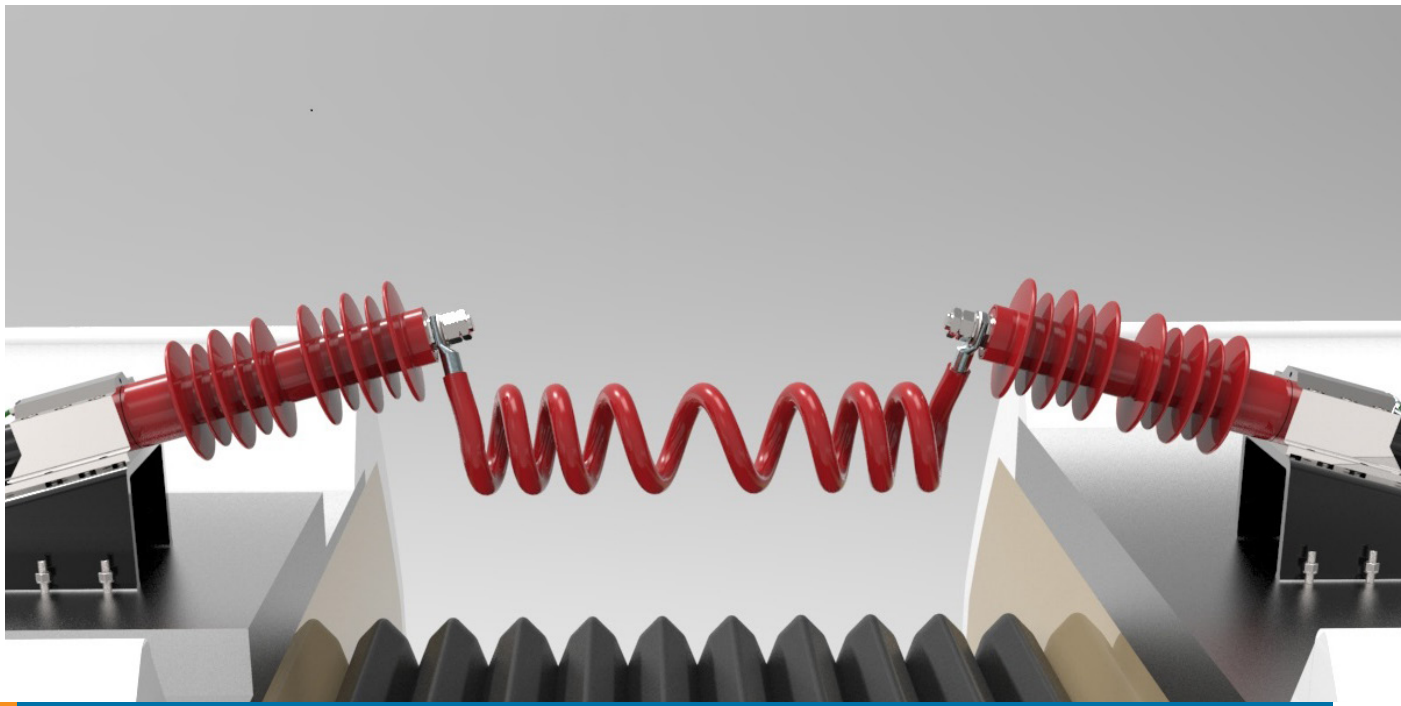




HVJL TYPE C JUMPER CABLES

HIGH VOLTAGE POWER DISTRIBUTION FOR RAIL VEHICLES

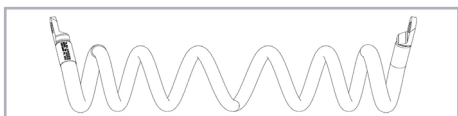
TE Connectivity Type C jumper cables provide a low profile, reliable and maintenance free solution as inter-car jumpers in high voltage roof-lines.

Suitable for use at 3 kV DC as well as 15 and 25 kV AC, the type C jumper offers the optimum combination of flexibility and minimum space usage. Current ratings up to 600A (at 30°C) are available. Two or more jumpers may be used if higher currents are required. The combination of industry-leading Raychem high voltage insulation materials and an engineering plastic strength spine gives a design that is highly flexible over a wide temperature range and is resistant to the rigours of the high voltage rail environment.

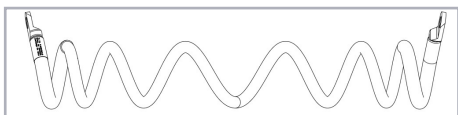
HVJL jumper cables are designed for individual applications

Key Features:

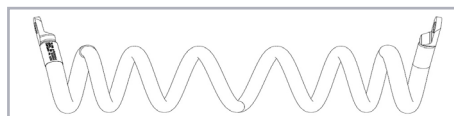
- 15/25kV roof-line inter-car jumper cables optimised for use in the rail environment
- Dual wall insulated to reduce the risk of flashover and proof against accidental contact
- Optional push on boots for insulation of connections
- Completely sealed to prevent water ingress and ice blocking
- Low profile giving improved clearances and minimising wind resistance
- Coiled form allows large flexing range with minimum space usage
- Flexible across a wide operating temperature range
- Dimensions customisable for individual applications
- Impact resistant
- Low weight
- Maintenance free minimising total life-cycle costs.



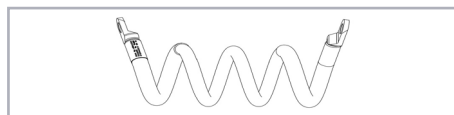
6 turn jumper manufactured to 450mm



7 turn jumper manufactured to 800mm



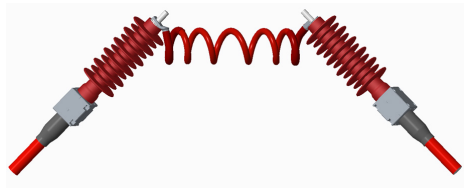
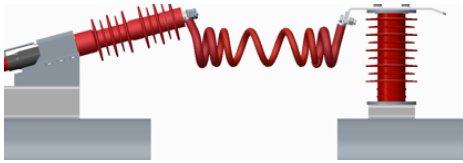
7 turn jumper manufactured to 600mm



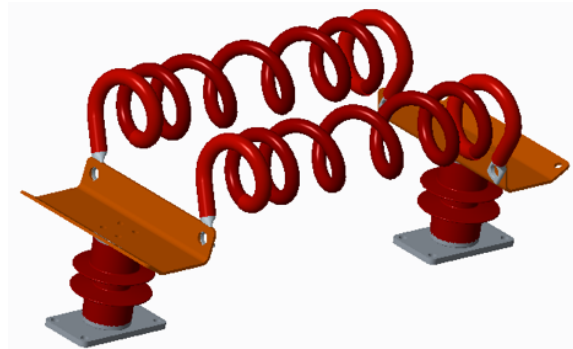
4 turn jumper manufactured to 350mm

Application:

15 - 25 kV AC



1.5 - 3 kV DC



HVJL Type C Jumper cables are used as part of the high voltage roof-line on high speed trains and EMUs and are highly flexible to take up large lateral, longitudinal and vertical movements.

Jumpers can be attached to support insulators or directly to self-supporting terminations on the high voltage cables. They can be mounted 'hanging' so that the coil is above the mounting points or inverted so that the coil is above the mounting points. Locating adapters can be provided to stop the jumper rotating in service. Push on silicone rubber boots can also be supplied to cover the connections to further reduce the risk of accidental contact. HVJLs can be mounted in parallel or at various angles in reference to a train centreline.

Typical Ratings:

Characteristic	Value	
Nominal line voltage (U_n)	3 kV/ 15 kV/ 25 kV	3 kV/ 15 kV/ 25 kV
Dielectric withstand (U_{50}) - 180 mm clearance	75 kV	75 kV
Dielectric withstand (U_{50}) - foil wrapped around cable	40 kV	40 kV
Leakage current at 25 kV - foil wrapped around cable	<0.5 mA	<0.5mA
Impulse withstand voltage (U_{imp}) - 180 mm clearance	170 kV	170 kV
Conductor (IEC class 6, copper)	95 mm ²	150mm ²
Rated Current	440A (at 30°C)	600A (at 30°C)
Operating Temperature	-50 to +80°C	-50°C to +80°C
Coil Diameter	105+/- 5 mm	120 +/-5mm
Length (as manufactured)	295mm to 800mm	295mm to 800mm
Max. longitudinal deviation	40% of Length	40% of Length
Max. lateral deviation	50% of Length	50% of Length
Max. vertical deviation	50% of Length	50% of Length
Emergency (must be replaced)	70% of Length	70% of Length

This table gives typical data for the most commonly used jumper cable size, which is 95mm² conductor, 7 turns and manufactured at 600mm length. Deviation figures are taken from a particular project and are for illustrative purposes only. 150mm² conductor cross section and other lengths to suit project requirements are also available.

Custom Design Service:

TE Connectivity can provide a complete design service to provide a tailor made jumper cable.

The train designer needs to provide:

- Distance between car ends
- Range of possible movements in service
- Frequency of movements in service
- Current carrying requirements

TE Connectivity will design the optimum jumper cable for the application. A 2D or 3D CAD model can be provided, as required

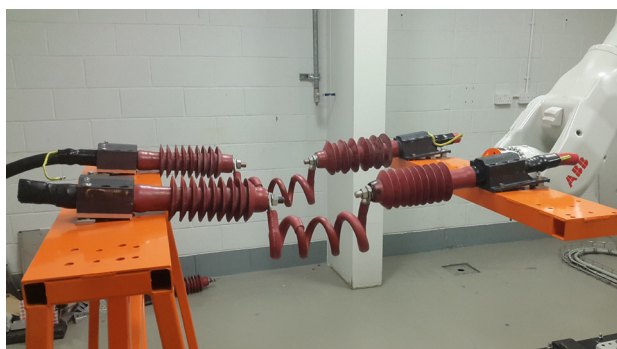


Testing

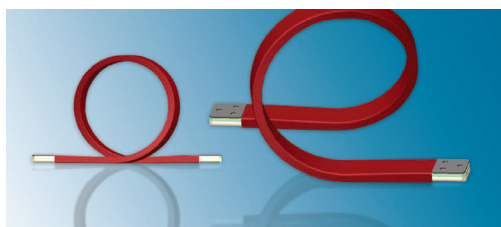
HVJL jumper cables have been subjected to a range of qualification tests including:

- Whole-life flex testing
- High voltage withstand tests
- Current cycling thermal tests
- Shock and vibration
- Mechanical cycling to extremes
- Low temperature flexing

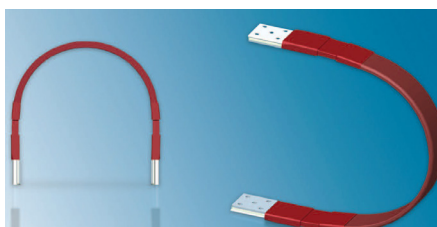
Test reports are available on request.



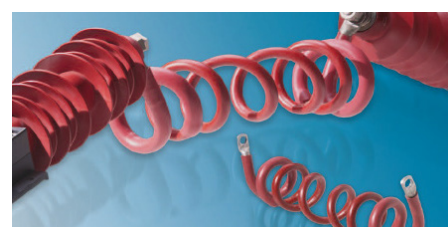
The Type C coiled jumper cable is one of a range of jumper cable configurations available from TE Connectivity.



HVJL Type E Jumper Cables



HVJL Type F Jumper Cables



HVJL Type C Jumper Cables

te.com/rail

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