

TECHNICAL INSTRUCTION

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NETWORK RAIL - SIGNAL ENGINEERING

Limit Switch Adjustment Procedure for GWE Barrier Machines

Relevant Standard: NR/L3/SIG/10663 and NR/GN/SIG/19044 (SIGTAN 044)

Purpose

This Technical Instruction provides SMS supplement to remove any misinterpretation with NR/GN/SIG/19044 (SIGTAN 044).

Background

An incident occurred whereby a signal cleared over a CCTV-monitored crossing with one barrier raised. The signaller had not noticed the raised barrier when the 'Crossing Clear' function was operated. It was found that a limit switch was continually made in the down-proving condition, irrespective of barrier position.

The switch was a Crabtree AC11 type, as used in Godwin-Warren barrier machines. It was identified as the earlier pattern, obsolete since 1992, so was probably original crossing equipment. When tested it was still in the 'operated' condition as far as contacts were concerned, although the plunger moved freely. It was noted that there was no gap between the operating plunger and internal mechanism when in the relaxed position. This should be 1.5mm for proper operation and is achieved by moving the contact block on slotted holes. Clear witness marks showed that the contact block had not shifted, so it is likely that this switch never had been correctly set.

The testing method for the required gap has been published in SIGTAN 044 (NR/GN/SIG/19044 [formerly RT/E/C/19044]). In §13.2 and §13.3 reference is made to the 'contact gap'. This is not the critical setting. The gap is required between the plunger and the switch operating arm. NR/L3/SIG/10663: SMS LC24 also refers (§10.3) to this setting as a 'contact gap'. Unfortunately, the illustration in Appendix A in LC24 has suffered from poor reproduction and shows no gap at all at the critical point.

Originator's Details:-

John Sneider

Network Rail

john.sneider@networkrail.co.uk

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Scope

This technical instruction covers the adjustment of Crabtree limit switches in Godwin-Warren barrier machines.

The complete SMS for LC24 has been reproduced in this TI and changes have been side barred.

Compliance Requirements

The next Service B or Annual Test, which ever is the sooner.

Staff to be Briefed

The attached Maintenance Document requires to be briefed to Signalling Maintenance Technical staff who are called upon to carryout maintenance on Crabtree limit switches in Godwin-Warren barrier machines.

Expiry Date

This TI will expire once the information has been migrated to the Signalling Maintenance Specifications NR/SMS LC24 and removed from NR/GN/SIG/19044.

NR/SMS/LC24 - Barrier Machine GWE

Includes: Electro-Mechanical and Electro-Hydraulic types.

SERVICE A

1. Exterior All Machines

- 1.1 Remove all fire risks and potential obstructions from the pedestal base and the immediate surrounding area.
- 1.2 Check the following items:
 - With the barrier in the fully raised position there is clearance between the ground and the barrier side arm and weights.
 - Concrete base and pedestal assembly.
 - Safety fence.
 - Tension of straining wire (If applicable).
Adjust if necessary.
 - Alignment of boom lamps.
 - LED Boom lamps (if fitted) are visible from 50m.
- 1.3 Examine the following items:
 - Pedestal fixing bolts.
 - Seals on the barrier bearing cover.
Freezing water in the bearings can cause the barriers to jam.
 - Boom, reflective bands and strips.
Wipe as necessary to clean.
 - Skirt assembly (if fitted).
 - Support member and reflective bands (if fitted).
Wipe as necessary to clean.
 - Boom lamps, lenses, housings, hoods and brackets.
Clean lenses and replace any failed or faulty lamps.
 - Boom lamp cable, plug couplers and clamps.
 - Straining wire, stay bracket, clamp and adjuster (if fitted).
 - Skirt fittings and bottom retaining clamp bolts.
 - Skirt support arm pins.
 - Sliding members of end steady units and support posts (if fitted). *Check spring is intact (if fitted). Clean as necessary.*
 - Pneumatic buffers, *Check* that the rubber gaiter is intact (if fitted).
 - Main shaft fixing and balance arm bolts.
- 1.4 Lubricate with mineral oil:
 - Sliding members of end steady units (if fitted).
 - Sliding members of support posts (if fitted).
 - Skirt support arm pins.
Plastic skirt supports should not be oiled.
- 1.5 Lubricate with lithium based grease the pneumatic buffers (if fitted).

2. Interior All Machines

- 2.1 Isolate the motor by opening the manual control door.
- 2.2 Check the correct operation of heaters, if fitted. Check the thermostat is set to 16°C (60°F).
- 2.3 Examine the heater wire insulation.
- 2.4 Wipe the limit switches.
- 2.5 Lubricate with lithium based grease the limit switches operating plunger.