

Memorandum

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cc File.

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NR/BS/LI/058 Letter of Instruction

Train Based Grinding Specification For Switches and Crossing Grinding

This is a Letter of Instruction. In accordance with Section 16, of Network Rail Business Process Document, NR/SP/STP/090 – *Managing Change to Network Rail Standards*, I give notice that the following changes shall be made with effect of **17th August 2006**.

The instructions are to outline the requirements for train borne Switch and Crossing grinding, in relation to delivery, quality control and performance of grinding.

This instruction does not change any requirements for compliance with the any other standards and health and safety requirements.

Further advice and guidance on the application of these changes may be sought by contacting Mark Allen, Rail Management NST, Grinding & Lubrication Engineer.


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Rail Grinding Specification

For

Train borne Switch and Crossing Grinding

Rail Grinding Specification for Switch and crossing Grinding

I. Introduction

The principal objectives of Switch and crossing grinding are as follows:

- To produce a regular and consistent running band on the crown of the rail.
- To impose and maintain a profile that reduces contact stresses on the gauge corner and shoulder of the rail.
- To remove localised misalignment at welds and other track features.
- To remove the fatigue damaged surface of the rail, which has or is likely to initiate rolling contact fatigue cracks.

The priorities for current train based grinding should be as follows until such time as grinding resources are available to control the initiation and early propagation of rolling contact fatigue.

1. New S&C installation, NB the S&C should always be tamped before grinding is performed
2. S&C with moderate RCF, poor rail profile, moderate damage to crossing nose
3. S&C with heavy or severe RCF, chipped switchblade tips and crossing nose
4. Grinding of other obstacles that the main line grinder cannot grind

Grinding should be targeted so that the highest priority S&C are ground approximately every 15 to 20 EMGT of traffic.

This following brief description of switch grinding methods is provided to give a better understanding of the performance expected from the switch grinding machines.

- The grinder shall have the capability of grinding the railhead surface between 45° on the field side to 75° on the gauge side, where 0° is normal to the vertical centre line of the rail.
- The grinder shall have the capability of removing side lipping and corrugations at level crossings.
- Different arrangements of grinding stones and motors will have limitations concerning the capability to grind within crossings, guard rails, lubricator sites,

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axle counters, hot axle box detectors, obstacles in level crossings, and other obstructions.

- The distance left un-ground by the main line grinders will define the limits of the switch grinding in terms of distances from the heel of the crossing and in front of the switch point. At present main line grinders can grind to within a nominal 30 meters of an obstruction. Once the S&C grinders are in full operation it is anticipated that these machines will have a scheduled grinding programme to follow the plain line grinders to complete the areas of track left unground by these machines.

These issues combined with the grinding machine metal removal capability will determine the grinding stone patterns, power and grinding pass speeds to be used on the switch grinding machines.

Switch Grinding with the S&C grinding trains

Both the straight and turnout legs of the switch are to be ground. This will include a length of track, before or after the switch not ground by the plain line grinders and the length of plain line track between a series of switches also left unground by the plain line grinding trains. The outer limits of grinding will be at least 30 metres beyond the switch points and at least 30 metres beyond the heel of the crossing (frog) or at the locations where there are well-defined grinding marks left by plain line grinding trains picking up and lowering motors either side of the switch, whichever is the greater.

Grinding of the crossing, if the crossing is fit for grinding and not too worn the S&C grinder can grind straight thru the crossing nose, but only in "trailing" mode.

If the crossing is worn down and need welding or other repair it is better to leave the crossing unground as outlined in Appendix I. This will leave the nose unground at a distance of approximately 0.5 m extending both ways from the nose of the crossing as described in appendix A.

NB The S&C grinding train can grind the complete crossing nose but from a maintenance point of view it is better to do grinding in combination with necessary weld repairs to the crossing nose within the limits as described in appendix A. This does not have to be done at the same time the S&C grinder is planned; however, it is preferable to weld repair and hand grind the crossing before the switch grinder is scheduled. Crossing nose welding and hand grinding can also be done after completion of train-based switch grinding.

The switch rails are to be ground to a profile specified by Network Rail. In most cases the same profile will be applied to switch rails as is ground on the adjoining