

Ref:	NR/L2/TRK/6100/mod03
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Date:	07 March 2015
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Installing stretcher bars and setting them to the correct length

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Issue record

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1	March 2015	First Issue

Compliance

This Network Rail standard is mandatory and shall be complied with by Network Rail and its contractors if applicable from 07 March 2015.

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 completed and not to comply with requirements contained herein, unless stipulated otherwise in the scope of this standard.

Reference documentation

NR/SMS/PartZ/02

TEF 3074

NR/WI/SIG/00111

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1 Purpose

This module specifies the method for installing fixed, adjustable and tubular stretcher bar assemblies, to the correct length, to achieve the required free wheel clearance through the length of the switch rail.

2 Scope

This module applies to the following stretcher bar assemblies:

- Fixed
- Adjustable
- Tubular

3 Stretcher bars

3.1 Which stretcher bar to install

Use the tubular stretcher bar in newly installed compatible Switches and Crossings (S&C) and as a replacement.

Replacement is mandated in the action tables NR/L2/TRK/6100/mod08 due to:

- Defective stretcher bar assemblies.
- The need to adjust the length of fixed stretcher bars.
- A need to replace half sets of switches.
- Re-gauging of the S&C.

3.2 Intermixing different types of Stretcher Bars

Mixing fixed and 35mm square adjustable stretcher bars is not permitted.

With the introduction of tubular stretcher bars, it is permitted to have a mixture of:

- Fixed and tubular stretcher bars
- Yellow and black fixed stretcher bars.
- 35mm square adjustable stretcher bars and tubular stretcher bars.

on the same set of points.

Note: See NR/L2/TRK/6100/mod04 for further details of tubular stretcher bars.

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4 Critical dimensions

4.1 Flange back contact

The aim when installing stretcher bars is to have the open switch rail open sufficiently to allow the flanges of the train wheels to pass through the points without coming into contact with the open switch rail.

If the wheel flanges do come into contact with the open switch rail, it is known as Flange Back Contact (FBC). The point at which FBC is most likely to occur is the region where the minimum opening of the switch rail is found. This is towards the rear of the points at the end of the switch planing (see Figure 1). The point of Minimum Free Wheel Clearance is measured at the end of the switch planing.

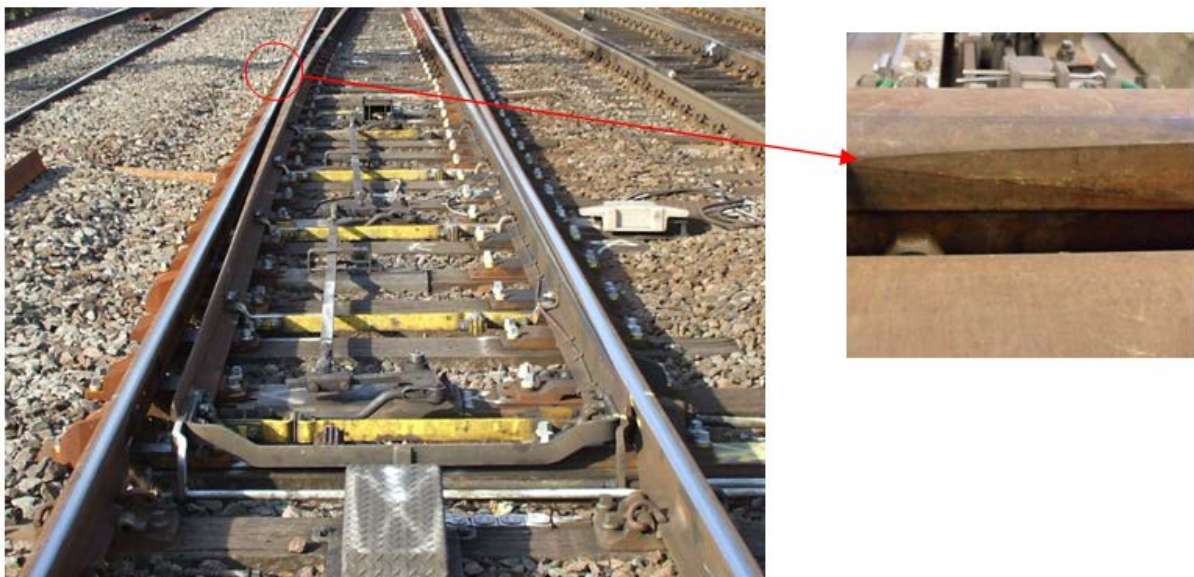


Figure 1 – Identifying the point of Minimum Free Wheel Clearance

FBC can be recognised by visible marks on the back face of the switch rail. If FBC occurs, high levels of force are transmitted through the stretcher bar and, where fitted, to the supplementary drive as trains pass over the points. This force can lead to damaged and broken stretcher bars. It can also lead to damaged and broken components elsewhere within the S&C system.

Where FBC is identified this shall be managed as per the requirements of TRK/6100/Mod08 Action Tables.

FBC occurs if stretcher bars are set to an incorrect length (too long) during the installation process. This is more likely to occur where the track gauge is out of specification and it is difficult to get the points to operate reliably with the required free wheel clearance.

A formula has been devised which calculates the required free wheel clearance (FWC) at each stretcher bar position to prevent FBC occurring. This is used to set the stretcher bars to the correct length.

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Figure 2a – With nominal track gauge and nominal FWC

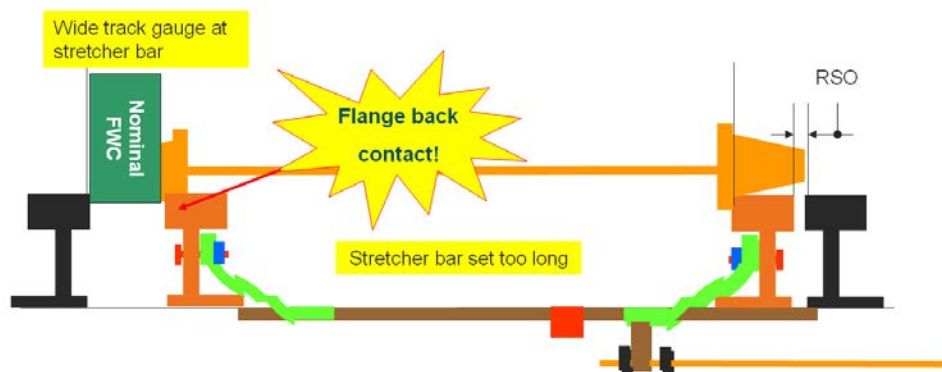


Figure 2b – With wide track gauge and nominal FWC FBC can occur



Figure 2c – With Required FWC FBC cannot occur even with wide track gauge

The track engineering standards allow tolerances of -2/+6mm from the nominal track gauge. The formula takes measured track gauge into consideration so that the nominal FWC may need to be increased to compensate for points with wider than nominal gauge. The static track gauge must be measured at each stretcher bar location and the required FWC calculated.

The FWC dimension is measured using a track gauge fitted with a measurement device as illustrated in Figure 3. This measures FWC at a point 14mm below the head of the rail.