc.	comp.		porc.	composit		porc.	
Termination length (L)	mm	770	778	1240	1240	1280	1280	1365	1390	1450	1552	1590	1640	2400	2400	2300	2300
Creepage distance	mm	2350	3695	3460	4025	3200	3905	3870	4605	4495	4480	5370	5270	6548	8163	6300	7812
Pollution level in accordance with IEC 60815		IV	IV	III	IV	III	IV	III	IV	IV	III	IV	IV	III	IV	III	IV
Volume of compound	l	6	6	28	28	30	30	31	32	35	36	37	40	147	147	150	150
Net weight	kg	50	98	115	117	332	362	121	124	362	130	153	690	306	313	690	770
Maximum allowed load on top connector	kN	4	4	3,5	3,5	2,8	2,8	3,2	3,2	2,8	2,7	2,2	5	5	5	5	5

Drawings

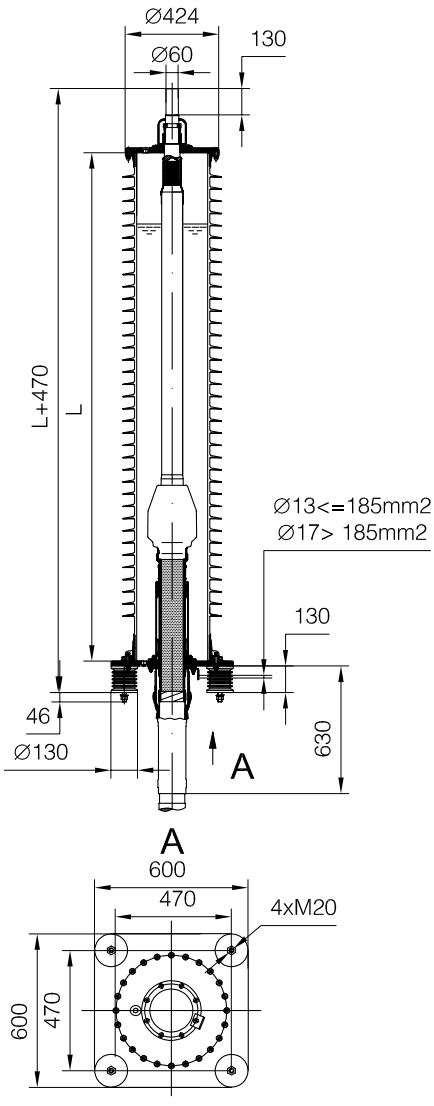
MKB 72,5



MKB 126 / 145 / 170



MKB 252



Cable termination MKBC 126, MKBC 145

Arkasil dry type cable terminations 126-145 kV are designed for connection of HV cable lines with overhead lines or substation equipment. Dry type terminations are suitable for indoor and outdoor installation with HV XLPE cables 64/110, 76/132 kV with conductor cross-section range of 185-1600 mm^2. Terminations for XLPE cable with optical fibers (OF) which are used for temperature monitoring are optionally available.

Main parts

Insulator:

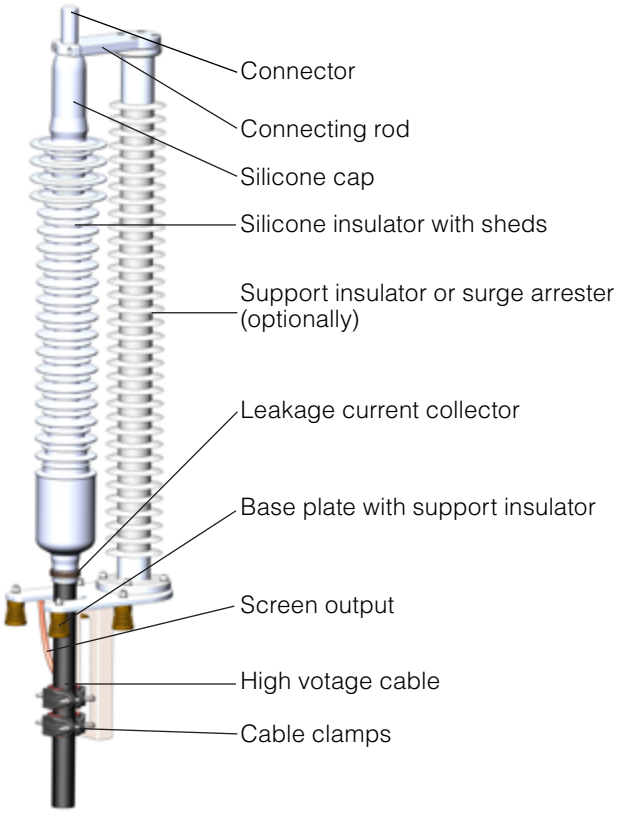
- Premoulded and factory tested silicone rubber insulator with sheds;
- Leakage current collector.

Cable end:

- Conductor connector;
- Bottom plate;
- Support insulators;
- Earthling output;
- Optical fiber output (optional).

Support:

- Composite type support insulator with solid glass fiber rod and silicone rubber sheds;
- Composite type support surge arrester with silicone rubber sheds.



Marking of outdoor dry type terminations

MKBC 126 – Cu 1000 ___ / 185 – ___ B M O P H

- MKBC – High voltage dry outdoor cable termination
- 126,145 – Maximum system voltage
- Cu, Al – Conductor material
- 185...2000 – Conductor cross–section
- M – Solid rod conductor
- 35...400– Cu screen cross–section (Al 35...400 – Al screen cross–section Pb – Lead sheath)
- Minimal creepage distance.
- Types of cable terminations:
  B–screw connector
  M–welding connection between conductor and termination connector
  O–Termination has optical fiber output
  P–Termination with surge arrester
  H–Termination without support

Area of application

Type		MKBC 126	MKBC 145
Phase voltage	kV	64	76
Line voltage	kV	110	132
Maximum system voltage	kV	126	145
Cable conductor cross-section	mm^2	185 ÷ 1600	
Maximum cable overall diameter, mm	mm	125	
Maximum cable insulation diameter	mm	91	
Installation options		MKBC 126	MKBC 145
On framework or tower of OHL		+	+
On high voltage busbar		+	+
Maximum angle to vertical		0..90°	0..90°

Technical data

Electrical parameters	MKBC 126	MKBC 145
Phase voltage	160 kV for 30 min	190 kV for 30 min
Partial discharges	< 5 pC at 96 kV	< 5 pC at 114 kV
Impulse withstand voltage (10+/10- impulses)	550 kV	650 kV

Climatic characteristics	MKBC 126	MKBC 145
Operation temperature	-45 +50°C	-45 +50°C

Nominal operating current	Limited by cable specification

Stress cone routine test	MKBC 126	MKBC 145
AC voltage withstand test	160 kV for 30 min	190 kV for 30 min
Partial discharges	< 5 pC at 96 kV	< 5 pC at 114 kV

Technical parameters	MKBC 126	MKBC 145
Pollution level according to IEC 60815	IV	IV
Maximum allowed load on top connector	1 kN	

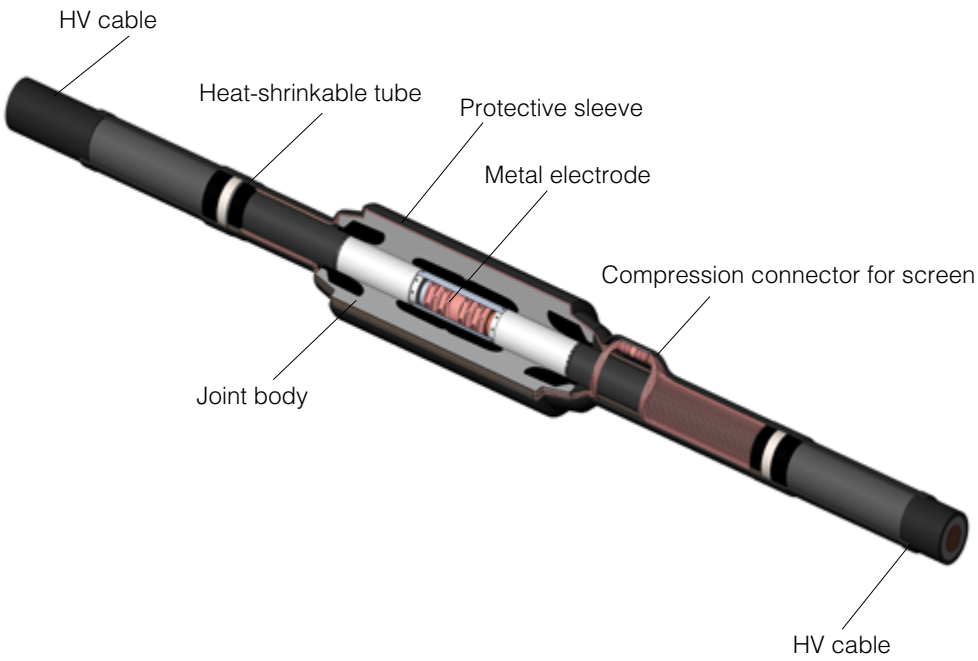
Straight joints MCB 72,5, MCB 126, MCB 145, MCB 170, MCB 252

Arkasil straight joints 72-252 kV are prefabricated silicone joints, designed to connect high-voltage cables 60/110/132/150/220 kV with XLPE insulation (conductor cross-section 95-2500 mm^2) with direct connection of wire screens. Factory produced and tested silicone joint-body is the main element of the joint. Joint body is made of high quality silicone rubber (LSR) and contains conductive deflectors and middle electrode for electrical stress control. Straight joints can be produced with different outer covering.

Main parts

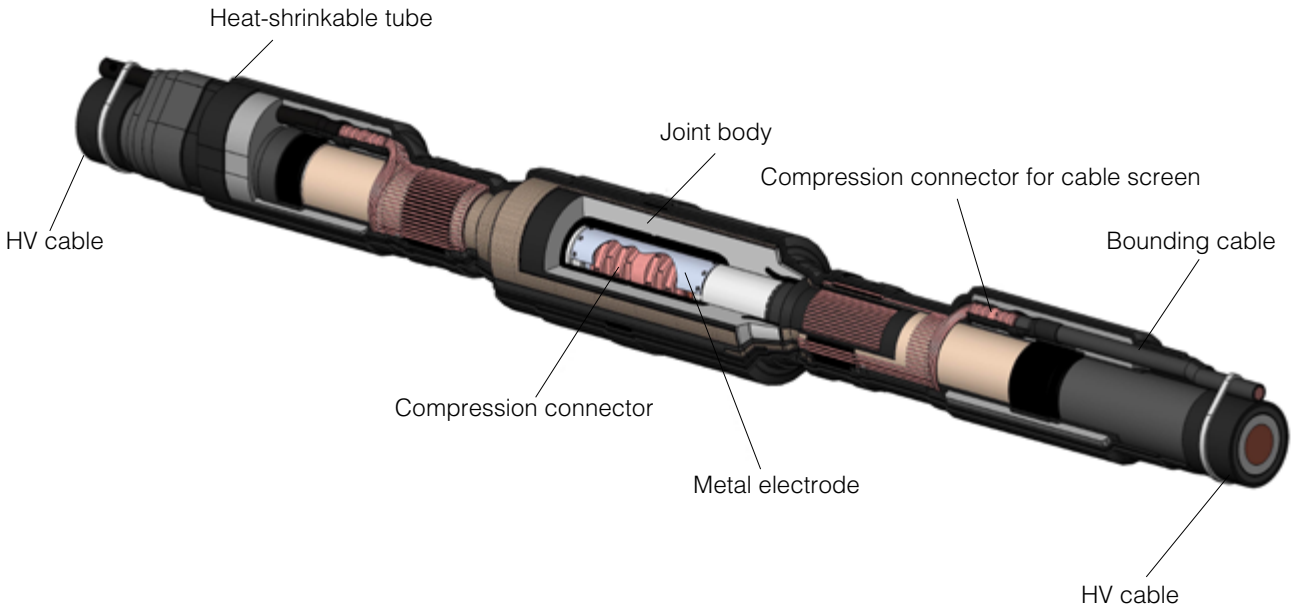
- screw connector or compression connector;
- pre-molded silicone insulator - joint body;
- sealing materials;
- tapes (semiconductive, sealing);
- heat-shrinkable protective tubes and sleeves;
- coffin box;
- copper case.

MCB 72,5 / 126 / 145 / 170 / 252



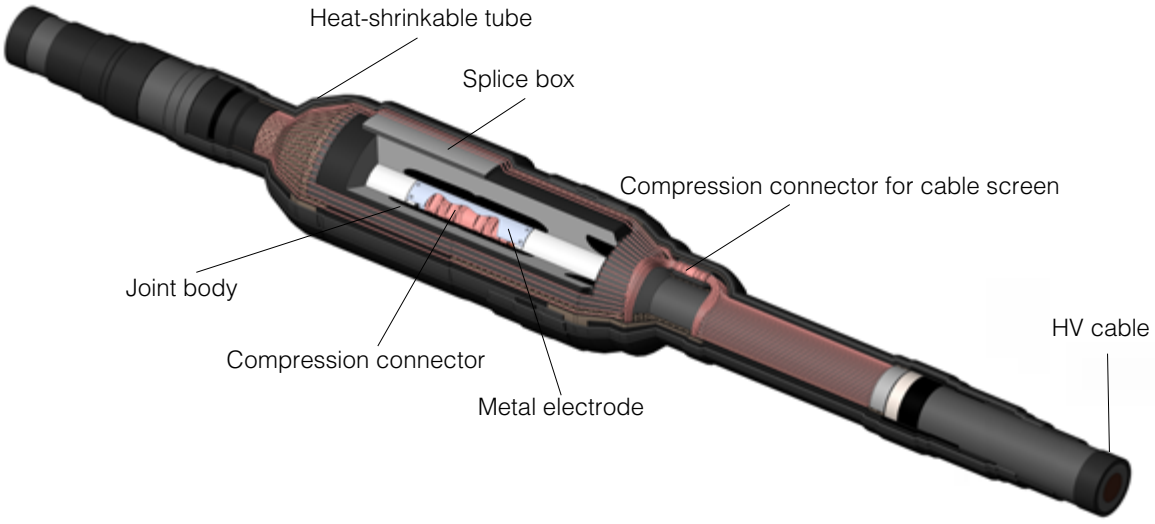
Cross-bonding joints MCB 72,5 X / 126 X / 145 X / 170 X / 252 X

Arkasil cross-bonding joints 72-252 kV are prefabricated silicone joints, designed to connect high-voltage cables 60/110/132/150/220 kV with XLPE insulation (conductor cross-section 95-2500 mm^2) with integrated screen interruption. Joint body has dielectric gap. Cable screen interruption is organized by 2 single-wire bonding cables or by one coaxial cable.



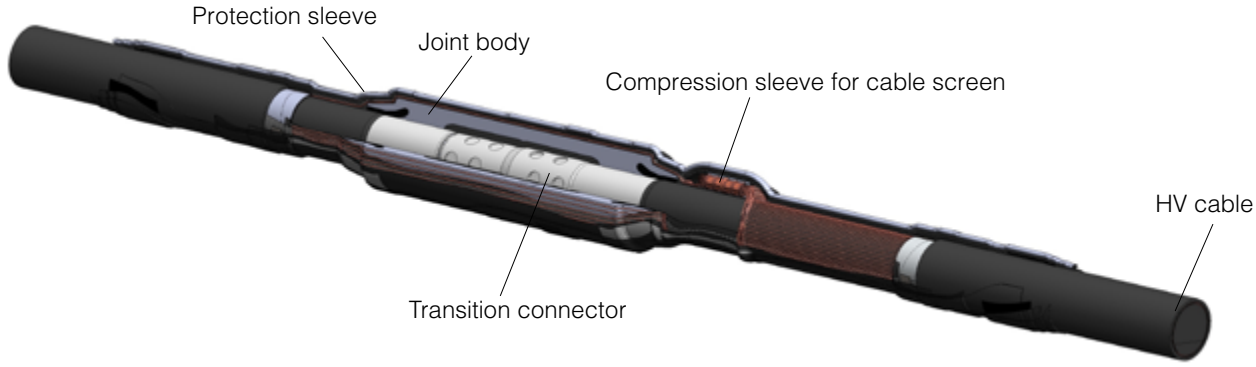
Joints with splice-box for optical fiber connection MCB 72,5 O / 126 O / 145 O / 170 O / 252 O

Arkasil joints 72-252 kV with connector (splice-box) of optical fiber integrated in screen are prefabricated silicone joints, designed to connect high-voltage cables 60/110/132/150/220 kV with XLPE insulation (conductor cross-section 95-2500 mm^2). Splice-box includes all necessary components for splicing and mechanical protection.



Transition joints MCB 72,5 T / 126 T / 145 T / 170 T / 252 T

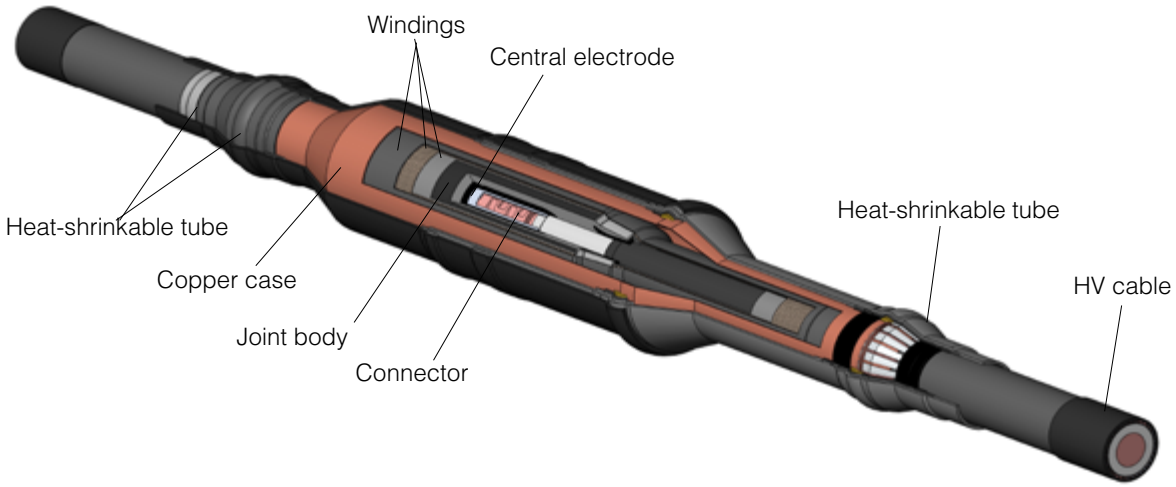
Arkasil transition joints 72-252 kV are prefabricated silicone joints, designed to connect high-voltage cables 60/110/132/150/220 kV with XLPE insulation (conductor cross-section 95-2500 mm²) with different constructions, different cross-sections of the core and screen, insulation thickness, conductor material etc. Transition joint dimensions depend on cables constructions.



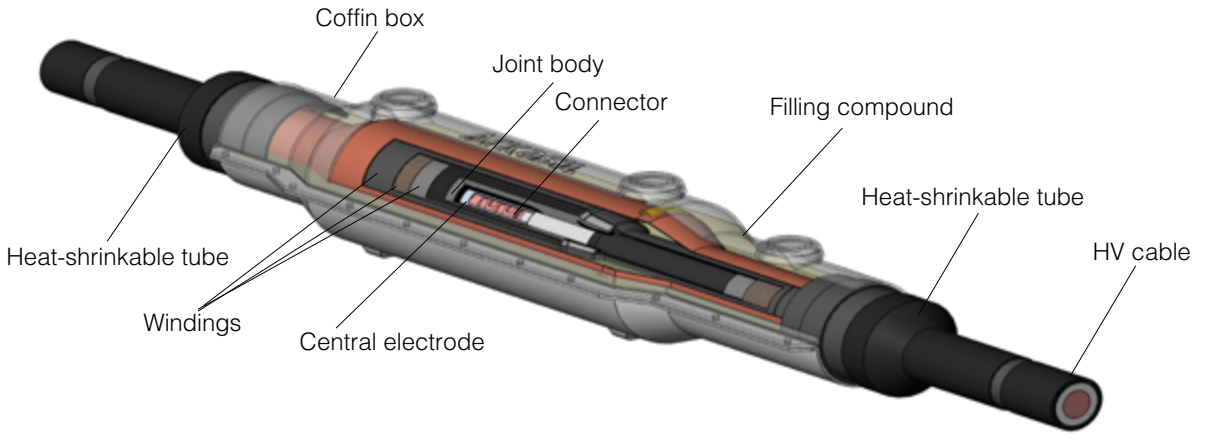
Joints with copper cases (index C) and coffin-boxes (index P) MCB 72,5 C,P(CP) / 126 C,P(CP) / 145 C,P(CP) / 170 C,P(CP) / 252 C,P(CP)

Arkasil joints with copper cases (index C) and coffin-boxes (index P) are premolded silicone joints which are used for XLPE cables connection. Cases serve for mechanical protection and additional protection against water penetration.

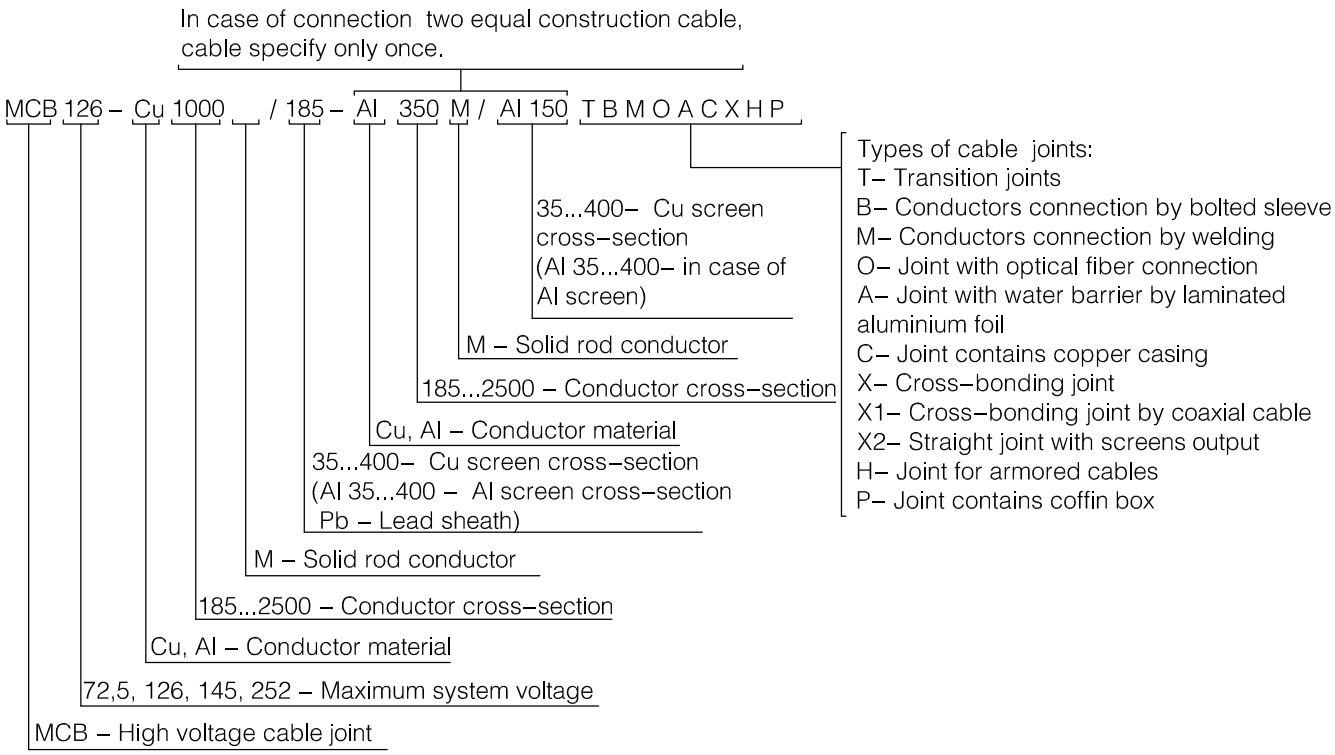
MCB 72,5 C / 126 C / 145 C /170 C / 252 C



MCB 72,5 P / 126 P / 145 P / 170 P / 252 P



Marking of high-voltage cable joints



Area of application

Type		MCB 72,5	MCB 126	MCB 145	MCB 170	MCB 252
Phase voltage	kV	36	64	76	87	127
Line voltage	kV	66	110	132	150	220
Maximum system voltage	kV	72,5	126	145	170	252
Cable conductor cross-section range	mm^2	95-1600	185 ÷ 2000	185 ÷ 2000	185 ÷ 2500	400 ÷ 2500
Maximum cable diameter	mm	120	150	150	150	150
Maximum cable insulation diameter	mm	75	93	93	110	110
Rated minimal insulation thickness	mm	8,5	10,5	14	14	20

Installation options	MCB 72,5	MCB 126	MCB 145	MCB 170	MCB 252
Underground	+	+	+	+	+
Outdoor	+	+	+	+	+
Indoor	+	+	+	+	+

Technical data

Electrical parameters	MCB 72,5	MCB 126	MCB 145	MCB 170	MCB 252
AC voltage withstand test	90 kV for 30 min	160 kV for 30 min	190 kV for 30 min	218 kV for 30 min	318 kV for 30 min
Partial discharges	<5 pC at 54 kV	<5 pC at 96 kV	<5 pC at 114 kV	<5 pC at 131 kV	<5 pC at 190 kV
Impulse voltage (10+/10- impulses)	325 kV	550 kV	650 kV	750 kV	1050 kV

Current load rating	MCB 72,5	MCB 126	MCB 145	MCB 170	MCB 252
Rated operational current	limited by cable specification	limited by cable specification	limited by cable specification	limited by cable specification	limited by cable specification
Short circuit current	limited by cable specification	limited by cable specification	limited by cable specification	limited by cable specification	limited by cable specification

Stress cone routine tests	MCB 72,5	MCB 126	MCB 145	MCB 170	MCB 252
AC voltage withstand test	90 kV for 30 min	160 kV for 30 min	190 kV for 30 min	218 kV for 30 min	318 kV for 30 min
Partial discharges	<5pC at 54 kV	<5pC at 96 kV	<5pC at 114 kV	<5 pC at 131 kV	<5pC at 190 kV

Climatic characteristics	MCB 72,5	MCB 126	MCB 145	MCB 170	MCB 252
Temperature	-45 +50°C	-45 +50°C	-45 +50°C	-45 +50°C	-45 +50°C

Cable sheath test voltage	MCB 72,5 X	MCB 126	MCB 145	MCB 170	MCB 252
AC voltage	10 kV within 1 min	10 kV within 1 min	10 kV within 1 min	10 kV within 1 min	10 kV within 1 min
DC voltage	20 kV within 1 min	20 kV within 1 min	20 kV within 1 min	20 kV within 1 min	20 kV within 1 min

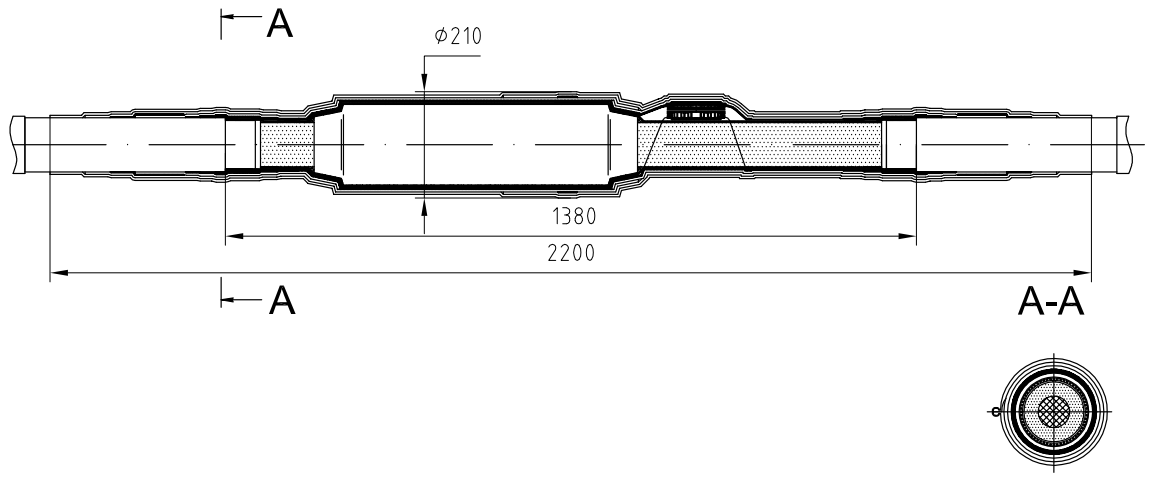
Test voltages of the cross-bonding joints	MCB 72,5 X	MCB 126 X	MCB 145 X	MCB 170 X	MCB 252 X
Impulse voltage (10+/10- impulses)	30 kV	37,5 kV	37,5 kV	47,5 kV	47,5 kV
DC voltage	25 kV within 1 min	25 kV within 1 min	25 kV within 1 min	25 kV within 1 min	25 kV within 1 min

Test voltages between transposition wires	MCB 72,5 X	MCB 126 X	MCB 145 X	MCB 170 X	MCB 252 X
DC voltage	25 kV within 1 min	25 kV within 1 min	25 kV within 1 min	25 kV within 1 min	25 kV within 1 min
Impulse voltage (10+/10- impulses)	60 kV	75 kV	75 kV	95 kV	95 kV

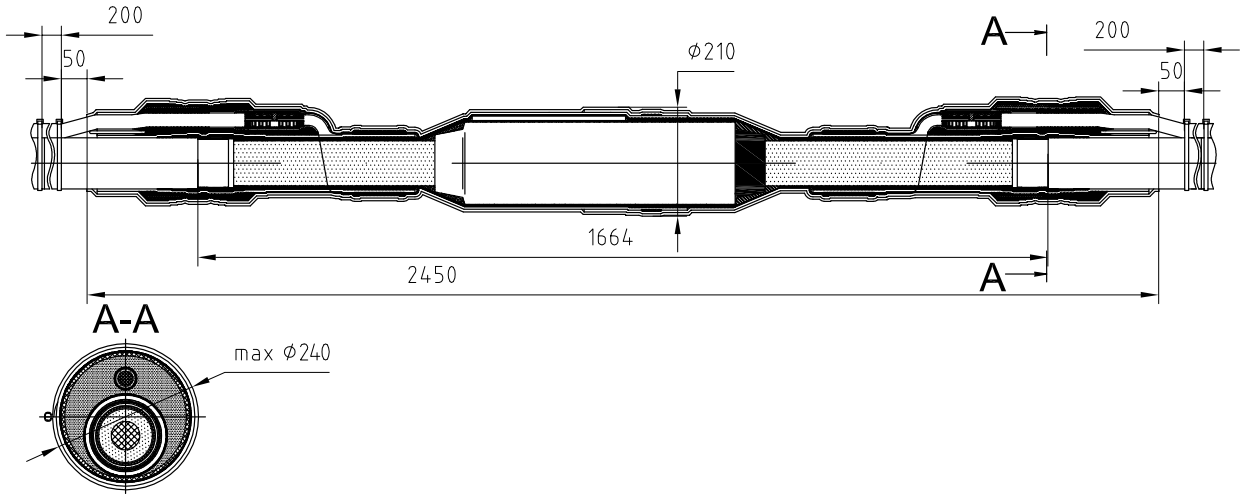
Mechanical characteristics	MCB 72,5	MCB 72,5 X	MCB 126	MCB 126 X	MCB 145	MCB 145 X	MCB 170	MCB 170 X	MCB 252	MCB 252 X
Approximate weight, kg	34	50	38	59	38	59	38	59	75	95

Drawings

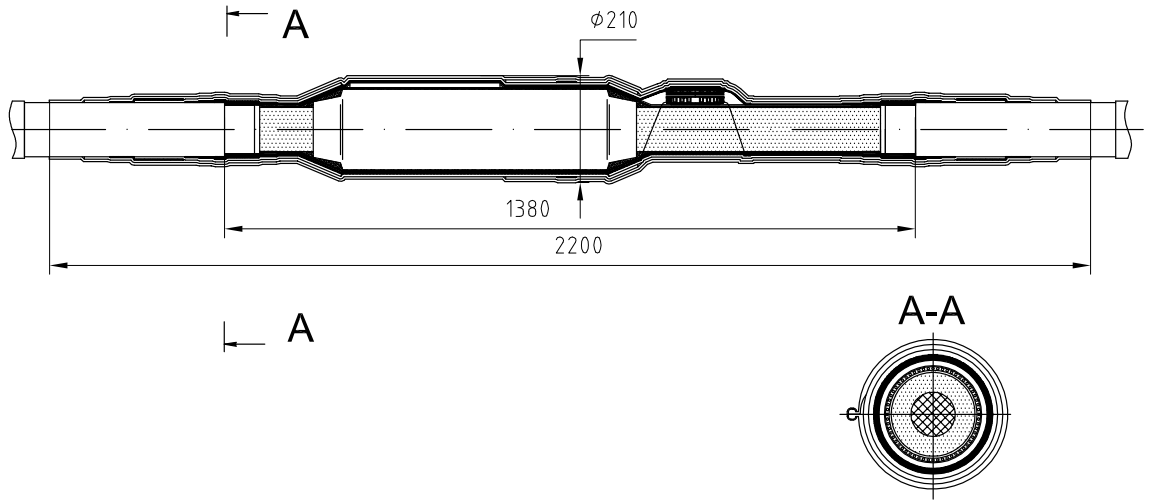
MCB 126 / 145 / 170



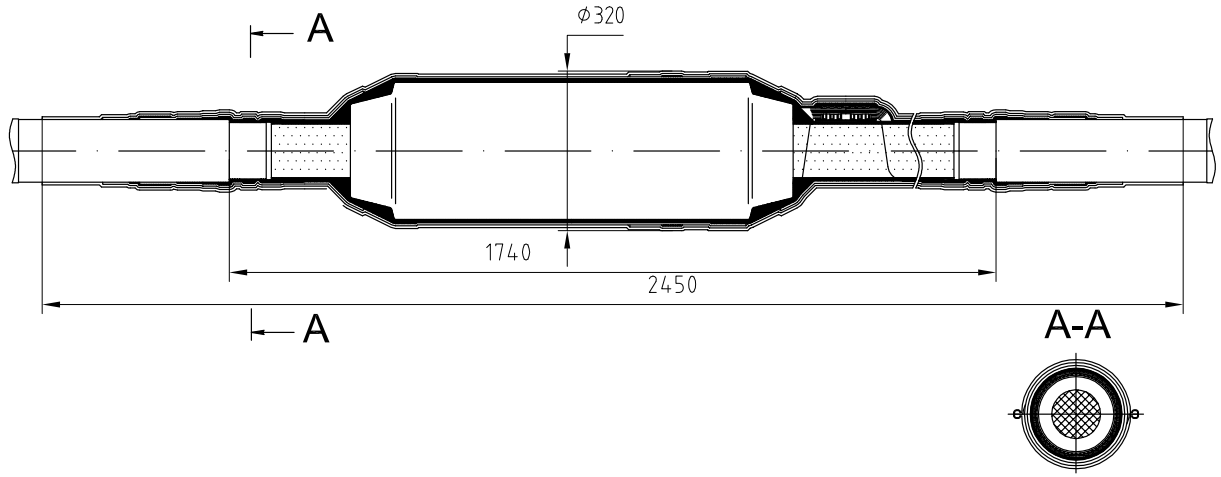
MCB 126 X / 145 X / 170 X



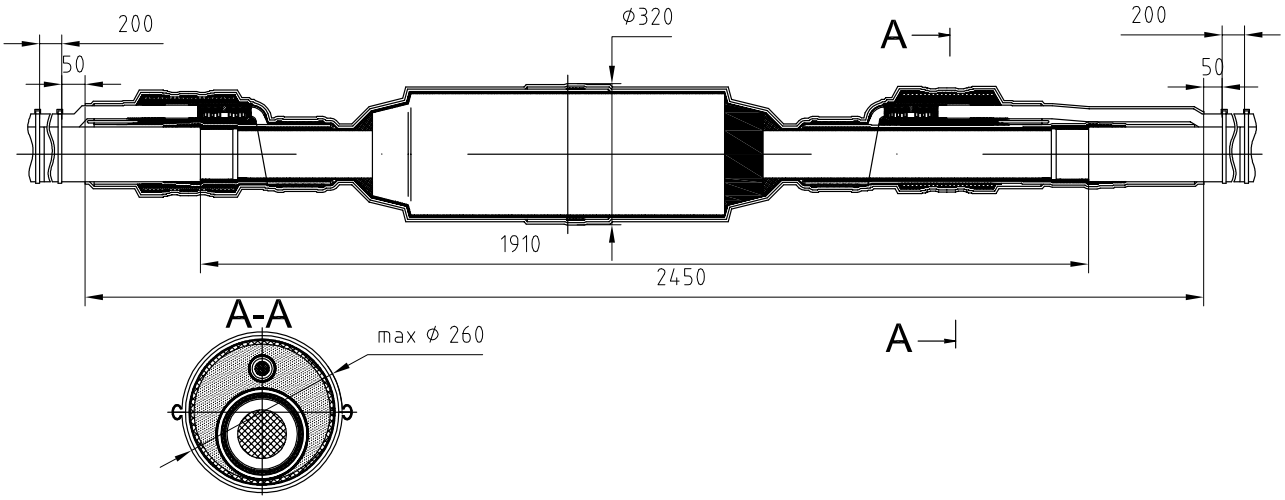
MCB 126 O / 145 O / 170 O



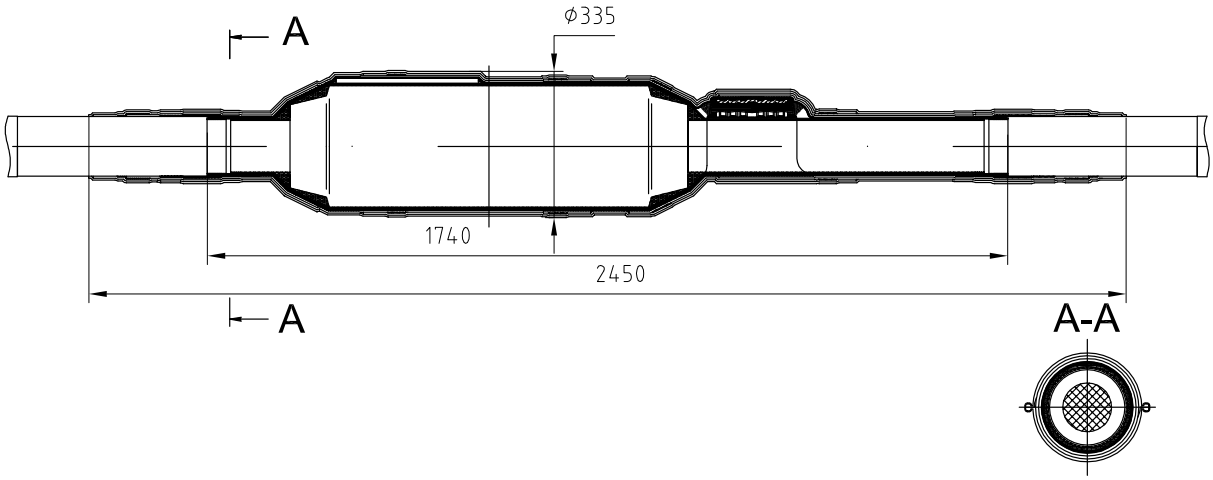
MCB 252



MCB 252 X



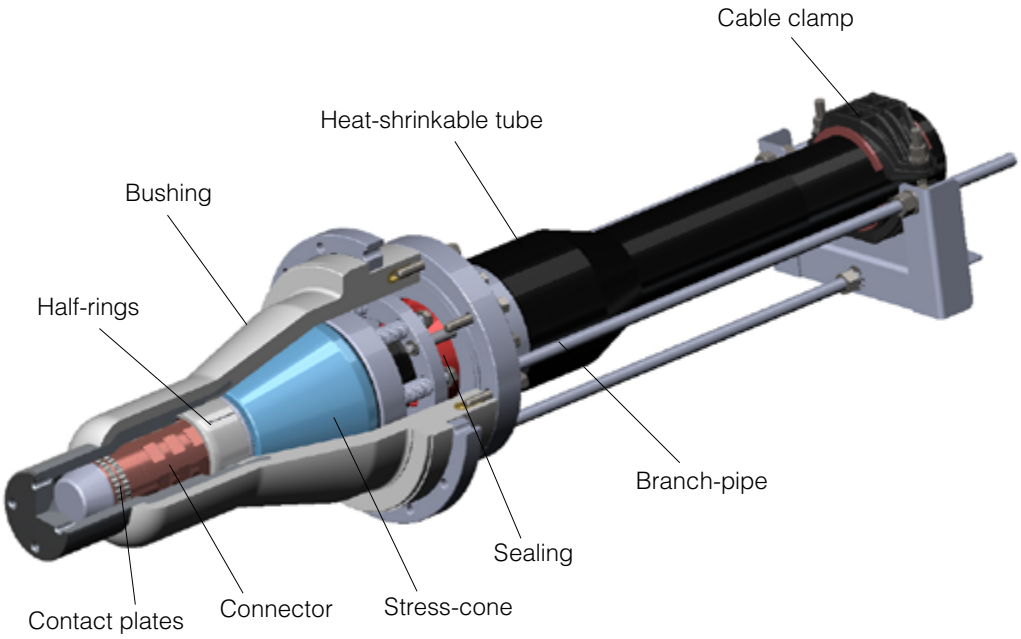
MCB 252 O



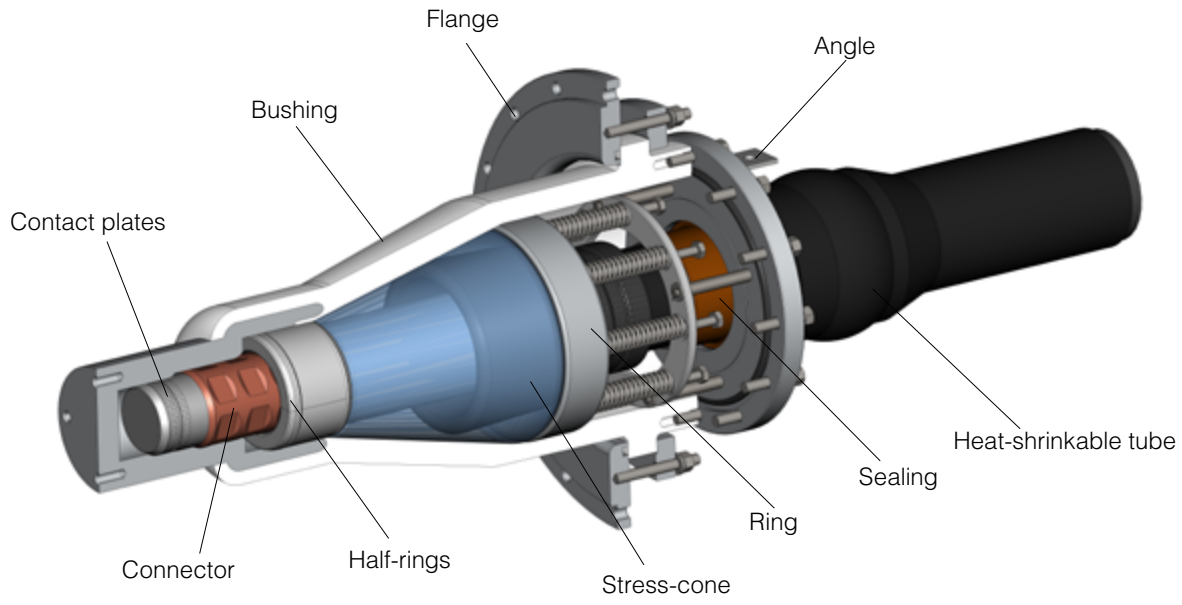
GIS terminations
MBB 126 / 145 / 170 / 252

Arkasil GIS terminations are used for cable lines connection to gas-insulated switchgears and transformers. MBB 126/145/170/252 are used for indoor installation for XLPE cables 64/110, 76/132, 87/150, 127/220 kV (conductor cross-section 185-2500 mm^2). GIS terminations could be produced for XLPE cable with optical fibers in screen which are used for temperature monitoring. All types of GIS terminations are made in accordance with IEC 62271-209 and could be used with switchgears for dry type and oil filled GIS terminations. GIS termination consists of epoxy insulator and plug-in part. Due to such design cable if can be disconnected from the GIS and connected again without SF6 or oil evacuation. The epoxy insulator can be delivered with GIS (epoxy insulator installed in switchgear by the manufacturer).

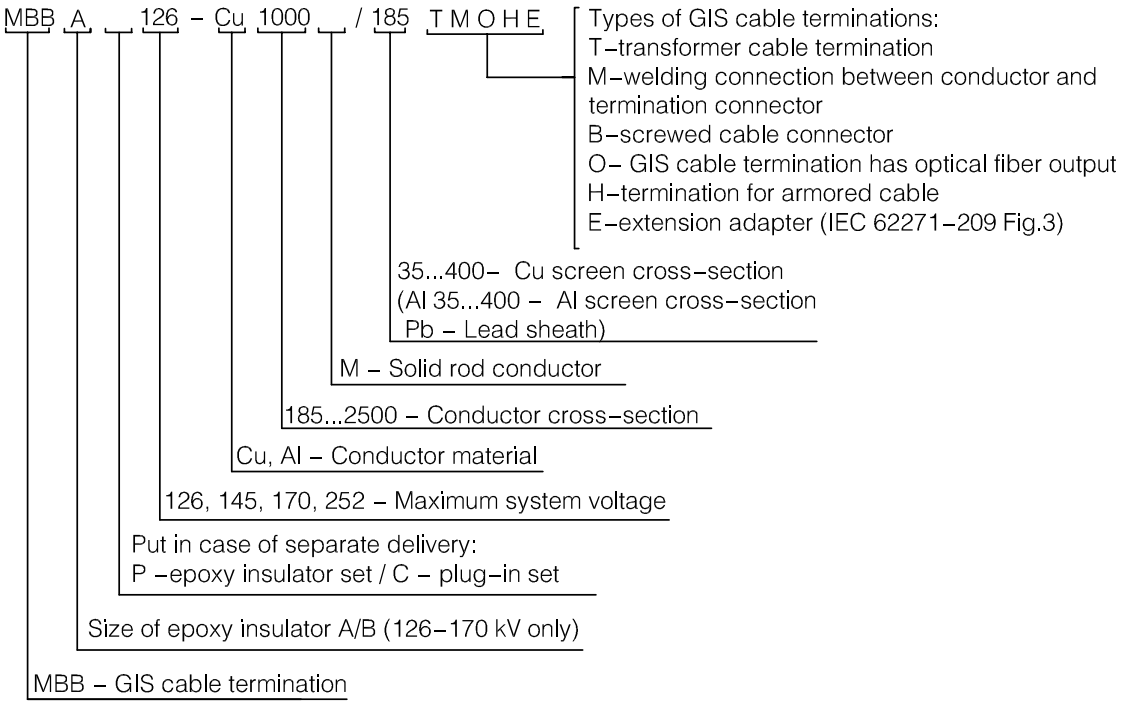
MBB 126 / 145 / 170



MBB 252



Marking of GIS termination MBB



Area of application

Type		MBB 126	MBB 145	MBB 170
Maximum system voltage	kV	126	145	170
		MBB A 126	**MBB A 145**	**MBB A 170**
Maximum cable diameter	mm	125	125	125
Cable conductor cross-section range	mm^2	185÷1600	185÷1600	185÷1600
Cable insulation diameter	mm	47÷84	47÷84	47÷84
		MBB B 126	**MBB B 145**	**MBB B 170**
Maximum cable diameter	mm	125	125	125
Cable conductor cross-section range	mm^2	400÷2500	400÷2500	400÷2500
Cable insulation diameter	mm	55÷103	55÷103	55÷103

Type		MBB 252
Maximum system voltage	kV	252
Maximum cable diameter	mm	125
Cable conductor cross-section range	mm^2	400÷2500
Cable insulation diameter	mm	65÷112

Technical data

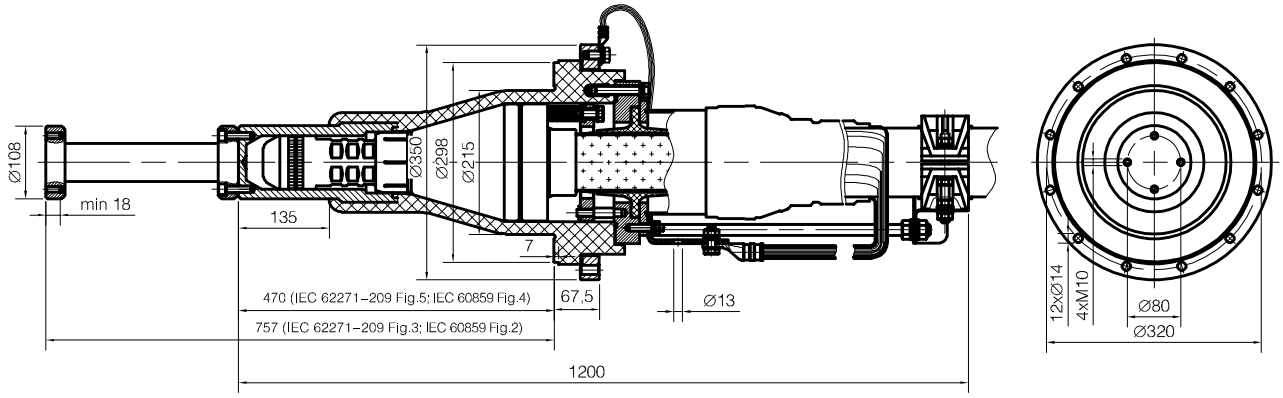
Electrical parameters	MBB 126	MBB 145	MBB 170	MBB 252
Maximum system voltage	126 kV	145 kV	170 kV	252 kV
AC voltage withstand test	160 kV for 30 min	190 kV for 30 min	218 kV for 30 min	318 kV for 30 min
Impulse voltage (10+/10- impulses)	550 kV	650 kV	750 kV	1050 kV
Partial discharges	<5 pC at 96 kV	<5 pC at 114 kV	<5 pC at 131 kV	<5 pC at 190 kV
Climatic characteristics				
Operation temperature	-25 +50°C	-25 +50°C	-25 +50°C	-25 +50°C

Current load rating	
Rated operational current	limited by cable specification
Short circuit current	limited by cable specification

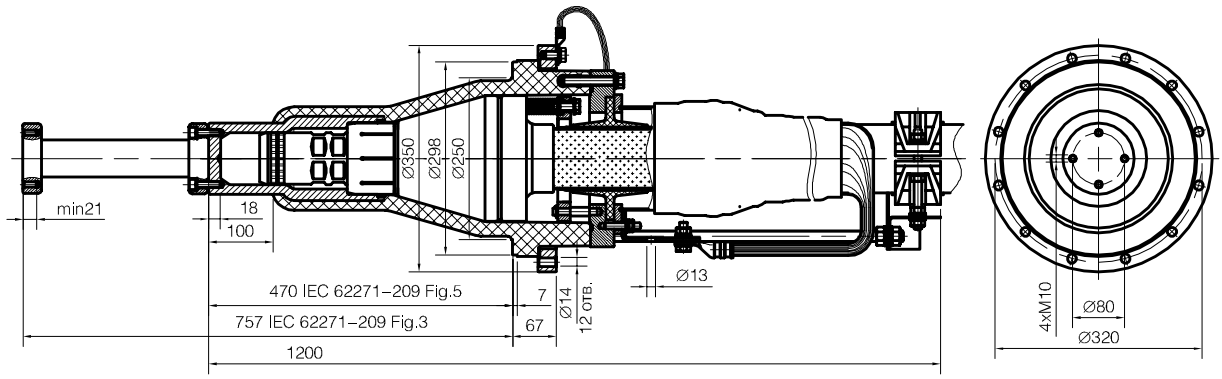
Stress cone routine tests	MBB 126	MBB 145	MBB 170	MBB 252
Stress cone	126 kV	145 kV	170 kV	252 kV
AC voltage withstand test	160 kV for 30 min	190 kV for 30 min	218 kV for 30 min	318 kV for 30 min
Partial discharges	<5 pC at 96 kV	<5 pC at 114 kV	<5 pC at 131 kV	<5 pC at 190 kV

Mechanical characteristics		MBB 126/145/170 A	MBB 126/145/170 B	MBB 252
Approximate weight	kg	50	54	96
Length	mm	1200	1200	1700

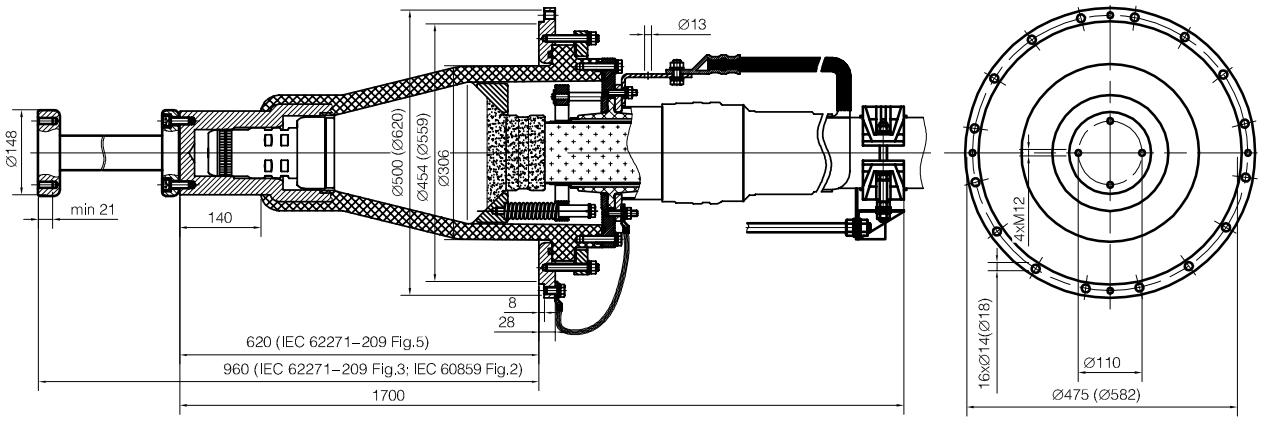
MBB A 126 / 145 / 170



MBB B 126 / 145 / 170

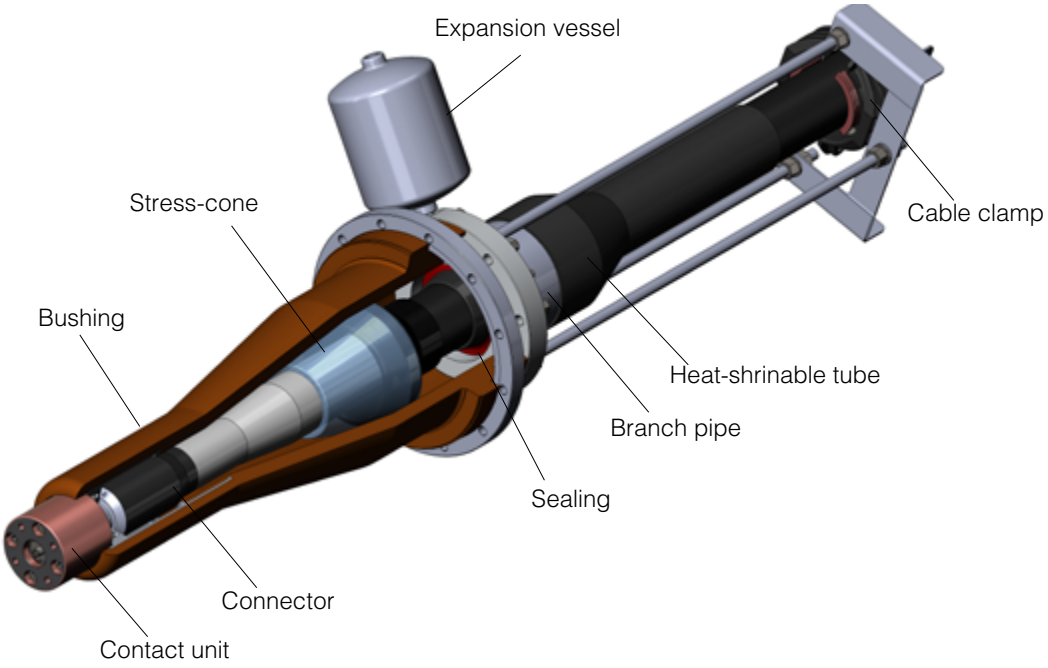


MBB 252



GIS terminations
MBBM 126 / 145 / 170

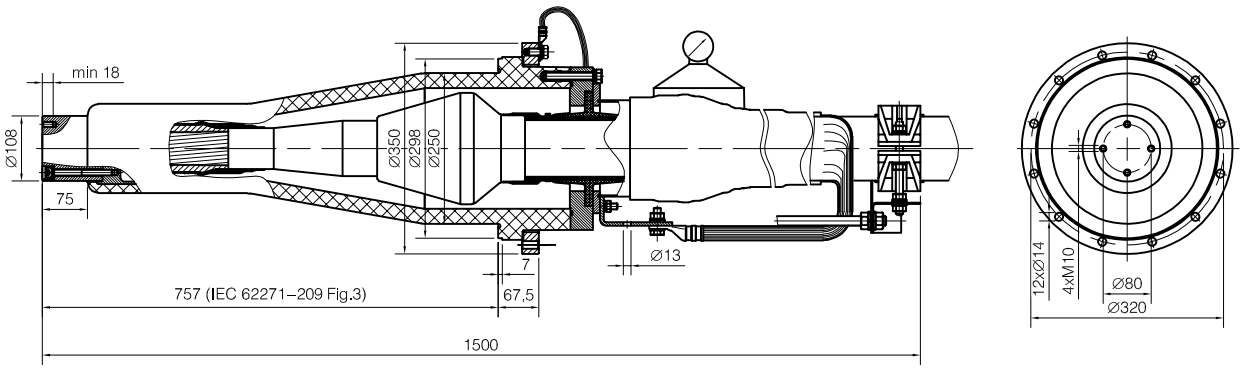
Arkasil oil-filled GIS terminations are used for cable lines connection to gas-insulated switchgears and transformers. GIS oil-filled terminations are used for indoor installation for XLPE cables 64/110, 76/132, 87/150 kV (conductor cross-section 185-2500 mm^2). GIS oil-filled terminations can be produced for XLPE cable with optical fibers in screen. All types of GIS oil-filled terminations are made in accordance with IEC 62271-209.



Labeling of fluid filled GIS termination MBBM

MBBM 126 – Cu 1000 / 185 – T M O X H

- Types of GIS fluid filled cable terminations:
  T– transformer cable termination
  M– welding connection between conductor and termination connector
  B–screwed cable connector
  O– GIS fluid filled cable termination has optical fiber output
  X– GIS fluid filled cable termination without expansion vessel set
  H–termination for armored cable
- 35...400– Cu screen cross–section (Al 35...400 – Al screen cross–section Pb – Lead sheath)
- M – Solid rod conductor
- 185...2500 – Conductor cross–section
- Cu, Al – Conductor material
- 126, 145, 170– Maximum system voltage
- MBBM – GIS fluid filled cable termination



Area of application

Type		MBBM 126	MBBM 145	MBBM 170
Maximum system voltage	kV	126	145	170
Maximum cable diameter	mm	125	125	125
Cable conductor cross-section range	mm^2	185÷2500	185÷2500	185÷2500
Cable insulation diameter	mm	45-95	45-95	45-95

Technical data

Electrical parameters		MBBM 126	MBBM 145	MBBM 170
Maximum system voltage	kV	126	145	170
AC voltage withstand test	kV	160 kV for 30 min	190 kV for 30 min	218 kV for 30 min
Impulse voltage (10+/10- impulses)	kV	550	650	750
Partial discharges	kV	<5 pC at 96 kV	<5 pC at 114 kV	<5 pC at 131 kV

Climatic characteristics	MBBM 126	MBBM 145	MBBM 170
Operation temperature	-45 +50°C	-45 +50°C	-45 +50°C

Current load rating	
Rated operational current	limited by cable specification
Short circuit current	limited by cable specification

Stress cone routine tests	MBBM 126	MBBM 145	MBBM 170
Maximum system voltage	126 kV	145 kV	170 kV
AC voltage withstand test	160 kV for 30 min	190 kV for 30 min	218 kV for 30 min
Partial discharges	<5 pC at 96 kV	<5 pC at 114 kV	<5 pC at 131 kV

Mechanical characteristics		MBBM 126	MBBM 145	MBBM 170
Approximate net weight	kg	90	90	90
Length	mm	1500	1500	1500

TYPE TESTS OF CABLE SYSTEM 110 kV

CESI, Italy

- heating cycle voltage test;
- partial discharge test at ambient temperature;
- partial discharge test at high temperature;
- tan Δ measurement;
- lightning impulse voltage test followed by power frequency voltage test;
- examination of the cable system;
- test of outer protection of joint.

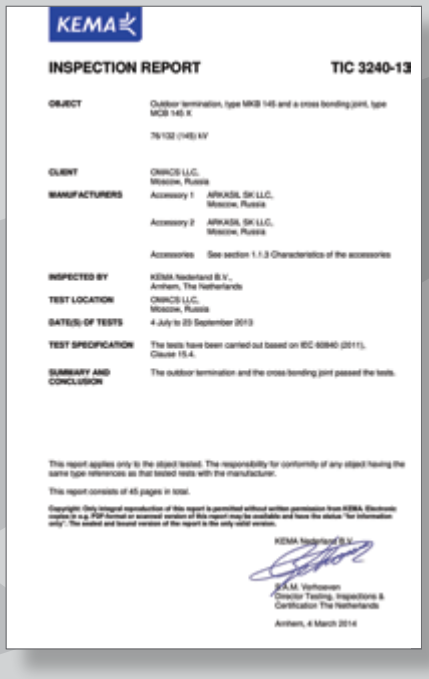
KEMA, The Netherlands

Tests were made according to the program of the harmonized European standard HD 632 S2, part 1, analogue of IEC 60840 edition 3 (2004), in the test laboratory of KEMA (Netherlands).

OMACS, Russia

Type tests according to IEC 60840.

TYPE TESTS OF CABLE SYSTEM 132 kV



KEMA

INSPECTION REPORT **TIC 3240-13**

OBJECT	Outdoor termination, type MKB 145 and a cross bonding joint, type MCB 145 X 76/132 (145) kV
CLIENT	OMACS LLC, Moscow, Russia
MANUFACTURERS	Accessory 1: ARKASIL SK LLC, Moscow, Russia Accessory 2: ARKASIL SK LLC, Moscow, Russia Accessories: See section 1.1.3 Characteristics of the accessories
INSPECTED BY	KEMA Nederland B.V., Arnhem, The Netherlands
TEST LOCATION	OMACS LLC, Moscow, Russia
DATE(S) OF TESTS	4 July to 23 September 2013
TEST SPECIFICATION	The tests have been carried out based on IEC 60840 (2011), Clause 15.4.
SUMMARY AND CONCLUSION	The outdoor termination and the cross bonding joint passed the tests.

This report applies only to the object tested. The responsibility for conformity of any object having the same type references as that tested rests with the manufacturer.

This report consists of 45 pages in total.

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KEMA Nederland B.V.

ir.M. Verhoeven
Director Testing, Inspections & Certification The Netherlands

Arnhem, 4 March 2014

KEMA, The Netherlands

OMACS

ПРОТОКОЛ ИСПЫТАНИЙ **ТК.13-945**

ОБЪЕКТ ИСПЫТАНИЙ	Муфты концевая и соединительная на класс напряжения 76/132 (145) кВ
МАРКА	концевая муфта МКВ 145 – Cu 2000/185 соединительная муфта МСВ 145 - Cu 2000/185 X
ПРОИЗВОДИТЕЛЬ	ООО «Аркасил СК» 110053, Москва, Землянский пер., д.32, стр. 10
ЗАКАЗЧИК	ООО «Аркасил СК»
ДАТА ИСПЫТАНИЙ	04.07 - 12.09.2013 г.
СТАНДАРТ	ГОСТ Р МЭК 60840-2011

Настоящим подтверждается, что типовые испытания в соответствии с ГОСТ Р МЭК 60840-2011 раздел 14 проведены успешно. Эксплуатационные характеристики арматуры типа МКВ 145 и МСВ 145 X соответствуют требованиям ГОСТ Р МЭК 60840-2011.

Результаты испытаний приведены на 25 листах.

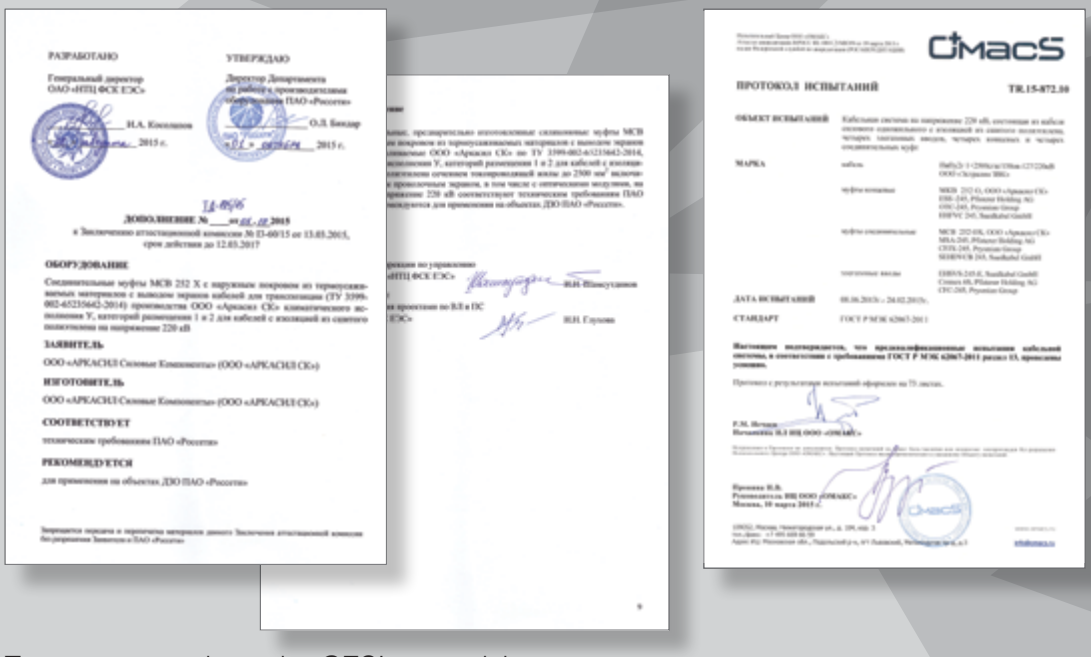
Начальник ИЦ ООО «ОМАКС»

Москва, 18 сентября 2013 г.

OMACS, Russia

Tests were made on cable with 14 mm insulation thickness.

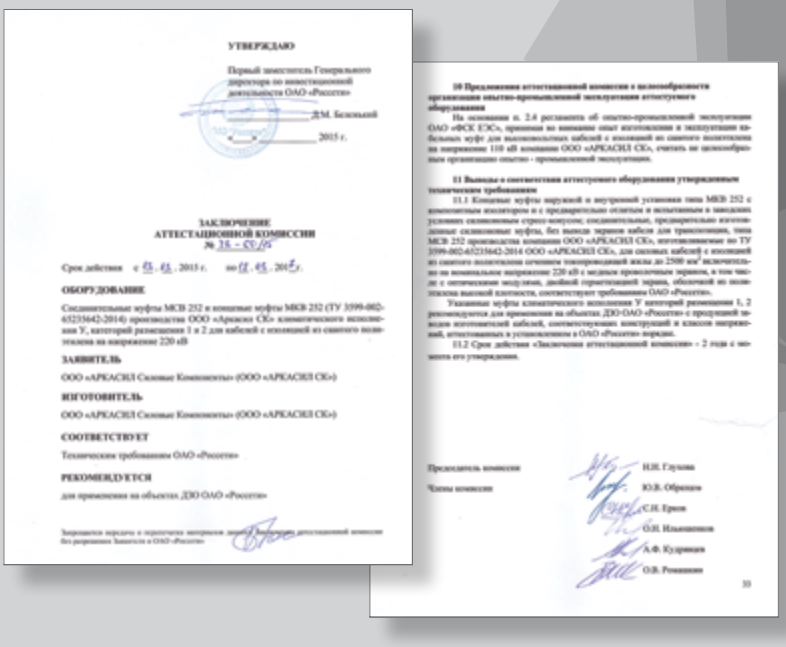
TYPE TESTS OF CABLE SYSTEM 220 kV



OMACS, Russia

Tests were made under CESI supervision.

PREQUALIFICATION TESTS OF CABLE SYSTEM 220 kV



TU 3599-001-65235642-2011


СИСТЕМА СЕРТИФИКАЦИИ ГОСТ Р

ФЕДЕРАЛЬНОЕ АГЕНТСТВО ПО ТЕХНИЧЕСКОМУ РЕГУЛИРОВАНИЮ И МЕТРОЛОГИИ

СЕРТИФИКАТ СООТВЕТСТВИЯ

№ 1806239

ARKASIL SK LLC production complies with the requirements of regulatory documents.


TÜV NORD

CERTIFICATE

Management system as per
ISO 9001 : 2008

ARKASIL
Arkasil SK LLC
prosp. Zavodu Serp i Molot, 6, corpus 1
111250, Moscow
Russia

XLPE cable accessories 110-220 kV, design, production, training, installation and supervision

IAF DAkkS

HEAT-SHRINKABLE COMPONENTS

Heat shrinkable cable end caps

Heat Shrinkable cable End Caps are used to seal the ends of all types of cables to protect cables from penetration of water/moisture. The caps are manufactured from high quality cross linked polyolefin material. Compatible with most commonly used Cable Jackets i.e. XLPE, PVC, PILC or Rubber Sheathed Cable. Hot Melt adhesive lining provides seal from irregular cable sheaths. Excellent resistance to weathering, moisture, contamination and adverse environmental conditions.

Area of application

- valved end caps available for pressurized application for telecom cables;
- special relief valved end caps available for degassing application in High Voltage Power cables;
- high voltage (non tracking) end caps available for sealing live parts;
- conductive end caps.

Technical specification

Type		Standard
Physical		
Tensile Strength	12 H/mm² (Mpa)	ASTM D638
Ultimate Elongation	350%	ASTM D638
Density	1,05 ± 0,2 g/cm³	ASTM D792
Hardness	45 ± 10 Shore D	ASTM D2240
Water Absorption	0,2 % (max)	ASTM D570

Type		Standard
Low Temperature Flexibility		
(-40°C for 4 hrs.)	No Cracking	ASTM D2671
Heat Shock (250°C for 30 min.)	No cracking or flowing	ESI 09-11
Shrink Temperature	125°C	IEC 216
Temperature range	-40°C to +110°C	IEC 216

Thermal		
Accelerated Ageing	(120°C for 500 h)	ASTM D2671
Tensile Strength	11 H/mm² (Mpa)	ASTM D638
Ultimate Elongation	300 %	ASTM D638

Electrical		
Dielectric Strength	12 кВ/mm	ASTM D149
Volume Resistivity	$1 \cdot 10^{14}$ Ohm·cm	ASTM D257
Dielectric Constant (E)	5 (max)	ASTM D150

Code	D min (mm)	D max (mm)	T±10 (mm)	Length (min)	Cable diameter
ASEC 001S	6	2.0	2.0	25	2-4
ASEC 001	12	4.0	2.3	38	4-8
ASEC 001L	12	4.0	2.3	58	4-8
ASEC 001A	14	4.0	2.3	58	4-11
ASEC 101	20	7.5	2.3	55	8-16
ASEC 101 L	20	7.5	2.5	75	8-16
ASEC 101 A*	25	8.0	2.3	75	8-20
ASEC 102	30	11	2.5	75	12-26
ASEC 102 A	35	11	2.5	75	12-30
ASEC 201*	40	15	3.3	90	16-35
ASEC 201 L	40	15	3.3	120	16-35
ASEC 201 AL	45	15	3.3	120	16-40
ASEC 301*	55	25	3.8	122	25-47
ASEC 301 L	55	25	3.8	170	25-47
ASEC 301 AL	63	25	3.8	170	25-55
ASEC 401*	75	35	3.8	140	35-68
ASEC 401 L	75	35	4.0	180	35-68
ASEC 501 S	85	45	4.0	160	45-80
ASEC 501*	100	45	4.0	160	45-90
ASEC 501 L	100	45	4.0	200	45-90
ASEC 501 AL*	120	45	4.0	200	45-110
ASEC 601*	130	60	4.6	160	64-120
ASEC 701*	154	60	4.6	165	70-145
ASEC 801	230	120	5.5	220	140-200
ASEC 901	310	120	5.5	220	140-280
ASEC 1001	400	200	6.0	220	230-380

* Widely applied

HEAT-SHRINKABLE TUBES

Heat-shrinkable tubes ASMW and ASHW are medium wall and heavy wall black tubes. ASMW tubes are used for environmental protection of cable termination and insulating the connectors for straight through joints/ splice. ASHW tubes are used for mechanical protection and outer sealing of underground straight through cable joints/splice.

Technical specification

- these tubes are manufactured from high quality cross linked polyolefin material;
- optional hot melt adhesive lining for complete environmental protection and insulation;
- excellent resistance to weathering, UV rays, chemical and solvents;
- maximum cut length available up to 1500 mm;
- custom dimensions, thickness, length & colors available on request;
- conform to IEC standard.

Heat-shrinkable tubes	45/13 (250 mm)
Heat-shrinkable tubes	52/13 (1000 mm)
Heat-shrinkable tubes	130/35 (1000 mm)
Heat-shrinkable tubes	160/50 (900 mm)
Heat-shrinkable tubes	180/50 (1000 mm)
Heat-shrinkable tubes	200/55 (1300 mm)
Heat-shrinkable tubes	227/77 (1300 mm)
Heat-shrinkable tubes	300/90 (1200 mm)
Heat-shrinkable tubes	350/110 (1500 mm)

Type		Standard
Physical		
Tensile Strength	12 H/mm^2 (Mpa)	ASTM D638
Ultimate Elongation	350%	ASTM D638
Longitudinal Change	-10% (max)	ASTM D2671
Density	1,15 ± 0,2 g/cm^3	ASTM D792
Hardness	45 ± 10 Shore D	ASTM D2240
Water Absorption	0,5 % (max)	ASTM D570
Thermal		
Accelerated Ageing	(120°C for 500 h)	ASTM D2671
Tensile Strength	11 H/mm^2 (Mpa)	ASTM D 638
Ultimate Elongation	300 %	ASTM D 638
Low temperature Flexibility (-40°C for 4 h.)	No Cracking	ASTM D2671
Heat Shock (250°C for 30 min.)	No Cracking or flowing	ESI 09-11
Shrink Temperature	125°C	IEC 216
Temperature range	-55°C to + 105°C	IEC 216
Electrical		
Dielectric Strength	12 кВ/mm	ASTM D 149
Volume Resistivity	1·10^{14} Ohm·cm	ASTM D257
Dielectric Constant (E)	5 (max)	ASTM D150

HEAT-SHRINKABLE SLEEVES

Heat-shrinkable sleeves are polyolefin tubes with metal zipper that can be mounted on installed cable without cutting.

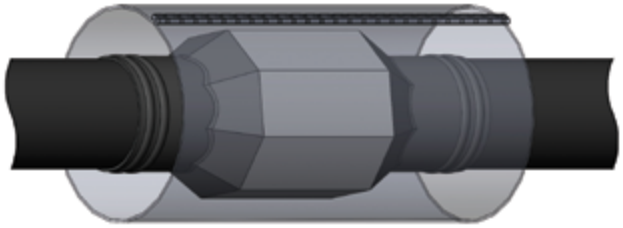
Technical specification

- hot melt adhesive provides complete sealing and insulation;
- high resistance to UV rays, chemicals, corrosion, fungus, etc.;
- temperature sensitive paint changes color when heat shrinking process is completed;
- maximum length available up to 1500 mm.

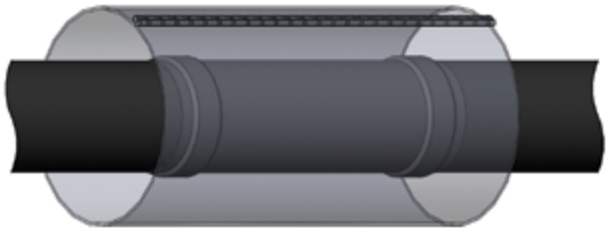
Heat-shrinkable sleeve	198/55 (2200 mm)
Heat-shrinkable sleeve	198/55 (2450 mm)

Type		Standard
Physical characteristics		
Tensile Strength	17 H/mm² (Mpa)	ASTM D638
Ultimate Elongation	300%	ASTM D638
Longitudinal Change	-10% (max)	ASTM D2671
Water Absorption	0,2 % (max)	ASTM D570

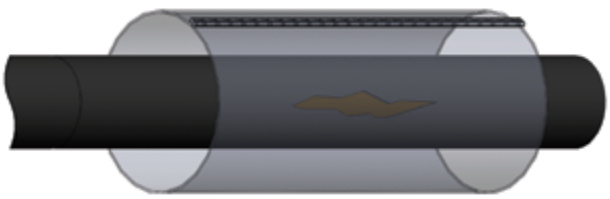
For the protection of Cable joint



For Cable Repairs



For corrosion protection of Oil, Water & Gas pipeline



Thermal characteristics		
Accelerated Ageing	(120°C for 500 h)	ASTM D2671
Tensile Strength	15 H/mm² (Mpa)	ASTM D 638
Ultimate Elongation	220 % (min.)	ASTM D 638

Thermomarker color change		
150°C for 30 min.	No change	Visual
250°C for 5 min.	Color change	Visual

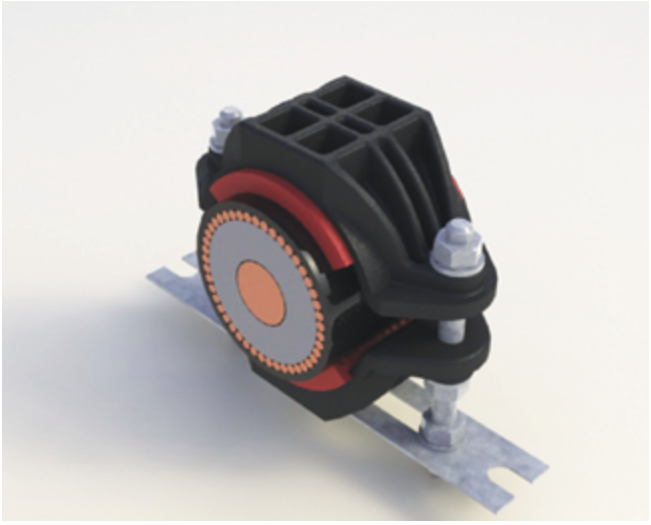
Electrical		
Dielectric Strength	12 кВ/mm (min.)	ASTM D149

CABLE CLAMPS FOR HIGH-VOLTAGE CABLES

BKK3 and BKK cable clamps provide reliable fixing of high voltage cables.

Cable clamp BKK3

Cable clamp BKK

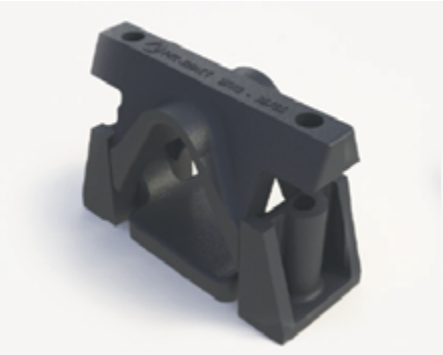


CABLE CLAMPS FOR MEDIUM VOLTAGE CABLES

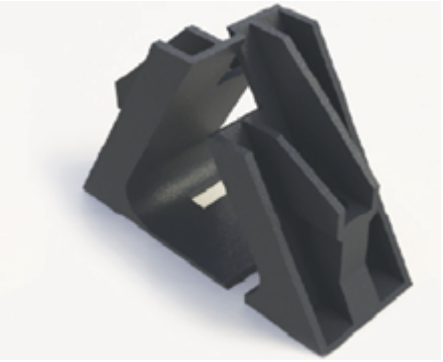
YKK3 and YKK-60 universal cable clamps as well as PKK cable clamps are designed for fixing of all types of medium voltage cables.

Cable clamp RKK

Cable clamp YKK3

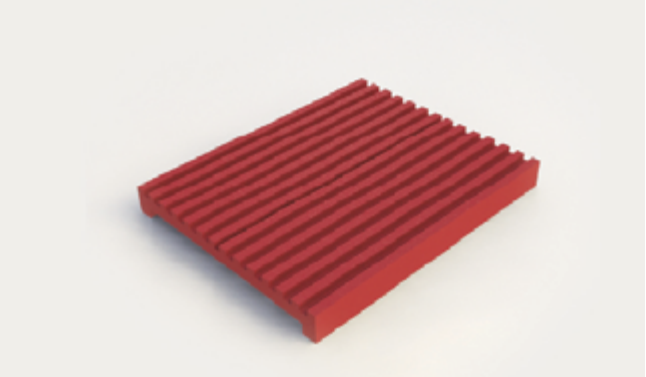


Cable clamps YKK-60 and YKK2-60



SILICONE GASKET HEAT RESISTANT PST-80

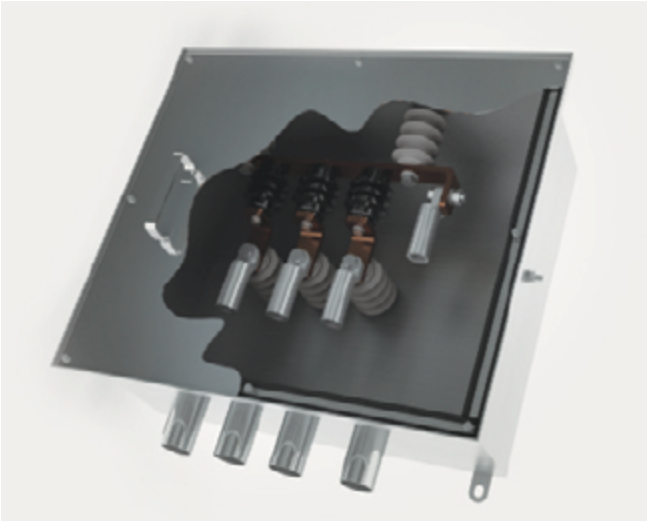
Gasket PST-80 is used for fastening the cable on the vertical sections. Gaskets are made of organosilicone rubber (silicone).



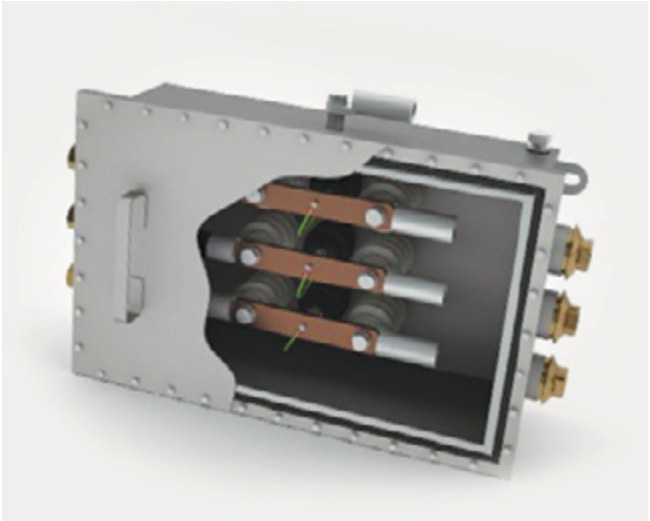
EARTHING AND CROSS-BONDING BOXES

Earthing and cross-bonding boxes are used for cross-connection of six single - core wires and for grounding of 60-500 kV cable screens.

Earthing box



Cross-bonding box

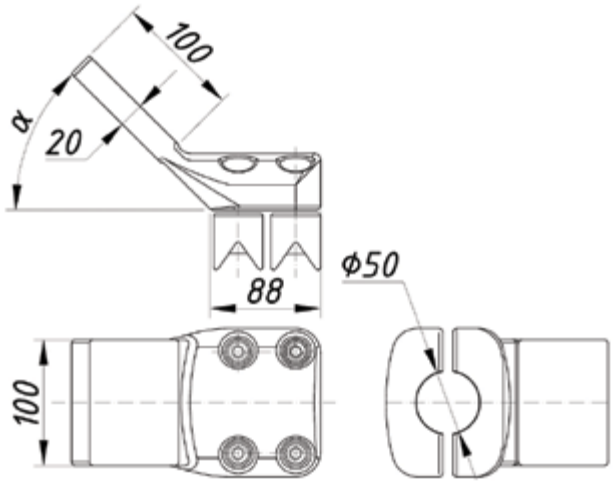


JOINT SUPPORTING STRUCTURE

Joint supporting structure is designed for installation of joints and consists of angle iron with supporting stand for installation of joints.

AERIAL LUGS

For connection of termination to overhead conductor it is necessary to use aerial lugs. Arkasil SK delivers aluminum, bronze and bimetallic aerial lugs.



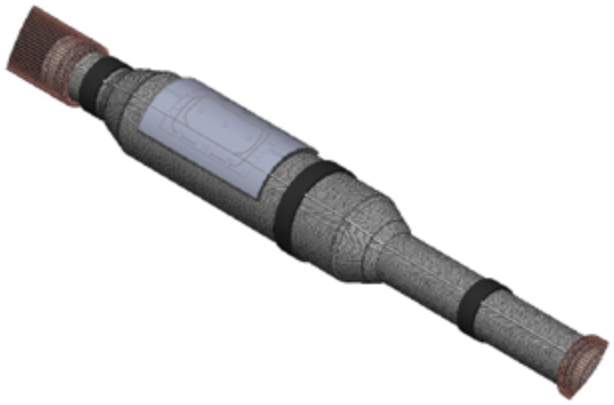
TERMINATIONS SPLICE BOXES

It is used for connection of fiber-optical modules embded in cable screen.

Splice box is the metal box, safety class IP66, with 4 inputs for optical fiber modules, 2,5 - 5,5 mm^2 in diameter. It protects the connection and is applied to store the fiber stock necessary for repair works.

JOINTS SPLICE BOXES

It is applied for connection of fiber-optical modules embed in cable screen. A joint splice box is the rubber base with slots and channels for the optical fibers, it provides connection of the modules, protects the connection. It is fixed during the joint installation. The complete set includes all necessary accessories for the optical modules connection and protection.



TOOLS FOR CABLE ACCESSORIES INSTALLATION

Installation Tool Kits 1010

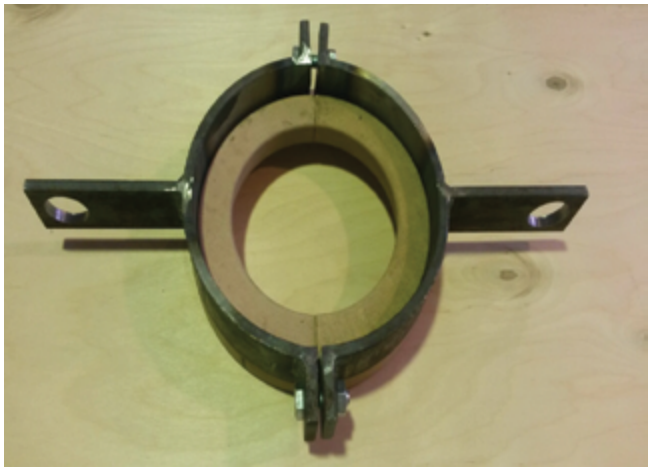
Set of installation tools.

HV cable cutting and stripping tool MAS 130

MAS 130 is multi-purpose tool for cutting and stripping insulation and semiconductive layer of the cable with XLPE insulation. The range of diameters is 18-130 mm.

1000 kg Belt Winch

For pulling the silicone insulator on the cable.



Cable heating kit 1080 kit

This instrument is used for cable heating.

Winch-to-cable fixing device

The device is fixed on the cable, and has terminals for fixing the winches.

INSTALLATION AND SUPERVISION SERVICE

- general technical control;
- quality control of installation done by jointers, certified by Arkasil;
- preparation of the documents related to install accessories;
- advising for installation.

INSTALLATION SERVICE

- installation of Arkasil cable accessories by the specialists certified by Arkasil;
- guarantee on the installed Arkasil cable accessories;
- Arkasil cable accessories related consultations.

+7 (495) 787-67-60

FOR MORE INFORMATION

TRAINING FOR INSTALLATION

Training takes place at the training center of Arkasil. Can be provided on customer site.

INSTALLATION TRAINING

THE TRAINING SHALL INCLUDE

- theoretical training;
- practical training;
- tests;
- sample preparation for certification;
- granting of certificates.

Arkasil SK LLC

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