

Energy Division

Raychem heat-shrinkable joint sleeve  
Rayfit for medium voltage joints  
up to 36 kV

# Raychem heat-shrinkable joint sleeve Rayfit for medium voltage joints up to 36 kV

Raychem Rayfit represents the new generation of heat-shrinkable jointing technology. It is based on a triple-extruded heat-shrinkable elastomeric joint sleeve component. The system is suitable for paper and polymeric cable constructions and is designed to accommodate modern jointing requirements such as mechanical shear bolt connectors.

### Main features

- Triple-extruded body provides a pre-engineered joint unit with fewer kit components
- Advanced shrink behaviour and profile-following are combined with a significant reduction in shrink time
- High recovery forces result in tight electrical interfaces and perfect sealing ability
- Optimised heat transfer due to reduced thermal capacity
- The reduced overall joint diameter provides a slimmer and space-saving profile
- As an alternative to crimp connectors, kits can be selected with mechanical shear bolt connectors for conductor and shield continuity
- Unlimited shelf-life simplifies material logistics and reduces cost
- Exceeds international performance standards including CENELEC HD 629 and IEC 60502 for joints and IEC 61238 for Tyco BSM type mechanical connectors

### Modern jointing

Today's jointing technology is required to be simpler and more economical yet provides higher levels of reliability and flexibility for operators who are under increasing pressure to improve network efficiency. Rayfit achieves these objectives and has additional valuable features including:

- high recovery forces
- reduced installation time
- slim and space-saving design

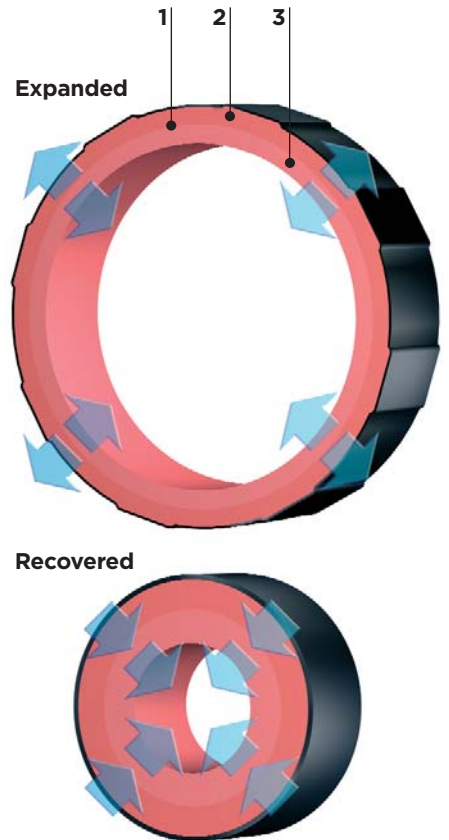
Kits are easy to select, will accommodate a variety of cable and conductor types and can include all components necessary to complete the joint. Important among the range of features is the option to include purpose-designed range-taking mechanical shear bolt connectors for conductor and shield wires.



### Raychem Rayfit joint sleeve

The triple layer heat-shrinkable joint sleeve combines:

- 1 heat-shrinkable outer conductive layer
- 2 heat-shrinkable insulation layer
- 3 elastomeric insulation layer



A triple-extruded hybrid component combining heat-shrink and elastomeric technology

ERIT	ERIC	ERIH
12 kV	24 kV	36 kV

**Raychem Rayfit joint sleeve**

The outer conductive layer and insulating middle layer provide the heat-shrinkable hold-out for the inner elastomeric layer of the joint sleeve. During the heat-shrink installation process, the stored recovery force of the elastomer is released and combines with the recovery force of the heat-shrinkable layers.

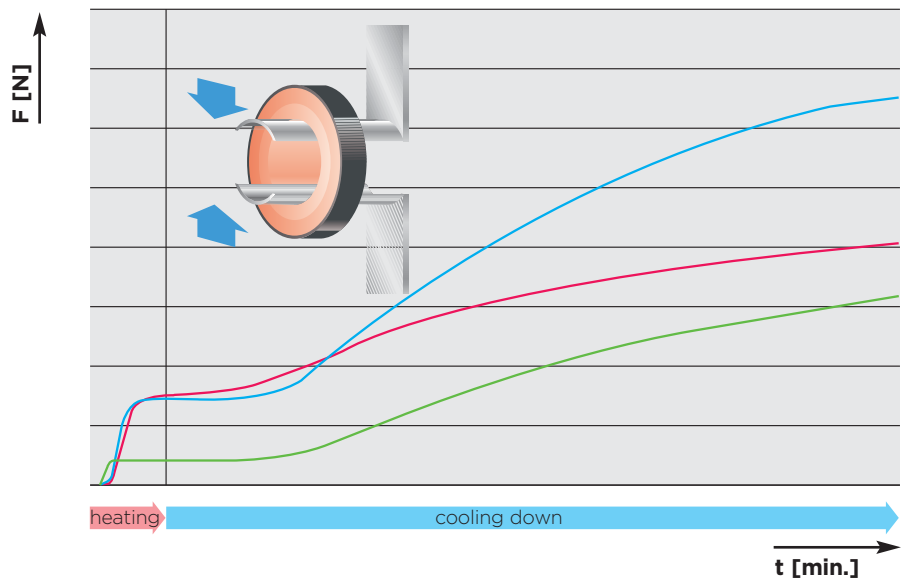
As a result, the electrical interfaces are reduced to the minimum and the joint sleeve provides a tight electrical interface.

The elastomeric characteristic of the materials, combined with the rigid outer heat-shrinkable (screen) layers enable the joint to follow the thermally induced dimensional changes of the cable insulation.



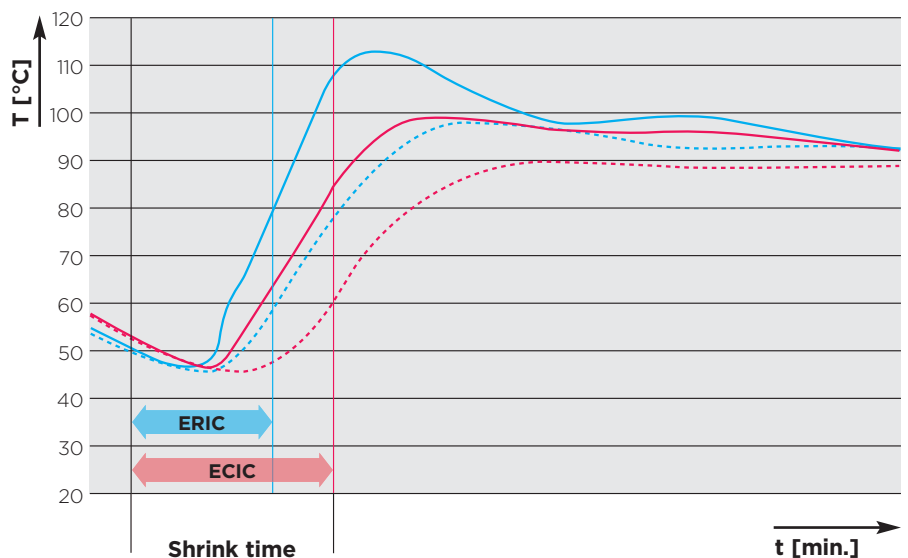
**Joint sleeve recovery forces during installation**

- New triple layer elastomeric ERIT
- Dual layer elastomeric ECIT
- Co-extruded heat-shrinkable sleeve CICM (non elastomeric)



**Joint sleeve temperature distribution during installation**

- New triple layer elastomeric ERIC
  - interface stress control to joint sleeve
  - - - interface stress control to cable dielectric
- Existing dual layer elastomeric ECIC
  - interface stress control to joint sleeve
  - - - interface stress control to cable dielectric



## Other jointing elements

### Mechanical shear-bolt connectors

Joint kits can be selected to include a Tyco BSM type mechanical shear-bolt connector to ensure a reliable pre-engineered electrical connection for different conductor types and materials.

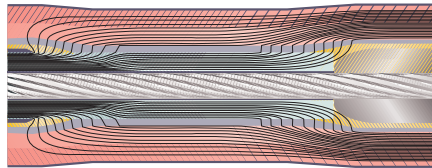
- range-taking sizes cover 25-400 mm<sup>2</sup> conductor cross-sections for aluminium and copper conductors
- pre-set shear torque provides safe and reliable installation
- removable half shell insert provide core centering
- tin-plated and greased contact surface for corrosion protection
- no need for compression tools or maintenance
- shorter length compared to compression connectors
- tested in accordance with IEC 61238
- excellent tensile performance due to special bolt tip design



Cordless impact wrench for simple and easy installation of mechanical connectors.

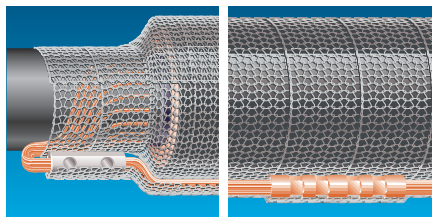
### Electrical stress control

The stress control sleeves in combination with stress grading mastic at the screen cut provide a precisely defined impedance characteristic which smoothes the electrical field. For ease of installation, mechanical shear-bolt connectors are applied in combination with a stress control patch while joints with compression connectors use mastic tape for void filling and stress grading.



### Shield continuity

With mechanical shear-bolt connectors as standard, typical shield wire cross sections up to 35mm<sup>2</sup> can easily be connected with the connector supplied in the kit. Positioned at the oversheath cut back, the connection provides a smooth profile and resists mechanical damage. There is no need for a crimping tool and its maintenance. Shear bolts provide the required contact force in order to ensure safe installation and reliable performance during load cycling in service as well as during short circuit conditions. An additional layer of copper mesh is applied around the joint to provide effective shielding and protection.



Joint kits for other connector technologies including deep indent and hexagonal compression are available.

### Armouring

As some cable designs use a steel wire armour to provide a certain mechanical strength, joint designers have to provide the same performance. A steel wire armour wrap in combination with a heat-shrinkable sleeve or fibre reinforced wraparound are being used to fulfill the impact test requirements as requested e.g. in the CENELEC specification.



### Robust outer sealing and protection

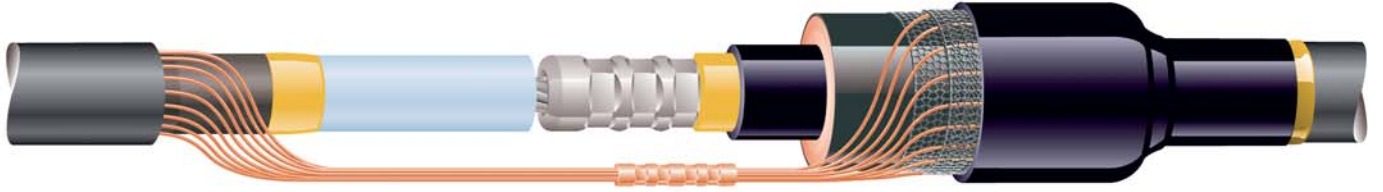
Modern cable laying techniques require a robust oversheath replacement capable of withstanding high mechanical stresses during conventional cable laying as well as mechanical impact occurring during the entire cable life. The thick-wall heat-shrinkable tubing is internally coated with a hot-melt adhesive to ensure an effective moisture seal and corrosion protection for the joint. When installed, the joints provide a level of protection and thickness equal to modern cables with PE oversheath. A space saving alternative using a fibre re-enforced wraparound sleeve coated with hot melt adhesive can be selected for installations in manholes and restricted joint bays.



## Product families for polymeric insulated cables

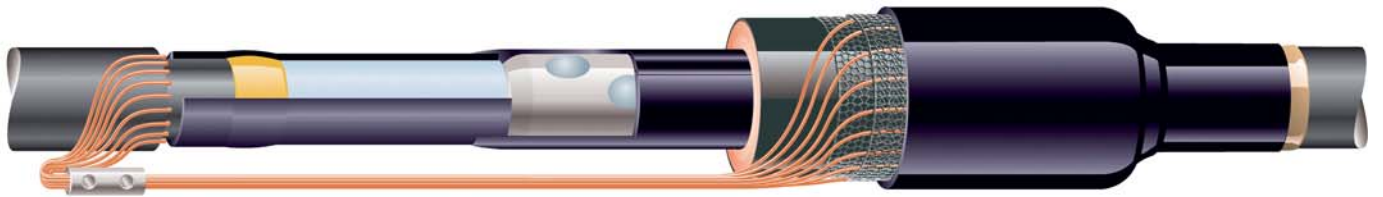
SXSU

Medium voltage joints up to 36 kV using compression connectors



MXSU

Medium voltage joints up to 36 kV including mechanical connectors



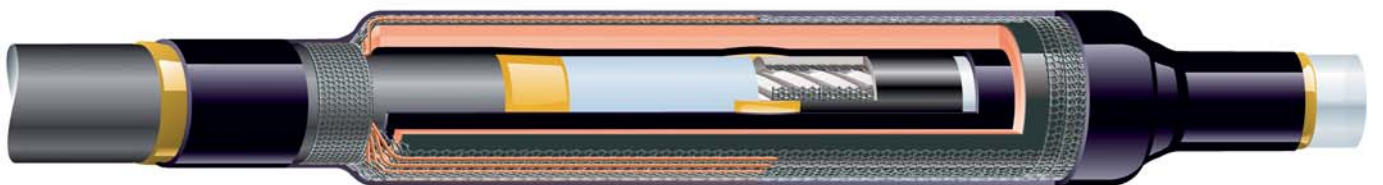
EPKB

Medium voltage branch joints up to 24 kV including mechanical connectors



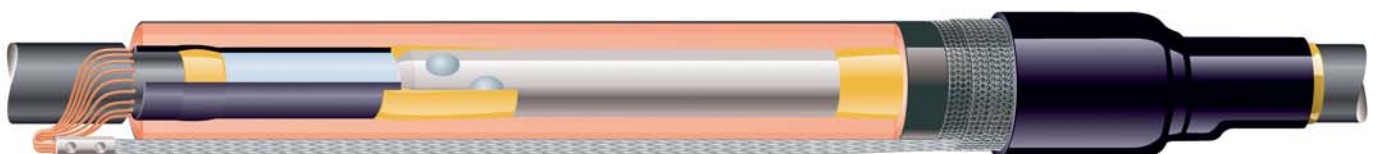
EPKE

Single core live end seals (stop end) up to 36 kV



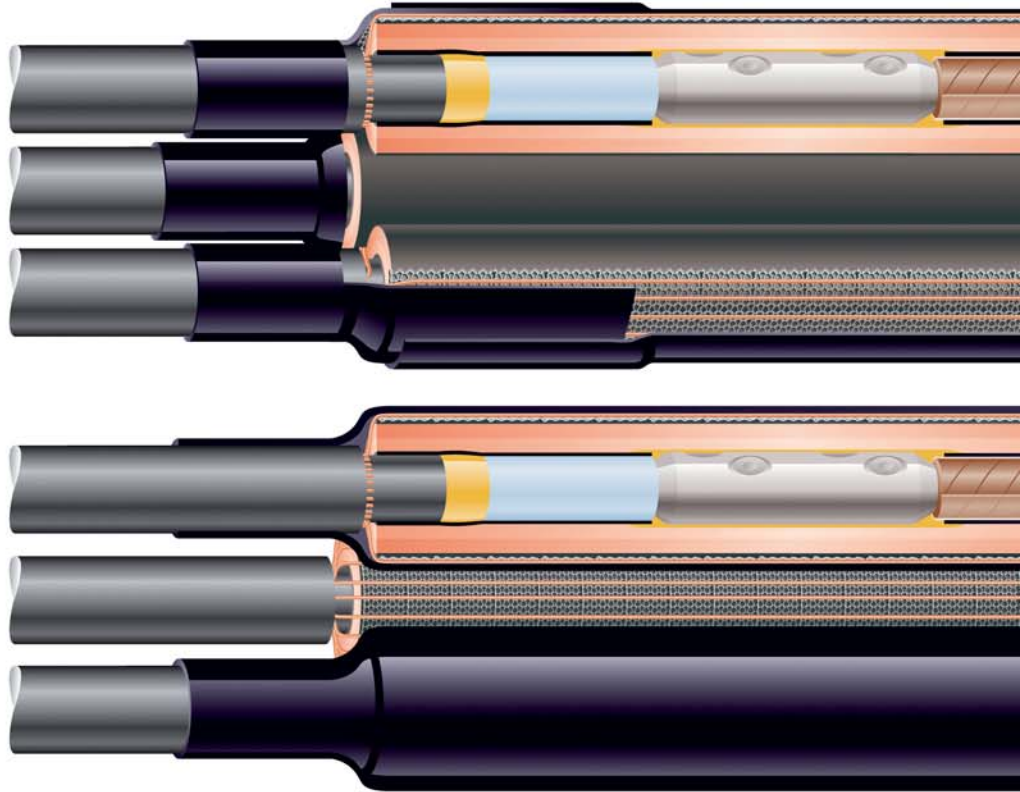
REPJ

Medium voltage repair joints up to 24 kV including mechanical connectors



**MXSU**

**Transition joints up to 24 kV including Tyco BSM type mechanical shear bolt connectors**



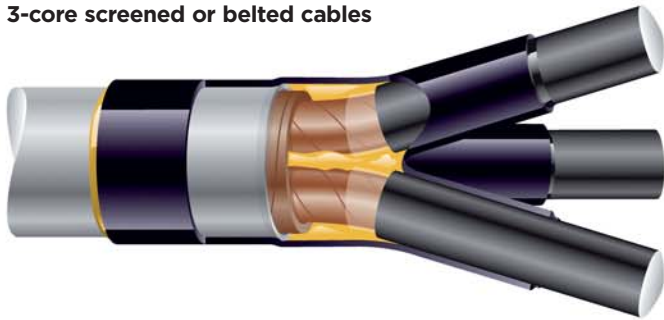
**EPKJ-R**

**Universal jointing system to connect all common cable types using compression connectors**

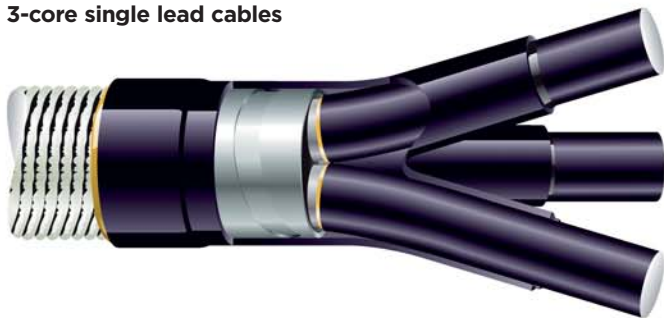
**System technology**

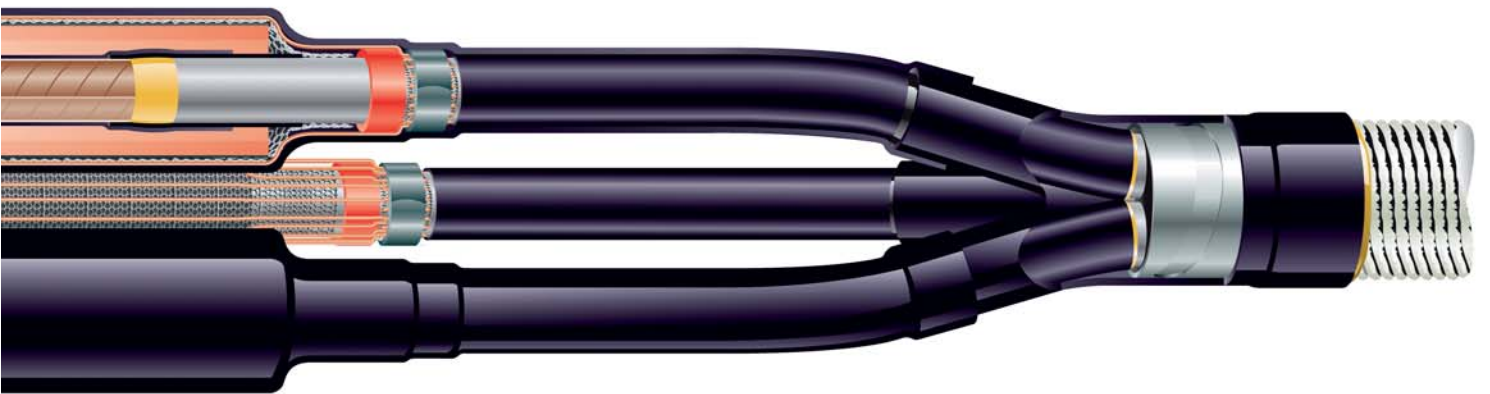
Few heat-shrinkable components like oil barrier sleeves, conductive breakouts etc. transfer paper cables into quasi polymeric type allowing the use of the same jointing sleeves.

**3-core screened or belted cables**

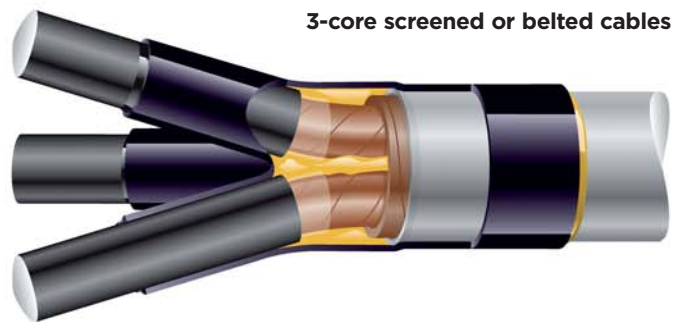


**3-core single lead cables**





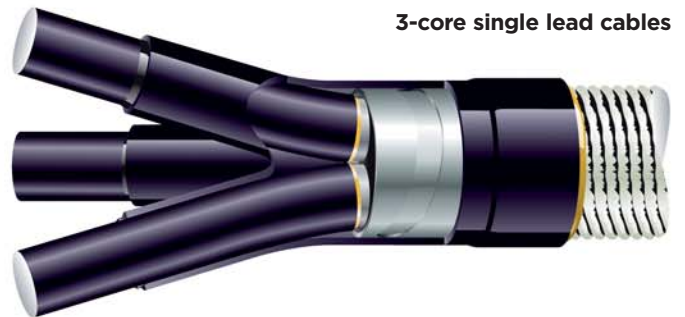
**3-core screened or belted cables**



**1-core lead sheathed cables**



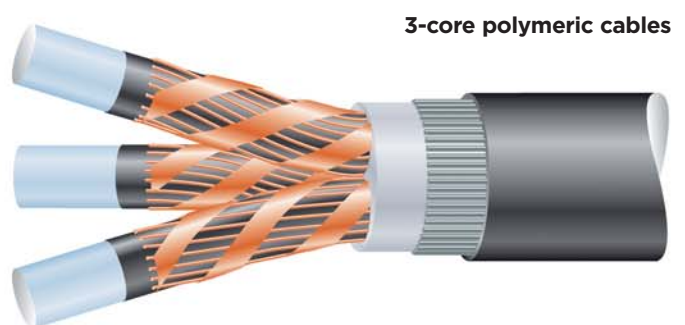
**3-core single lead cables**



**1-core polymeric cables**



**3-core polymeric cables**



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Tyco Electronics Raychem GmbH  
Energy Division  
Finsinger Feld 1  
85521 Ottobrunn/Munich, Germany

Phone: +49-89-6089-0  
Fax: +49-89-6096345

<http://energy.tycoelectronics.com>

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