



NKT

High-Voltage Cable Accessories

72.5 kV up to 550 kV

nkt.com



NKT

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General



About NKT

NKT is a global front-line supplier to the energy sector and as such NKT develops, manufactures and markets high quality cables and solutions for power grid infrastructure and construction sites. NKT' manufacturing plants are among the most modern, flexible and cost-effective facilities worldwide. At NKT we work tirelessly to reduce our carbon footprint; neutral production and waste prevention are high priorities. NKT invests heavily to ensure that the company maintains leading edge capability.

The brand new state-of-the-art factory in Cologne is an example of this commitment. Being among the most modern factories in the world, it is at the forefront of technological developments. NKT is part of NKT Holding A/S, which is listed on the Danish Stock Exchange. NKT Holding owns a number of companies, which are active in different industries, and has production facilities on four continents.

High voltage cable accessories product range

All high voltage cable accessories from NKT are developed by our R&D department, who take into account specific customer requirements as well as national and international standards in designing and producing customized solutions. All materials are subjected to intensive quality control procedures. The production- and testing equipment from NKT guarantees the highest level of quality for all products. The complete product range has been type-tested in accordance with international standards.

The high voltage product range from NKT includes accessories for all applications from 50 kV up to 550 kV voltage range, also as a modular component system. NKT offers various technical versions of accessory systems like plug-in technology, dry-type technology and conventional technology with insulating oil.

XLPE

Cable accessories



The range of cable accessories covers following applications:

We offer accessories for all applications in the voltage range up to 550 kV, optionally also as a modular component system. Our solutions include various technical versions of accessory systems such as connector technology, dry-type technology and conventional technology with oil-insulation.

- Self-supporting outdoor terminations, porcelain or composite
- Flexible outdoor terminations
- Terminations for gas-insulated switchgear
- Transformer terminations
- Straight-through joints
- Insulation joints/cross-bonding joints
- Transition joints, XLPE-insulated/oil-filled cables
- Products for the connection/installation of low-pressure oil-filled cables

Premoulded one-piece joint with heat shrink outer protection

KSME



Design:

The different versions of the premoulded one-piece joint are designed from 72.5 kV up to 245 kV.

The complete KSME consists of premoulded silicone joint body with integrated stress control system and screw or compression type connector.

The outer sheath is recovered with a heat shrink tube.

Application:

Premoulded one-piece joint with heat shrink outer protection for XLPE- and EPR-insulated cables with Al or Cu conductor.

Standard:

- IEC 60840
- IEC 62067

Specific for the product:

The earthing versions are selected as follows:

KSME

- Straight-through

KSME-E

- Straight-through with earthing connection

KSME-S

- Screen separation with coax-bonding cable

KSME-SE

- Screen separation with single-bonding cable

Note:

Optional kits:

- Optical fibre kit

Tools:

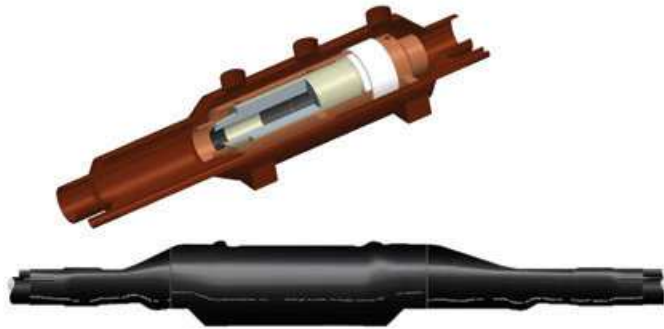
- Push-on tools
- Fix points for push-on tools
- Belt strap tool

Technical details:

Voltage	Type/ designation	Max. cross section	Prepared cable insulation diameter	Maximum oversheath diameter	Max. dimension (length, diameter)	Weight (approx.)
kV		mm ²	mm	mm	mm	kg
72.5	KSME 72	1000	40.0 – 65.0	no limitation	1600 x 120	6.5
145	KSME 145	2500	41.6 – 120.0	no limitation	2350 x 240	35 – 70
170	KSME 170	2500	56.0 – 120.0	no limitation	2350 x 240	60 – 70
245	KSME 245	2500	56.0 – 120.0	no limitation	2350 x 240	60 – 70

Premoulded one-piece joint with housing outer protection

SME



Design:

The different versions of the premoulded one-piece joint are designed from 72.5 kV up to 245 kV.

The complete SME consists of premoulded silicone joint body with integrated stress control system and screw or compression type connector.

The joint is protected by metal or plastic housing, alternatively a combination of both.

Application:

Premoulded one-piece joint with housing outer protection for XLPE- and EPR-insulated cables with Al or Cu conductor.

Standard:

- IEC 60840
- IEC 62067

Specific for the product:

The earthing versions are selected as follows:

SME

- Straight-through

SME-E

- Straight-through with earthing connection

SME-S

- Screen separation with coax-bonding cable

SME-SE

- Screen separation with single-bonding cable

Note:

Optional kits:

- Optical fibre kit

Tools:

- Push-on tools
- Fix points for push-on tools
- Belt strap tool

Technical details:

Voltage	Type/ designation	Max. cross section	Prepared cable insulation diameter	Maximum oversheath diameter	Max. dimension (length, diameter)	Weight (approx.)
kV		mm ²	mm	mm	mm	kg
72.5	SME 72	1000	40.0 – 65.0	no limitation	1600 x 120	70
145	SME 145	2500	41.6 – 120.0	no limitation	2350 x 240	140 – 200
170	SME 170	2500	56.0 – 120.0	no limitation	2350 x 240	200
245	SME 245	2500	56.0 – 120.0	no limitation	2350 x 240	200

Premoulded three-piece joint with heat shrink outer protection

KSM



Design:

The different versions of the premoulded three-piece joint are designed from 145 kV up to 300 kV.

The complete KSM consists of premoulded silicone main joint body, two silicone adapters with integrated stress control system and screw or compression type connector.

The outer sheath is recovered with a heat shrink tube.

The joint is designed to connect two different cable dimensions.

Application:

Premoulded three-piece joint with heat shrink outer protection for XLPE- and EPR-insulated cables with Al or Cu conductor.

Standard:

- IEC 60840
- IEC 62067

Specific for the product:

The earthing versions are selected as follows:

KSM

- Straight-through

KSM-E

- Straight-through with earthing connection

KSM-S

- Screen separation with coax-bonding cable

KSM-SE

- Screen separation with single-bonding cable

Note:

Optional kits:

- Optical fibre kit

Tools:

- Push-on tools

Technical details:

Voltage	Type/ designation	Max. cross section	Prepared cable insulation diameter	Maximum oversheath diameter	Max. dimension (length, diameter)	Weight (approx.)
kV		mm ²	mm	mm	mm	kg
145	KSM 145	2500	34.5 – 108.0	118	2200 x 240	110
170	KSM 170	2500	50.0 – 108.0	118	2200 x 240	110
245	KSM 245	2500	50.0 – 108.0	118	2200 x 280	120
300	KSM 300	2500	56.0 – 108.0	118	2200 x 280	120

Premoulded three-piece joint with housing outer protection

SM



Design:

The different versions of the premoulded three-piece joint are designed from 145 kV up to 550 kV.

The complete SM consists of premoulded silicone main joint body, two silicone adapters with integrated stress control system and screw or compression type connector.

The joint is designed to connect two different cable dimensions.

The cable joint has a metal and plastic housing as an outer protection.

Application:

Premoulded three-piece joint with housing outer protection for XLPE- and EPR-insulated cables with Al or Cu conductor.

Standard:

- IEC 60840
- IEC 62067

Specific for the product:

The earthing versions are selected as follows:

SM

- Straight-through

SM-E

- Straight-through with earthing connection

SM-S

- Screen separation with coax-bonding cable

SM-SE

- Screen separation with single-bonding cable

Note:

Optional kits:

- Optical fibre kit
- PD measuring kit

Tools:

- Push-on tools

Technical details:

Voltage	Type/ designation	Max. cross section	Prepared cable insulation diameter	Maximum oversheath diameter	Max. dimension (length, diameter)	Weight (approx.)
kV		mm ²	mm	mm	mm	kg
145	SM 145	2500	34.5 – 108.0	118	2105 x 421	150
170	SM 170	2500	50.0 – 108.0	118	2105 x 421	150
245	SM 245	2500	50.0 – 108.0	118	2105 x 473	200
300	SM 300	2500	81.5 – 108.0	118	2105 x 473	200
420	SM 420	3200	81.5 – 140.0	185	3620 x 715	850
550	SM 550	3200	97.0 – 140.0	185	3620 x 715	850

Screen separation kit

SKKB



Design:

The SKKB 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 route.

Application:

SKKB is a screen separation kit for cross bonding or earthing of cables up to 245 kV.

Specific for the product:

The earthing versions are selected as follows:

SKKB-PAL

- Al laminate as radial water barrier

SKKB-MET

- Metallic sheath with or without copper screen wires

SKKB-CUW

- Copper screen wires

Technical details:

Cable outer sheath diameter mm	Designation	Max. length
mm	mm ²	mm
50 – 100	SKKB 10 - x	1200
100 – 150	SKKB 15 - x	1200

Dry plug-in GIS/transformer termination

KSEV/KTEV



Design:

The different types of the dry type termination KSEV/KTEV are designed from 72.5 kV up to 550 kV.

The KSEV is suitable for installation in the gas-filled cable connection box of a metal enclosed gas-insulated switchgear (GIS).

The KTEV is suitable for installation in the oil-filled cable connection box of a metal enclosed oil-insulated transformer. The complete KSEV/KTEV consists of epoxy resin insulator with embedded electrode, fixing ring and plug-in part, which is fitted to the cable, comprising metal cable gland with spring loaded device and premoulded silicone stress cone for electrical field control. The KTEV is additionally equipped with a corona shield.

Application:

Dry GIS/transformer termination suitable for XLPE- and EPR-insulated cables with Al or Cu conductor.

Standard:

- IEC 60840
- IEC 62067
- IEC 62271-209
- EN 50299

The standard conductor connector is of screw type. Press type connector is also available.

All metal parts are made of corrosion proof materials.

Special offshore solution is available.

Specific for the product:

The kits are selected as follows:

KSEV

- Dry plug-in GIS termination

ISEV

- Insulator for dry plug-in GIS termination

KTEV

- Dry plug-in transformer termination

ITEV

- Insulator for dry plug-in transformer termination

XEV

- Plug-In for dry GIS/transformer termination

Note:

Optional kits:

- Optical fibre kit
- PD measuring kit
- IEC adapter
- Blind plug (BST 72-245)
- Testing plate
- Current testing device
- Termination clamp
- Protecting housing for XEV

Tools:

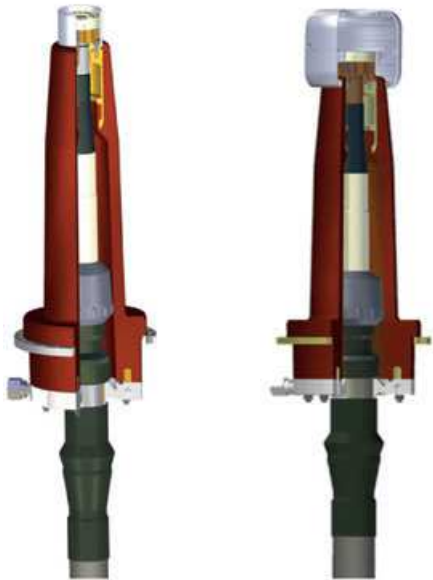
- Push-on cone

Technical details:

Voltage	Type/ designation	Max. cross section	Prepared cable insulation diameter	Maximum oversheath diameter	Insert length (short/long)	Weight (approx.)
kV		mm ²	mm	mm	mm	kg
72.5	KSEV/KTEV 72	1200	35.5 – 76.0	96	310/583	35
123 – 170	KSEV/KTEV 123/145/170	2500	35.5 – 100.0	135	470/757	60
245 – 300	KSEV/KTEV 245/300	3200	47.0 – 140.0	185	620/960	150
420 – 550	KSEV/KTEV 420/550	3200	81.0 – 140.0	185	960/1400	193

Oil-filled GIS/transformer termination

SEV/TEV



Design:

The different types of the oil-filled termination SEV/TEV are designed from 123 kV up to 420 kV.

The SEV is suitable for installation in the gas-filled cable connection box of a metal enclosed gas-insulated switchgear (GIS).

The TEV is suitable for installation in the oil-filled cable connection box of a metal enclosed oil-insulated transformer.

The complete termination consists of epoxy resin insulator with embedded electrode, fixing ring, metal cable gland, prefabricated silicone stress cone for electrical field control.

The TEV is additionally equipped with a corona shield.

Screw or compression type conductor connector is available.

All metal parts are made of corrosion proof materials.

Application:

Oil-filled GIS/transformer termination suitable for XLPE- and EPR-insulated cables with Al or Cu conductor.

Standard:

- IEC 60840
- IEC 62067
- IEC 62271-209
- EN 50299

Specific for the product:

The kits are selected as follows:

- SEV**
 - Oil-filled GIS termination
- TEV**
 - Oil-filled transformer termination

Note:

- Optional kits:**
 - Oil expansion vessel

Technical details:

Voltage	Type/ designation	Max. cross section	Prepared cable insulation diameter	Maximum oversheath diameter	Insert length	Weight (approx.)
kV		mm ²	mm	mm	mm	kg
123 – 170	SEV/TEV 123/145/170	2500	34.5 – 112.0	135	757	92
245 - 300	SEV/TEV 245/300	2500	56.0 – 122.0	135	960	235
420	SEV/TEV 420	2500	56.0 – 124.0	< 165	1400	530

Dry prefabricated outdoor termination

TD



Design:

The different versions of the outdoor termination TD are designed for operation voltage from 123 kV up to 145 kV.

The complete termination consists of a pre-assembled cable termination, top bolt and conductor connector 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 conductor bolt is available as screw type. All metal parts are made of corrosion proof aluminium alloy or stainless steel.

The insulators are available according to IEC 60815 with the standard pollution levels. The insulators have standard flashover distance.

Application:

Dry outdoor termination suitable for XLPE- and EPR-insulated cables with Al or Cu conductor.

Standard:

- IEC 60840

Note:

Optional kits:

- Opto Kit

Tools:

- RKM 145
- Installation cone

Technical details:

Voltage	Type/ designation	Max. cross section	Prepared cable insulation diameter	Maximum oversheath diameter	Creepage distance	Length (approx.)	Weight (approx.)
kV		mm ²	mm	mm	mm	mm	kg
123	TD 123	2500	50.0 – 102.0	150	3940	1810	90
145	TD 145	2500	50.0 – 102.0	150	4650	1955	102

Dry plug-in outdoor termination

KFEV



Design:

The different versions of the outdoor termination KFEV are designed for operation voltage from 123 kV up to 300 kV.

The complete termination consists of combination of epoxy resin insulator with embedded electrode and composite insulator with silicone sheds and upper metal work, metal base plate with supporting insulators and prefabricated silicone stress cone for electrical field control. The cable gland is sealed to avoid entrance of water. All metal parts made of corrosion proof aluminium alloy or stainless steel.

The insulators are available according to IEC 60815 with the standard pollution levels. The insulators have standard flashover distance.

Application:

Dry outdoor termination suitable for XLPE- and EPR-insulated cables with Al or Cu conductor.

Standard:

- IEC 60840
- IEC 62067

Note:

Optional kits:

- Optical fibre kit
- PD measuring kit

Tools:

- Push-on cone

Technical details:

Voltage	Type/ designation	Max. cross section	Prepared cable insulation diameter	Maximum oversheath diameter	Creepage distance	Length (approx.)	Weight (approx.)
kV		mm ²	mm	mm	mm	mm	kg
123	KFEV 123	2500	47.0 – 100.0	138	4495	1754	150
145	KFEV 145	1200	35.5 – 76.0	96	4495	1750	130
300	KFEV 245/300	2000	47.0 – 100.0	138	8755	2861	384

Oil-filled outdoor termination

APED



Design:

The different versions of the outdoor termination APED are designed for operation voltage from 52 kV up to 84 kV.

The complete termination consists of composite or porcelain insulator with metal head plate, metal base plate with supporting insulators and premoulded EPDM rubber stress cone with integrated stress control system and synthetic polyisobutene (PIB) insulating oil for insulator filling and cable clamps.

The conductor bolt is available as screw type. All metal parts are made of corrosion proof aluminum alloy or stainless steel.

The insulators are available according to IEC 60815 with the standard pollution levels. The insulators have standard flashover distance.

Application:

Outdoor termination suitable for XLPE- and EPR-insulated cables with Al or Cu conductor.

Standard:

- IEC 60840

Specific for the product:

The kits are selected as follows:

- APED – P**
 - Composite insulator
- APED – B**
 - Porcelain insulator

Note:

- Optional kits:**
- GAP-APED
 - PIU-APED

Technical details:

Voltage	Type/ designation	Max. cross section	Prepared cable insulation diameter	Maximum oversheath diameter	Creepage distance	Length (approx.)	Weight (approx.)
kV		mm ²	mm	mm	mm	mm	kg
52	APED 52 P	1200	25.0 – 66.0	85	> 1700	1172	35
52	APED 52 B	1200	25.0 – 66.0	85	> 1240	1050	51
72.5	APED 72 P	1200	25.0 – 66.0	85	> 2330	1366	37
72.5	APED 72 B	1200	25.0 – 66.0	85	> 2200	1330	67
84	APED 84 P	1200	25.0 – 66.0	85	> 2710	1461	40
84	APED 84 B	1200	25.0 – 66.0	85	> 2635	1445	74

Oil-filled outdoor termination

APECB



Design:

The different versions of the outdoor termination APECB are designed for operation voltage from 123 kV up to 420 kV.

The complete termination consists of composite or porcelain insulator with metal head plate, metal base plate with supporting insulators and premoulded EPDM stress cone with integrated stress control system and synthetic polyisobutene (PIB) insulating oil for insulator filling and cable clamps.

The conductor bolt is available as screw type. All metal parts are made of corrosion proof aluminum alloy or stainless steel.

The insulators are available according to IEC 60815 with the standard pollution levels. The insulators have standard flashover distance.

Application:

Outdoor termination suitable for XLPE- and EPR-insulated cables with Al or Cu conductor.

Standard:

- IEC 60840
- IEC 62067

Specific for the product:

The kits are selected as follows:

- APECB – P**
 - Composite insulator
- APECB – B**
 - Porcelain insulator

Note:

- Optional kits:**
- Opto kit
 - GAP-APECB
 - PIU-APECB

Tools:

- SV 140, SV 190, SV 215 – installation tool for stress cone

Technical details:

Voltage	Type/ designation	Max. cross section	Prepared cable insulation diameter	Maximum oversheath diameter	Creepage distance	Length (approx.)	Weight (approx.)
kV		mm ²	mm	mm	mm	mm	kg
123	APECB 123	2500	45.5 – 107.0	170	> 3150	1555	90
145	APECB 145	2500	45.5 – 107.0	170	> 4350	1855	100
170	APECB 170	2500	45.5 – 107.0	170	> 5250	2055	110
245	APECB 245	2500	68.0 – 120.0	170	> 9360	3275	295
300	APECB 300	2500	68.0 – 120.0	170	> 9360	3275	295
420	APECB 420	2500	80.0 – 124.0	170	> 14900	4825	600

Dry flexible outdoor termination

THV



Design:

The different versions of the dry flexible outdoor termination THV are designed for operation voltage from 72.5 kV up to 245 kV.

The complete termination consists of push-on prefabricated silicone element with integrated electrical field control, shed modules according to creepage distance requirement, sealing material and screw type conductor bolt. Press type conductor bolts are available on request. The insulating elements are according to IEC 60815 with the standard pollution levels and have standard flashover distance.

Application:

Outdoor termination is suitable for XLPE- and EPR-insulated cables with Al or Cu conductor.

Specific for the product:

THV 245 BIL max. 750kV

Standard:

- IEC 60840
- IEC 62067

Note:

- Tools:**
- Push-on cone

Technical details:

Voltage	Type/ designation	Max. cross section	Prepared cable insulation diameter	Maximum oversheath diameter	Creepage distance	Length (approx.)	Weight (approx.)
kV		mm ²	mm	mm	mm	mm	kg
72.5	THV 72	1600	40.0 – 78.0	no limitation	> 2248	1280	7.5
100	THV 100	1200	51.5 – 78.0	no limitation	> 2500	1830	10
123	THV 123	1200	55.0 – 78.0	no limitation	> 3675	2200	25
145	THV 145	1200	55.0 – 78.0	no limitation	> 4495	2200	25
245	THV 245	1200	55.0 – 78.0	no limitation	> 4495	2200	30

LINKBOX



Description:

Linkbox for Termination:

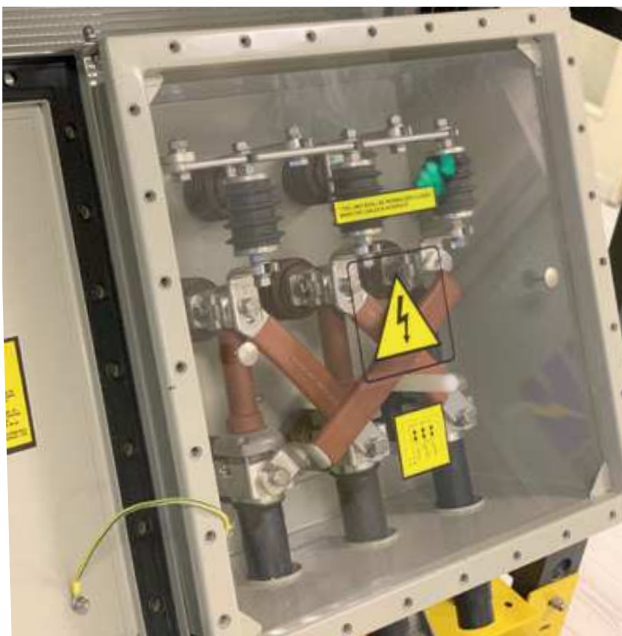
- Direct earthing (without SVL)
- Earthing with SVL

Linkbox for Joints:

- Crossbonding of cable screen (with SVL)
- Direct earthing (without SVL)

Additional different versions available:

- Connection of coax and single bonding cables
- Different cross sections of bonding cables
- Different outer housings
- Special solutions on request
- Different SVL types available



Transition joints



Transition joints

In addition to modern XLPE cable accessories, our portfolio also includes a complete range of low-pressure oil-filled (LPOF) cable accessories up to 170 kV. We develop our LPOF cable solutions together in close cooperation with our customers. This allows us to provide cost-efficient and fast installation of appropriate transition technologies.

Although some oil cable systems (LPOF) have already been in use for 70 years, they can still be operated for years to come with good and regular maintenance. Furthermore, it is possible to connect low-pressure oil-filled cable systems with modern XLPE systems at any time and offers the advantage of being able to renew or convert your cable system section by section.

Furthermore our transition joint portfolio also includes a broad range of gas-pressured cable accessories to enable a reliable and cost-efficient transition technology to XLPE cables.

Features and advantages:

- Minimum tools and installation space needed
- Available as cross-bonding or straight-through application
- Advanced production technology
- Cover housing size and material optimized
- Routinely tested
- Customized solutions

Transition joint for three-core LPOF – XLPE cable

MUDC



Application:

Transition joint for three-core low-pressure oil-filled to XLPE cables with Al or Cu conductor

Standard:

- EN 61442
- IEC 60840

Design:

The transition joint MUDC is designed for operation voltage from 36 kV up to 52 kV.

The complete joint connects a three-core oil cable with three single-core XLPE cables.

The XLPE-side is designed with the plug-in part CPI, which consists of stress cone, main body and screw type connector.

The stress cones are made of oil-impregnated insulation paper, carbon paper, copper mesh and if necessary a stress relief ring.

The oil cable conductor can be connected with screw and compression type connector.

All necessary assembling accessories are part of the kit.

For outer protection a glass fibre housing and filling compound will be supplied.

An optional oil-stop-housing reduces significant oil loss during installation.

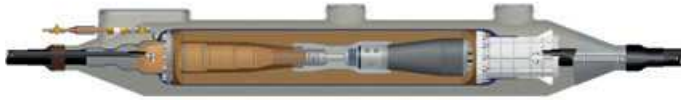
The version is prepared for screen separation requirement.

Technical details:

Voltage	Type/ designation	Max. cross section XLPE	Max. cross section LOPF	Max. XLPE cable insulation diameter	Max. oversheath diameter	Max. dimensions (length, ...)
kV		mm ²	mm ²	mm	mm	mm
36 – 52	MUDC 36/52	1000	630	62.0	no limitation	2300 x 500

Transition joint for single-core LPOF – XLPE cable

USM



Application:

Transition joint for single-core low-pressure oil-filled to XLPE cables with Al or Cu conductor

Standard:

- IEC 60840
- CIGRE 415 06/2010

Design:

The different versions of the transition joint USM are designed for operation voltage from 72.5 kV up to 170 kV and connect a single core oil-filled cable with a single-core XLPE cable.

The two cables will be connected by a common epoxy resin insulator with embedded electrode.

The XLPE-side is designed with a fixing ring and plug-in part, comprising metal cable gland with spring loaded device and premoulded silicone stress cone for electrical field control.

The standard conductor bolt is of screw type.

The oil cable stress cone is made of oil-impregnated insulation paper, carbon paper, copper mesh and the stress relief ring.

Compression type conductor connector, inlet funnel with oil feed-in and all necessary assembling accessories are part of the kit.

Only approx. 15 litre filling of cable insulation oil is needed.

For outer protection a glass fibre housing is in the standard scope of supply.

Two component cast resin filling material is used.

The versions are prepared for screen separation requirement.

Connection of a three-core LPOF cable is possible with the trifurcation kit - AGOW.

Note:

Optional kits:

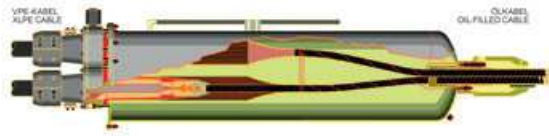
- Optical fibre kit
- PD measuring kit

Technical details:

Voltage	Type/ designation	Max. cross section XLPE	Max. cross section LOPF	Max. XLPE cable insulation diameter	Max. oversheath diameter oil side	Max. dimensions (length, ...)
kV		mm ²	mm ²	mm	mm	mm
123-170	USM 170-OX	2500	1200	47.0 – 100.0	110.0	2700 x 450

Transition joint for single/three-core LPOF – XLPE cable

TJ



Design:

The different versions of the transition joint TJ are designed for operation voltage from 72.5 kV up to 170 kV and connect a single/three-core oil-filled cable with a single-core XLPE cable.

The XLPE-side is designed with premoulded silicone stress cone for electrical field control, a metal cable gland, expansion vessels and insulating oil.

The standard conductor bolt is of compression type. The connection between both cable types takes place by an epoxy resin insulator and compression connectors.

The oil-cable-side is made by a stress cone, which is made of oil-impregnated insulation paper, carbon paper, copper mesh and the stress relief ring.

Compression type conductor connector, stainless steel housing, oil feed-in and all necessary assembling accessories are part of the kit.

A oil-stop-housing reduces significant oil loss during installation. For outer protection a glass fibre housing and filling compound are part of supply.

Application:

Transition joint for single/three-core low-pressure oil-filled to XLPE cables with Al or Cu conductor

Standard:

- IEC 60141-1
- SS 424 14 17
- IEC 60840

Technical details:

Voltage	single/three-core LPOF cable	Type/designation	Max. cross section XLPE	Max. cross section LOPF	Max. XLPE cable insulation diameter	Max. oversheath diameter oil side	Max. dimensions (length, ...)
kV			mm ²	mm ²	mm	mm	mm
84	single-core LPOF	TJ 84-1	1000	800	66.0	78.0	1800 x 250
84	three-core LPOF	TJ 84-3	1000	800	66.0	114.0	2500 x 480
170	three-core LPOF	TJ 170-3	1000	630	83.5	114.0	3400 x 700

LPOF

Low-pressure oil-filled cable accessories



LPOF

We offer a full range of accessories for LPOF cables up to 170 kV. Even today, in close cooperation with our customers, we are developing customized LPOF solutions for repairs or for use as a transition joint for a new XLPE cable.

Some of the advantages using NKT LPOF-solutions:

- Contemporary and advanced products for the fastest and easiest installation
- Simple, cost-effective storage due to overlapping cable cross-sections and cable types
- Extensive expertise with years of experience in the condition of oil cable systems

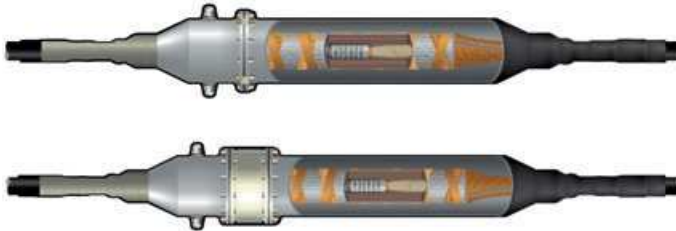
NKT – A reliable expert

LPOF cables and gas-pressured cables are used for the transmission of electrical power over several decades. Thanks to our extensive experience and world-wide installations, we are a reliable expert when it comes to service, maintenance or transition to XLPE-insulated cables. We have a high level of expertise for service, maintenance, repair and reconstruction as well as dismantling and disposal of oil-filled cable systems:

- Expertise on the condition of oil-cable systems
- Tests and preventive measures
- Condition of insulating oil
- Filling factor
- Gas-in-oil analysis
- Pressure volume tests on tanks
- High voltage test
- Localisation of leaks
- Repair of leaks
- Disposal of dismantled materials in accordance with local regulations
- Flushing of oil cables in the case of poor oil quality

Straight-through joint for single-core LPOF cable

MVEO



Design:

The different versions of the straight-through joint MVEO/i are designed for operation voltage from 72.5 kV up to 170 kV.

The complete joint connects two single-core oil cable by a stress cone, made of oil-impregnated insulation paper, carbon paper, copper mesh and if necessary a stress relief ring.

Compression type conductor connector, inner copper housing and necessary assembling accessories are part of the kit.

For outer protection a heat shrink tube or a plastic housing are available.

Application:

Straight-through joint for single core low-pressure oil-filled cables with Al or Cu conductor.

Standard:

- IEC 60141-1

Specific for the product:

The earthing versions are selected as follows:

- MVEO**
 - Straight-through
- MVEO-i**
 - Screen separation

Technical details:

Voltage	Type/ designation	Max. cross section	Max. cable insulation diameter	Max. oversheath diameter	Max. dimensions (length, ...)
kV		mm ²	mm	mm	mm
145	MVEO/i 145	1200	60.0	85.0	1950 x 250
170	MVEO/i 170	1400	76.0	102.0	2500 x 410

Straight-through joint for three-core LPOF cable

MVDO



Design:

The different versions of the straight-through joint MVDO are designed for operation voltage from 72 kV up to 145 kV.

The complete joint connect two three-core oil cable by stress cones, made of oil-impregnated insulation paper, carbon paper and copper mesh.

Compression type conductor connector, inner copper housing and all necessary assembling accessories are part of the kit.

Two oil-stop-housings reduce oil loss during installation.

For outer protection a heat shrink tube or a plastic housing are available.

Application:

Straight-through joint for three-core low-pressure oil-filled cables with Al or Cu conductor.

Standard:

- IEC 60141-1

Technical details:

Voltage	Type/ designation	Max. cross section	Max. cable insulation diameter	Max. oversheath diameter	Max. dimensions (length, ...)
kV		mm ²	mm	mm	mm
72	MVDO 72	630	50.0	no limitation	2500 x 410
145	MVDO 145	630	50.0	no limitation	3550 x 410

Stop-joint for single-core LPOF cable

MEYOSL



Design:

The stop-joint type MEYOSL is designed for operation voltage up to 145 kV.

The complete joint enables a hydraulic independent connection between two low-pressure oil-filled cables. It consists of two separate stress cones, which are made of oil-impregnated insulation paper, carbon paper, copper mesh and the stress relief ring.

The kit includes compression type conductor connector, GIS insulator according IEC 62271-209, both sided oil feed-in, inner copper housing and all necessary assembling accessories.

The outer sheath is recovered with outer protective housing.

The connecting of different cable cross sections are possible.

The version is prepared for screen separation requirement. Connection of two three-core LPOF cables are possible with the trifurcation kit – AGOW.

Application:

Stop-joint for single-core low-pressure oil-filled-cables with Al or Cu conductor

Standard:

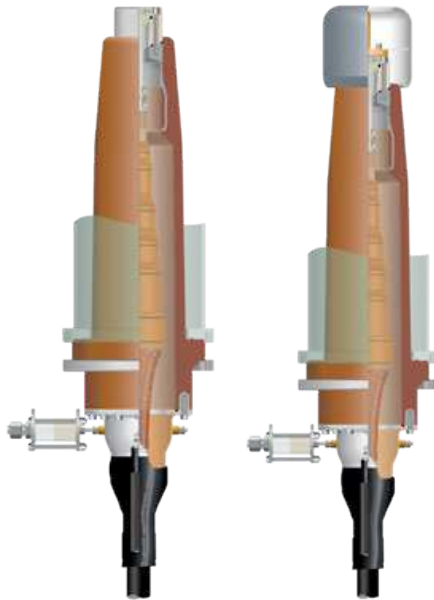
- IEC 60141-1

Technical details:

Voltage	Type/ designation	Max. cross section	Max. cable insulation diameter	Max. oversheath diameter	Max. dimensions (length, ...)
kV		mm ²	mm	mm	mm
145	MEYOSL 145	800	62.0	100.0	3150 x 530

Oil-filled GIS/transformer termination

EYOK/EYOT



Design:

The different types of the oil-filled termination EYOK/EYOT are designed from 123 kV up to 145 kV.

The EYOK is suitable for installation in the gas-filled cable connection box of a metal enclosed gas-insulated switchgear (GIS).

The EYOT is suitable for installation in the oil-filled cable connection box of a metal enclosed oil-insulated transformer.

The complete termination consists of epoxy resin insulator with embedded electrode, fixing ring, metal cable gland. The stress cone is made of oil-impregnated insulation paper, carbon paper, copper mesh and the stress relief ring.

The EYOT is additionally equipped with a corona shield.

The conductor will be connected with compression type connection bolt.

All metal parts are made of corrosion proof materials.

Application:

Oil-filled GIS/transformer termination suitable for low-pressure oil-filled cables with Al or Cu conductor

Standard:

- IEC 60840
- IEC 62271-209
- EN 50299

Specific for the product:

The kits are selected as follows:

EYOK

- Oil-filled GIS termination

EYOT

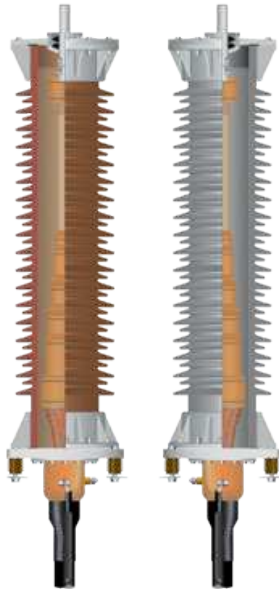
- Oil-filled transformer termination

Technical details:

Voltage	Type/ designation	Max. cross section	Prepared cable insulation diameter	Max. oversheath diameter	Insert length	Weight (approx.)
kV		mm ²	mm	mm	mm	kg
123 – 145	EYOK/EYOT 123 – 145	800	62.0	no limitation	757	82

Oil-filled outdoor cable termination

EROW/EPO



Design:

The different versions of the outdoor termination are designed for operation voltage from 72.5 kV up to 145 kV.

The complete termination consists of composite or porcelain insulator with metal head plate, metal base plate with supporting insulators and the stress cone is made of oil-impregnated insulation paper, carbon paper, copper mesh and the stress relief ring.

The conductor bolt is available as compression type. All metal parts are made of corrosion proof aluminum alloy or stainless steel.

The insulators are available according to IEC 60815 with the standard pollution levels. The insulators have standard flashover distance.

Application:

Outdoor termination suitable for low-pressure oil-filled cables with Al or Cu conductor

Standard:

- IEC 60840

Specific for the product:

The kits are selected as follows:

- EROW**
 - Composite insulator
- EPO**
 - Porcelain insulator

Technical details:

Voltage	Type/ designation	Max. cross section	Max. cable insulation diameter	Max. overshath diameter	Creepage distance	Length (approx.)	Weight (min.)
kV		mm ²	mm	mm	mm	mm	kg
72.5	EROW/EPO 72	1200	62.0	no limitation	> 2320	960	70 – 150
123	EROW/EPO 123	1200	62.0	no limitation	> 3250	1450	82 – 205
145	EROW/EPO 145	1200	62.0	no limitation	> 4840	1650	85 – 230

Oil tank for low-pressure oil-filled cables

OIL TANK



Design:

The various tank types can be used as an expansion vessel in all types of low-pressure oil cable systems.

The tanks are prepared according to the customer's requirements for the necessary internal pressure as well as the appropriate discharge pressure and delivered ready-to-install.

Surface: Galvanized and painted after customer's requirements. Additional glass fibre reinforced plastic surface for further mechanical protection possible. Different stands possible. Connection points M18x1,5.

Application:

Oil tank

Technical details:

Description	Max. volumes	Expansion bellows	Height	Diameter	Weight of tank and oil
			mm	mm	kg
OT-40	73	40	1596	435	325
OT-45	82	45	1739	435	350
OT-50	91	50	1892	435	370
OT-55	100	55	2045	435	393
OT-60	110	60	2198	435	420

Pre-compression of bellows

Working pressure range

0.3	0.3 – 2.0
0.5	0.5 – 2.5
0.75	0.75 – 3.0
1*	1.0 – 3.5*
1.5*	1.5 – 4.8*

* Only available after additional check of our technical engineers and in special cases

Certificates

NKT is certified according to all main international standards and at all locations. High voltage cable accessories from NKT are produced in Cologne, Germany and in Alingsås, Sweden. All certificates are also available on our websites.

Certificate

Standard **ISO 9001:2015**
 Certificate Registr. No. **01 100 1542133**

Certificate Holder:

NKT

NKT GmbH & Co. KG
 Düsseldorfer Strasse 400
 51061 Köln
 Germany

including the locations according to annex

Scope: Research, development, production, project execution, installation, service, marketing and sale of power cable systems and fibre optic cable systems and metal products. Installation and services of HV cable systems. Supply of HV products, planning and supply of HV cable systems.

Proof has been furnished by means of an audit that the requirements of ISO 9001:2015 are met.

Validity: The certificate is valid from 2020-01-01 until 2022-12-31. First certification 1993

2019-11-27
 TÜV Rheinland Cert GmbH
 Am Grauen Stein · 51105 Köln

www.tuv.com

Certificate

Standard **ISO 9001:2015**
 Certificate Registr. No. **01 100 1542133**

Certificate Holder:

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2019-11-27
 TÜV Rheinland Cert GmbH
 Am Grauen Stein · 51105 Köln

www.tuv.com

Certificate

Standard **BS OHSAS 18001:2007**
 Certificate Registr. No. **01 213 1542152**

Certificate Holder:

NKT

NKT GmbH & Co. KG
 Düsseldorfer Strasse 400
 51061 Köln
 Germany

including the locations according to annex

Scope: Research, development, production, project execution, installation, service, marketing and sale of power cable systems and fibre optic cable systems and metal products. Installation and services of HV cable systems. Supply of HV products, planning and supply of HV cable systems.

Proof has been furnished by means of an audit that the requirements of BS OHSAS 18001:2007 are met.

Validity: The certificate is valid from 2019-08-02 until 2021-03-11. First certification 2012

2019-08-02
 TÜV Rheinland Cert GmbH
 Am Grauen Stein · 51105 Köln

www.tuv.com

Certificate

Standard **ISO 50001:2011**
 Certificate Registr. No. **01 407 1542159**

Certificate Holder:

NKT

NKT GmbH & Co. KG
 Düsseldorfer Strasse 400
 51061 Köln
 Germany

including the locations according to annex

Scope: Research, development, production, project execution, installation, service, marketing and sale of power cable systems and fibre optic cable systems and metal products. Installation and services of HV cable systems. Supply of HV products, planning and supply of HV cable systems.

Proof has been furnished by means of an audit that the requirements of ISO 50001:2011 are met.

Validity: The certificate is valid from 2019-11-29 until 2021-08-20. First certification 2013

2019-12-02
 TÜV Rheinland Cert GmbH
 Am Grauen Stein · 51105 Köln

www.tuv.com

NKT GmbH & Co. KG

Düsseldorfer Strasse 400

Chempark

51061 Cologne

Germany

Tel.: +49 221 676 0

NKT HV Cables AB

Sävelundsgatan 2

441 16 Alingsås

Sweden

Tel.: +46 322 774 00

accessories@nkt.com

www.nkt.com



NKT ist Unterzeichner des Europacable Industry Charter: Eine Verpflichtung für erstklassige Qualität.

NKT is signatory of the Europacable Industry Charter: A commitment towards superior quality.