



Energy Division

MXSU

Raychem jointing system
up to 36kV complete with
mechanical connectors

MXSU

MXSU is based on a joint design using mechanical connectors

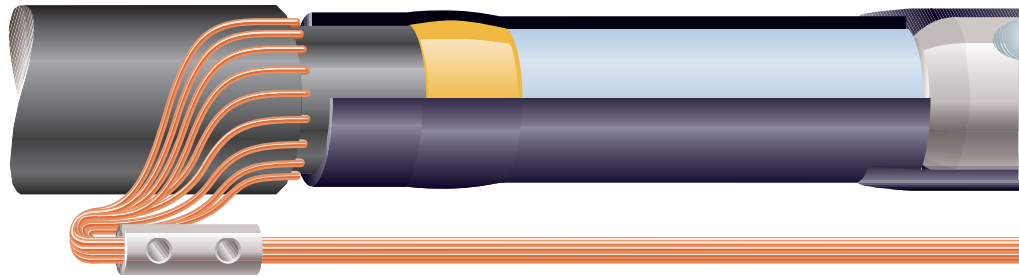
- Mechanical connectors for conductor and wire shield are supplied with the kit
- Kits are widely range taking and cover most conductor constructions including their tolerances
- No crimping tools or tool maintenance required
- Short and space saving design for installation
- Improves installation reliability
- Has unlimited shelf life, simplifies material logistics and reduces cost
- Avoids bulky waste and costly waste disposal
- Exceeds international performance standards including CENELEC HD 629 or IEC 60502-4 for joints

Modern jointing

Today's jointing technology must achieve higher levels of reliability and flexibility to meet the demand of operators who are under increasing pressure to improve network efficiency. In an environment with less engineering resources for product selection, outsourced services, emphasis on repair time and a variety of cable and conductor types in the network, a universal joint including range taking screw connectors ensures reliable application and service.



Raychem jointing system for polymeric insulated cables



Mechanical shear bolt connectors

All joint kits incorporate a Raychem designed screw connector with shear head bolts to ensure a reliable pre-engineered electrical connection for the different conductor materials, shapes and types used in today's network. The pre-set shear torque of the bolts ensures that the correct contact pressure is always achieved. The specially designed contact surface on the inside of the connector breaks up any conductor oxide layer and ensures reliable service over the entire life time of the joint. The connectors have been tested in accordance with IEC 61238-1 class A.

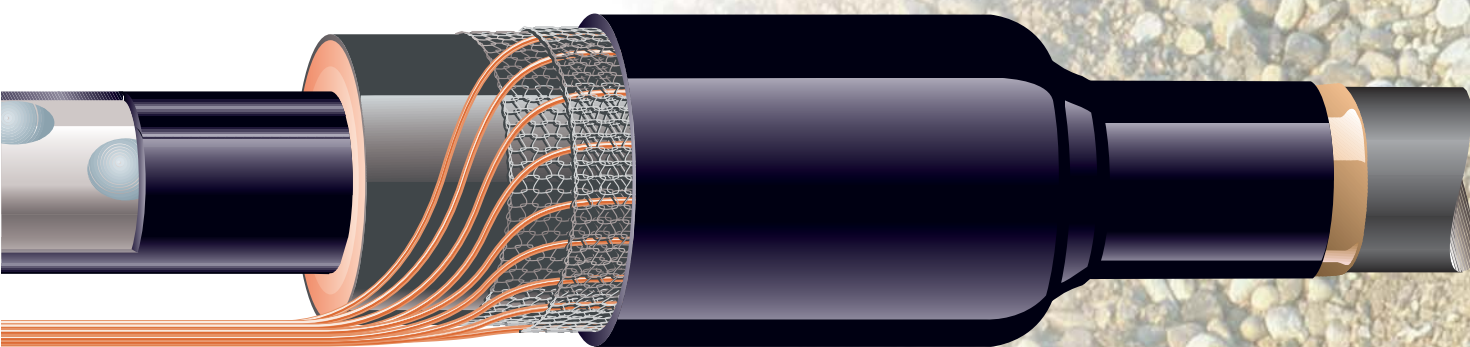


Tyco Electronics Raychem BSM type connectors used for aluminium and copper conductors

- 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
- shorter length compared to compression connectors
- 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 tubing at each cable end in combination with the yellow stress grading mastic at the screen cut provide a precisely defined impedance characteristic which smoothes the electrical field. For ease of installation, a stress control patch is applied around the mechanical connector to provide a similar function.

Shield continuity

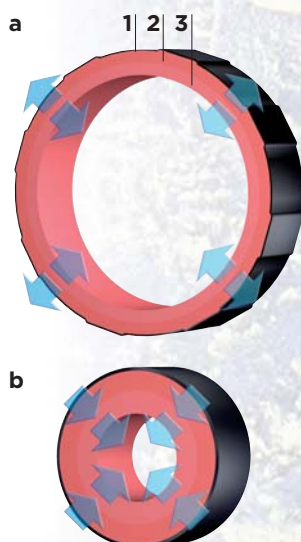
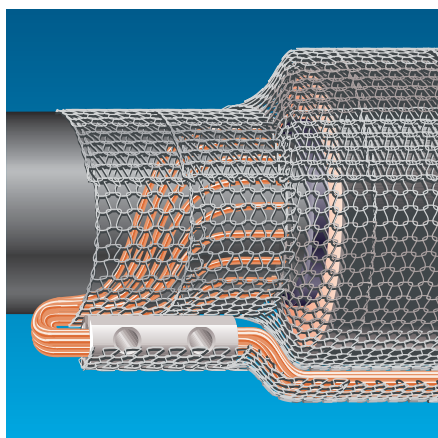
Typical shield wire cross sections up to 35mm² can easily be connected with the mechanical connector supplied in the kit. Positioned at the oversheath cut back, the connection provides a smooth profile and resists mechanical damage. There is no need for a crimping tool and its maintenance. Two shear 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 satisfactory shielding and protection.

Rayfit joint body (a) expanded shape (b) recovered shape

The conductive outer layer (1) together with the insulating middle layer (2) represent the heat shrinkable hold out for the inner elastomeric layer (3) of the joint body. During the shrinking process the stored recovery force of the elastomeric layer is released and adds up to the recovery force generated by the heat shrinkable outer layers of the joint body. The resulting high compression forces as well as the perfect ability of geometrical adjustment are providing tight electrical interfaces and a perfect seal against moisture ingress. The elastomeric properties of the inner insulation layer of the joint body allow for any cable diameter compensation and adjustment resulting from the load cycling of the cable. At the same time the two outer heat shrinkable layers provide a tight and rigid belt for the joint body representing a high level of mechanical protection against outer environmental interferences such as soil weight or pebble stones etc.

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 time. 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 the similar level of protection and thickness as modern cables with PE oversheath. All voltage sheath testing commonly used today after cable laying or as control test methods have easily been passed.



This is the kit...

Pre-engineered components including mechanical shear bolt connectors.



Summary of type tests performed on MXSU

CENELEC HD 629.1 S1 IEC 60502-4

MXSU joints passed all tests for XLPE insulated cables according to CENELEC HD 629.1 S1 or IEC 60502-4 including impact tests at ambient and at low temperature.

Additional tests reflecting future network operation

MXSU joints were subjected to additional tests which are not part of any European standard but reflect future demands in modern network operation: Overload operation of cables: More than 800 hours of electrical heat cycling at conductor temperatures of 130 °C with a voltage of 2.5 times the operating voltage U_0 .

Oversheath testing as the routine test method of cable networks: Voltage withstand tests between the screen wires and the water bath for 15 minutes at 15 kV DC and at 8 kV AC.

IEC 61238-1 class A

Mechanical connectors used in MXSU joints, pass the requirements in accordance with IEC 61238-1 class A.

All of the above information, including drawings, illustrations and graphic designs, reflects our present understanding and is to the best of our knowledge and belief correct and reliable. Users, however, should independently evaluate the suitability of each product for the desired application. Under no circumstances does this constitute an assurance of any particular quality or performance. Such an assurance is only provided in the context of our product specifications or explicit contractual arrangements. Our liability for these products is set forth in our standard terms and conditions of sale. Raychem, TE Logo and Tyco Electronics are trademarks.

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.

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