

**Inline joints for plastic and rubber insulated cables  
up to 1 kV with or without armour or concentric  
neutrals**



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*After the conductors have been jointed, the connectors are insulated and moisture sealed out by shrinking Raychem tubing over them. The special-purpose adhesives are supplied already coated on the insides of the inner and outer joint components.*

*Cover photo: The heat-shrinkable outer sleeve, being installed with a gas torch by this German cable fitter, seals and mechanically protects this Raychem joint for a concentric neutral cable.*

The insulating and sealing performance of Raychem heat-shrinkable materials has been demonstrated in the course of over 35 years' use in power engineering. These proven materials form the basis for Raychem inline joints for cables up to 1 kV.

While fully comparable in ease and speed of installation to other modern methods, Raychem joints also eliminate mixing, pouring and topping-up delays, as they require no jointing compound or resin. This feature cuts out curing time and enables the joints to be buried immediately. As the joint components are of heat-shrinkable material, they can also be held in stock in varying climatic conditions without risk of long-term deterioration.

### **Installation**

Applying equally well to both armoured and unarmoured cables, the Raychem technique achieves insulating and sealing in one step by heating. This causes tubing, slipped over the cores before jointing, to shrink to tightly fit the connectors and insulation. At the same time the heat causes adhesive, supplied already pre-coated on the inside of the tubing, to melt and flow. The high integrity bond thus formed seals out moisture and corrosion, follows the thermal expansion of the cable, and can be reliably made on a range of core sizes and connector types without special skills or procedures.



*The Armarap joint case allows the electrical and mechanical functions of the cable armour to be restored simply and quickly.*

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### Sealing and mechanical strength

For unarmoured and concentric neutral cables, the mechanical and sealing functions of the oversheath are restored by heat-shrinking a thick-walled insulating tubing over the joint area. A durable and repeatable seal is ensured here too by hot-melt adhesives supplied already pre-installed on the inside of this component.

For armoured cables a galvanized steel grid for impact protection is used inside the outer sealing sleeve. The grid is flexible enough to be wrapped round the joint, but rigid when clamped to the cable armour. The Raychem Armarap joint case has been designed and fully tested for earth fault carrying capacity.

### Performance

Raychem joints are designed and fully tested to meet Raychem specification PPS 3013, which encompasses the requirements of the major national standards and the IEC norms. Each joint covers a range of cable sizes and is supplied complete with full installation instructions.

As one of the leader in heat-shrinkable materials and one of the largest cable accessory makers, we support our products with customer training, service and technical assistance to meet the demands of the growing world of energy.



*After a couple of minutes' work, this cable fitter in Scandinavia has nearly finished installing the outer sleeve of a Raychem joint for a 1 kV plastic insulated cable. Back-filling of the trench and switching on can then follow without delay.*

### Ordering information

Raychem joint kits are available for plastic insulated cables with or without armour for up to 1 kV, with 2 to 5 cores and with conductor cross-sections up to 300 mm<sup>2</sup>. Joints for larger cross-sections and a full selection table are available on request.

For further details on this or any other Raychem products please contact your local sales representative.

### Performance tests for Raychem joints for plastic and rubber insulated cables up to 1 kV

Test sequence		Result
<b>Insulation resistance</b>	with DC voltage $\geq 500$ V	$\geq 1000$ M $\Omega$
<b>Impact (only for armoured cables)</b>	4 kg wedge dropped 6 times from 2 m	no functional damage
<b>A.C. voltage withstand</b>	4 kV for 15 min	no breakdown and no flashover
<b>Impulse voltage withstand</b>	10 positive and 10 negative, 1.2/50 $\mu$ s, 8 kV peak, between conductor and grounded water bath	no breakdown and no flashover
<b>Insulation resistance</b>	repeat	$\geq 1000$ M $\Omega$
<b>Load cycling</b>	63 cycles 5 h heating, 3 h cooling Conductor temperature: PVC cables: 75°C XLPE cables: 95°C	pass
<b>Load cycling</b>	as above with cable in 1 m water, oversheath removed	pass
<b>Insulation resistance</b>	repeat	$\geq 1000$ M $\Omega$
<b>Impulse voltage withstand</b>	repeat	no breakdown and no flashover
<b>D.C. voltage withstand</b>	15 kV for 5 min	no breakdown and no flashover
<b>Notes:</b>	1. All voltages are applied between each conductor in turn and all other conductors, shield, armour, and the waterbath being grounded. 2. Further details are given in Raychem specification PPS 3013.	

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. ALR, AMP, AXICOM, B&H, BOWTHORPE EMP, CROMPTON INSTRUMENTS, DORMAN SMITH, DULMISON, GURO, HELLSTERN, LA PRAIRIE, MORLYNN, RAYCHEM, and SIMEL are trademarks.



**Energy Division – a pioneer in the development of economical solutions for the electrical power industry. Our product range includes: Cable accessories, connectors & fittings, electrical equipment, instruments, lighting controls, insulators & insulation enhancement and surge arresters.**

For more information and your country contact person, please visit us at:  
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