tyco Electronics

Energy Division
http://energy.tycoelectronics.com

EPKB
Heat-shrinkable medium voltage branch joints for single core polymeric cables up to 24 kV

Features
- Shear bolt connector
- Connector and insulation in one kit
- Range taking kit
- Compact, robust and buriable

Benefits
- No special installation tools or dies needed
- No other engineering required
- Wide range of application
- Space saving, low total costs

Raychem

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Today's networks must achieve higher levels of reliability and flexibility to meet the demands of their operators who are under increasing pressure to decrease the networks' costs. The result is that engineers are looking at new ways to optimize the configuration of their networks.

In response to these demands Raychem has developed a range of easy to install, medium voltage branch joints for single core polymeric cables.

EPKB joints use shear bolt connectors to simplify the interconnection of conductors. Heat-shrinkable insulating components supply pre-engineered thicknesses of insulation and stress control material. This is a major step forward in comparison with traditional taping solutions.

Network applications
The long-term reliability of polymeric cables in combination with modern fault finding techniques has opened up many economically attractive opportunities for solid branch joint connections.
The branch joints are sealed in robust heat-shrinkable jackets and are suitable for direct burial which saves valuable space in comparison with traditional link boxes or switchgear.
EPKB branch joints can also be used to reduce the amount of cables required for making connections to transformers remote from the distribution ring.

Raychem's flexible solution
Given the difficulties of both connecting the conductor and providing the insulation for the more complex geometry of a branch joint, Raychem's solution provides a complete kit including both connector and insulation.

Many of the joint's basic components are already used in Raychem's heat-shrinkable elastomeric joints proven in millions of installations all over the world. The heart of the insulation is a thick-wall elastomeric tubing designed to conform tightly with the stress control system and the connector.

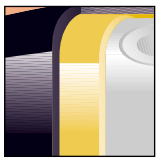
Special features
The design of the connector, specially engineered to fit the insulation components, also enables the user to connect different conductor sizes. This provides great flexibility in the range of cables which can be connected in this branch joint.

The connector uses bolts designed to shear off at a preset level of torque and is installed with a standard socket set. This technique ensures that the connector performs consistently for a wide range of conductor diameters.

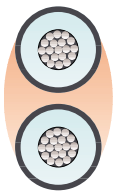
As the installation of the complete joint is similar to the installation of a heat-shrinkable inline joint, time requirements are low and no additional installer skills are needed.

The complete kit has been tested to meet Raychems performance standards.

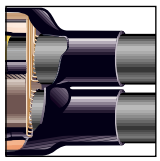
For performance specifications and available sizes please see last page.



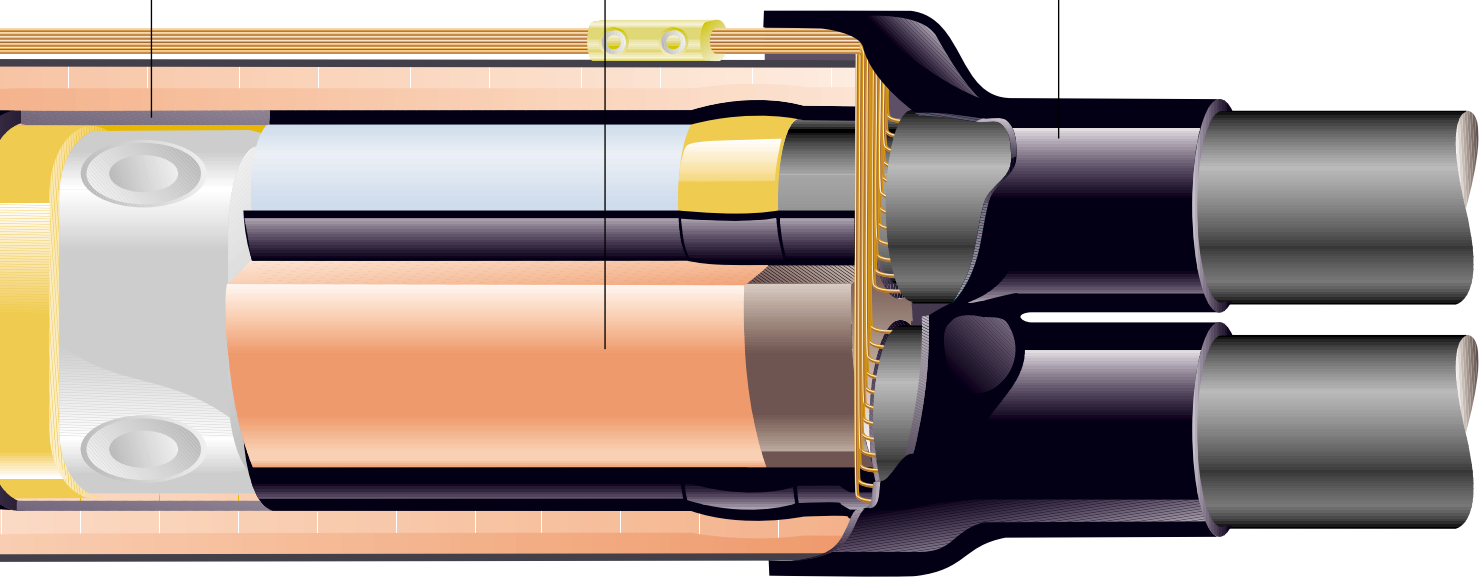
Electrical stress control
The mechanical connector is covered with yellow void filler tape and JSCR stress control tubing.
These are the same materials used in Raychem's inline medium voltage joints.



Spacer profile
This specially extruded profile is made from a red high-performance insulating elastomer.
The material properties guarantee a void-free crutch filling and tight electrical interfaces between the two branch cables.



Breakout cap
The adhesive coated two finger breakout provides water sealing for the branch side in the same way as the jacket does for the single side.
This also gives the flexibility needed to ensure good sealing under temperature changes due to load cycling.



Heat-shrinkable medium voltage branch joints for single core polymeric cables up to 24 kV

Test Sequence		Test Voltage Highest Voltage for Cable U_m (kV) 12/17	24	Result
A.C. Voltage Withstand	1 min	25	55	no breakdown
Partial Discharge		12	24	≤ 20 pC
Impulse Voltage Withstand	10 positive and 10 negative, 1.2/50 µs, between conductor and grounded screen	95	150	no breakdown
Load Cycling	63 cycles 5 h heating, 3 h cooling Conductor temperature on XLPE cables: 95°	15	30	no breakdown
Partial Discharge		12	24	≤ 20 pC
Thermal Short Circuit	1 s symmetrical fault with conductor temperature as in the cable specification			no functional damage
Load Cycling	as above, with cable in 1 m water (oversheath removed)	15	30	no breakdown
Partial Discharge	as above	12	24	≤ 20 pC
A.C. Voltage Withstand	4 h	24	48	no breakdown
Impulse Voltage Withstand	repeat	95	150	no breakdown
D.C. Voltage Withstand	30 min	48	96	no breakdown
Notes:	1. U_m is the highest phase to phase voltage. All other voltages are stated as phase to ground values. 2. Further details are given in Raychem specification PPS 3013.			

Selection Table

Voltage class	Conductor cross-section	Overall cable diameter		Min. diameter over insulation of main cable	EPKB kit description
kV	mm²	min	max		
12	35- 95	23.5	32	14.8	EPKB 12A 1XU-2XU
	95-150	26.0	37.5	19.3	EPKB 12B 1XU-2XU
	185-300	32.1	43	23.9	EPKB 12C 1XU-2XU
24	35- 95	25.2	38	19.0	EPKB 24A 1XU-2XU
	95-150	31.8	40	23.5	EPKB 24B 1XU-2XU
	185-300	36.4	47	28.1	EPKB 24C 1XU-2XU

For other combinations of cable sizes or information for 36 kV cables, please contact your local sales representative.

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:
http://energy.tycoelectronics.com

Tyco Electronics Raychem GmbH, Energy Division
Finsinger Feld 1, 85521 Ottobrunn/Munich, Germany
Phone: +49-89-6089-0, Fax: +49-89-6096345