

Signals and Telecommunications Task Instruction

Security of Turnouts

Purpose

This Task Instruction relates to the rules and use of Points Security Clamps and Bolts.

Document Control

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1. Revision Procedure and History

This is a 'living' document, that will be up dated every five years or whenever KiwiRail determines that changes to it and processing requirements documented herein are appropriate.

If changes arise from the review this document will be reissued, however, if no changes arise from the review, the current version of this document will remain in force.

Refer to the **Briefing Note(s) for S-TI-PM-2218 Security of Turnouts**

and **Document History** (at the end of this document) for full document changes.

Issue No	Prepared (P) Reviewed (R) Amended (A)	Authorised for Release By	Date Effective

1.1 Changes in this issue

Issue No	Section	Description	Page(s)

1.2 Withdrawn, closed and superseded

Old Reference	Title	Replaced by

2. Associated Documents

Level	Number	Title

Table of Contents

Purpose	1
Document Control.....	1
Copyright.....	1
1. Revision Procedure and History	ii
1.1 Changes in this issue	ii
1.2 Withdrawn, closed and superseded	ii
2. Associated Documents	ii
3. Acronyms and Definitions.....	5
3.1 Notes, caution and warnings	5
4. Scope.....	6
4.1 Use in the field	6
5. Introduction.....	6
6. Arrangements for Bulletins for Installation and Removal of Turnouts	6
7. Application Rules.....	7
7.1 Points Clamp	7
7.2 PS Bolt.....	7
8. Installation.....	8
8.1 Points Clamps.....	8
8.2 Points Bolt.....	9
9. Procedure	10
9.1 Installation of turnout	10
9.2 Security of turnout.....	10
9.3 Hand operation	10
9.4 Operation of the turnout once secured	10
9.5 Removing existing turnouts	11
9.6 Inspection of turnouts	11
9.7 Connection of yard track to an un-signalled turnout.....	11
Briefing Note(s) for S-TI-PM-2218 Security of Turnouts.....	17
Document History	18

List of Figures

Figure 8:1 Points security clamp	8
Figure 8:2 Dimensions for PS Bolts	9
Figure 9:1 Front bolt closed switch	14
Figure 9:2 Rear bolt closed switch.....	15

Figure 9:3 Rear bolt open switch	16
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List of Tables

Table 9:1 Turnouts subject to facing direction movements and speeds greater than 25 Km/h.....	12
Table 9:2 Turnouts subject to trailing direction movements only and/or speeds 25 Km/h or less.....	13

3. Acronyms and Definitions

Acronyms	Definition
FPL	Facing Points Lock
PS Bolt	Points Security Bolt
RORP	Rail Operating Rules and Procedures

3.1 Notes, caution and warnings

Icon	Definition
	Note(s) to point out something of special importance
	Caution or warning – drawing special attention to anything of important reminder or a safety message

4. Scope

This Task Instruction covers the use of Points Security Clamps and Points Security Bolts on turnouts.

4.1 Use in the field

This document has been designed to be used in the field. It is expected that this document will be opened in an iPad via 'Briefcase' and used as reference to complete the task. Note as written on the front cover the controlled version is held on SharePoint. **Printed copies of this document are uncontrolled.**

5. Introduction

This Task Instruction sets out requirements for the security of turnouts in the following situations:

- 1) During construction – before interlocking and operating equipment has been fitted. The arrangement enables the points to be used for requirements such as work trains or Track Maintenance Machine Groups. Turnouts secured in accordance with these requirements may be traversed at normal speed.
- 2) When they are planned for removal from the track during signalling alterations but due to the magnitude of the track alterations, the turnout removal must take place sometime after new signalling and interlocking arrangements are brought into use, which must be secured for some length of time pending repair of or reinstallation of interlocking equipment.
- 3) During planned work that involves disarranging the interlocking for periods less than 72 hours.

Notwithstanding the procedures permitted by this Task Instruction, the preferred arrangement is that track alterations and re-signalling work be carried out in one coordinated exercise to limit the times when track possessions must be taken for track alterations and signalling and interlocking is disarranged.

6. Arrangements for Bulletins for Installation and Removal of Turnouts

The arrangements specified have been devised to ensure that **both** Track and Signals staff are **involved** whenever a turnout is installed or removed from an area where signalling and interlocking is in use.

Prior notice of work

A Bulletin must be issued to cover:

- 1) The locality of the turnout to be installed or removed.
- 2) Operating arrangements, this will apply when the turnout is not available for normal use.

Responsibility for arranging the issue/cancellation of Bulletins is as follows:

- 1) Where a turnout is to be installed temporarily without interlocking:
 - a) Production Manager arranges issue
 - b) Signals Field Engineer arranges cancellation after interlocking is working.
- 2) Where interlocking is to be removed for a period before turnout is recovered:
 - a) Signals Field Engineer arranges issue
 - b) Production Manager arranges cancellation on removal of turnout
- 3) Where interlocking is temporarily removed or disarranged:
 - a) Signals Field Engineer arranges issue and cancellation.

7. Application Rules

7.1 Points Clamp

When any interlocking device on a turnout (ie motor points, frame lever or any other locking device) is disconnected so that the locking is not effective on the closed switch, the closed switch must be secured to the stock rail either by the use of a points security clamp or padlocked PS Bolts before any train movements are authorised over the turnout. When a points security clamp is used the speed of these authorised train movements **must not** exceed 25 Km/h. Speed boards are to be erected accordingly.

The points security clamp is not designed to be left on site as a locking device for any length of time. If the points interlocking cannot be reinstated within 72 hours, arrangements are to be made to have the turnout secured with PS Bolt and Padlock as soon as possible. While a points security clamp is left installed it must be checked every 24 hours to ensure that it is securing the turnout properly and the point of switch is closed adequately onto the stock rail in accordance with Task Instruction requirements

When these clamps are installed on an interlocked turnout, the protecting signals must be fixed at **stop** in accordance with the RORP. Block signalling may be left working when the clamp is applied to switchlocks in the block section providing the detection circuits are fully operative.

7.2 PS Bolt

When a turnout requires security and there is no interlocking fitted or a higher level of security is needed (prevention of movement) a PS Bolt is to be fitted and an appropriate padlock used to prevent the bolt from being removed. The bolt is to be fitted with sufficient washers to prevent any appreciable loosening of the nut before it comes against the hasp of the padlock.

8. Installation

8.1 Points Clamps

The approved type of clamp that may be left installed and unattended for short periods in a turnout, is shown in **Error! Reference source not found.**

Points security clamps may be used to ensure that any turnout with disarranged interlocking equipment is properly secured in the Normal or Reverse position. They are provided for temporary use only (72 hours maximum) and Signals and Telecommunications staff are to be in attendance at all times when the clamp is the only form of lock keeping the switch secure.

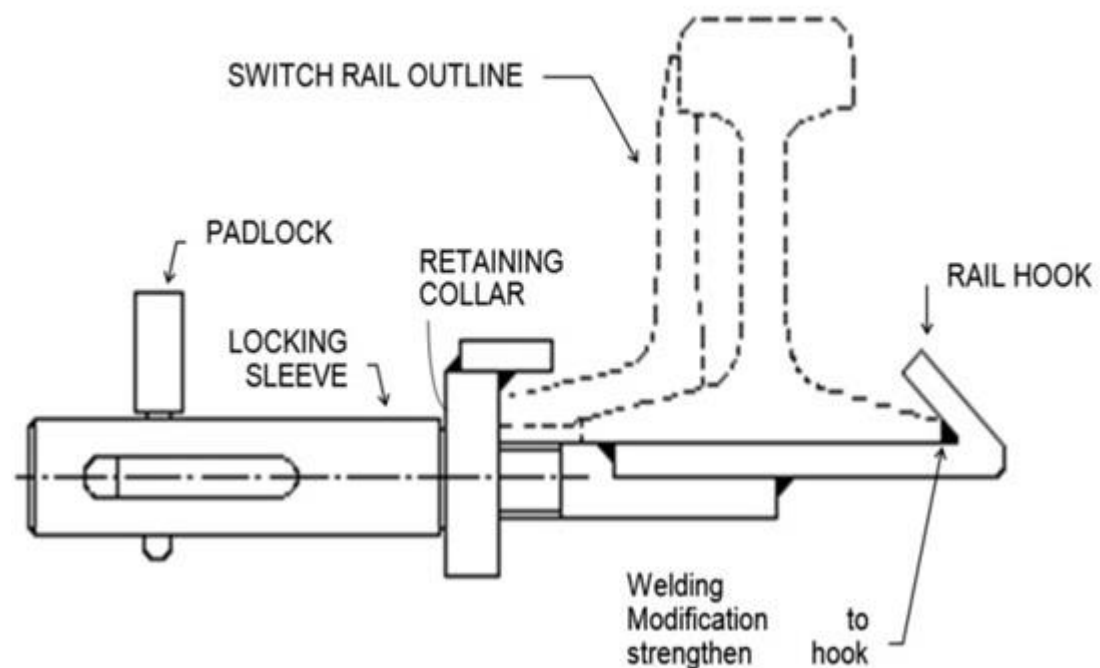


Figure 8:1 Points security clamp

Before installation, clamps must be checked for damage and fatigue cracks especially in the hook ends. The clamp is to be installed so that it is wedged against the stretcher bar or a sleeper to inhibit drift along the reducing profile of a switch.

Note that the clamp is not designed to pull a misaligned or twisted switch into the closed position by normal screw action. If the switch cannot be clamped in the closed position (ie tip not firmly against stock rail) by normal screw action, arrangements are to be made for track staff to repair or replace the switch.

8.2 Points Bolt

PS Bolts are to be used in conjunction with an appropriate padlock when interlocking is disconnected and Signals and Telecommunications staff are not constantly in attendance.

There are two approved types of point bolt.

- 1) M24 x 120mm with a machined area and a hole with a chamfered edge suitable to take the hasp of a PS padlock. The end of the bolt is painted blue for identification. This bolt is suitable for closed switch situations.
- 2) M24 X 200mm with a machined area and a hole with a chamfered edge suitable to take the hasp of a PS padlock. The end of the bolt is painted blue for identification. This bolt is suitable for open switch situations

All bolts when fitted are to have a sufficient number of washers to prevent switch movement should the nut come loose and back off against the padlock hasp.

When carrying out the three monthly check on points bolts in service the tightness of the bolt is to be tested, security of the switch is to be tested and the state of the padlock and hasp is to be inspected.

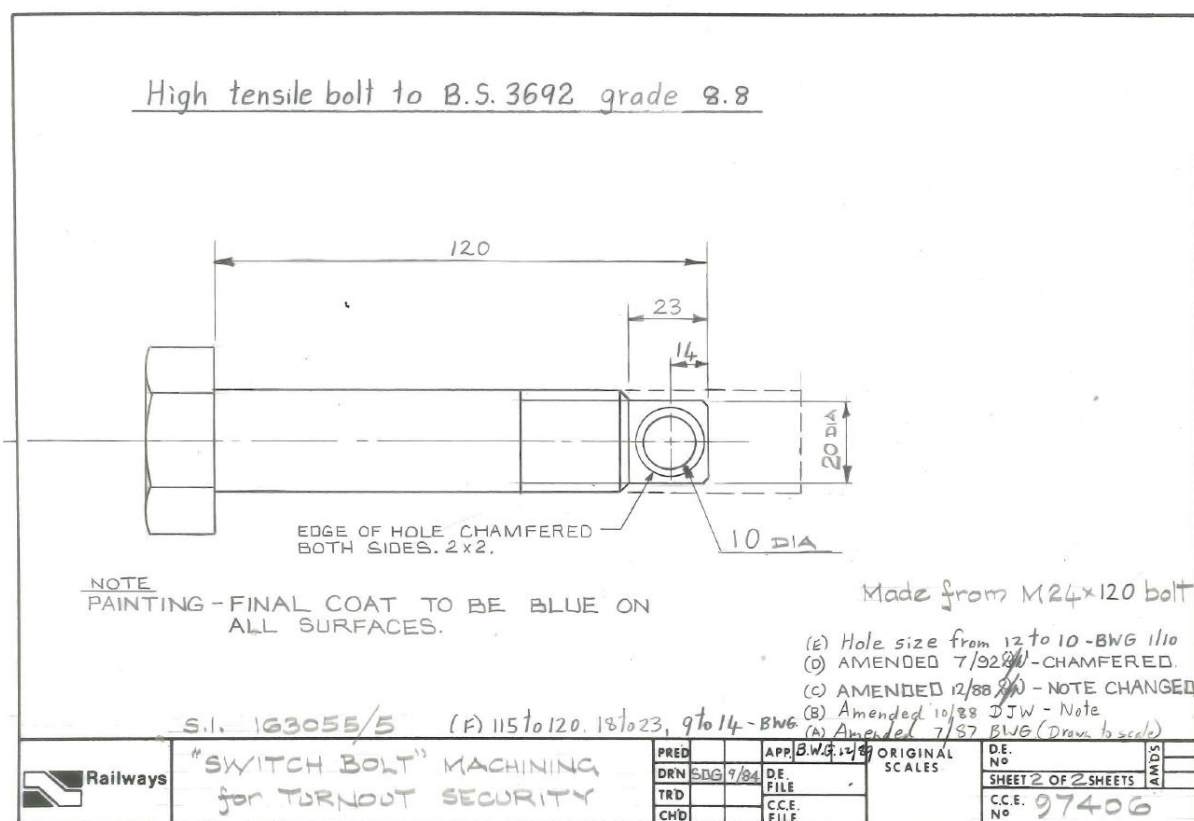


Figure 8:2 Dimensions for PS Bolts

9. Procedure

9.1 Installation of turnout

Where possible turnouts are to be installed complete with both stockrails and switchblades fitted, all stretcher bars, and the switch closed which sets the points for the existing signalled route. If the area is track circuited then the stretcher bars must be insulated and the closure rail of the turnout fitted with an insulated joint and sufficient bonding installed to ensure proper operation of existing track circuits over signalled routes. Where possible the switches of a turnout installed as Safety Points or Trap Points shall be set for the derailing position.

Where a turnout is installed with an associated trap switch, the trap switch is not to be inserted until such time as the interlocking equipment is fitted and operational.

9.2 Security of turnout

Turnouts are to be secured as specified in the attached tables:

- **Error! Reference source not found..**
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9.3 Hand operation

If the turnout is equipped with a points machine then all covers including the crank handle cover shall be secured with No.41/ 43 (signals security) padlocks and if the turnout is required to be operated then it is to be hand-wound. On completion of operation care must be taken to ensure that the normal lock is fully engaged.

The crank handle for operating the points is to be kept in a conveniently located box also secured with a No. 41 padlock.

If the turnout is fitted with a frame lever the lever shall be secured with No.41 padlock.

9.4 Operation of the turnout once secured

The operation of a turnout secured by this arrangement will require the presence of a member of both the Track and Signals staff who shall make the following arrangements:

- 1) The Signals Field Engineer or the Signals member who has been authorised to unlock the turnout must advise the Train Control Operator or Signaller of what is to be done and come to an understanding that the signals controlling entry to the section of line in which the turnout is situated will be fixed at stop. The time at which this is to happen will be agreed upon and recorded by the Train Control Operator or Signal man.
- 2) Before unlocking the turnout the authorised signals member must take appropriate action to fix the applicable signals at stop.

- 3) The Signals and Track staff may then jointly remove the padlock and the two bolts.

This will ensure responsibility is shared jointly and misunderstandings do not occur.

When the turnout is restored and bolted in its correct position and locked, the signals may be restored to operation and the Train Control Operator or Signal man advised.

When the new or altered signalling is commissioned or signalling reinstated and the turnout brought into normal use the padlocks and bolts are to be recovered and retained by Signals staff and the bolts by Track staff. The padlock is to be retained by authorised Signals staff for possible future use.

9.5 Removing existing turnouts

When an existing turnout is no longer required, if possible it shall be removed at the same time as the associated interlocking equipment. If this cannot be done then the switch must be secured as laid down in section 9.2.

When the turnout is removed from the track the padlock is to be recovered by Signals staff and the bolts by Track staff.

9.6 Inspection of turnouts

Turnouts installed with interim security arrangements as laid-down in this Task Instruction are to be inspected:

- 1) By Track during regular track patrols to check that, the turnout is secure and has not been damaged.
- 2) Three monthly by Signals to check that:
 - b) The turnout is secure and has not been damaged.
 - c) Closed switchblade is secured properly to stock rail.
 - d) Padlocks still correctly fitted and hasp not worn excessively.
 - e) If fitted, Detection adjustment and integrity (for position in which points are bolted).

9.7 Connection of yard track to an un-signalled turnout

It may happen that pending the signalling of a loop extension, track may be laid (connected or unconnected) from an existing yard to an un-signalled turnout in the main line. In this or similar cases a track workers red disc 'stop' sign must be erected and the arrangements must be made to ensure that movements from the yard end towards the main line cannot take place unless the main line has first been protected.

Table 9:1 Turnouts subject to facing direction movements and speeds greater than 25 Km/h

Type	Interlocking Equipment Fitted	Switch Bolting Arrangements		
		Closed Switch		Open Switch
		Rear PS padlocked switch bolt (see Error! Reference	Front switch bolt (refer to Error!	Remove switchblade or fit rear PS padlocked switch bolt (refer to Error!
Motor Points	Reverse switch secured by Drive stretcher bar only (no other rodding installed)	#	#	#
	Drive and lock rodding installed. Lock engaged and correctly adjusted. Detection is not operative in signalling system.	#	#	
	Drive and lock rodding installed. Detection is operative in signalling system.	#		
Hand Points	Reverse switch secured by Drive stretcher bar only	#	#	#
	Fitted with conventional long sleeper layout. FPL installed and operative. Detection is not operative in signalling system.	#	#	
	Fitted with switch stand long sleeper layout. Independent locking device ¹ installed and operative. Detection is not operative in signalling system.	#	#	
	Drive and lock rodding installed. Detection is operative in signalling system.	#		
Trap Points	(Those required to be set in the running position)	#	#	
	(Those required to be set in the derailling position)			#

1 - TW lock, switchlock pedestal or HLM2 combined points lock/detector unit.

Note: Additional requirements for points subject to facing direction movements in the Auckland and Wellington suburban areas. Full electrical detection in the protecting signals is to be maintained on all PS bolted main line points and those where movements are signalled at medium speed or higher (unless exemption is granted by Signals Engineering).

Electrical detection is only to be disconnected immediately (or shortly) before removal and a 25 Km/h speed restriction applied until the turnout is removed or electrical detection is restored.

Table 9:2 Turnouts subject to trailing direction movements only and/or speeds 25 Km/h or less

Type	Interlocking Equipment Fitted	Switch Bolting Arrangements		
		Closed Switch		Open Switch
		Rear PS padlocked switch bolt (see Error!)	Front switch bolt (refer to Error! Reference	Remove switchblade or fit rear PS padlocked switch bolt (refer to
Motor Points	Reverse switch secured by Drive stretcher bar only (no other rodding installed).	#	#	@
	Drive and lock rodding installed. Lock engaged and correctly adjusted. Detection is not operative in signalling system.	#	#	
	Drive and lock rodding installed. Detection is operative in signalling system.	#		
Hand Points	Reverse switch secured by Drive stretcher bar only.	#	#	@
	Fitted with conventional long sleeper layout. FPL installed and operative. Detection is not operative in signalling system.	#	#	
	Fitted with switch stand long sleeper layout. Independent locking device ¹ installed and operative. Detection is not operative in signalling system.	#	#	
	Drive and lock rodding installed. Detection is operative in signalling system.	#		
Trap Points	(Those required to be set in the running position.)	#		
	(Those required to be set in the derailing position.)			#

1 - TW lock, switchlock pedestal or HLM2 combined points lock/detector unit.

@ - Additional requirements for points in the Auckland and Wellington metro areas.

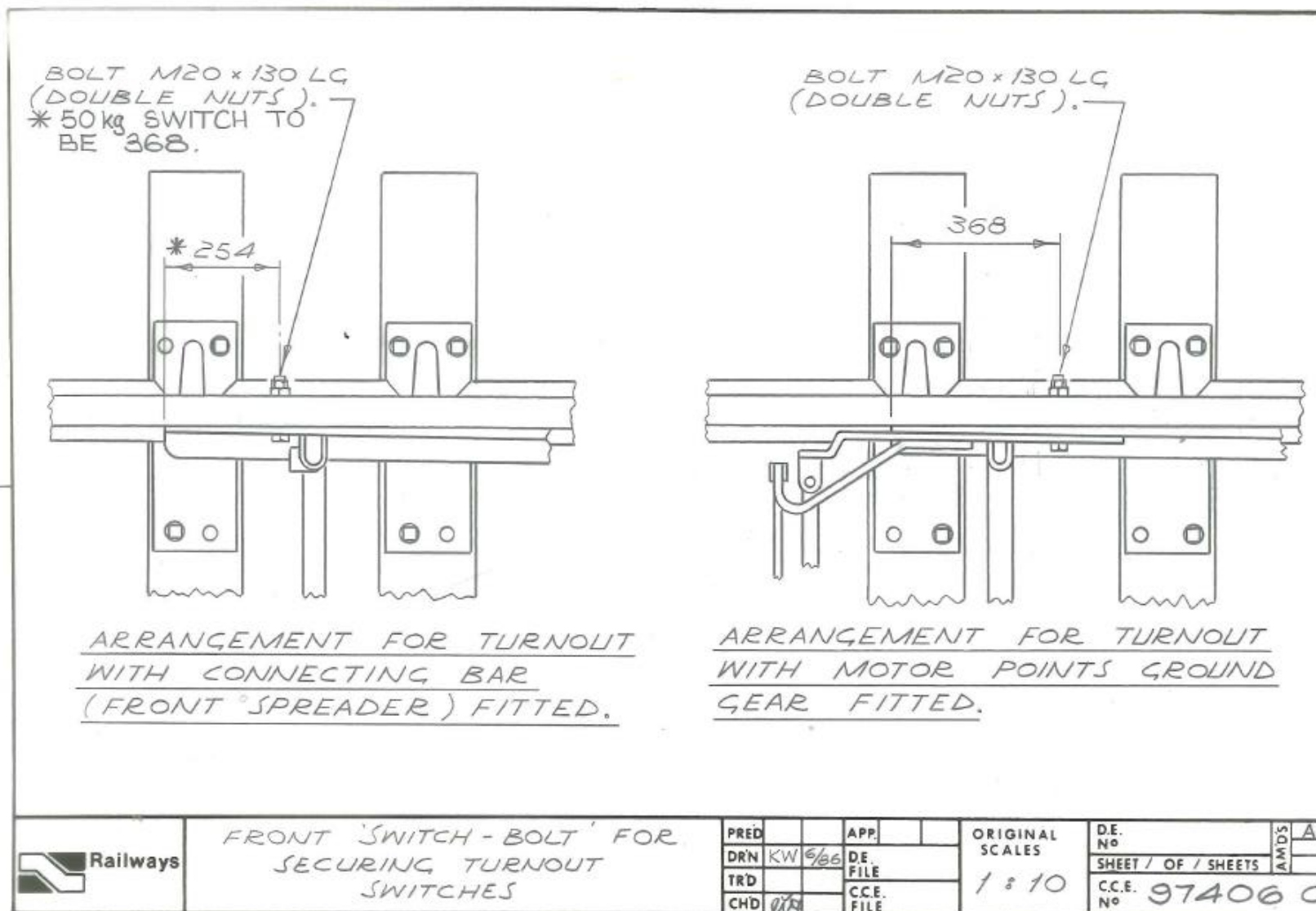


Figure 9:1 Front bolt closed switch

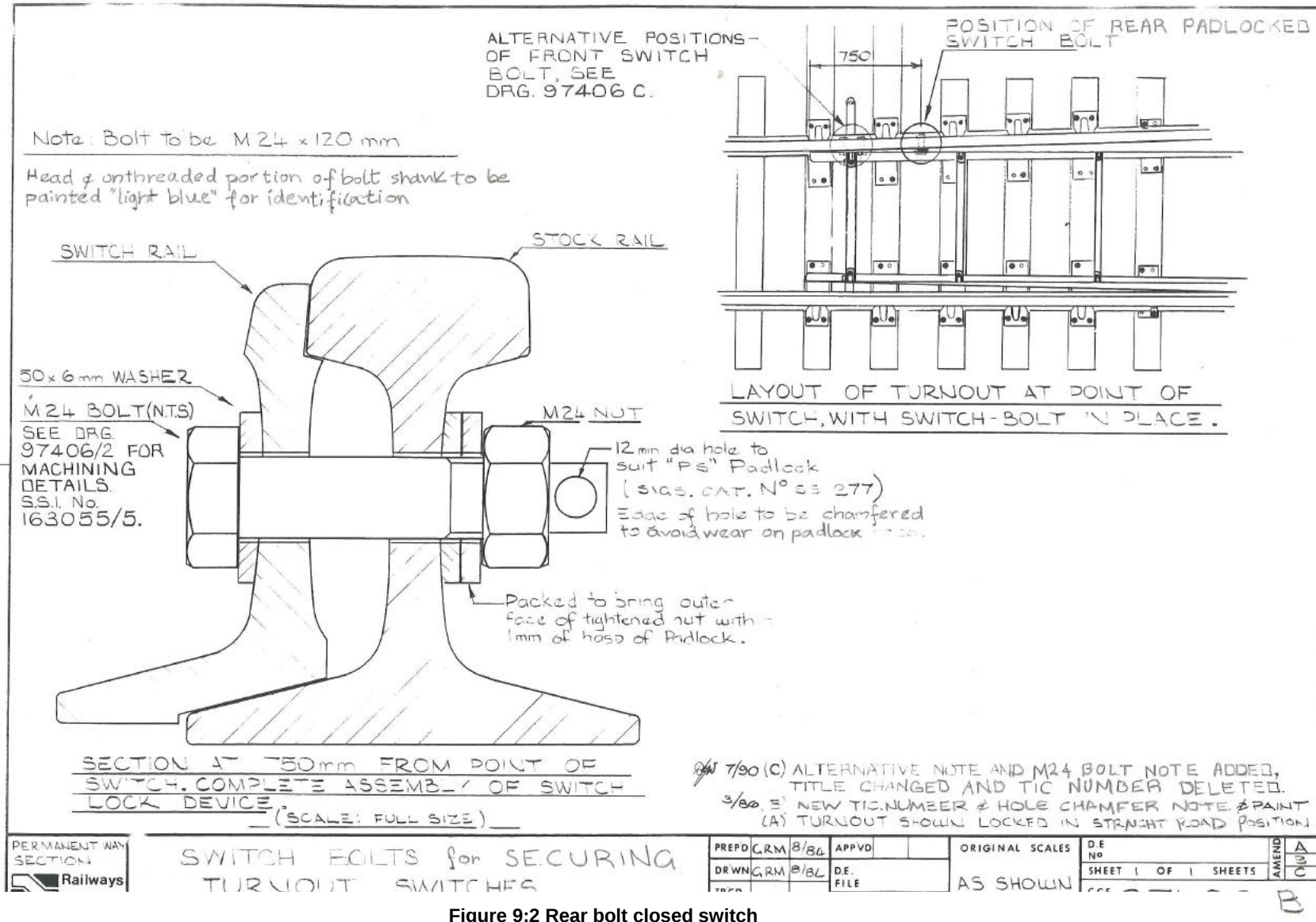


Figure 9:2 Rear bolt closed switch

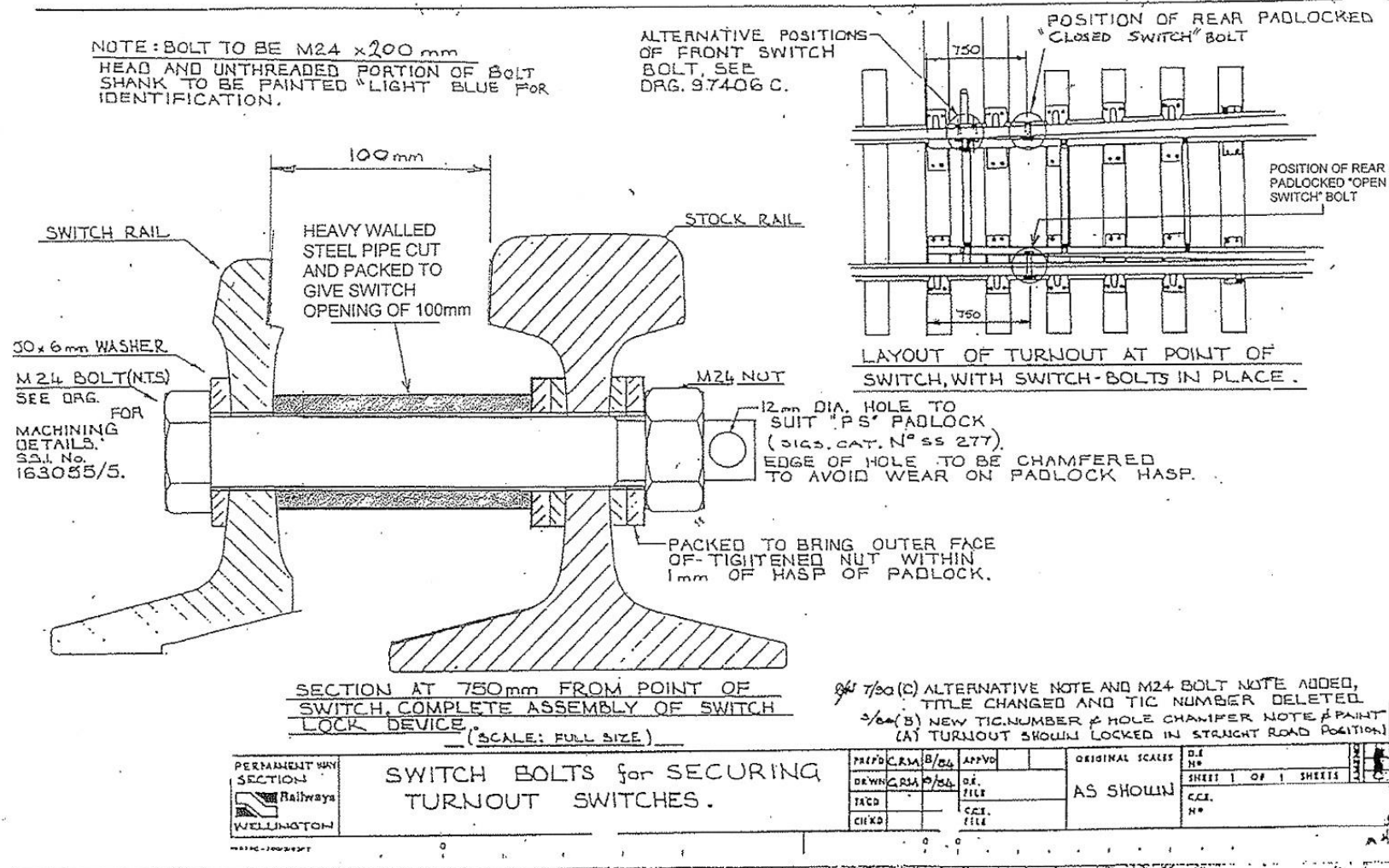


Figure 9:3 Rear bolt open switch

Briefing Note(s) for S-TI-PM-2218 Security of Turnouts

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1/07/2016

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Key changes / compliance

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Implementation

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Applicability (Select relevant boxes)	General	Civil	Signals and Telecommunications	Structures	Track	Traction and Electrical
Zero Harm	☐	☐	☐	☐	☐	☐
Learning and Development	☐	☐	☐	☐	☐	☐
Project Management Office	☐	☐	☐	☐	☐	☐
Manager Property Revenue and Grants	☐	☐	☐	☐	☐	☐
National Train Control Centre	☐	☐	☐	☐	☐	☐
Engineering Services Manager	☐	☐	☐	☐	☐	☐
National Supply Chain and Distribution Manager	☐	☐	☐	☐	☐	☐
Professional Head	☐	☐	☐	☐	☐	☐
Network Services Managers	☐	☐	☐	☐	☐	☐
Region Operations Managers	☐	☐	☐	☐	☐	☐
STTE Managers	☐	☐	☐	☐	☐	☐
Production Managers	☐	☐	☐	☐	☐	☐
Asset Engineers	☐	☐	☐	☐	☐	☐

Document History

Note page numbers relate to the document at the time of amendment and may not match page numbers in current document.

Issue No.	Section	Description	Page(s)