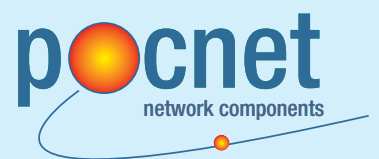




# Premoulded Joints



Accessories for high voltage  
polymeric cables

## About us

Prysmian Cables & Systems is a world-class multinational company. Founded in 1872 as "Ditta Pirelli & C.", it has achieved a leading position for more than a century of operations in its two key international markets - "Energy Cables and Systems" and "Telecom Cables & Systems".

Prysmian Cables and Systems is the world's largest manufacturer of power and telecommunications cables, with 52 manufacturing facilities in 21 countries in five continents and a market share in excess of 10%.

Prysmian Energy Cables and Systems is a global solutions provider, offering a wide range of integrated solutions, such as cable systems, system design and engineering, project management, installation and post-sale services.

Prysmian Energy Cables and Systems concentrates on continuous product innovation and on achieving a competitive edge by focusing on research and development. This is done through Prysmian's own R&D centres and by co-operating with universities, scientific institutions and above all, our customers. Prysmian's world-wide organisation makes and delivers advanced technological solutions to customers anywhere in the world.

Prysmian started manufacturing insulated cables for electric power distribution around 1880 and soon afterwards initiated the development of the first cable accessories.

Prysmian's very long and successful experience in HV and EHV cable systems have led to the development of a comprehensive range of accessories for extruded dielectric cables.

A relentless R&D effort focused on rubber compounds as well as on electrical design has created accessories for all applications, based on pre-moulded and factory tested joint sleeves and termination stress cones that are recognised worldwide for their unsurpassed reliability.



## Joint core basics

The origin of the current product range of accessories for HV polymeric cables dates back to 1978 when Prysmian, strong of its very long and successful experience in Fluid Filled cable systems developed its first generation of accessories for extruded cable systems.

These accessories are based on pre-moulded electrical components, i.e. stress cones for terminations and one-piece sleeves for joints.

Pre-moulded sleeves and stress cones are currently available for HV polymeric cables from 72.5 kV up to 525 kV and adopt the same design at all voltage classes.

Thanks to its outstanding electrical and mechanical properties, ethylene-propylene rubber (EPR) has been favoured for the rubber mouldings manufacture. After a thorough research on rubber compounds properties, Prysmian developed a proprietary formulation with superior characteristics that is manufactured in-house, which guarantees an unsurpassed reliability of the products.

The mechanical properties of Prysmian special compounds ensure a constant pressure at the cable/moulding interface during the entire lifetime of the accessories, whilst the electrical design has been optimised to minimise the electrical stress concentration in the same area. Prysmian one-piece pre-moulded sleeves and stress cones are completely manufactured in-house.

The moulding process has been refined thanks to the long-standing presence of Prysmian in the rubber industry; each single moulding is mechanically and electrically tested in the factory (the applied electrical test parameters are stricter than those established by the international standards) and certified individually.

Prysmian HV Accessories quality system complies with both ISO 9001 and ISO 14001 standards. Prysmian HV accessories based on EPR mouldings represent a highly reliable solution that is considered a key component in the safe operation of a HV cable system.

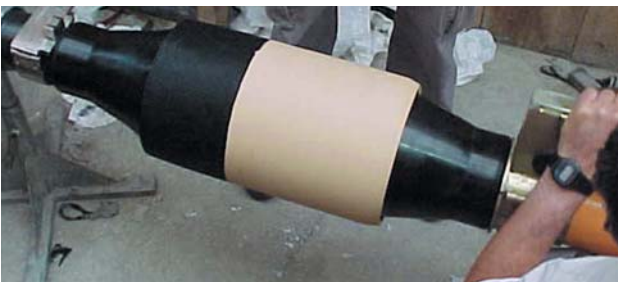
The reliability of its HV accessories has made Prysmian the worldwide market leader in terms of design and quality and all major power Utilities consider Prysmian products the benchmark in terms of performance and service.

## Product range

Prysmian jointing solutions - based on EPR one-piece pre-moulded sleeves - feature a wide range of products to fulfill all connection requirements in any installation lay out and environment.

As demonstrated by the preference given for many years to this design by final users, the advantage of using one-piece pre-moulded joints lies in the fact that they all undergo factory testing to check for manufacturing defects. This ensures that, once the joint is assembled, its reliability can be compared to that of the cable it is fitted on. Joints are available both with and without a metallic casing.

Prysmian HV Accessories product range includes different degrees of outer protection to the joint core that can be used for both sheath interruption and normal joints.



### > Compact

#### Heat-shrinkable tubes outer protection

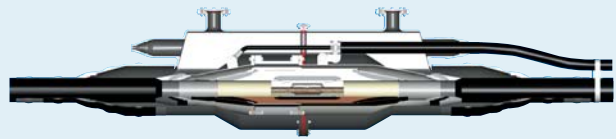


This solution has very compact dimensions and is, therefore, ideally suitable for manholes with limited dimensions. For lead or corrugated aluminium sheathed cables the heat-shrinkable outer protection is combined with a metallic protective sleeve to be plumbed to the cable sheath.

This outer protection consists of a twin layer of heat shrinkable tubes that are applied on site over the joint and guarantees a good sealing against water penetration in compliance with IEC 60840 and IEC 62067 standards. This solution is generally used for installation in tunnels or in concrete manholes

### > Universal

#### XLPE insulating box filled with cold pouring resin



This design guarantees a high degree of protection in different environments and it is generally considered as the standard solution for any cable circuit. It consists of an XLPE hard coffin box to be assembled on site and filled with a cold pouring resin; the sealing between the coffin and the cables is achieved by means of heat-shrinkable sleeves. For lead or corrugated aluminium sheathed cables this type of outer protection is combined with a metallic protective sleeve to be plumbed to the cable sheath.

Thanks to the outer double insulating/sealing barrier (XLPE box + cold pouring resin) this solution guarantees an excellent sealing against water penetration that exceeds IEC 60840 and IEC 62067 requirements and is normally used in directly buried installations, also in the case of humid soil.



# EPR one-piece pre-moulded joints available from 72,5 kV up to 525 kV

## > Additional features

Following the latest cable design developments and in view of a full system approach, upon specific request Prysmian joints can include:

- > Optical fibres management
- > Partial discharge sensor

## > Installation basics

The joint sleeve is expanded on a supporting tube just before its installation using a specially designed motorized equipment.

At the end of this stage the PVC tube holds the joint sleeve in its expanded position affording an adequate clearance between the sleeve and the cable.

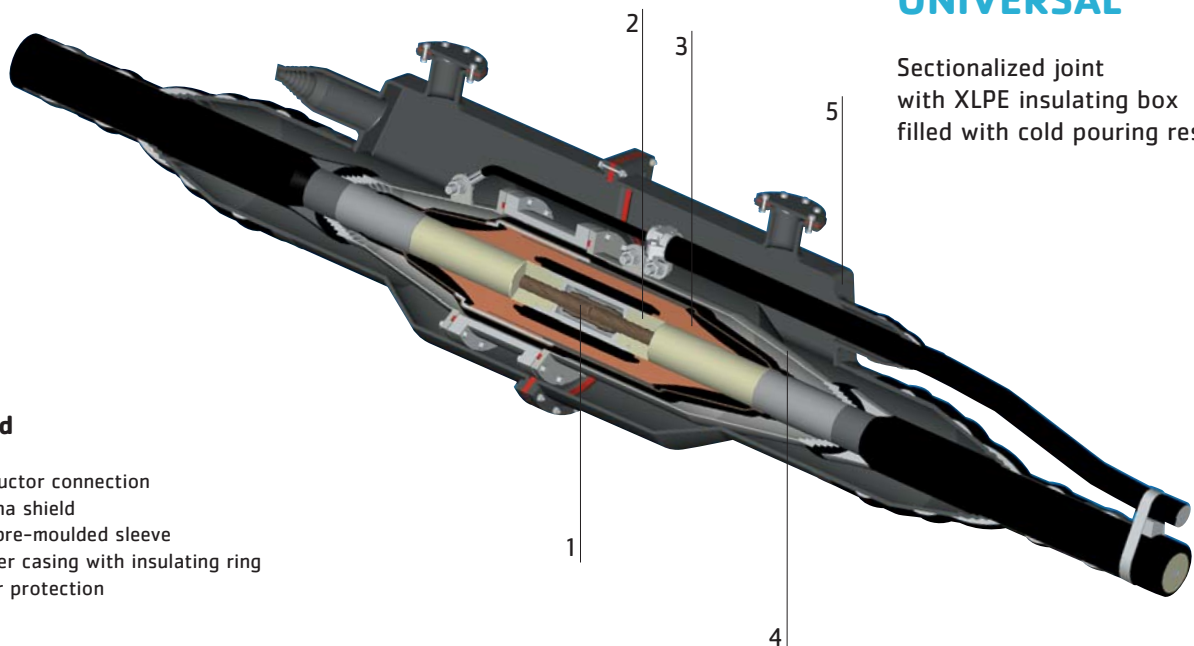
The PVC tube is then parked on the cable during conductor joining operations.

Aluminium conductors are joined by means of Cadweld or MIG welding, while copper conductors are joined by means of compression/punching ferrules.

The sleeve is then fitted in its final position in the joint center, the PVC tube is drawn out of the sleeve using a hand-operated extraction tool.

## UNIVERSAL

Sectionalized joint with XLPE insulating box filled with cold pouring resin



### Legend

- 1 Conductor connection
- 2 Corona shield
- 3 EPR pre-moulded sleeve
- 4 Copper casing with insulating ring
- 5 Outer protection

# YOUR ENERGY... OUR SYSTEMS... ANYWHERE



Joint sleeve expansion on carrier tube



Cable head preparation



Corona shield positioning

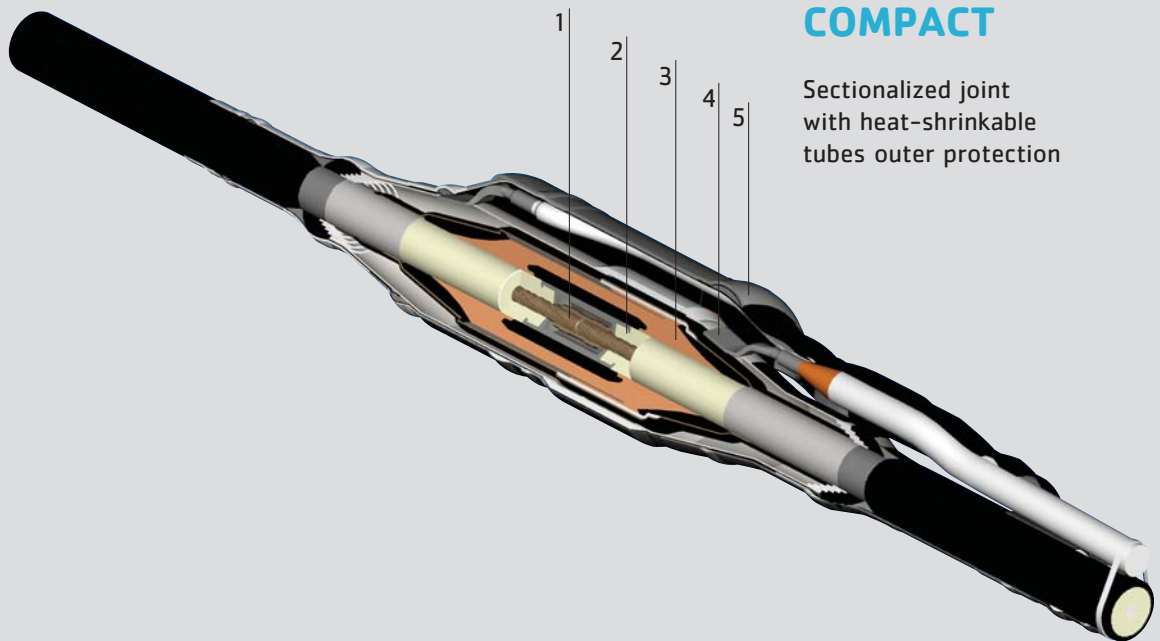


Cable core finishing



Joint sleeve positioning

**Prysmian jointing solutions have been successfully applied over 22,000 times around the world**



## COMPACT

Sectionalized joint with heat-shrinkable tubes outer protection

Electrical rating	U max (kV)	72,5 kV	123 kV	145 kV	170 kV	245/300 kV	420 kV
Basic Impulse Level		350	550	650	750	1050	1425
IEEE 404 = 1 min AC Dry withstand		175	205	310	365	460	-
IEEE 404 = 6 h AC Dry withstand voltage		120	160	210	250	330	-
IEC 60840 - 62067 = 15 min AC Dry withstand		90	160	190	218	320	440

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