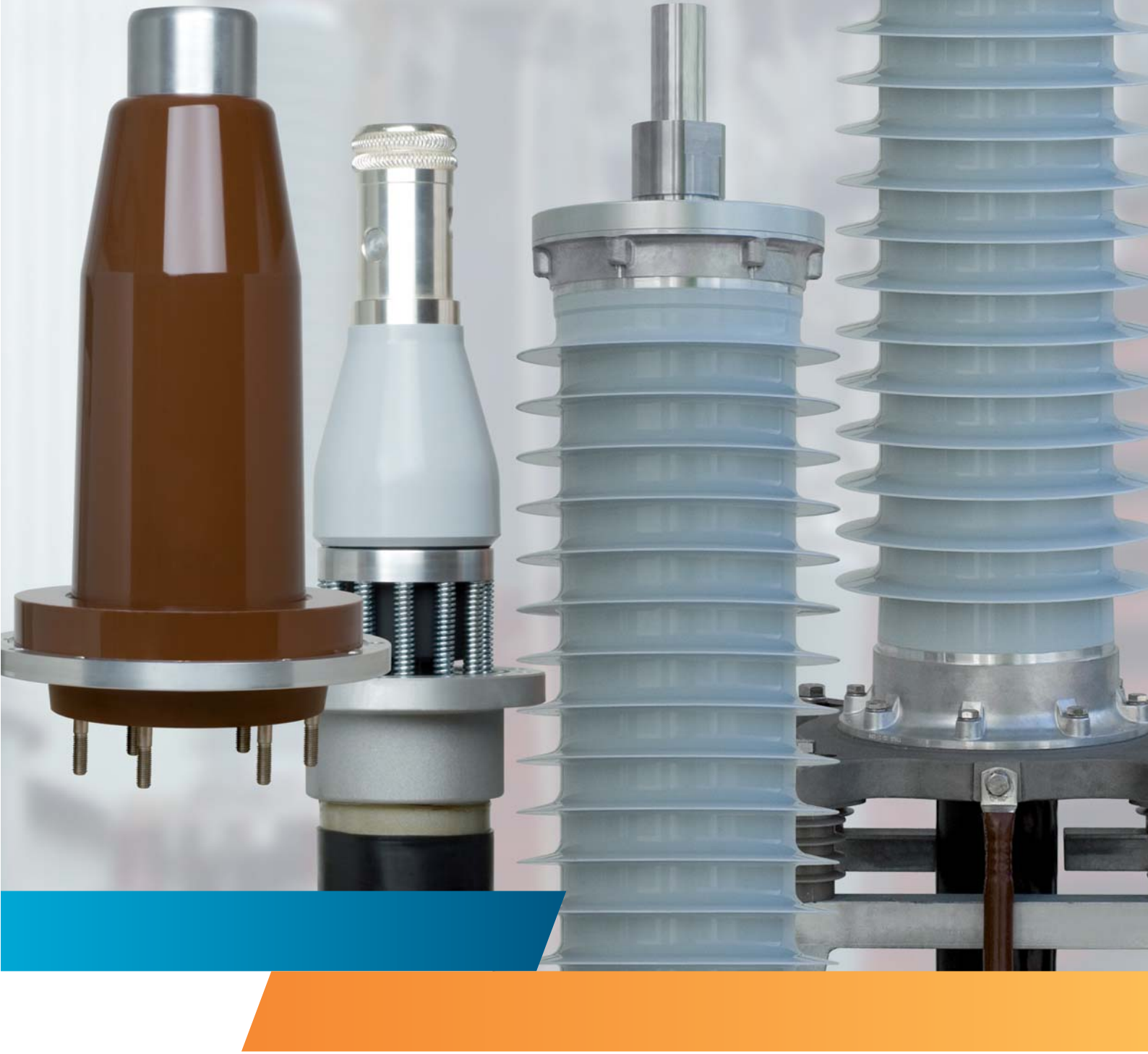


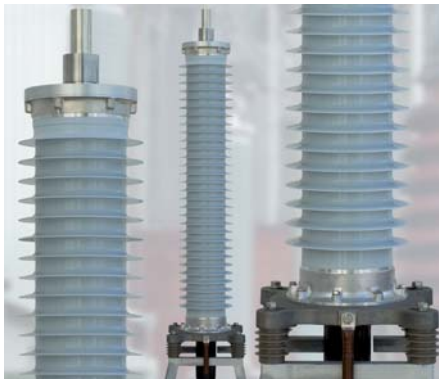
Energy Division

Raychem High-Voltage Cable Accessories up to 170 kV

Tyco Electronics

Our commitment. Your advantage.

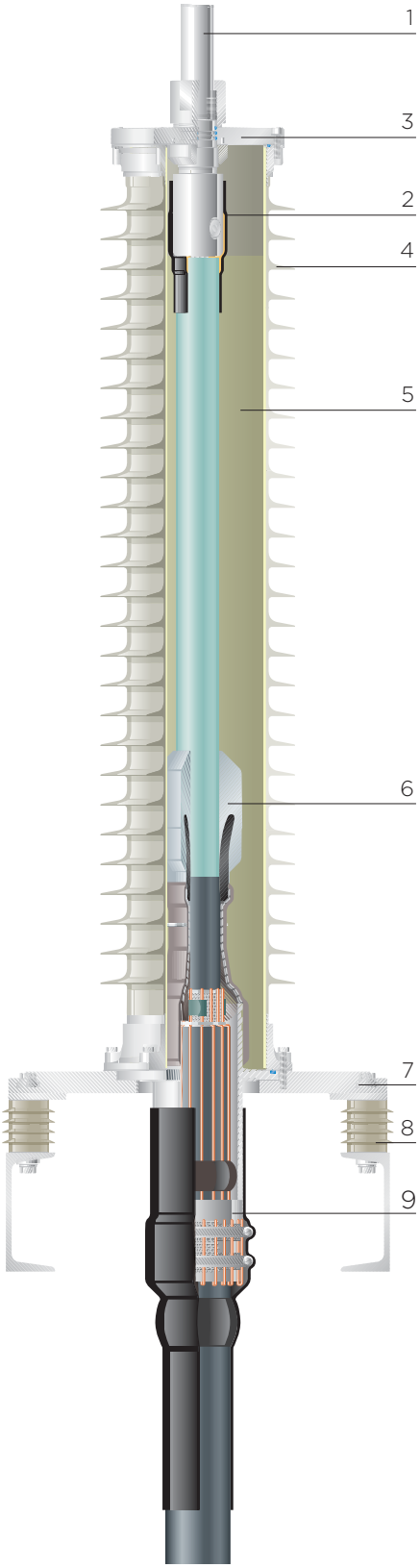
Raychem Outdoor Termination up to 170 kV



Application
The termination is designed for voltage classes up to 170kV and to operate under severe environmental conditions. Polymeric insulated cables of various designs can be adopted with respect to shielding and metal sheath. Composite housings with different creepage lengths up to 50 mm/kV are available covering the most common and also extreme pollution levels according to IEC 60071-1 1996, IEC 60071-2 1996 and IEEE-1313.1-1996.

Features
- Pressure-tight and light weight composite housing
- Pre-fabricated and factory tested Si-rubber stress cone
- Torque-controlled conductor bolt
- H/S components used for sealing
- No special tools required to install the termination
- Si-oil filling (filling from the top)
- Isolated base plate for sectionalization
- Fittings made of corrosion resistant alloy
- Type tested according to IEC 60840 and IEEE 48 standards

Major Design Elements
The pressure-tight composite housing (4) is made of a glass fibre reinforced resin GFR tube with silicone rubber sheds moulded INSITU to the tube. The fittings (3) and the base plate (7) are made of non-corrosive alloy.
To fit the cable conductor, mechanical connectors with torque controlled shear-off bolts (1) or crimp-type connectors are available. The connector is suitable for stranded aluminium and copper conductors and can be modified to accept solid conductors as well. No special tool is required to install the mechanical connector. The flexible double sealing system (2) is installer-friendly and ensures persistent leak tightness of the top assembly. Heat-shrinkable polymeric tubing containing oil-resistant sealant encapsulates the connector barrel and the polymeric insulation transition. The silicone rubber stress cone (6) provides the electrical field control and can easily be applied without tools owing to its excellent elasticity. The interface between stress cone, cable insulation and inner GFR housing is filled from the top with silicone oil (5). The cable outer serving is adapted through a gland system (9), which addresses the individual shielding and armouring of the cable. Heat-shrinkable tubing is used to seal the cable gland. Support insulators (8) are supplied for sectionalization and sheath voltage testing when separate grounding is required.



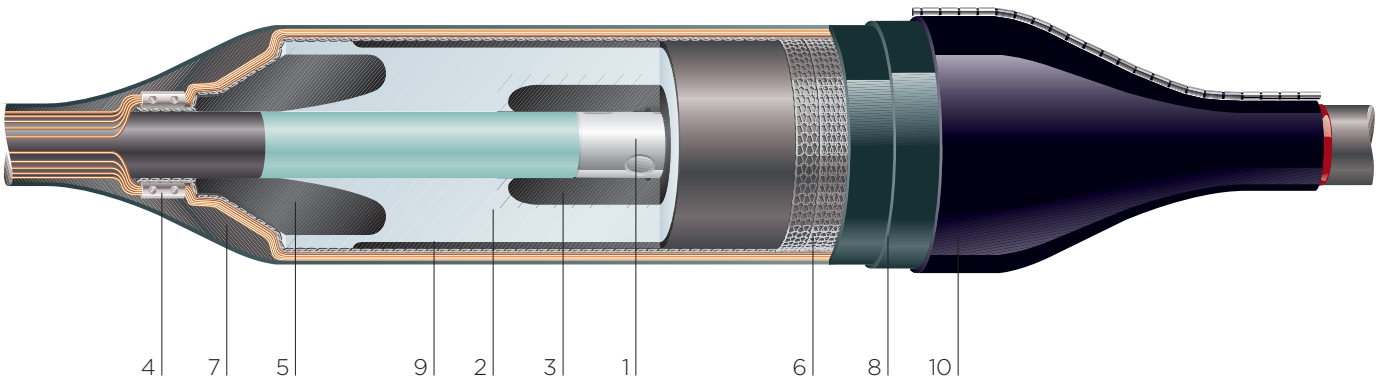
1 Connector (mechanical or crimp)
2 Sealing system
3 Upper metal fitting
4 Composite housing
5 Oil-filling
6 Stress cone
7 Base plate
8 Support insulators
9 Gland and sealing

Raychem One Piece Joint up to 145 kV

Application
The joint is a pre-fabricated one-piece design for voltage classes up to 145kV. Polymeric insulated cables of various designs can be adapted with respect to shielding and metal sheath. The silicone rubber joint body with integrated geometrical stress control provides excellent electrical performance. The joint components combine electrical performance, stress control and moisture sealing to provide the important functions required for all High Voltage products.

Features
- Prefabricated one-piece joint design
- Torque-controlled connector
- Choice of outer sealing and protection systems
- Joint fits on all polymeric cable constructions
- Proven shield continuity concept
- Factory tested Silicon-rubber body
- Special silicone rubber provides perfect compression force for proper electrical behaviour
- No shelf-life issues of main parts
- Simple assembly
- Electrical stress control by integrated conductive geometrical deflectors
- Type tested according to IEC60840, IEEE404, GB11017 Standards
- Manufactured according to ISO9001 and ISO14001

Major Design Elements
The joint consists of connector (1), joint body (2) - containing deflectors (5) inner (3) and outer electrode (9) and outer serving by heat-shrink technology (8, 10). The conductors of the cable are connected by a mechanical connector sleeve (1) using torque controlled shear-off bolts. The connector sleeve is suitable for stranded aluminium and copper conductors. The joint body (2), accommodating the various cable insulation diameters due to its excellent elasticity. During the installation the joint body is parked on the insulation of the cable. Solderless connection technologies are used to connect the metal sheath/shield of the cable. Heat-shrink technologies (8, 10), replace the cable serving and the moisture barrier. The joint concept is similar for inline (4), grounded and shield break joints, despite the shield conductivity. Special heat-activated sealant (7) is used to insulate and smooth out uneven components, providing a water tight seal and preventing moisture ingress.



1 Mechanical connector
2 Silicone rubber body
3 Inner electrode
4 Solderless shield connection
5 Deflector
6 Copper mesh
7 Sealant
8 Insulating tubes
9 Outer electrode
10 Outer protection with integrated moisture barrier

Raychem Dry Compact Switchgear & Transformer Termination for 72 kV up to 145 kV

Application

The dry compact switchgear termination for voltage classes up to 145 kV is designed to be installed in cable entry housings of gas-insulated switchgear (GIS). It complies with IEC 62271-209 standard, which essentially specifies the interfaces between the termination and the switchgear. Therefore the termination will fit into all GIS complying with IEC 62271-209. An adapter is available to match the dimensions of wet (oil-filled) type terminations, which are also specified in IEC 62271-209. The termination operates in SF_6 but also in insulating liquids like transformer oil. A corona shield at the top of the termination then provides the necessary shielding of the terminal. The termination is easily separable and consists of a plug-in part and an epoxy resin insulator. The insulator can be installed by the GIS or transformer manufacturer already at the factory saving installation time on-site and reducing the risk of contamination of the cable entry housing. In case of short cable links and due to the short length and light weight of the plug-in part it can be also pre-installed by the cable manufacturer further reducing the time required to install a substation.

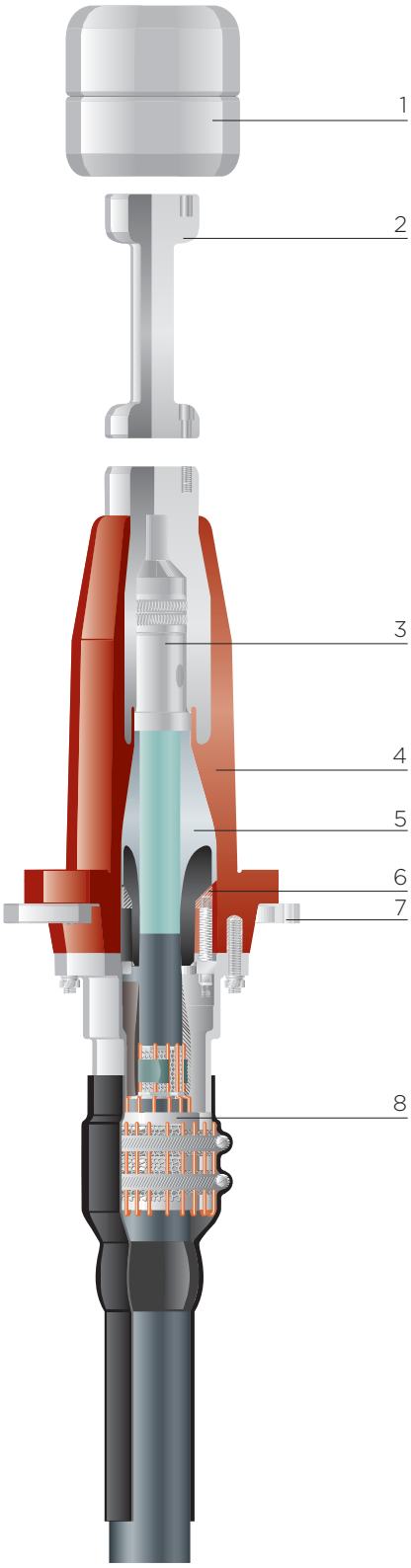
Features

- Dry interfaces, no oil-filling
- Dimensions comply with IEC 62271-209
- Pressure-tight resin housing
- Operates in SF_6 and insulating liquids
- Pre-fabricated and factory tested Si-rubber stress cone
- Torque-controlled multi-contact conductor bolt
- No special tools required to install the termination
- Isolated cable gland for sectionalization
- Type tested according to IEC 60840 and IEC 62271-209 standards

Major Design Elements

The epoxy-resin insulator (4) with embedded multi-contact electrode forms the gas pressure-tight interface between GIS or transformer cable entry and the plug-in part of the termination. It is attached to the cable entry housing with the fixing ring (7). The torque-controlled shear-off bolt connector (3) with multi contacts fits the cable conductor. The connector is suitable for stranded aluminium and copper conductors and can be modified to accept solid conductors as well. No special tool is required to install the connector. The silicone rubber stress cone (5) provides the electrical field control and can easily be applied without tools owing to its excellent elasticity. A metal spring-loaded compression ring (6) presses the rubber stress cone into the specially shaped interior of the resin housing, ensuring a uniform contact pressure and electrically sound interface. A corona shield (1) can be easily attached to the termination for use in insulating liquids. Compared with IEC 62271-209 wider clearances apply in this application. The cable outer serving is adapted through a gland system (8), which addresses the individual shielding and armouring. The gland system also secures the cable. An adapter (2) can be used to match the dimensions of wet type switchgear and transformer terminations which makes the termination the ideal choice for replacing oil-filled terminations.

1 Corona shield (PHVT only)
2 Adapter (optional)
3 Mechanical connector
4 Resin housing
5 Stress cone
6 Spring-loaded compression ring
7 Fixing ring
8 Gland and sealing



The Energy Division, a global operating unit of Tyco Electronics, develops manufactures and markets products and systems for the electrical power industry. Today, the Energy Division employs approximately 4,000 people. Our products are extensively employed by power utilities and equipment manufacturers, in rail transport systems and in industry around the world.

Energy Division – innovative and economical solutions for the electrical power industry: cable accessories, connectors & fittings, insulators & insulation, surge arresters, switching equipment, lighting controls, power measurement and control.

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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