

CLICK-FIT[®]

High Voltage Accessories for Extruded Cables



Linking the future

As the worldwide leader in the cable industry, Prysmian Group believes in the effective, efficient and sustainable supply of energy and information as a primary driver in the development of communities.

With this in mind, we provide major global organisations in many industries with best-in-class cable solutions, based on state-of-the-art technology. Through two renowned commercial brands - Prysmian and Draka - based in almost 100 countries, we're constantly close to our customers, enabling them to further develop the world's energy and telecoms infrastructures, and achieve sustainable, profitable growth.

In our energy business, we design, produce, distribute and install cables and systems for the transmission and distribution of power at low, medium, high and extra-high voltage.

In telecoms, the Group is a leading manufacturer of all types of copper and fibre cables, systems and accessories - covering voice, video and data transmission.

Drawing on over 130 years' experience and continuously investing in R&D, we apply excellence, understanding and integrity to everything we do, meeting and exceeding the precise needs of our customers across all continents, at the same time shaping the evolution of our industry.

What links power grids to sustainability?

From Asia-Pacific to the Americas, and from Europe to the Middle East to Africa, Prysmian cable solutions sit at the heart of the development of power grids worldwide, helping major utilities in transmitting and distributing power to their customers.

Unmatched in our manufacturing capabilities and with unwavering commitment to R&D, we design, produce and install low, medium, high and extra-

high voltage underground and submarine cables and systems, along with network components and value-added engineering services.

Always aware of the need to minimize our impact on the planet, we're constantly driving innovation in our industry, aiming to optimize supply chain processes, reduce total cost of ownership for our customers and help them achieve sustainable, profitable growth.

CLICK-FIT® accessories for extruded cables

Introduction and concept

High Voltage accessories - based on prefabricated mouldings - represent a highly reliable solution, which is considered a key asset in the safe operation of a High Voltage cable system.

The CLICK-FIT® concept is a unique "plug-in-system" designed to connect (Extra) High Voltage extruded cables from 72 kV to 550 kV. This unique plug-in-system guarantees a high reliability combined with fast, simple and man-independent installation techniques.

The pre-moulded insulating and stress control body is made of high-quality material (HTV

Silicone Rubber), which has excellent insulating and highly reliably mechanical features.

The integrated semi-conductive (silicone rubber) stress cone and shielding electrode ensure a smoothly distributed electrical field control.

The outer ends of the cables can be "factory-prepared". This means they will be accommodated with unique plugs, which accelerates the installation of cable accessories in the field, by simply plugging-in the prepared cable ends into the cable joints and terminations. The CLICK-FIT® locking mechanism provides a core lock inside the joints and terminations.



General Characteristics

All CLICK-FIT® accessories share some important characteristics:

- Plug-in CLICK-FIT® system available for all voltage classes U_m from 72.5 kV - 550 kV
- Prefabricated, factory-tested components
- Uniform plug design, enabling preparation of cable ends in the factory
- Modular and flexible design for tailor-made solution
- Fail-safe design for optimum reliability
- Compact design for installation in small spaces
- Simple and fast installation techniques
- Easy to use tools
- Reduction of overall installation time
- Short delivery time
- Worldwide experience
- Suitable for severe environmental conditions (ambient temperature -60 °C to 50 °C, all pollution classes)

FACTORY PREPARED CLICK-FIT® CABLE ENDS

The unique CLICK-FIT® concept allows for the cable end to be prepared in the factory. Connectors are installed on the cables after preparation and tested together with the cable.

Mechanical protection during transportation is realised by a special protection sleeve with integrated pulling eye.

Products

Description	Code	Available for cable systems with maximum system voltage U_m (kV)							
		72.5	123	145	170	245	300	420	550
Joint CLICK-FIT® straight/(interrupted)	CFJ (X) - (U_m)	✓	✓	✓	✓	✓	✓	✓	✓
Asymmetrical transition joint CLICK-FIT® straight/(interrupted)	CFJ(X) - (U_m)/- T	✓	✓	✓	✓	✓	✓	✓	✓
GIS termination CLICK-FIT® connector (Dry Type / Fluid Filled)	CFC - (U_m)/	✓	✓	✓	✓	✓	✓	-	-
	CFMT - (U_m)	✓	✓	✓	✓	✓	✓	✓	✓
Transformer termination CLICK-FIT® connector (Dry Type / Fluid Filled)	CFCO - (U_m)/	✓	✓	✓	✓	✓	✓	-	-
	CFMTO - (U_m)	✓	✓	✓	✓	✓	✓	✓	✓
Outdoor Termination Composite	OTC (U_m) - (X)	✓	✓	✓	✓	✓	✓	✓	✓
Outdoor Termination Dry Type	CFT (U_m)	-	✓	✓	✓	-	-	-	-
Transition Joint CLICK-FIT® for extruded cable to paper insulated cable	CFTJ(X) - (U_m) - P	✓	✓	✓	✓	-	-	-	-

JOINTS

The CLICK-FIT® joint is a prefabricated and factory pre-tested joint, designed to connect two high voltage cables with extruded insulation.

The cable ends, provided with CLICK-FIT® plugs, are inserted into the silicone rubber insulating body and connected in the middle by means of silver plated electrical contacts. In the middle of the joint 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. To protect the joint different types of covering are available. The standard joint covering is based on a copper casing with a polymeric sheathing. Optionally, a polymeric protective casing with filling compound is available. The joint covering ensures mechanical protection, protection against moisture ingress and external damages.

The joint is fully submersible in water.

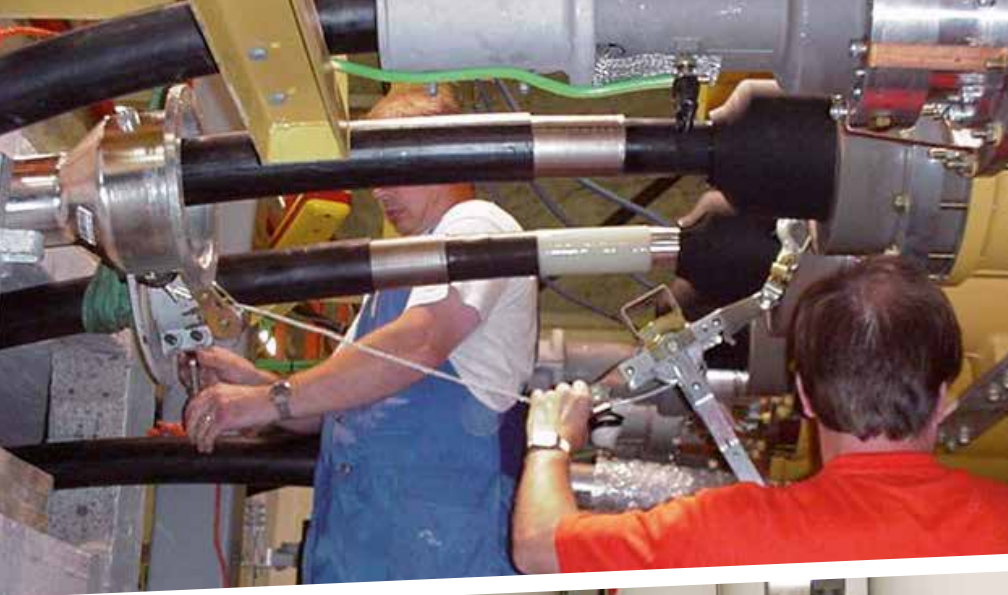
CLICK-FIT® Joint

- Straight joints as well as joints with integrated screen interruption for cross bonding purposes. In the case of screen interruption, the metal joint casing comes with an epoxy-insulating ring
- Installation procedures and tools for various site conditions (e.g. manhole, open trench, etc.)
- Reduction of overall installation time and cost by CLICK-FIT® plug in concept

CLICK-FIT® Asymmetrical Transition Joint

- Design allows easy engineering solutions for jointing extruded cables of different construction
- Different conductor cross sections
- Different conductor materials (Cu/Al)
- Different insulation diameters (asymmetrical) also to connect different cable voltage classes
- Different cable sheathing (e.g. Pb/WAS/CWS/CAS)





CLICK-FIT® CONNECTORS

The CLICK-FIT® connector is a dry type prefabricated and pre-tested sealing end, designed to connect high voltage cables into GIS or Transformers. The cable ends, provided with CLICK-FIT® plugs, are inserted into the silicone rubber insulating body and connected by means of silver plated electrical 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. Standard offer is dry design alternatively fluid-filled design is available.

- Applicable for gas insulated switch gear (GIS) and transformer (TRAF0) - dimensions and scope of delivery according to IEC 62271-209 (previously IEC 60859:1999) and EN50299.
- Vertical or horizontal installation.
- Epoxy Insulators (cones) can be installed separately in the GIS Switch gear or transformer.
- Reduction of overall installation time and cost by CLICK-FIT® plug in concept
- Available in fluid filled version





OUTDOOR TERMINATIONS

The CLICK-FIT® outdoor composite terminations connect extruded cables to outdoor equipment and overhead lines. Cable ends connection is by means of a CLICK-FIT® plug-in system. The CLICK-FIT® plug is connected to the cable by means of compression, MIG-welding or shear-off bolts, which allows for reduction of overall installation time and cost. Standard offer is with composite insulator; porcelain insulator is available on demand.

- Insulator of glass fibre reinforced epoxy resin tube, covered with silicone rubber sheds.
- Excellent environmental properties by water repelling silicone outer layer and sheds.
- Standard creeping distance c.a. 21 mm/kV (increased creeping distance available).
- Vertical or horizontal installation.
- Basic or none scaffolding and protection needed during installation.
- Reduction of overall installation time and cost by simple installation procedure and low weight composite insulators.
- Porcelain termination available on request.

Traditional CLICK-FIT® composite termination is fluid-filled design, filled with unpressurised insulating oil for all voltage levels (no oil or gas pressure monitoring system required).

The CLICK-FIT® composite termination can be provided also in dry type version:

- Dry type prefabricated and pre-tested outdoor termination.
- Self-supporting prefabricated insulator, covered with silicone rubber sheds



OTHER PRODUCTS

Additional equipment, such as link boxes, grounding sets and installation tools can be supplied.

Link Boxes

- Single phase and three phase
- Cross bonding and single point bonding
- Earthing design with and without surge voltage limiters
- Single core and concentric bonding cable connections
- Choice in boxes and cabinets, including stainless steel box for wall or floor mounting, suitable for indoor, outdoor and underground installation

Accessories for power cables with integrated Optical Fiber

All accessories can be provided, with connections for optical fibers integrated in the power cable.



RELATED SERVICES

- Tailor made solutions for specific needs (such as optimised installation, modified accessories to meet special demands)
- Engineering
- Special tools
- Training and certification of jointers
- Supervision
- Installation
- Diagnostics and testing of installed components
- Partial Discharges monitoring performed with Prysmian's unique PryCam system



TEST AND QUALIFICATION PROGRAMMES

Prysmian quality system for High Voltage accessories complies with both ISO 9001 and ISO 14001 standards. Integrity of all CLICK-FIT® products is thoroughly proven by comprehensive programmes. These validation programmes include items such as:

- Electrical routine test on each individual accessory body
- Type tests according to international standards (IEC-60840, IEC 62067, IEEE 404, IEEE 48, NEN 3629) witnessed by independent institutes - Reports available on request.
- Long term development and prequalification tests up to 550 kV
- Statistical evaluation of impulse breakdown tests
- Short circuit tests
- Compatibility of materials
- Electrical field calculations
- Thermo-mechanical stability

Linking power grids
to sustainability



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