



**AUSTRALIAN RAIL TRACK CORPORATION LTD**

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**Discipline**  
**Engineering Standard – NSW**

**Category**  
**Signalling**

**Title**  
**Testing of Interlockings – Maintenance Responsibilities**

**Reference Number**  
**SMP 22 – (RIC Standard: SC 00 52 00 22 SI)**

**Document Control**

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## About This Standard

This Standard defines the procedures to be followed when testing Interlockings and the maintenance responsibilities

Superseded

## Document History

Primary Source – RIC Standard SC 00 52 00 22 SI Version 2.0

### List of Amendments –

ISSUE	DATE	CLAUSE	DESCRIPTION
1.1	01/09/2004		▪ Reformatting to ARTC Standard
1.2	14/03/2005	Disclaimer	Minor editorial change
	13/08/2010		Superseded by ESM-05-01

Superseded

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# 1 TESTING INTERLOCKINGS

## 1.1 Testing New Works and Alterations

Requirements for testing and certifying new works and alterations are detailed in Specification SCP 08 to SCP 12, “Inspection, Testing, Installation and Commissioning Requirements for Safety Assurance of New and Altered Works”.

When New Works or Alterations are commissioned into use, the Commissioning Engineer is to provide the Maintenance Signal Engineer with a copy of the associated locking table or control table, locking diagram and working sketch/signalling plan showing the locking details as commissioned. The Commissioning Engineer is to forward the Interlocking Test Certificates to the Maintenance Signal engineer.

All changes are to be tested and certified by the Signal Engineer who carried out the tests and the tables and plans promptly brought up-to-date.

## 1.2 Periodic Maintenance Interlocking Tests

Periodic maintenance interlocking tests shall be carried out by a Signal Engineer qualified to test interlockings for the primary reason of checking the interlocking and ensuring that it remains in accordance with the locking tables or interlocking portion of control tables, the locking diagrams and the working sketches/signalling plans.

The Maintenance Signal Engineer is responsible for adhering to interlocking test programs as set out in the Technical Maintenance Plan.

Performance indicators and/or status reports on the interlocking test programme shall be submitted by the Maintenance Signal Engineer at the agreed frequency.

Copies of the Interlocking Test Certificates are to be kept in the Maintenance Signal Engineer’s Office.

For mechanical and relay interlocking, Form S4.304 A/B, "Mechanical/Relay Locking Test Certificate" should be used. This does not include track locking.

For new and altered works, Form S4.304C, "Design Integrity/Control Table Function Test Certificate" is to be used, which would also encompass the certification electrical testing of relay interlockings, inclusive of track locking.

## 1.3 Mechanical Locking

Mechanical locks and mechanical interlocking frames are subject to wear and tear.

### 1.3.1 Mechanical Locks

Locking tests on mechanical locking shall be completed and certified on certificate by a suitably accredited Signal Engineer every two (2) years.

The locking tests are performed to ensure that mechanical locking items (such as, releasing switch locks, annett keys, annett locks, duplex locks, half pilot staff locks, emergency locks,

bolt locks, bracket locks, staff contact locks, staff drawer locks, key staffs, loose keys, emergency switch machine locks, SL and XL locks on points) are effectively operational, safe and secure, and in accordance with Locking Tables, Control Tables, Locking Diagrams and Working Sketches/Signalling Plans.

Signalling notice boards are also to be checked as part of the interlocking certification.

### 1.3.2 Mechanical Interlocking Frames

Mechanical interlocking machines as a matter of principle do not contain redundant interlocking.

Interlocking tests on mechanical interlocking frames shall be completed and certified on a S4.304A/B certificate by a suitably accredited Signal Engineer every two (2) years. On ground frames up to and including three levers, a signalling maintainer may be accredited to carry out the testing.

### 1.4 Relay Interlockings

Standard relay interlockings and route control relay interlockings contain some redundancy for safety spread over the interlocking and control circuits.

Relay interlocking integrity may be reduced by mechanical deterioration of electromechanical relays or by the deterioration of circuit and/or equipment insulation through aging, termite or rodent attack, overheating, fire, lightning damage etc or by electrical leakage paths tracking across insulating surfaces.

Defects, mechanical or electrical, which hold a relay falsely energised, are likely to be brought to early attention due to the back proving or cross proving of relays or due to equipment malfunction.

However, defects of a type which result in part of the selection in an interlocking circuit being bridged out may not necessarily come to attention.

Reliable earth leakage detection equipment and bus-bar voltage leak to earth tests together with down proving of relays assist in guaranteeing the integrity of relay interlocking.

Relay interlocking integrity may also be reduced by interference.

No person shall disconnect or connect wiring in working circuits unless they are qualified in signalling and do so in accordance with the rules and regulations and established procedures.

Relay interlockings shall be electrically tested and certified on a S4.304C certificate every five years by a suitably accredited Signal Engineer, in accordance with the locking tables or the interlocking portion of control tables except as follows.

Where the interlocking relays and interlocking circuits fully comprise

- i) plug-in relays, and
- ii) P.V.C. insulated and sheathed cables, and
- iii) double switched external circuits to relays used for interlocking, and

iv) reliable earth leakage detection fitted to vital supplies for interlocking circuits, then they need not be subject to periodic interlocking tests except at the discretion of the Signal Engineer.

The mechanical locking associated with relay interlocking areas, (eg., ground frames, releasing switches, annett locks and keys, E.S.M.L.'s etc), must be tested and certified every two years in accordance with applicable Locking Tables, Control Tables, Locking Diagrams and Working Sketches/Signalling Plans, as described for Mechanical Locking, and the S4.304A/B certificate shall be completed.

### **1.5 Periodic Maintenance Interlocking Tests**

Form SF S4.304 A/B is the form to be used as “Mechanical / Relay Locking Test Certificate”.

Form SF S4.304C is the form to be used as “Design Integrity / Control Table Function Test Certificate”.

Superseded



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Signalling Form

SF S4.304A/B Rev.1

**SIGNAL APPARATUS**

**MECHANICAL / RELAY LOCKING TEST CERTIFICATE**

*To be Issued By:*

Test Engineer (Name) \_\_\_\_\_

Date: \_\_\_\_/\_\_\_\_/\_\_\_\_

*To be Issued To:*

\* Commissioning / District Engineer (Name): \_\_\_\_\_ Location: \_\_\_\_\_

*Purpose:*

To Certify that \* Mechanical / Relay locking is correct

\_\_\_\_\_

The \* Mechanical / Relay interlocking at \_\_\_\_\_ was completed and Certified Correct

on \_\_\_\_ / \_\_\_\_ / \_\_\_\_ Date at \_\_\_\_\_ Time, \* Route / Lever No.

to \_\_\_\_\_ are in accordance with Control / Locking Table Title / No.

\_\_\_\_\_

Dated: \_\_\_\_ / \_\_\_\_ / \_\_\_\_

Test Engineer (Signed):

Received by \* Commissioning / District Signal Engineer (Signed): \_\_\_\_\_

\* Delete that not required

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**Signalling Form**

**SF S4.304C Rev.1 SIGNAL APPARATUS**

**DESIGN INTEGRITY / CONTROL TABLE FUNCTION TEST CERTIFICATE**

*To be Issued By:*

Test Engineer (Name) \_\_\_\_\_

Date: \_\_\_\_/\_\_\_\_/\_\_\_\_

*To be Issued To:*

\* Commissioning / District Engineer (Name): \_\_\_\_\_ Location: \_\_\_\_\_

*Purpose:*

To Certify that \* Design Integrity / Control Table Function Testing is correct

The \* Design Integrity / Control Table Function Test at \_\_\_\_\_ was completed and Certified Correct  
on \_\_\_\_/\_\_\_\_/\_\_\_\_ Date at  
\_\_\_\_\_ Time, and is in accordance with

Control Table Title / No.

Dated: \_\_\_\_/\_\_\_\_/\_\_\_\_ and / or

Design Integrity Test Plan Title / No

Dated: \_\_\_\_/\_\_\_\_/\_\_\_\_

Test Engineer (Signed):

Received by \* Commissioning / District Signal Engineer (Signed):

\* Delete Design Integrity Test where function testing is not carried out from signalling principles but directly from the control table. (The Test Engineer needs to be accredited by the Signal Design Manager or the Principal Signalling Engineer to conduct Design Integrity Tests or Function Testing to Control Tables)