

Track Circuit Assistor (TCA®)

Improves Track Shunting when
rails are contaminated with rust



The build-up of rust on rails can prevent the track circuit being activated when a train passes. This problem is overcome with the TCA® fitted to DMUs or bi-mode vehicles.

TCA® Principle

RIS-2777-RST states:

"A TCA® is fitted between a pair of wheelsets on a vehicle. It assists the operation of a track circuit by raising the effective track circuit rail-to-rail voltage at the wheelsets either side of the TCA®; this enables a low voltage track circuit to operate as effectively as a higher voltage type."

TCA® induces a high-frequency current through the wheelsets and rail to break through the rust or insulating layer allowing the track circuit current to pass.

Track Circuit Failure

Track circuits affected by rust or other contaminants are not a problem for heavier trains, but lighter DMUs and alternative fuel and battery vehicles do not have enough weight to break through the insulating layer, and in certain cases this can lead to a train not being detected by the signalling system.

Improved suspension, better wheel-rail profiles and use of disc-brakes on modern vehicles also contribute to the problem as there is less abrasion to the rail and a resulting build-up of rust or contaminants acts as an insulator to the track circuit current.

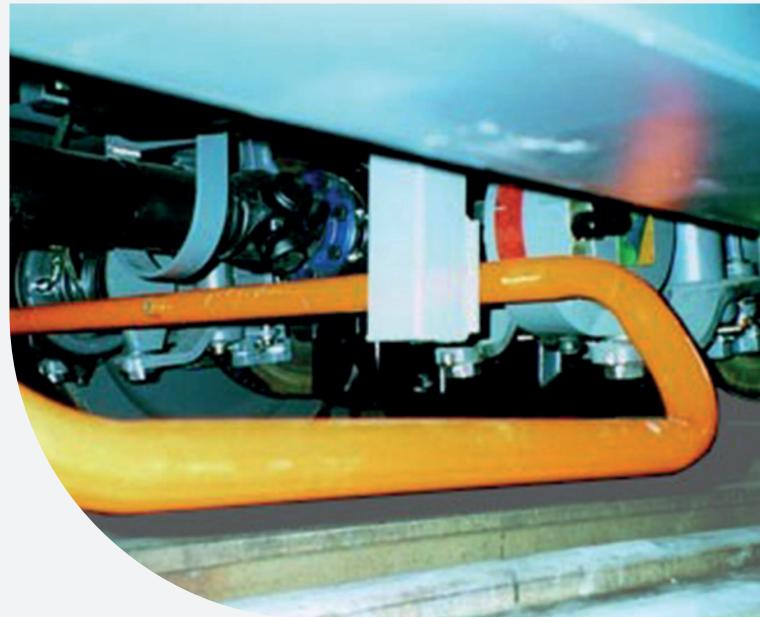
Different Rail Profiles

This can occur when, for example, urban fleets enter Metro systems and run on a less frequently used part of the rail head.

The System

The TCA® antenna is suspended on the underside of the bogie and the system consists of:

- Cab-mounted control unit
- Wiring harness or kit of connector parts
- Bogie mounted tuner unit with an integrated harness to run to an underbody connector
- Bogie mounted antenna manufactured from steel tubing



The Service

Unipart offers a comprehensive service including:

- Consultancy service to identify specific fleet requirements
- Customisation of the TCA® design for each fleet
- Compliant with rail group standards RIS-2780-RST, GMRT2477 AND RIS-27777-RST
- Customised test and maintenance equipment
- Delivery and commissioning of complete TCA® kits
- Training for installation and maintenance engineers
- Support and technical advice

Benefits of the TCA®

- Improved track circuit shunting when wheels and rails are rusty or have a contamination layer
- Improved safety and reliability of train detection
- Ability to operate short vehicle sets
- Reduced likelihood of costs associated with delays caused by non-shunting of circuits
- Straight-forward, simple installation
- Low-maintenance system supported by Unipart Rail
- Spares and replacements available



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