



# Irregular Operation of Westinghouse Releasing Switch

### Applicability

ARTC Network Wide	✓	Western Jurisdiction		New South Wales		Victoria	
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Audience	Main Points	Change History
Signal Asset Engineers Signal Maintenance Engineers Signal Construction Engineers Signal Electricians Team Leaders Infrastructure Controllers Interlocking Fitters	Incorrectly assembled Santon rotary switch and adjustment of lock drop contacts	Previously RailCorp Engineering Instruction 05/04 June 2005

### Scope

This instruction applies to Signalling Maintenance personnel responsible for the maintenance of releasing switches and signalling construction personnel responsible for the testing and certification of this equipment.

### Background

An irregular operation of a Westinghouse Releasing Switch (signaller controlled) occurred recently where the driver was able to operate the handle from the 'locked' position to the 'free' position without the release being given by the signaller. On initial investigation it was found that the locking pin was ledging on the locking cylinder allowing the releasing switch handle to remain in a free (unlocked) state but with the lock drop contacts made thus indicating to the interlocking that the switch was in the locked condition.

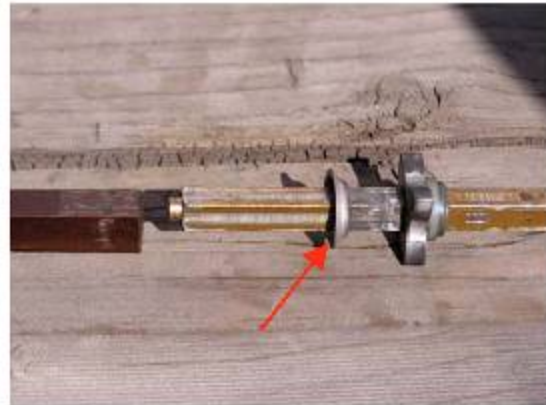
Further detailed inspection in the workshop found that there was excessive movement / play in the releasing switch handle spindle which passes through the attached lock cylinder and Santon rotary switch and allowed the ledging of the locking pin to take place. Following disassembly of the rotary switch and associated components from the case it was found that the rear bearing end of the rotary switch spindle was not engaged in the switch's rear bearing plate (No 1), thus allowing the excessive movement. Upon removal of the spindle from the switch itself it would appear that the spindle had never been fully home in the rear bearing plate from new. This was evident from the position of the keeper cap (No 2) on the spindle which prevented the spindle from travelling further into the switch and engaging into the bearing plate. Considering the above it would appear that this was a major factor in the incorrect adjustment of the lock drop contacts.

<b>Issued by</b>	<b>Date</b>
John Cowie, Manager Standards & Systems	13 April 2007



Rear of Santon switch showing spindle end not engaged in bearing plate.

No 1



Santon Switch spindle showing incorrect position of spring keeper cap.

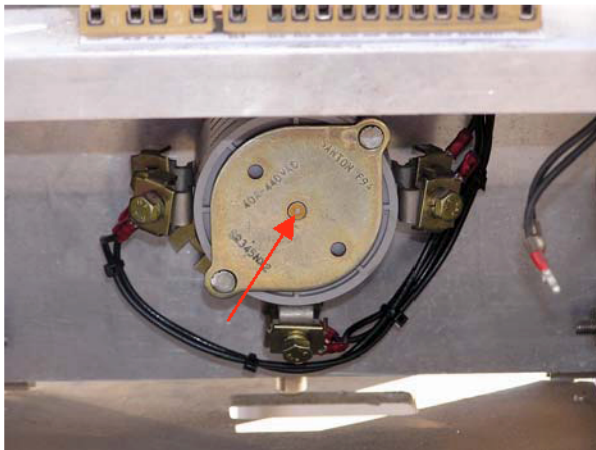
No 2

### Actions

To ensure the integrity of all existing releasing switches of this type, the following inspection tasks are to be carried out;

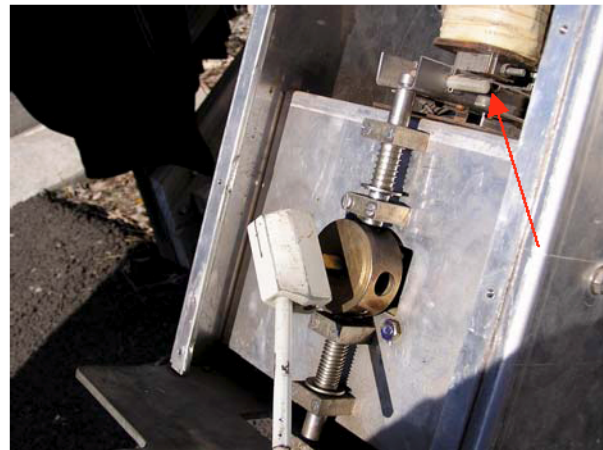
- Inspect the rear of the Santon switch and ensure that the switch spindle is fully home in the bearing plate (No 3).
- Check for excessive movement in the releasing switch handle and any possibility of the locking pin ledging on the lock cylinder.
- Ensure that the lock drop contacts are open a minimum of 1mm but do not exceed 1.5mm with the locking pin sitting/ledging on the lock cylinder (No 4). Where this is not the case the bottom contact/s are to be adjusted to obtain the minimum opening.

Where it is found that the switch spindle is not fully home in the bearing plate and or the locking pin is ledging on the lock cylinder with the releasing switch handle in the 'locked' position, the complete releasing switch is to be changed out and forwarded to the Interlocking Fitters for repair. No attempt should be made to repair the releasing switch in the field.



Rear of Santon switch showing spindle fully home in bearing plate.

No 3



Lock drop contacts to be adjusted to a minimum opening of 1mm but not exceed 2mm with locking pin ledging on lock cylinder. No 4

### Maintenance Requirements

To ensure that maintenance activities capture any potential unsafe conditions the following tests / tasks are to be carried out during routine maintenance.

1. Try to operate releasing switch handle from the 'locked' position, it should be locked.
2. Obtain / ensure release is available, then press button on releasing switch to obtain release.
3. When lock energises place handle in the 'free' position and release button to de-energise the lock.
4. Observe lock drop contacts are broken by a minimum of 1mm but do not exceed 1.5mm, (bend bottom contact to adjust).
5. Restore releasing switch handle to the 'locked' position and then try to move the handle from the 'locked' position.

Where ledging of the releasing switch is found to be occurring, ie the handle can be moved from the 'locked' position without the release (lock de-energised), it is to be removed from service and forwarded to the Interlocking Fitters for repair.