

Our references include:

France: SNCF (conventional lines and high speed lines), Lyon (Metro), Paris - RATP (Metro and RER), Eurotunnel

Belgium: Infrabel, Brussels STIB (Metro)

Great Britain: Network Rail (high speed line)

Italy: RFI

Poland: PKP

Spain: RENFE (standard track and high speed lines)

Portugal: REFER, Lisbon (Metro)

Switzerland: Lausanne (Metro)

Turkey: TCDD (high-speed line)

Sweden: TRAFIKVERKET (high speed line and heavy haul)

Norway: JBV Jernbaneanverket

Morocco: ONCF (conventional lines and high speed lines)

Tunisia: SNCFT (Tunisian Railways)

Algeria: ANESRIF/SNTF (Algerian Railways), Algiers (Metro)

Egypt: Cairo (Metro)

Cameroon: Regifercam

Mauritania: SNIM (heavy haul)

Venezuela: Caracas (Metro)

Chile: Santiago de Chile (Metro)

Canada: Montreal STM (Metro)

Brazil: National railways, Rio de Janeiro (Metro), Salvador de Bahia

Panama: Panama city (Metro)

South Korea: KR (conventional lines and high speed lines)

Singapore: SMRT, SBST (Metro)

Hong Kong: MTR (Metro), KCRC

India: New Delhi (Metro), Bangalore, Jaipur, Hyderabad, Kochi

Dubai: RTA (Metro)

Australia: ARTC (railways)

China: high speed line

Bangladesh: National railways

Taiwan: Taichung (Metro)

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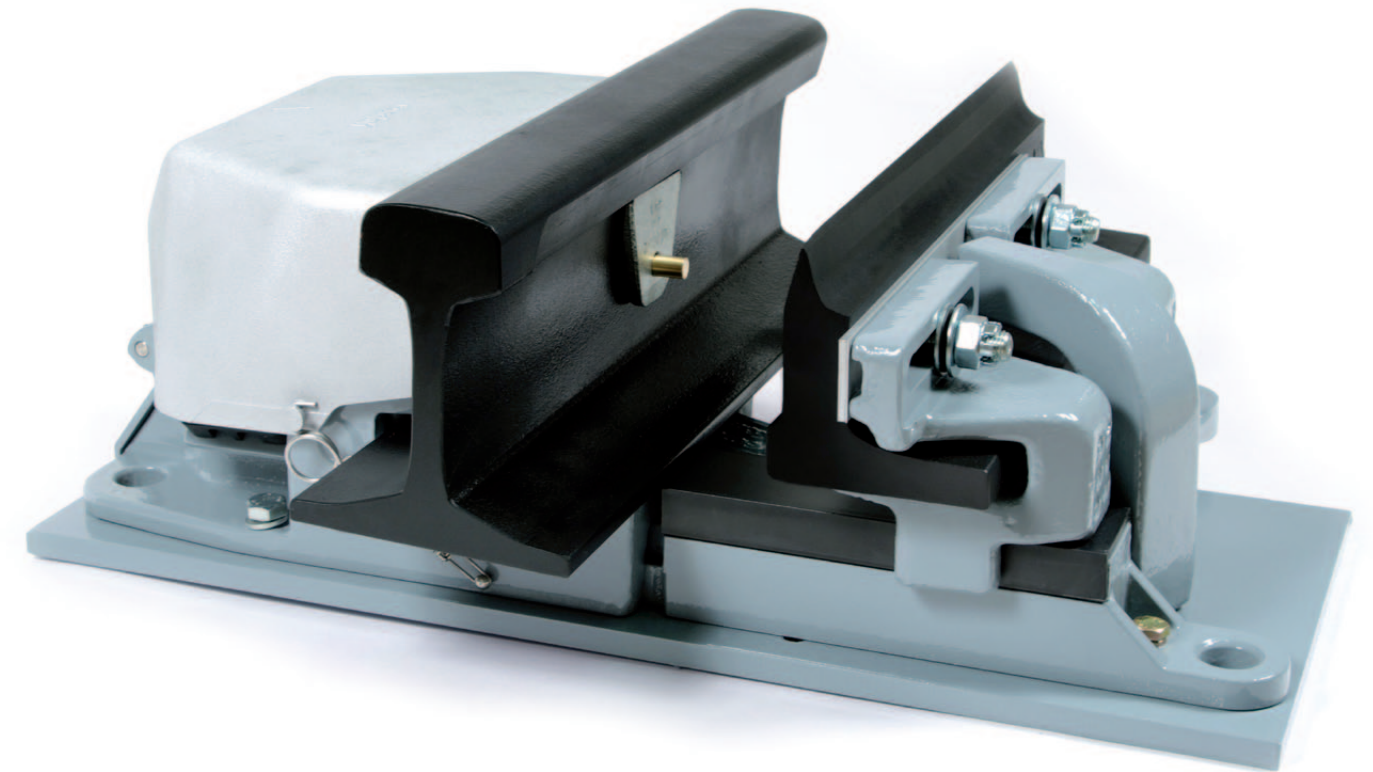
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VCC Clamp Lock

"Locking under control
with safety as close as possible to the rail..."



'In cases where conventional clamping allows unlocking by means of action on the open switch rail, the VCC offers the **positive, simultaneous** locking of both switch rails, thus avoiding any derailment risk.'

With the benefit of a century of experience, throughout the world, Vossloh offers detected locking solutions that are recognized and have been tested in extreme conditions (of speed, axle load and temperature) by the world's largest rail networks.

With its robust and innovative design, the clamp lock (VCC) offers unequalled characteristics and safety level. Used in pairs and assembled on the turnout first bearer, VCCs replace two slide chairs, thus forming an integral part with the switch rail and the stock rail. This special configuration provides the locking function, offers greater control of switch rail drive and permits mechanical tamping operations between bearers.

Endorsed by the most demanding networks, the clamp lock (VCC) meets the NF F 52-162 and NF F 52-164 safety standards. The UIC recommends it for high speed lines (see UIC 734R) and the SNCF requires it on TGV (French high-speed rail network - see NF 52 151) lines as well as on all turnouts crossed at facing speeds beyond **40 km/h**.

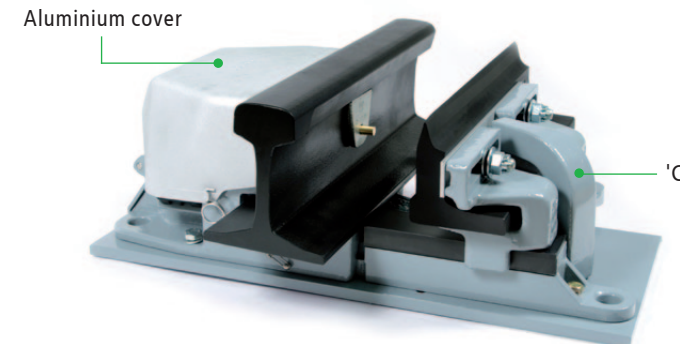


Installation and application

In terms of application, the VCC offers unequalled flexibility:

- Adaptable to any switch rail/stock rail profile
- Compatible with all bearers including timber bearers, concrete bearers, metallic bearers, slab track, etc.
- Accepts mountings of all types: coachscrews, etc.
- Supports all types of rail laying: inclined or vertical
- Is independent of track gauge (between 1000 and 1676 mm)
- Designed for mixed traffic, high speed and heavy loads

Aluminium cover

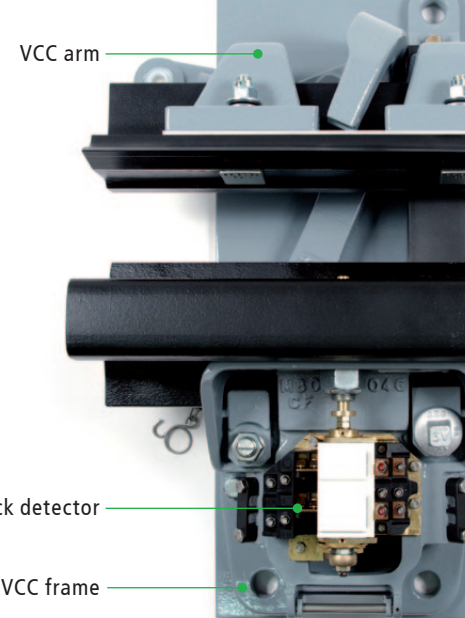


Technical characteristics

- Switch rail opening: 110 mm to 170 mm
- Facing crossing speed: up to 350 km/h
- Operating temperature: -55°C – +70°C
- Allowed thermal expansion: +/- 55 mm
- Heating: optional
- Anti-vandalism protection: included
- MTBF: over 30 years

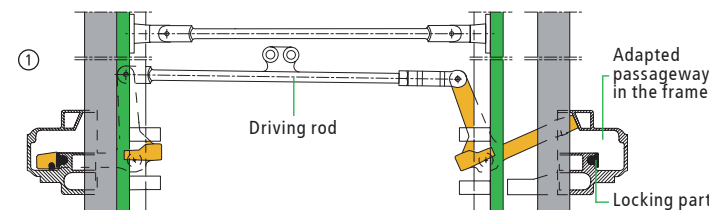
Clamp lock detector

VCC frame

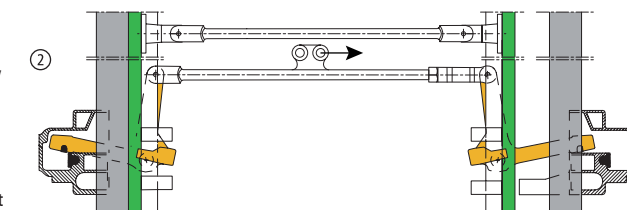


Operation

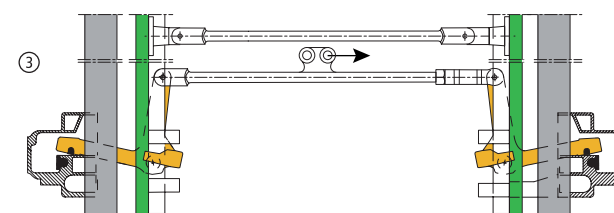
The locks are driven in four distinct phases.



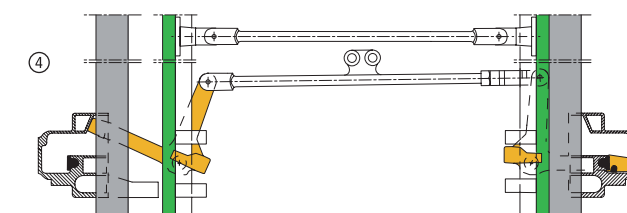
The initial configuration of the VCC pair is as follows: one switch rail is closed and the other one is opened, both rails are locked.



The drive brings about the unlocking of both switch rails.



The drive moves the switch rails.



After switch rail application, the VCC pair locks both switch rails.

The position and locking of the switch rails are detected by clamp lock detectors (see separate technical sheet), which provide electrical information on switch rail application opening and locking at the end of the movement.

The detectors are installed as closely as possible to the switch rail, thus offering unequalled reliability (switch rail expansion and track vibrations, however significant, do not affect the accuracy of the detection in any way). This system is therefore adapted not only to conventional networks, but also to heavily stressed networks (heavy load, very high speed, heavy duty urbanlines, etc.).

Keeping the switch in position is helped by a secondary safety device that stabilises locking under the worst conditions.