Division / Business Unit: Corporate Services & Safety
Function: Track & Civil
Document Type: Work Instruction

Switch Blade and Stock Rail Profiling

ETW-03-02

Applicability

ARTC Network Wide

SMS

Publication Requirement

Internal / External

Primary Source

Document Status

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1.1	28 Feb 19	Standards	Stakeholders	Manager Standards	General Manager Technical Standards 04/03/2019

Amendment Record

Amendment Version #	Date Reviewed	Clause	Description of Amendment
1.0	01 Feb 19	All	Initial Issue of Work Instruction
1.1	28 Feb 19	Cover	Update to document title.

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1 Introduction

1.1 Purpose

This work instruction describes the process for controlling lipping in the switch and stock rail assemblies to prevent development of lipping which could lead to early replacement of switch and stock rail half sets.

1.2 Scope

This work instruction covers the identification and removal of lipping on the switch, the stock rail and wheel transfer areas.

1.3 Document Owner

The Manager Standards is the document owner.

1.4 Responsibilities

The authority with the overall responsibility for the delivery of safe and reliable track and civil infrastructure for the business unit or their delegate is responsible for the implementation of this work.

1.5 Risks Controlled

This work instruction is a control for the risk associated with the lipping on the switch blade and the stock rail. The lipping can lead to material breakout resulting reduced asset life.

1.6 Reference Documents

The following documents support this work instruction:

- ARTC Track and Civil Code of Practice, Section 3 and related documents.

1.7 Definitions

The following terms and acronyms Table 1-1 Definitions and Acronyms are used within this document:

Table 1-1 Definitions and Acronyms

Term or acronym	Description
ARTC	Australian Rail Track Corporation Ltd.
Lipping	Plastic deformed metal flow that appears as a lip.
PPE	Personal protective equipment

2 General

2.1 Introduction

When a turnout is initially installed the rail will deform to some extent until full working hardness is achieved. During this initial period the switch and stock rail should be checked, and any material flow removed by grinding.

Lipping on the switch and the stock rail can occur over the life of the components. This should be monitored for the life of the turnout.

2.2 Visual and Detailed Inspections

During scheduled inspections examine the switch blades and stock rails for signs of lipping, this condition will continue until the gauge radius and wheel profiles have "bedded in". This type of wear should not be allowed and can easily be removed by light hand grinding.

Any lipping detected during inspection should be recorded in the asset management system and planned for removal.

2.3 Possible causes of lipping

Some of the possible causes of lipping

- Lack of maintenance to prevent lipping through early grinding.
- Non-optimal wheel rail contact.

3 Pre-work planning

3.1 Tools

The following tools are required for switch and stock rail profiling:

- Switch grinder and/or angular grinder
- Sliding Bevel
- Mechanism for locking the switch to prevent movement.

3.2 Safety

All personnel shall hold appropriate certification or proof of competency. All plant and equipment shall be inspected and assessed prior to use.

All personnel to abide by the ARTC Work, Health and Safety guidelines and the minimum PPE requirements for the completion of grinding.

Safeworking protection must be arranged with a possessions officer.

As the safeworking protection may not prevent the switches from being operated remotely the switches must be secured against movement while the switch grinding is being undertaken.

3.3 Examination

Remove any lipping see Figure 3-1: . A sliding bevel can be used to assess the lipping. Hold the bevel against the blade. Any lipping causing a gap between the bevel and blade or stock rail should be removed.

Figure 3-1: Lipping

When the rail starts to break away, the switch blade and stock rail should be ground to profile. See Figure 3-2: Switch blade with pieces broken away.

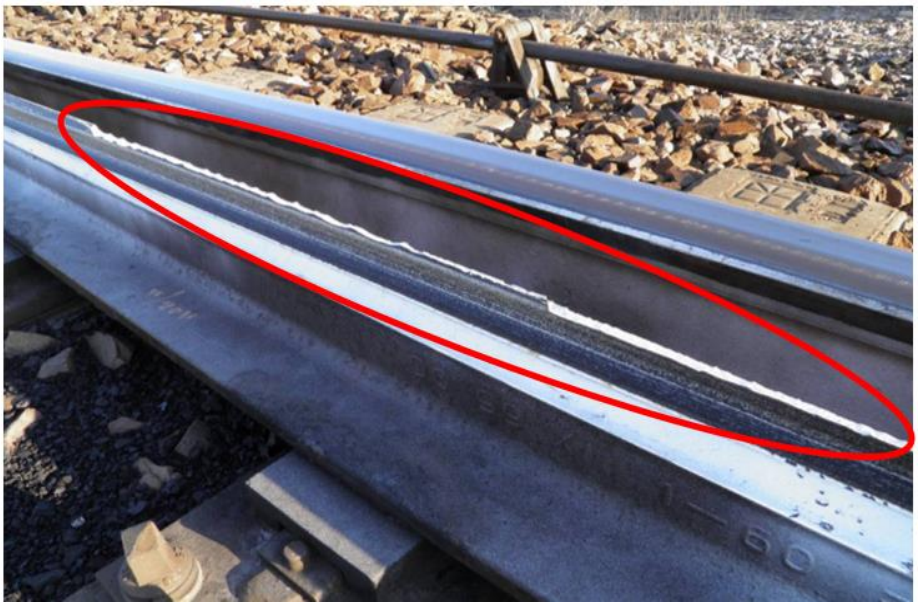

Figure 3-2: Switch blade with pieces broken away

4 Profiling

4.1 Switch blade

When the switch point is worn to a thin and sharp edge, grind the edge slightly to prevent chipping or cracking of the switch point, removing only the minimum amount of steel. Refer to ARTC Track and Civil Code of Practice, Section 3 for switch and stock rail dimensioning requirements. Where grinding is undertaken using an angle grinder, care must be taken not to overheat the rail.

Remove lipping at the top edge of the back of the switch, see Figure 4-1: Switch blade profiling by grinder.

Figure 4-1: Switch blade profiling by grinder

After the grinding, there should be no lipping or gap between bevel and switch or stock rail, see Figure 4-2: Completed profile of the switch blade.

Figure 4-2: Completed profile of the switch blade

To check the finished work, paint the rail top to identify tracking band and where the wheels are making contact. Check requirements against ARTC standards.

4.2 Stock rail

Start the grinding on the stock rail near the point where the back of the switch makes contact and continue to a point about 50mm in front of the switch point, see Figure 4-3: Profiling of the stock rail. Then remove the lipping from the top back edge of the switch.

Do not remove any lipping on the stock rail more than 50mm in front of the switch as it provides partial protection for the switch point.

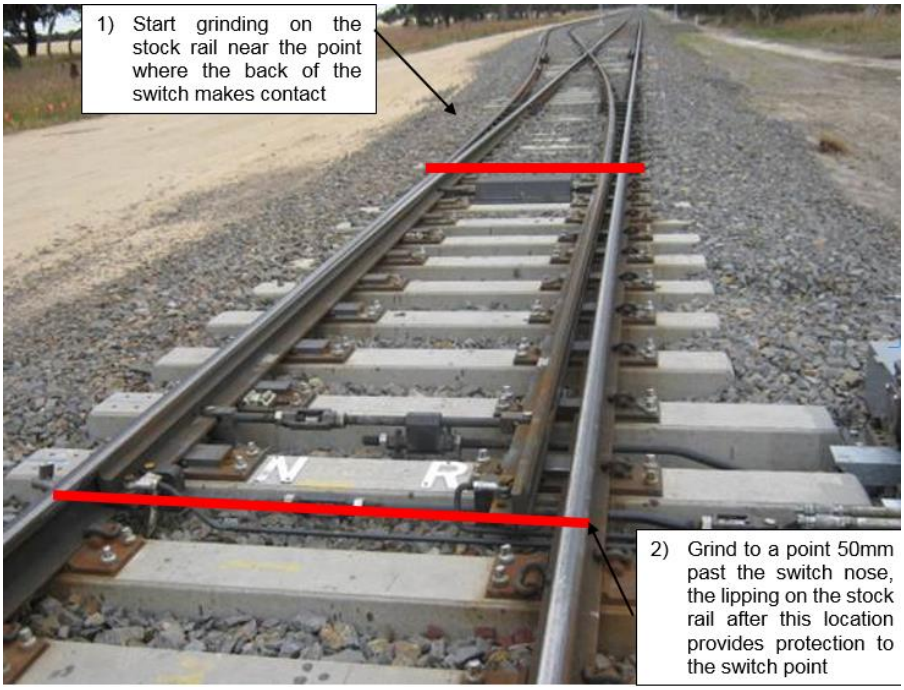

Figure 4-3: Profiling of the stock rail

5 Finishing

Upon completion of the profiling work contact Train Control to ensure the turnout is in correct safe working operation, e.g. signal displays are operating correctly, switch can be thrown both sides without fault and closed switch detection gap checked. Where there is an issue then a Signal Staff Member with appropriate competency should be called in for maintenance. See Figure 5-1: Closed switch detection gap.

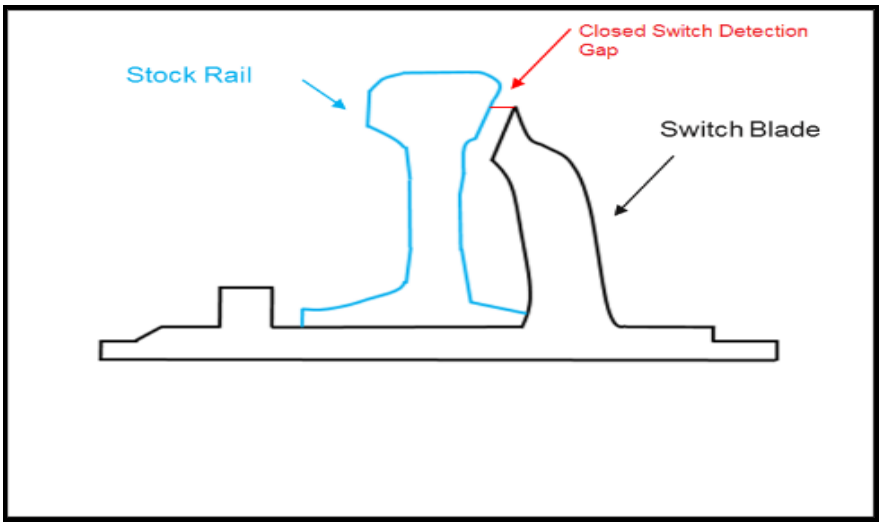

Figure 5-1: Closed switch detection gap

Prior to leaving the job site ensure working area is clean and safe, with all equipment used removed from track, e.g. grinder removed from track, timber block removed from between the switch blade and stock rail.