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Level 3

Use of Top of Rail Friction Modifiers

Endorsement and Authorisation

For endorsement and authorisation, please refer to
NR/L3/TRK/3510

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Issue record

Issue	Date	Comments
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Compliance

This Network Rail standard is mandatory and shall be complied with by Network Rail and its contractors if applicable from 4 June 2011 (clause 13 from April 2012).

When this standard is implemented, it is permissible for all projects that have formally completed GRIP Stage 3 (Option Selection) to continue to comply with the Issue of any relevant Network Rail Standards current when GRIP Stage 3 was reached and not to comply with requirements contained herein, unless stipulated otherwise in the scope of the standard.

Reference documentation

NR/L2/TK/001/B01, *Inspection and maintenance of permanent way – Rail management.*

NR/L2/TK/001/E01, *Inspection and maintenance of permanent way – Installation requirements, maintenance limits and intervention limits.*

NR/L3/TRK/TEF3040, *Rail friction management equipment – inspection and maintenance record*

NR/L3/TRK/TEF3219, *Rail friction management equipment – site specific assessment*

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1 Purpose

This standard gives the minimum requirements for the installation, inspection, filling and maintenance of top of rail friction modifier systems designed and approved for Network Rail's permanent way.

2 Scope

Unless otherwise stated, the requirements of this standard shall apply to all rail-mounted top of rail friction modifier systems fitted or proposed to be fitted to plain line running rails.

This standard applies to permanent way that is undergoing renewal as well as to permanent way which is in normal maintenance.

3 Roles and responsibilities

The requirements of this standard shall be complied with by anyone involved in the specification, purchase, installation, commissioning, inspection, filling and maintenance of rail-mounted rail head friction management systems.

4 Definitions

For the purposes of this standard, the following terms and definitions apply.

Term	Definition
applicator	The rail mounted component that delivers friction modifier onto the top of the rail from the field side.
competent person	Individual with the ability to perform a particular activity to a prescribed standard, in this case the installation, inspection, filling and maintenance of track-mounted top of rail friction modifiers. The ability to undertake responsibilities and to perform activities to a recognised standard on a regular basis. A combination of practical thinking skills, experience and knowledge and may include a willingness to undertake work activities in accordance with agreed standards, rules and procedures, in addition to having undertaken an approved training course covering the equipment to be installed / maintained.
friction modifier	Compound applied to the top of the rail head to control friction levels to between 0.3 and 0.4.
high rail	The outer rail in a curve, generally raised up relative to the inner rail due to the applied cant.
low rail	The inner rail in a curve, generally lower than the outer rail due to the applied cant.
pump	Electrically powered pump located inside the trackside friction modifier cabinet.

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Term	Definition
rail corrugations	Regular, repeated pattern of rail wear on the top of the rail head giving a corrugated or rippled appearance on the rail surface. Leads to increased dynamic forces, track component damage and wheel-rail noise.
severe rail corrugations	When rapid and persistent corrugation growth limits the life of the rail affected to less than 200EMGT or 5 years, whichever is the lower.
top of rail friction management	Applying approved friction modifier compounds to the top of the rail head, reducing the wheel-rail forces that generate vertical wear, plastic flow and low rail RCF, rail corrugations and certain forms of wheel-rail noise. Not to be confused with traction gels which are used during autumn to enhance wheel-rail adhesion.
top of rail friction modifier system or equipment	Assembly delivering friction modifier to the top of the rail head (either or both rails), consisting of an electronic control unit, friction modifier reservoir, electrically powered pump, rail-mounted non-contact wheel sensor, rail mounted applicators and all interconnecting hoses and couplings.

5 Identifying sites for top of rail friction modifiers

5.1 Site selection

New top of rail friction modifiers should be considered for installation on curves which exhibit or have a history of:

- Low rail RCF and plastic flow.
- Severe rail corrugations.
- Wheel/rail noise levels generated by tread contact severe enough (e.g. generate complaints from Network Rail's neighbours) to require correction.

Friction modifiers shall be fitted only to the rails exhibiting defects or generating noise.

In all cases of low rail wear, RCF, plastic flow and high/low rail corrugations, the preferred countermeasure is to install a premium rail steel. There are circumstances when use of top of rail friction modifiers is an appropriate solution:

- When re-railing is not planned (or has just been completed in grade 260 rail).
- As a temporary measure until planned re-railing is completed.

When low rail wheel-rail forces are so severe that defects continue to initiate after the installation of premium rail, top of rail friction modifiers shall be installed subject to site specific approval by the Route Asset Manager [Track] or their delegated representative.

Existing top of rail friction modifiers shall be reinstated or replaced when track is renewed or re-railed – this is subject to reappraisal if the re-railing incorporates premium rail steel.