



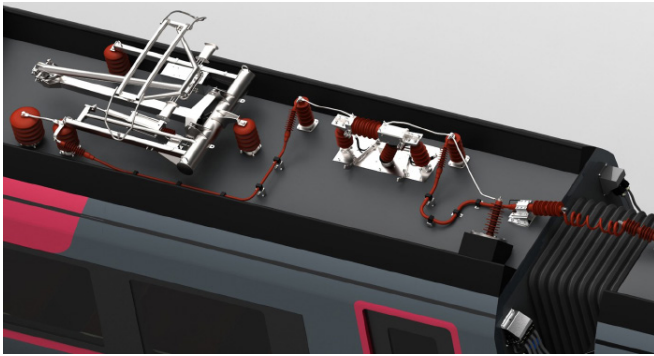
RSTI-68R-HT **RSTI-CC-68R-HT**

RAIL APPROVED T-CONNECTORS FOR
ROLLING STOCK- TYPE C INTERFACE

RSTI-68R-HT RSTI-CC-68R-HT

T-CONNECTORS FOR ROLLING STOCK -TYPE C INTERFACE

Introducing the new rail approved T-Connector. 800 A up to 42 kV optimized for Rolling Stock & High Transient applications. RSTI-68R-HT connectors, RSTI-CC-68R-HT coupling connectors & inline joints



New on the market

This T-connector family is optimized & tested specifically for the Rail market and meets the new European fire & smoke norm.

The grounding of the T-connector is improved, sealed, shock & vibration resistant and disconnectable. There is no need for a disjointed second grounding lead. This ensures improved ease of installation once the cable assembly has been made and tested before installation in the vehicle.

Tested against specific Rail standards:

- Shock & vibration standards. (IEC 61373: 2010)
- Smoke & Fire norm. (EN45545-2:2013 - HL2)
- High Voltage Switching Transients Accelerated Life Test (TE 109-103057), a special TE Connectivity in-house developed test method to simulate the typical transient effects generated in rolling stock roofline applications.
- Silicone rubber insulation offering reliable operation over an extremely wide range of operating temperatures.
- Environmentally sealed/shock & vibration resistant connector fitted to the grounding lead enabling disconnection from the cable screen for installation and/or test purposes.

Technical Information:

Cable core insulation diameter range 28.9 – 42.0 mm

Conductor cross section range 50 – 240 mm²

Maximum system voltage 42 kV

Continuous current rating 800 A

Basic Impulse Level 200 kV

Partial discharge at 2 u_0 < 2 pC

AC voltage withstand, 5 min 93.5 kV

DC voltage withstand, 15 min 125 kV

Thermal short circuit, 1 sec 55 kA

Thermal short circuit, 3 sec 32 kA

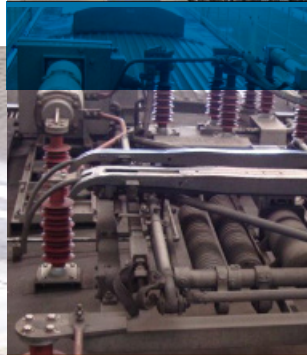
Dynamic short circuit 125 kA



NOTE:

R-HT MEANS "RAIL - HIGH TRANSIENTS RESISTANCE

ALL IMAGES ARE FOR REFERENCE.



VESA ROOFLINE SYSTEM SOLUTIONS

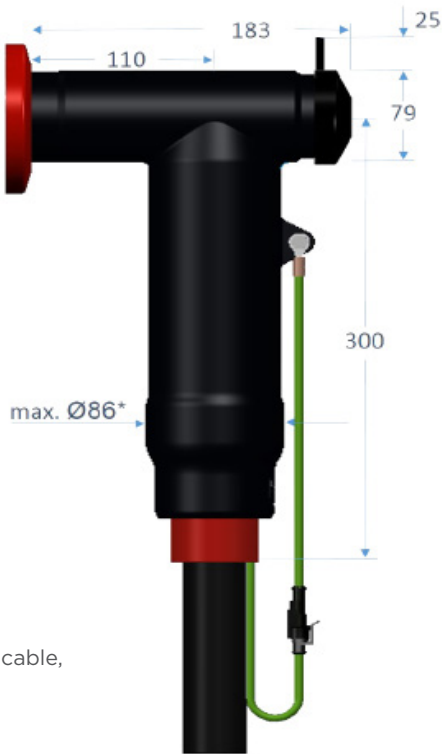
THE VESA SYSTEM IS A COMPLIMENTARY COMBINATION OF HIGH VOLTAGE COMPONENTS THAT ARE TYPICALLY REQUIRED FOR INSTALLATION BETWEEN THE PANTOGRAPH AND THE TRANSFORMER AS WELL AS BETWEEN CARS WITHIN THE RAIL INDUSTRY.

Main Features:

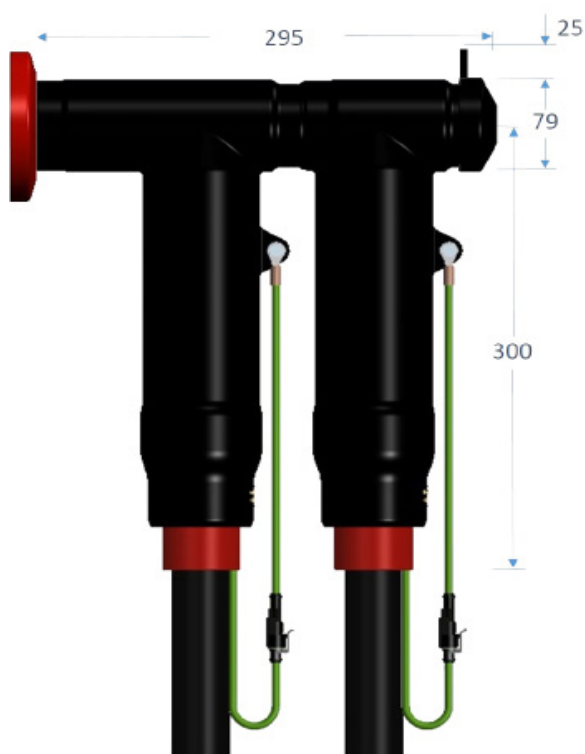
- The insulation of the T-connector is made of a highly modified silicone rubber characterized by high tracking resistance, elongation at break and non-flammability.
- A thin walled screen is permanently bonded onto the insulation that protects the connection system against accidental contact.
- The screened connector need not be removed for over sheath testing.
- The earth lead can be easily disconnected via the single pole AMP Superseal 1.5 SERIES sealed connector.
- The overall dimensions are designed to take up minimum space.
- Easily accessible rear plug with capacitive test point for determining whether the circuit is energized. A conductive cap protects this test point.
- The screened cable connector exceeds CENELEC HD 629.1 S2 requirements, which includes BS; VDE and other international specifications.
- Design is made for applications up to 800 A and fits both 630 A and 1250 A bushings (Interface "C1" and "C2") as specified by EN 50180 and EN50181.
- RSTI-68R-HT connector is compatible with a CLC/TS 50537 compliant bushing
- Suitable for train interior and exterior HV connections (mechanical protection recommended for exterior installations).
- The compact design supports the use of double "T" connections (stacked or inline joint) inside standard cabinets and on the train roofs.
- The wide application range covers cable cross sections from 50 to 240 mm².
- Conductor connection with 800 A DIN compression copper lugs.
- Suitable for – but not limited to – 18/30 kV and 26/45 kV cables for Rolling Stock such as:
 - PRYSMIAN's DRAKA TENAX-TRAIN-Plus (N)TMCWOEU
 - PRYSMIAN's PROTON(HMK) (N)TMCGCHXOEUK
 - NEXANS' FLAMEX® (N)TMCGCHXOE
 - NEXANS' FLAMEX PANTO®

APPLICATIONS SINGLE CONNECTION AND COUPLING CONNECTOR

Applications



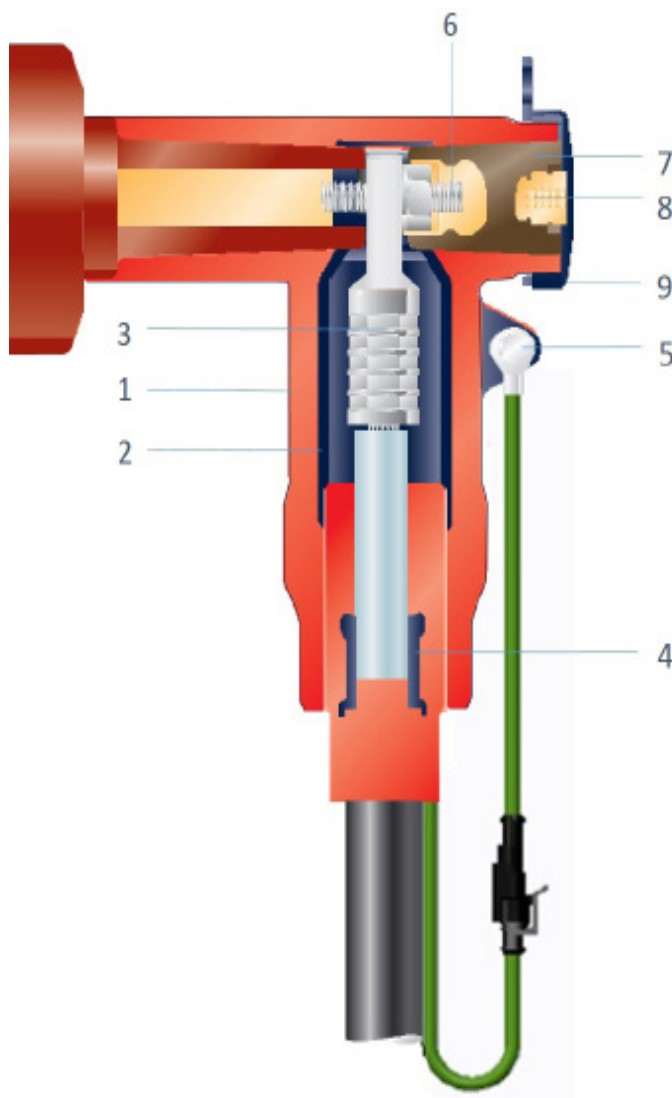
***Note:**
Plastic insulated cable,
42kV 240mm²



COUPLING CONNECTOR



DESIGN AND CONSTRUCTION



NOTE:

ALL APPLICATIONS AS SHOWN IN THE BROCHURE NEED TO HAVE A MECHANICAL SUPPORT OF THE POWER CABLE RELATIVELY CLOSE TO THE T-CONNECTOR BODY.



Sealed Connector

This connector is part of the sealed ground lead arrangement.

1 - Screened body

A thin walled conductive outer screen is permanently bonded to the silicone rubber insulating material of the body.

2 - Inner screen

A conductive inner layer, as a Faraday cage around the compression or mechanical lug, prevents corona at rated voltage.

3 - Compression or mechanical lugs

Specially designed DIN compression copper lugs for connecting copper conductor cables.

4 - Stress cone adapter

Relieves electrical stress at the point where the cable screen is cut. The insulated section, extending beyond the wire shielding, provides a convenient point for over sheath testing.

5 - Earthing eye and sealed ground lead with connector

Earthing eye provides a connection point for earthing the screen. The sealed ground lead has a single pole sealed connector in case the T-connector body has to be dismantled during installation and/or service.

The kit contains all required components for the assembly of a complete earth lead: the mating connector contact and seal will be crimped onto 6 of the screen wires from the cable, then heat shrinkable tubing is applied and all is joined with the connector housing. This way a shock & vibration resistant sealed earthing lead is made that can be connected and disconnected easily.

6 - Threaded pin

A threaded pin together with a spring washer (wave type) and hex nut ensure a high performance electrical and mechanical contact with the bushing.

7 - Rear plug with test point

Removable rear plug with capacitive test point.

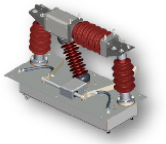
8 - Test point

The test point is used to determine whether the circuit is energized; alternatively it can be used for phasing.

9 - Conductive end cap

Electrical screen and protection of the rear end of the separable connector.

VESA HIGH VOLTAGE ROOFLINE SYSTEM.



VESA Vacuum Circuit Breaker

VESA vacuum circuit breaker (VCB) for railway electrification is the first completely electro-magnetically operated system for 25kV and 15kV vehicles. More than 1200 units on four continents, with the first unit installed over ten years ago, generate an unbeatable proven reliability and thus lead the electrical rail vehicle market into a new era.



VESA Insulators

TE HVIB polymeric insulators provide robust, light weight designs for pantograph, busbar, and equipment supports. Insulators are available for AC and DC systems. Industry-leading Raychem high voltage insulation materials and well-proven polymer or glass fibre cores are combined to make insulators that are easy to install and completely reliable in the harsh rail environment.



VESA Inter-car Jumper Leads

TE Connectivity jumper cables provide a low profile, reliable and maintenance free solution as inter-car jumpers in high voltage rooflines and pantograph connection cables.



VESA Roofline Cable Assemblies

TE Connectivity offers complete tested cable assemblies for rolling stock applications, with various kinds of termination types, fully adopted to customer specific needs, including inter-car jumper cable solutions.



VESA Transformer Download & T-connector

Our 15 / 25kV roofline and equipment connection cables for use between the pantograph and main transformer come pre-tested and ready to install. Industry leading Raychem insulation and stress control materials with flexible EPR power cable insulation make our assemblies easy to install and reliable in the harsh railway environment.



VESA Surge Arresters

Tested in accordance with IEC60099-4 at independent accredited laboratories, our surge arrester offer superior protection margins with low residual voltages.

Safe non-shattering short circuit behavior to higher current levels, maintenance free, - 50°C resistant, EN45545 compliancy, are just some of the benefits of our surge arresters. Our team could help your to select the specific Surge Arrester to protect your system at the right level.

MATERIAL AND COMPONENT SELECTION IS CRUCIAL TO HIGH VOLTAGE SUCCESS

In the world of rail and rolling stock applications, TE Connectivity delivers the broadest portfolio and systems expertise required to connect power and data systems safely and reliably. That portfolio includes products ranging from high voltage 'roofline' components and systems to the low voltage cabling and connector systems installed throughout the entire train. TE Connectivity works in partnership with its customers to help them understand the implications of material and component selection in 25 kV roofline systems. This collaborative approach helps customers make design decisions that will minimise the potential risk of failure in 25 kV roofline systems and ultimately deliver a reliable rail network.

AS A TECHNOLOGY LEADER, TE CONNECTIVITY DESIGNS AND MANUFACTURES THE ELECTRONIC AND ELECTRICAL CONNECTORS, COMPONENTS AND SYSTEMS INSIDE PRODUCTS THAT ARE CHANGING THE WORLD, MAKING THEM SMARTER, SAFER, GREENER AND BETTER CONNECTED.

The rapid growth of urban, suburban and long distance 'high speed' electrified rail systems around the world has led to new challenges concerning environmental conditions of electrified rail operation.

Train designers also have to contend with market demands for improved energy efficiency (requiring reduced equipment weight and aerodynamic drag) and increasing the utilisation of space within the train 'envelope' for optimising passenger comfort and carrying capacity (resulting in reduced space HV roofline equipment).

These trends bring various factors and variables into play that can affect the performance and reliability of the train high voltage roofline system and associated equipment, but where long and trouble free operation has to be maintained and assured.

To meet these demands, TE Connectivity offers to work with its customers to evaluate the performance of roofline systems as a whole, performing technical analyses that includes physical inspection, environmental analysis, and review of operational and maintenance procedures.

At component interaction level, expert TE Connectivity engineers can carry out finite element analysis using the physical structure of the 25 kV system to gain an understanding of the behaviour of the electrical and mechanical stresses when the system is live in order to identify the weak points.

This service helps train designers to optimise equipment selection and layout for performance and reliability, whilst ensuring minimal maintenance overhead for train operators/maintainers.

By being more than just a supplier of components and working closely in collaboration with its customers' engineering teams, TE Connectivity builds trust as a partner rather than a simple supplier.

As a provider of technical solutions, many rail operators and manufacturers turn to TE Connectivity to evaluate the reasons for failure on high voltage roofline systems and recommend specifications for components that are outside the normal scope of its supply.

In an industry where every failure is important, the objective is to work with rail operators and train builders to improve performance, reliability and safety.

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TE.COM/RAIL

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The dimensions herein are for reference purposes only and are subject to change without notice. Specifications are subject to change without notice. Consult TE for the latest dimensions and design specifications.

BROCHURE: RAIL T-CONNECTOR

Rail

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