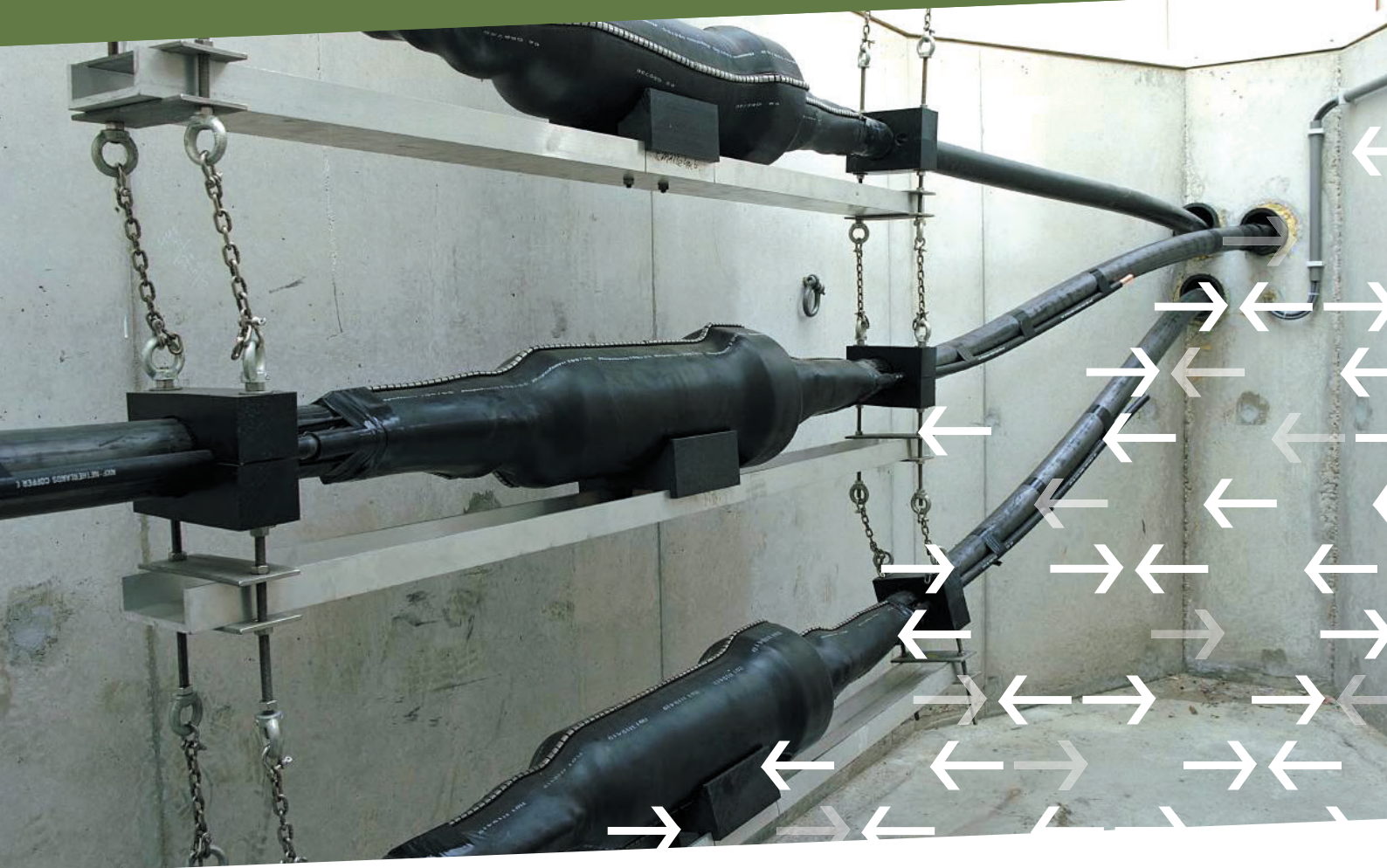


PRODUCT RANGE

Joints



A brand of the

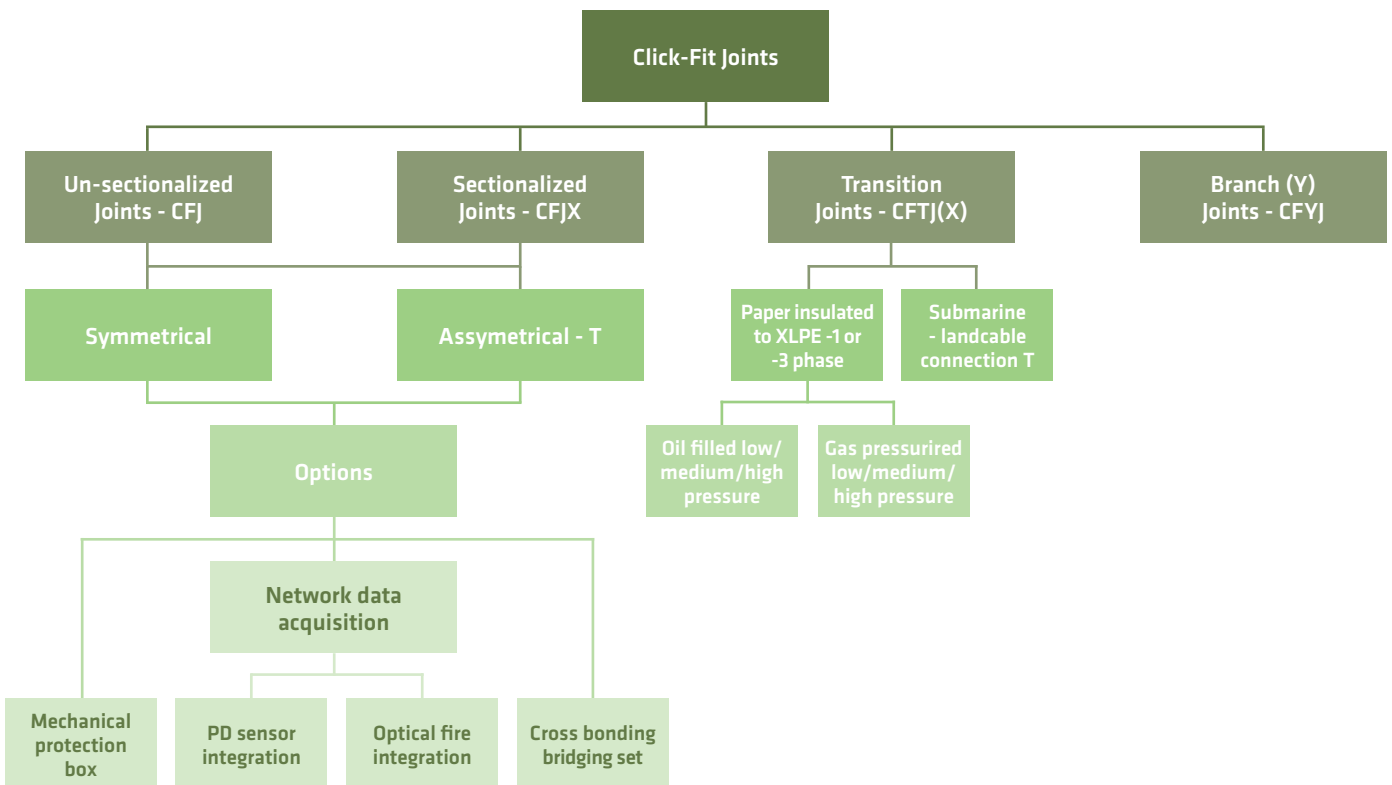
Prysmian
Group

Click Fit Joints

The application

Click-Fit joints are used in the high voltage power grids, connecting all combinations of cables with minimum effort and in less time than conventional joints. The pre-moulded, factory tested Click-Fit joints offer a fail-safe connection every time. Click-Fit joints can be split into four main categories: sectionalized and un-sectionalized (symmetrical joint and asymmetrical joints type to connect two different extruded cables), transition joints for extruded to paper cable connections and branch (Y) joints. Click-Fit joints are highly reliable cable connection assemblies designed to connect any extruded high voltage cable and able to cover a broad range of applications. Also Click-Fit technology allows for pre-fabrication of the XLPE cable prior to disconnection of the circuit, thus reducing network down time.

Overview - type of joints



Fail-safe connection with efficient installation

All joints are designed according to the unique Click-Fit principle, based on a simple plug and play philosophy that allows for time-efficiently connecting (extra) high voltage cables and systems. All joints include the unique Click-Fit locking mechanism. Click-Fit joints are available from 72.5kV to 550kV. Click-Fit joints are offered with a variety of options to meet customer specific design requirements.

Product range overview



Product overview

Available for cable systems with maximum system voltage
U_m [kV]

DESCRIPTION	CODE	Available for cable systems with maximum system voltage U _m [kV]							
		72,5	123	145	170	245	300	420	550
Click-Fit® Joint	CFJ(X) - (U _m)	✓	✓	✓	✓	✓	✓	✓	✓
Click-Fit® Asymmetrical Joint	CFJ(X) - (U _m) -T	✓	✓	✓	✓	✓	✓	✓	✓
Click-Fit® Transition Joint - extruded to paper insulated*	CFTJ(X) - (U _m) -P	✓	✓	✓	✓				
Click-Fit® Branch Joint	CFYJ(X) - (U _m)	✓							

CFJ = unsectionalized joint

CFJX = sectionalized joint (cross-bonding)

P = the number of phases

* Available for Low, Medium and High Pressure Fluid Filled Systems



Operational conditions

Ambient operational temperature

Min: -60°C

Max: +50°C



Installation conditions

Installation temperature

Min: 0°C

Min: +40°C

Jointer requirements

CF certified HV trained jointer

Environment

Protected against rain and dust

Quality control

Quality control of High voltage accessories 72kV-550kV

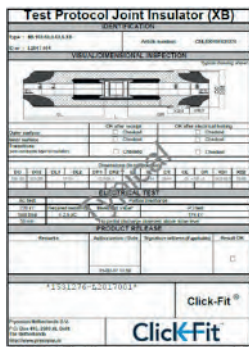
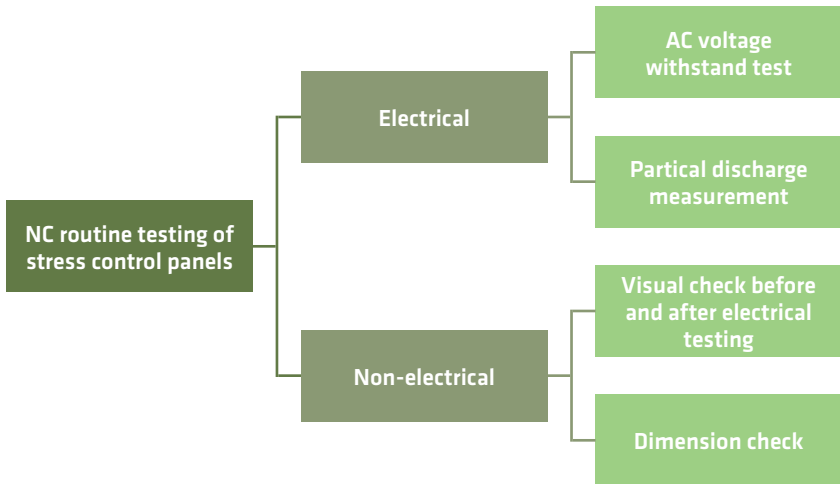
The accessories manufactured by Click Fit in the Netherlands meet the world's most stringent standards. The quality system in place is responsible for the total control of quality network components and related activities. During the manufacturing process at our suppliers, all relevant process parameters are checked and recorded. Prior to leaving the manufacturing facility, a final dimension and visual inspection is performed.

Routine test of Click Fit Joints

The rubber electrical stress control parts of Click-fit joints are 100% successfully routine tested (FAT) before leaving the factory. The test requirements are defined for each product family and the electrical and non-electrical test results are recorded on a protocol. The test protocols are identified for each product by a unique code and are included with each delivery and stored for a minimum of 10 years.



100 % Factory acceptance testing (FAT)



A test report is provided for every electrical stress control part

Installation

CF joints can be installed under various environmental conditions such as, directly buried in soil, clamped on a racking system (steel construction) in a tunnel or in confined spaces (manhole).

Installation possibilities



Direct buried

- Fully submersible
- No need for cable clamping



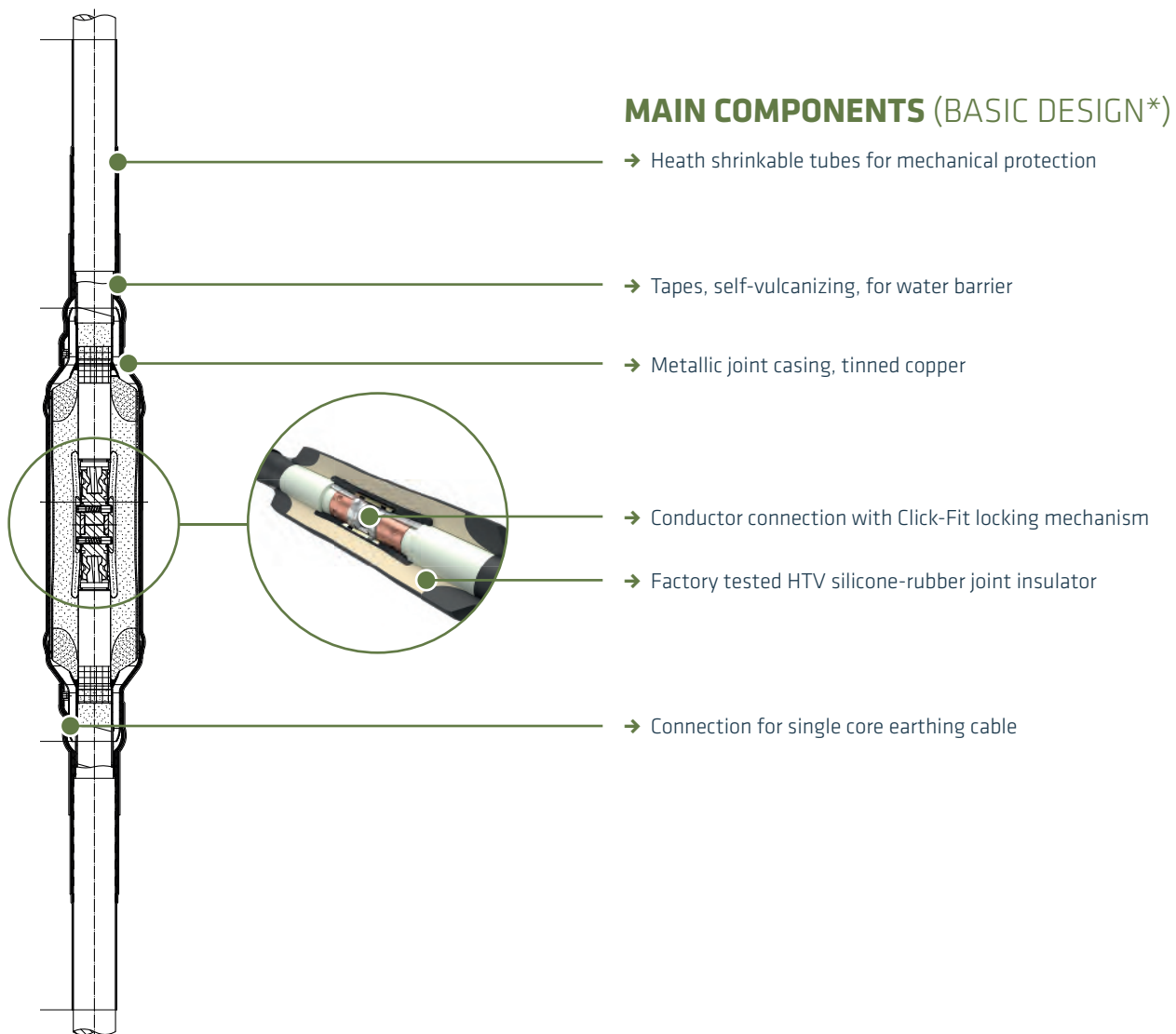
Manholes / ducts

- Installation possible in confined spaced
- Slim fit joints available for special space requirements

Click-Fit Joint types

Un-sectionalized (straight) joint type CFJ

Un-sectionalized joints are used to connect two extruded HV cables with no screen interruption. This type of joint is available for both symmetrical (type CFJ) and asymmetrical (type CFJ-T) designs. Straight joints are typically used in short length power circuits or when the induction current in the screen is low.



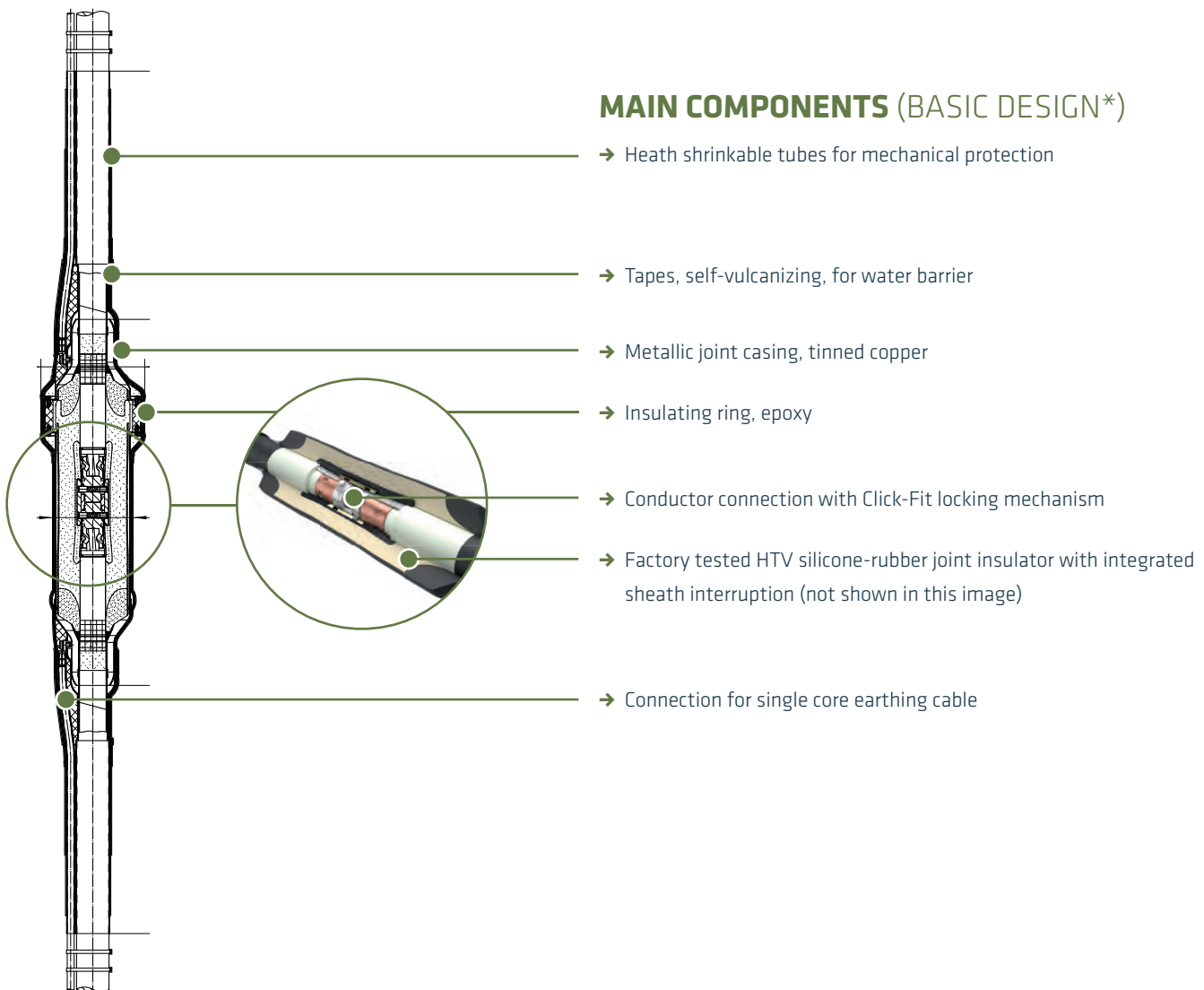
Datasheets

Please contact us for specific datasheets.

Click-Fit Joint types

Sectionalized (sheath interrupted) joint type CFJX

Sectionalized joints include a screen interruption to isolate the cable sheaths on each side of the joint and are used to connect two extruded HV cables. These type of joints are available for both symmetrical (type CFJX) and asymmetrical (type CFJX-T) joints. The screen interruption type is used for single point and/or cross bonding cable system designs.



Datasheets

Please contact us for specific datasheets.

Note: 'X' denotes sheath interruption

Benefits Click Fit Joints

The ClickFit logo is located in the top right corner of the page. It consists of the word "ClickFit" in a sans-serif font, with a blue arrow pointing to the left, positioned between the 'i' and 'F'. The logo is set against a white circular background.

BENEFITS CLICK FIT JOINT

	Type CFJ(X)
100% Factory Acceptance Testing (FAT) to ensure high reliability	Y
Installation possible in confined spaces	Y
Limited number of components	Y
Ability to connect all types of extruded HV cable	Y
Fully submersible in water	Y
Asymmetrical design available	Y
Optical fibre integration and/or Prywing PD sensor integration (optional)	Y

CFJ(X) Joint in operation

The Click-Fit un sectionalized (straight/symmetrical) joint, type CFJ(X)-Um, is designed to connect two equal extruded high-voltage cables. Both cable ends provided with CLICK-FIT® plugs are inserted into the one piece pre moulded silicone rubber insulating joint body and are electrically connected by using silver plated contacts. An integrated metallic grooved ring mechanically locks the position of the plugs through a spring-loaded bayonet mechanism. The CLICK-FIT® plug is connected to the cable by means of compression, MIG-welding or shear-off bolts. The joint is enclosed in a copper casing soldered to the metal sheaths of the high-voltage cables, which guarantees full radial water tightness. The joint is finished by means of a heat shrinkable tube for mechanical protection. The installation, which uses a minimum number of components, is user friendly and is time efficient.

Benefits Click Fit Joints

ClickFit™

CFJ(X)-T Joint design

The Click-Fit sectionalized (asymmetrical) transition joint, type CFJ(X)-Um-T, is designed to connect two extruded high-voltage with different diameters and/or constructions. Click-Fit joints are completely maintenance free.

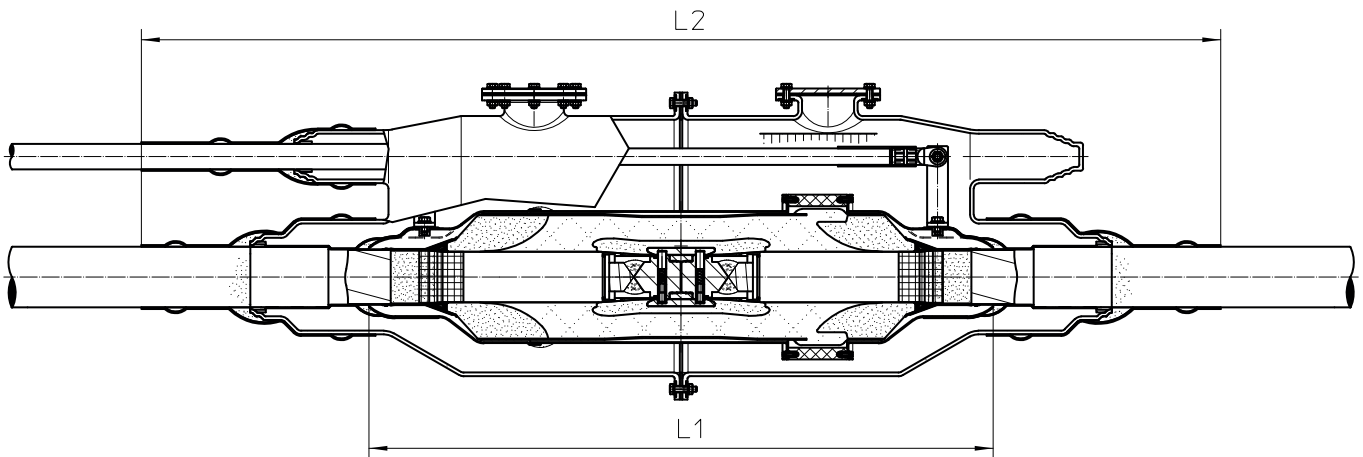
Joint design with outer protection box:

• CFJ(X)-(T)-CC Standard Joint design for concentric bonding Cable Connection

For the basic, watertight design of the Click Fit joint (type CFJ and CFJX) connected with single core bonding cable no coffin box is required. For a concentric cable connection, the Click-Fit joint with coffin box is the standard solution (indicated with “-CC”). The box is filled with bituminous resin, other filling compounds upon request.

• CFJ(X)-(T)-C Joint design for single core bonding cable which requires a Coffin box

For the basic, watertight design of the Click Fit joint (type CFJ and CFJX) connected with single core bonding cable no coffin box is required. For customers whose specification mention a need for a mechanical outer covering, the Click-Fit joint with coffin box is the designated type (indicated with “-C”). For a single core bonding cable connection a coffin box needs to be added as an additional item to your request. The standard filling of the box is with bituminous resin, other filling compounds can be provided upon request



Joint CFJ(X) Specifications




System Voltage [kV]

72,5 123 145 170 245 300 420 550

DIMENSIONS**

		72,5	123	145	170	245	300	420	550
Max conductor size	[mm²]	1.600	2.500	2.500	2.500	2.500*	2.500*	2.500*	2.500*
Max insulation diameter	[mm]	66	100	100	100	117	117	117	128

TESTING

HVAC routine test	100%	2,5 U ₀ -30 min / PD level < 5pC at 1,7 U ₀							
L.I. withstand voltage test	[kV +10/-10]	350	550	650	750	1.050	1.050	1425	1550
24 hr AC-test	[kV]	110	190	240	260	380	380	460	580
1 minute AC	[kV]	140	230	310	325	460	460	-	-
Short circuit current (1 sec)	[kV]	Limited by cable design							

STANDARDS

Type Test according	IEC	IEC-60840		IEC-62067	
	IEEE	IEEE-St404			
	NEN	NEN-HD632			

* Larger cable cross sections upon request

** Refer to datasheets for more details

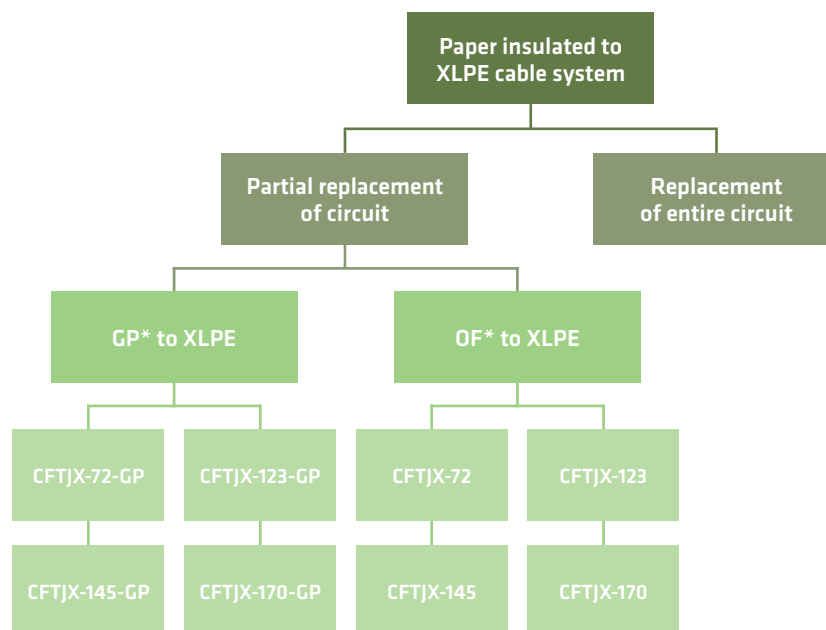
Transition Joint Type CFTJ(X)

Transition joint type CFTJ(X)

Introduction

Oil (fluid) filled (OF) and gas pressurised (GP) cable system have been long superseded by XLPE cable systems. However, there is still a vast majority of paper insulated cables present in the network around the globe. As paper insulated cables are generally reliable, they will continue to be a key part of the network for many years to come. Most cable manufacturers around the globe have now ceased to manufacture paper insulated cables. In light of this, network owners are in need of a solution to ensure network reliability is achieved whilst being cost efficient. The network is under continuous transformation, from replacing, repairing and diverting from paper insulated to solid insulation. Due to many constraints, replacements of paper insulated cables systems can be split into two categories as shown below.

Overview – different types of transition joints**



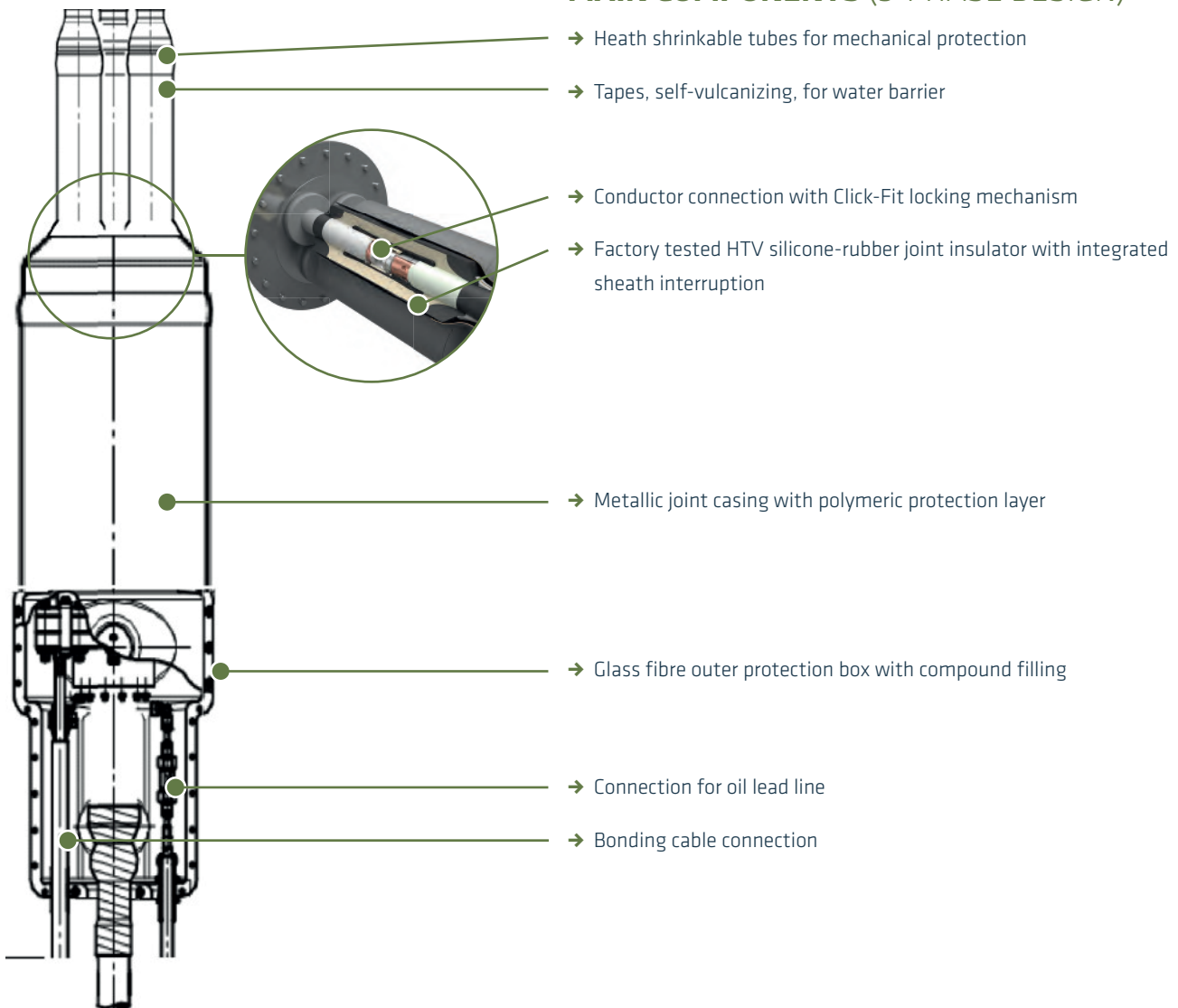
* Available for Low, Medium and High pressure systems

** Other voltage classes on request

Transition Joints

Transition joints are used to connect paper insulated cable to extruded cable and include a screen interruption to isolate the cable sheaths on each side of the joint. These type of joints are available for low, medium and high pressure cable systems. There are two main categories of paper cables which can be connected to the extruded cable, one is the oil(fluid) filled and the other is one a gas pressurized cable. Depending on the existing cable construction, connecting one or three core/Phase solutions is possible. Click-Fit technology allows for partial replacement circuit to reduce cost and save time during an emergency.

MAIN COMPONENTS (3-PHASE DESIGN)



Datasheets

Please contact us for specific datasheets.

Benefits Click Fit Transition Joints



BENEFITS CLICK FIT TRANSITION JOINT

	Type CFTJX (Paper - XLPE)
Available in 1 phase and 3 phase designs	Y
Solutions available for any type of paper insulated cable	Y
Suitable for oil and gas pressured cable systems (low/medium/high pressure)	Y
100% Factory Acceptance Testing (FAT) to ensure high reliability	Y
Limited number of components	Y
Click fit technology utilised on the extruded (XLPE) cable side, greatly improving efficiency and reliability	Y
Connection possibility with a range of conductor material with different cross sections	Y
Sheath interruption for the metal sheaths	Y
Connection for hydraulic / gas pressurized system and earthing cables	Y

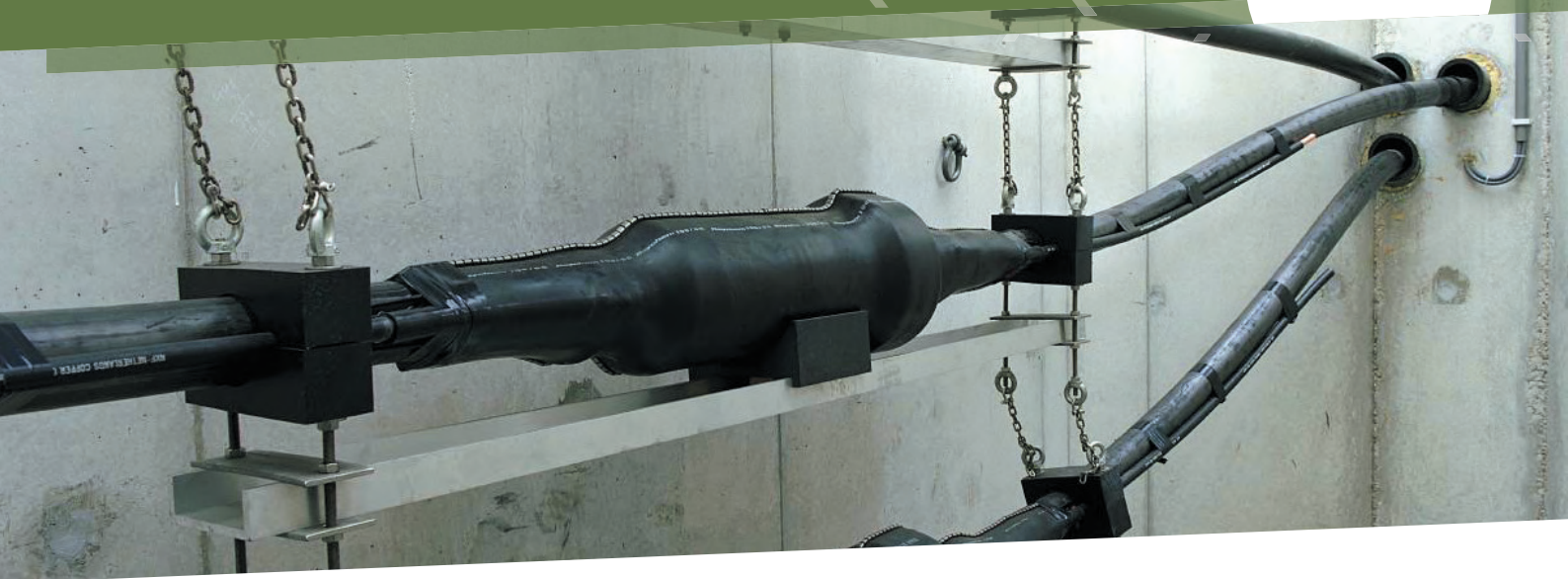
CFTJX Transition Joint in operation

The Click-Fit transition joint, type CFJTX-Um, is designed to connect (oil or gas) filled paper cables with extruded (XLPE) high voltage cables. The extruded cable ends, provided with a CLICK-FIT® plug, are inserted into the one piece pre moulded silicone rubber insulating joint body and are electrically connected by using silver plated contacts. An integrated metallic grooved ring mechanically locks the position of the plugs through a spring-loaded bayonet mechanism. The CLICK-FIT® plug is connected to the cable by means of compression, MIG-welding or shear-off bolts.

The rubber Click-Fit joint insulating bodies connect the XLPE cables to bushings. The factory tested epoxy resin bushings are required to make the transition between XLPE and paper cable parts. The paper cable part of the transition joint is created by lapping paper layers impregnated with cable oil. The paper cable part is also provided with a connection for the oil-pressure system (pre-pressurized tank, pressure gauge, etc.).

At the paper cable side, the joint is finished with a copper casing soldered to the metal sheath. The end of the copper casing is enclosed in a polyester outer box which provides mechanical protection and strain relief for the oil lead pipe. At the XLPE side the joint is finished with a polymeric casing. This casing is covered with heat shrinkable tube. Both casings guarantee full radial water tightness. The installation, which uses a minimum number of components, is user friendly and is time efficient.

Transition Joint CFTJX Specifications

System Voltage [kV]

72,5

123

145

170

DIMENSIONS**

		72,5	123	145	170
Max conductor size paper cable	[mm²]	70-240* (universal)	1.000	1.000	1.000
Max conductor size XLPE cable	[mm²]	1.200	1.600	1.600	1.600
Max insulation diameter	[mm]	66	100	100	100

TESTING

HVAC routine test	100%	2,5 U _o -30 min / PD level < 5pC at 1,7 U _o			
L.I. withstand voltage test	[kV +10/-10]	325	750	750	750
24 hr AC-test	[kV]	110	220	220	220
Short circuit current (1 sec)	[kV]	Limited by cable design			

STANDARDS

Type Test according	IEC	IEC-60840
	IEEE	IEEE-St404
	NEN	NEN-HD632
	CIGRE	TB415 (72 kV)

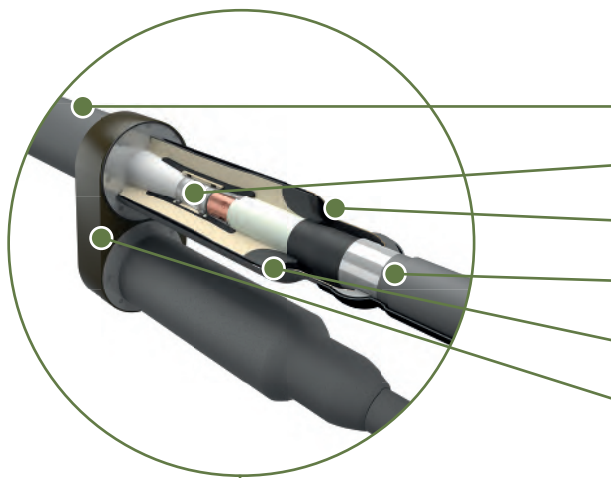
* Larger cable cross sections upon request

** Refer to datasheets for more details

Branch Joint

Branch (Y) joint type CFYJ

The Click-Fit branch (Y) joint type CFYJ is designed to connect three extruded high voltage cables. Suitable for direct buried configurations and also for Inter-array offshore cable connections of wind turbines using Click-Fit technology to save time and installation cost whilst offering a fail-safe connection every time.



MAIN COMPONENTS

- Heat shrinkable tubes for mechanical protection
- Conductor connection with Click-Fit locking mechanism
- Metallic joint casing
- Tapes, self-vulcanizing for water barrier
- Factory tested HTV silicone-rubber joint insulator
- Factory tested epoxy resin Y-insulator



Benefits Click Fit Branch Joint

ClickFit™

BENEFITS CLICK FIT BRANCH JOINT

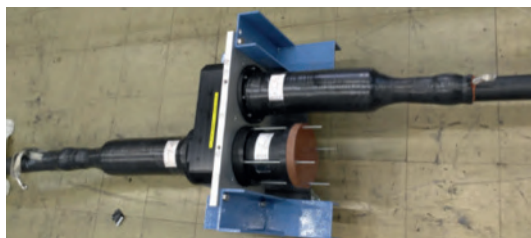
	Type CFTJX
Fully solid type of insulation, without oil or gas inside	Y
100% Factory Acceptance Testing (FAT) all three rubber insulating bodies and epoxy resin Y-insulator	Y
Fully submersible in water	Y
Saves time during installation with factory prepared cable ends	Y
Blind plug for HV testing of two (out of three) cables connected (optional)	Y
Protective watertight outer covering (optional)	Y

CFYJ Branch Joint in operation

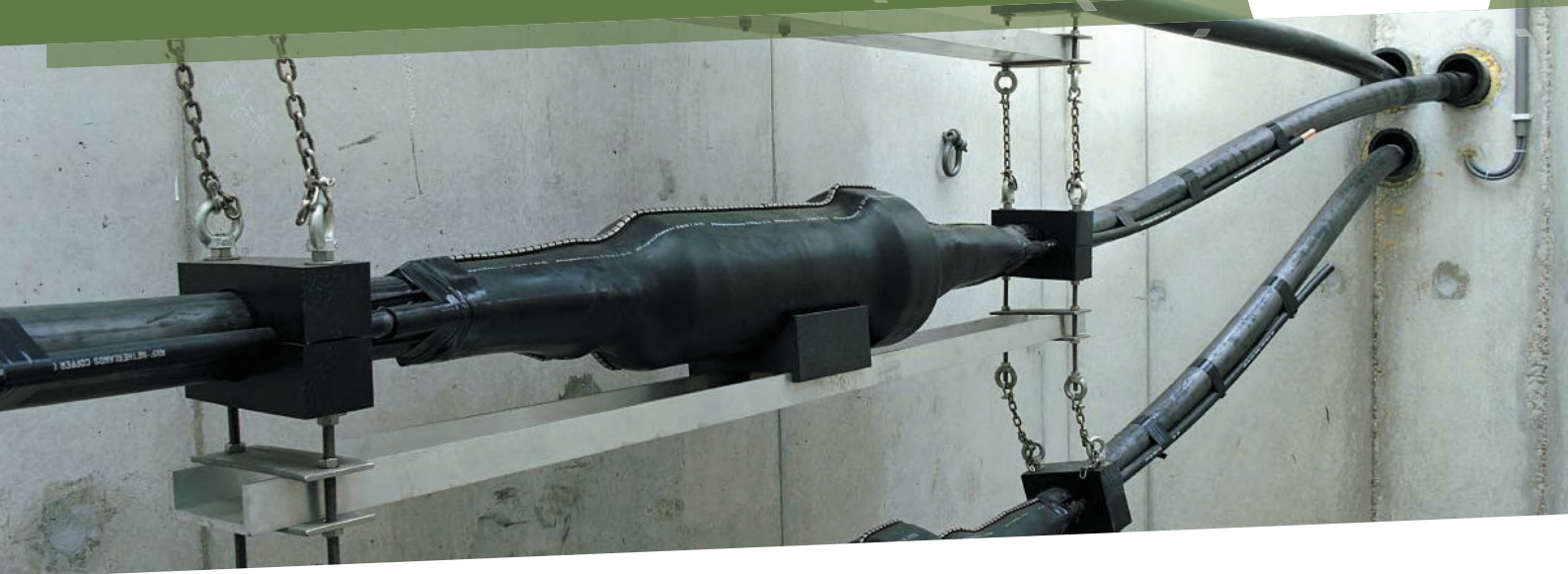
The Click-Fit branch joint, type CFYJ-Um, is designed to connect three extruded (XLPE) high voltage cables. The extruded cable ends, provided with a CLICK-FIT® plug, are inserted into the one piece pre moulded silicone rubber insulating joint body and are electrically connected by using silver plated contacts. An integrated metallic grooved ring locks the position of the plugs through a spring-loaded bayonet mechanism. The CLICK-FIT® plug is connected to the cable by means of compression, MIG-welding or shear-off bolts. A dry type polymeric joint covering protects against moisture ingress and mechanical impact. Vertical installation of accessories is also possible due to the integrated core locking system. This provides a vibration proof cable system. To minimize the offshore installation time, cable ends can be prepared onshore. The cables can then be installed and clamped inside the turbine. The installation, which uses a minimum number of components, is user friendly, increasing the speed of installation.

CFYJ-Blind plug

For testing purpose there is a blind plug available to be adapted on the third cable exit of the epoxy Y-insulator to make HVAC- testing possible on the other two cables connected to the Y-joint type CFYJ.



Branch Joint CFYJ Specifications

System Voltage [kV]

72,5

DIMENSIONS**

Max conductor size	[mm²]	1.600
Max insulation diameter	[mm]	79

TESTING

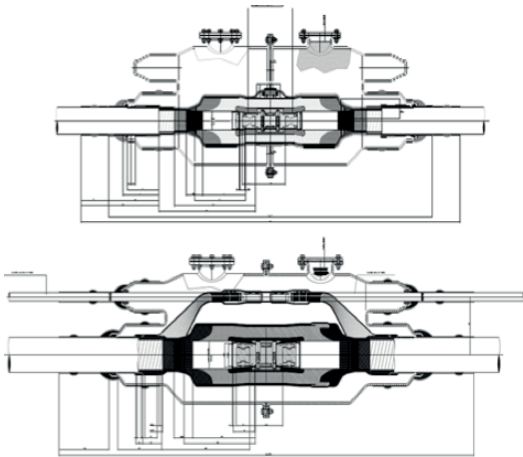
HVAC routine test	100%	2,5 U ₀ -30 min / PD level < 5pC at 1,7 U ₀
L.I. withstand voltage test	[kV +10/-10]	350
24 hr AC-test	[kV]	110
1 minute AC	[kV]	140
Short circuit current (1 sec)	[kV]	Limited by cable design

STANDARDS

Type Test according	IEC	IEC-60840
	IEEE	IEEE-St404
	NEN	NEN-HD632

Additional Components

Coffin box (-C) for single core bonding cable connection



For the basic, watertight design of the Click Fit joint (type CFJ and CFJX) connected with single core bonding cable no coffin box is required. For customers whose specification mention a need for a mechanical outer covering, the Click-Fit joint with coffin box is the designated type (indicated with “-C”). For a single core bonding cable connection a coffin box needs to be added as an additional item to your request. For a concentric cable connection, the Click-Fit joint with coffin box is the standard solution (indicated with “-CC”). The standard filling of the box is with bituminous resin. Other filling compounds can be provided upon request

TYPE CFJ(X)-Um- ‘C’

TYPE	System Voltage [kV]				
	123	145	170	245/300	420
110	✓	✓			
150		✓*	✓	✓	
220				✓	
400					✓

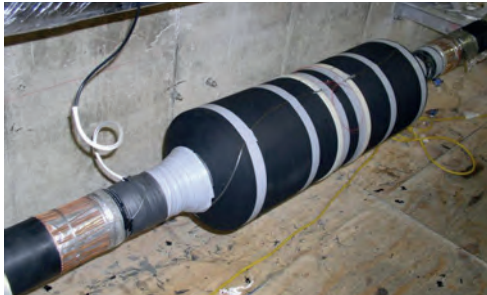
* Large cables



! * Please note: for Click fit Joints – type CFJX – connected with concentric cable, our standard design is with a polymeric outer protection coffin box, which is the water barrier of the joint. You do not need to add an additional box. (CFJX indicated with “-CC”).

Additional Components

Optical Fibre (-OF) integrated organiser



A Click Fit joint type CFJ(X) with designation “-OF” provides a possibility to splice and store the integrated optical fibers from the extruded (extra) high voltage cables within the metal casing. Suitable for Multimode and Single Mode optical fibres.

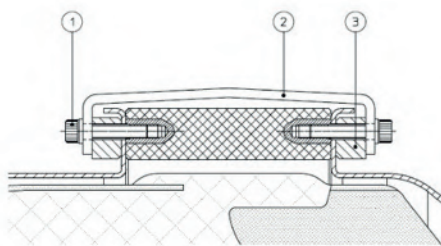
TYPE CFJ(X)-Um -OF

System Voltage [kV]

72,5 - 550

Integrated OF organizer set (MM/SM)	✓
-------------------------------------	---

Bridging set for CFJX



When the Click Fit joint with sheath interruption type CFJX needs to be installed as a straight joint type CFJ (without sheath interruption) there is a separate bridging set type 0-07-146 available.

TYPE 0-07-146

System Voltage [kV]

72

123/145/170

245/300

420

PRODUCT CODE

CNL299811467	✓			
CNL299811466		✓		
CNL299811465			✓	
CNL299811468				✓

Additional Components

Prycam WING PD sensor



All Click-Fit accessories are suitable for integration of a Prycam Wing PD patch sensor, for accurate Partial Discharge acquisition with 50 MHz bandwidth. The wing sensors are compatible with different kind of (remote) monitoring systems like PryCam and Omicron.

TYPE - Prycam WINGS

System Voltage [kV]

72,5 - 550

Prycam wing sensor suitable for all type of joints



Factory pre-connectorized cable end

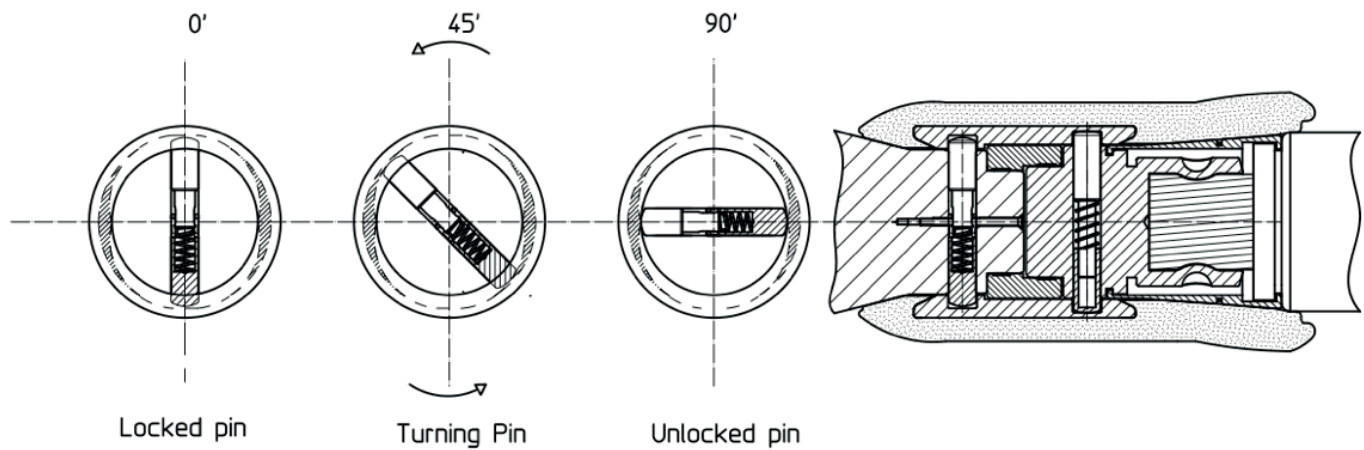


The unique Click-Fit concept allows the cable ends to be prepared in the factory. Connectors are installed on the cables after preparation and they are tested together with the cable. Mechanical protection during transport is ensured by a special protection sleeve with an integrated pulling eye.

Additional Components

Rotational Click Out

During normal operation, the cable is locked/fix inside the socket insulator. Optionally it is possible to unlock the cable from the socket as well as to unlock the cable from the field body, by using the rotational "Click-Out" mechanism. This requires additional components and tools.



For more details about this feature and other tailor made solutions please contact Click-Fit customer service.

Various toolsets are available for installation the Click Fit Joints.

Tools for cable preparation (details on request)

- Peeling tool for the removal of the insulation screen
- Peeling tool for the removal of the XLPE insulation
- Peeling tool for the removal of the conductor screen
- Peeling tool for insulation fixation groove
- Hydraulic Compression toolset (pump / mould / die)
- MIG welding machine for Aluminium

Tools for joint installation

- Hydraulic plug in frame
- Reducing bushes for hydraulic plug in frame (cable diameter range)



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