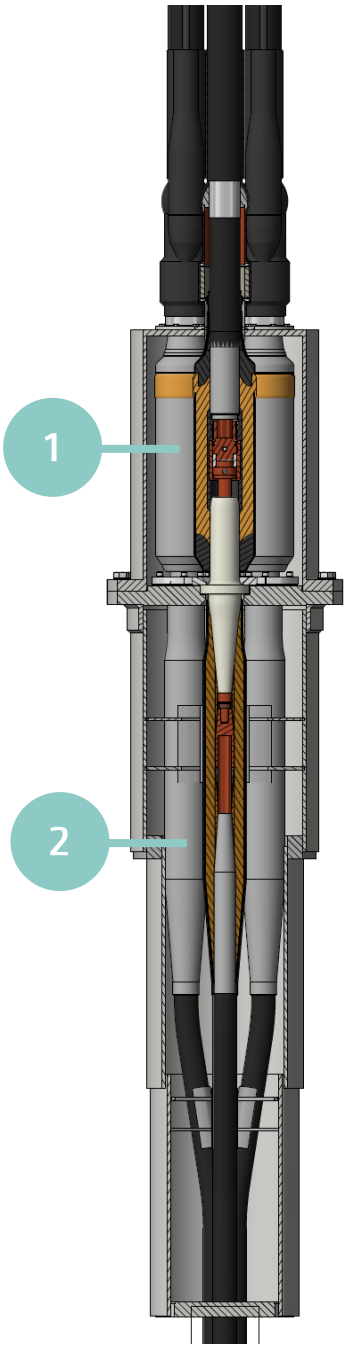
CFTJX-145-3-HPFF

Pre-moulded CLICK-FIT® XLPE to HPFF Transition Joint

Product Description

The pre-moulded CLICK-FIT® transition joint type is designed to connect three single-core extruded high voltage cables and a three-core High Pressure Fluid Filled (HPFF) cable including:



- Different conductor material and/or cross section
- 3x one-piece pre-moulded and factory tested rubber CLICK-FIT® joint insulators
- Sheath sectionalizer
- Connection for earthing cables
- Connection for hydraulic system fluid filled cable
- Complete steel casing
- Type tested in accordance with IEEE-Std 404 including additional tests

BASIS COMPONENTS

1) CLICK FIT® PRE-ASSEMBLY FOR POLYMERIC SIDE

→ Factory tested epoxy resin insulator
→ Factory tested field controlling rubber insulator with screen interruption
→ Conductor connection with silver plated CLICK-FIT® plug and contact elements
→ Earth connections for bonding leads
→ Fixing materials, such as bolts and nuts
→ Cable clamps

2) FLUID FILLED SIDE

→ Conductor connection
→ Flanges and O-rings to seal oil-filled cable compartment
→ Dielectric fluid impregnated insulation
→ Valves for filling and treating of the fluid
→ Connection point for pipe bonding

ADDITIONAL OPTIONS

→ Connection for single core earthing cable
→ Connections possible between all conductor sizes within applicable range

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RANGE OF APPLICATION [1]

- → Rated system voltage : 69 up to 138kV [Um=145kV]

Conductor size range HPFF cable:

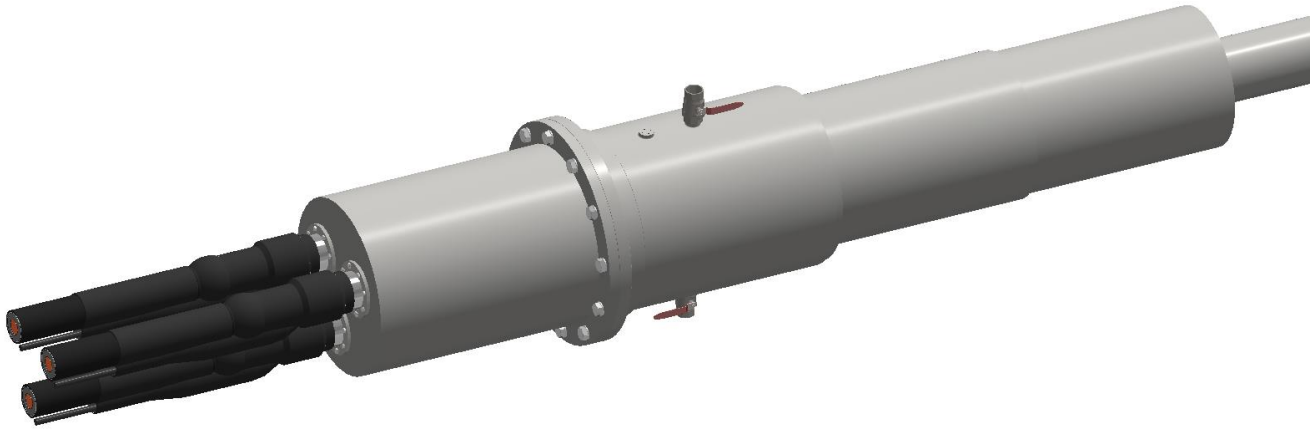
- → Copper or Aluminum stranded : 500 kcmil - 2500 kcmil (240 mm^2– 1200 mm^2)

Conductor size range XLPE cable:

- → Aluminum/Copper round stranded or Milliken conductor: 500 kcmil - 5000 kcmil (240 mm^2– 2500 mm^2)
- → Maximum cable insulation diameter (prepared) : 100 mm (XLPE)

INSTALLATION

- → Condition : Protected against rain and dust
  : Typical conditions of HPFF and XLPE applications
- → Installation : By certified/trained jointers only
- → Ambient operating temperature : min -60 °C / max +50 °C



[1] special cable specifications possible on request

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Electrical Information

DESIGN AND ENHANCED TESTS PERFORMED

24 hours AC	: 200 kV
Ambient and Hot Lightning impulse withstand (+10 / -10)	: 650 kV
1 hour AC	: 350 kV
Partial discharge level	: <5 pC at 200 kV
Cyclic aging test 30 cycles ambient to 105 °C	: 160 kV
Ionization factor	: <0.10 %

SHEATH WITHSTAND VOLTAGES

AC voltage	: 20 kV for 1 min
DC voltage	: 25 kV for 1 min
Impulse voltage (10+/10- impulses)	: 60 kV

ELECTRICAL ROUTINE TEST (CLICK-FIT) / PRE-ASSEMBLY

AC voltage withstand test	: 240 kV for 30 min
Partial discharge test	: Free of discharges at 174 kV

CURRENT CAPACITY

Nominal operating current	: Determined by cable rating
Short circuit current (1 second)	: 40 kA [2]

TYPE TESTS SATISFY THE REQUIREMENTS OF

National and International Standards	: IEC 60840 (2011) NEN HD632 (2018) IEEE Std 404 (2012) AEIC CS9-15 (2015)

MISCELLANEOUS

Tensile strength for copper conductor connection	: 8702 psi (XLPE side)
Tensile strength for aluminum conductor connection	: 5801 psi (XLPE side)
Approximate weight	: 500 kg/ 1102 lb

[2] Additional limits may apply according to cable conductor or shield dimensions. Different values can be supplied upon request.

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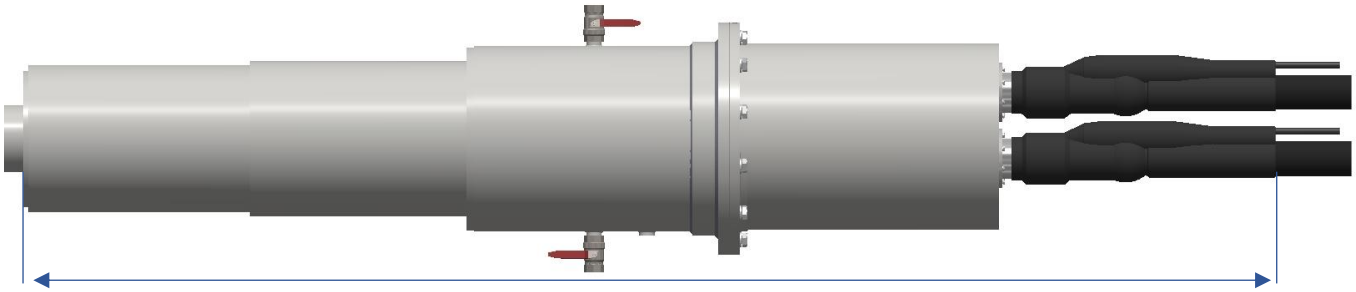
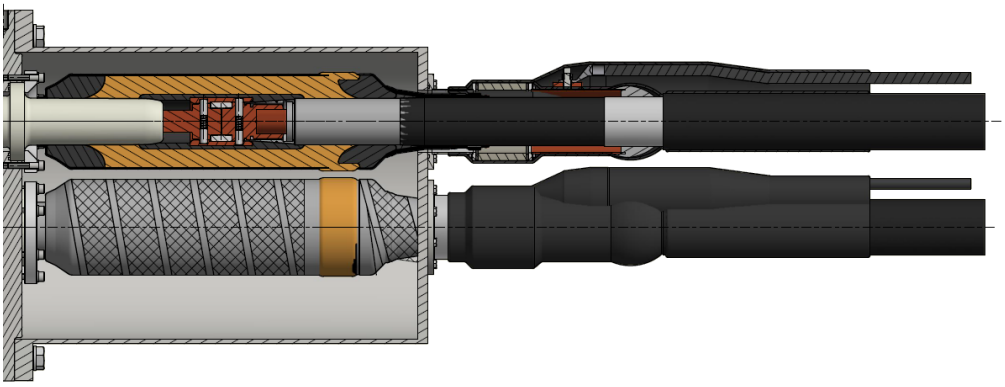
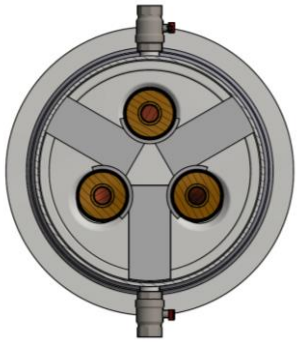
Typical Drawing



Lenght: approx. 4145 mm

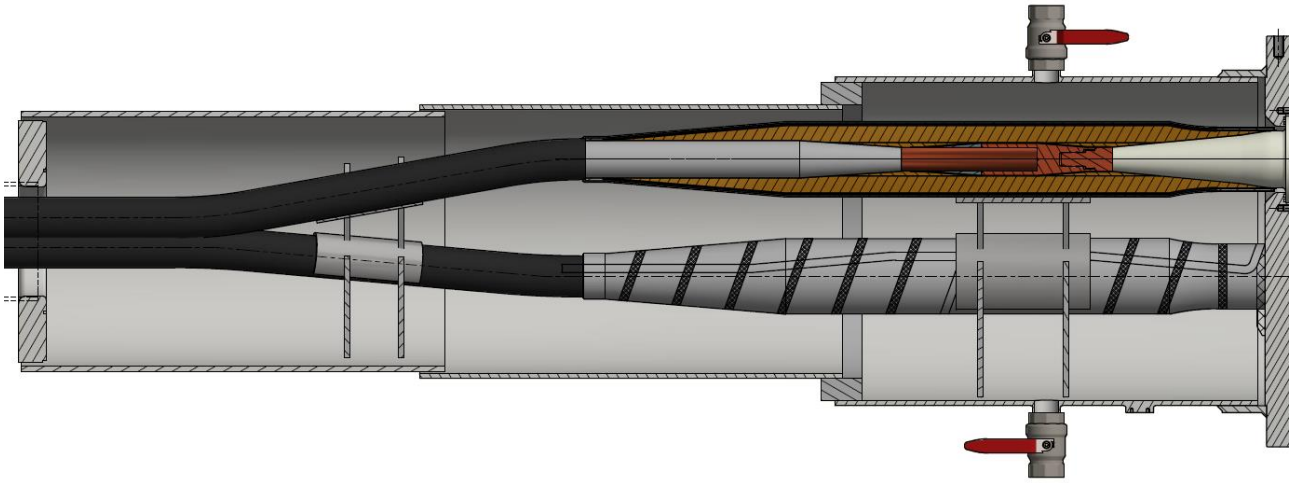
XLPE detail:





Overall diameter: 762 mm

HPFF detail:



Electrical Type Test

TESTS PERFORMED ON THE COMPLETE 3 PHASE JOINT

The complete 3 phase joint assembly was extensively tested according to IEC 60840, IEEE 404-2012 and additional requirements. The following table describes the tests performed and results.

Item	Test description	IEC 60840	IEEE 404-2012	Test Results	Note
1	AC Voltage withstand		7.4.1	Passed	2,5 U_o (200kv) for 1 minute
2	PD test at ambient temperature	12.4.4		Passed	Exceeded requirements
3	Lighting Impulse at ambient temperature		7.4.3	Passed	(+10/-10) 650kV at 20°C
4	Ionization factor		7.3.2	Passed	Exceeded requirements
5	Tanδ at elevated temperature	12.4.5		Passed	Exceeded requirements
6	Heating cycles		7.6.2	Passed	30 heating cycles
7	PD test at ambient temperature	12,4.4		Passed	Exceeded requirements
8	Ionization factor		7.3.2	Passed	Exceeded requirements
9	High voltage time test		7.7	Passed	2,5 U_o (200kv) for 24 hours
10	Pd Test at ambient temperature	12.4.4		Passed	Exceeded requirements
11	Lighting impulse at elevated temperature	12.4.7		Passed	(+10/-10) 650kV at 100°C
12	AC voltage proof test	12.4.7		Passed	2,5 U_o (200kv) for 15 minutes

Additional Test: AC Voltage Breakdown

The AC Voltage Breakdown test was performed before the conclusive visual inspection, to investigate the product safety margin in case of AC overvoltage.

The test loop was completely free of partial discharges up to **350kV**. The 4,3 U_o withstand voltage level is an indication of a well-designed, well manufactured and well assembled cable system.