

TECHNICAL INSTRUCTION		TI 163 Issue 1 29/09/2011 Expires: 30/09/2012 Page 1 of 3
		NETWORK RAIL - SIGNAL ENGINEERING Clamp Lock Microswitch Test Procedure
Relevant Standard	NR/GN/SIG/11774	

Purpose

This TI informs staff that a test procedure is to be carried out following a suspected Clamp Lock microswitch assembly failure.

Scope

The requirements of this TI apply to Clamp Lock mechanisms that have suspected faulty ITW microswitch assemblies. The ITW microswitch can be recognised by its nameplate, rectangular body and the 8 wires emerging directly from the sealing compound. The TI applies to staff responsible for maintenance, faulting and installation of Clamp Lock mechanisms.

Background

A microswitch assembly is currently being investigated following a detection failure. During testing, it was noticed that the left hand microswitch operated with greater travel than usually expected; the plunger had to be pushed further in than usual before the microswitch contacts operated.

It has since been revealed that the toggle / over travel spring had fractured, requiring the plunger to travel a greater distance before the snap-action switching occurred. It is not known how common this failure mode is because the likelihood is that if this occurs the faulty microswitch assembly will be disposed of without any further testing.

The microswitch assembly is designed so that the back contacts are used to prove detection and are made when the plunger is out. As the plunger is depressed these contacts remain in the same state until the changeover point is reached (approx 2mm) when the front contacts snap across and break the back contacts.

Test Procedure

In an attempt to identify if this failure mode is a more common occurrence, this test procedure shall be applied to all future suspected faulty microswitch assemblies occurring from publication of this TI. The test procedure is to be carried out on the work bench once the suspected faulty microswitch has been removed from service. The test is to be carried out by a person who holds the authority to carry out corrective and preventative maintenance on Clamp Locks.

- 1) Switch the Fluke Meter to measure resistance and place the leads between the terminals listed within the table. The wiring diagram shown can be used for guidance.
- 2) Connect the meter between the terminals as listed in the table shown on page 2 and complete the boxes by either entering a Yes or a No.
- 3) If the result of any of the tests is an N, then contact the originator of this TI.

Originator's Details:-
 Bleddyn-James Davies
 Network Rail
bleddyn.davies@networkrail.co.uk

PUBLISHED UNDER NR/L2/SIG/11120

TECHNICAL INSTRUCTION

TI 163
Issue 1
29/09/2011
Page 2 of 3

Note - It is important to check that the microswitch changes state. This is done by verifying that the switch changeover occurs between plunger out ('relaxed') to plunger in ('depressed') and vice versa.

The following table is to be completed as per step 2 of the Test Procedure;

Left Hand Microswitch – Connect the meter and measure between terminals		Is this correct Yes / No?
1A & L	When the plunger is OUT the resistance is between 0.1Ω & 0.5Ω	
1A & L	When the plunger is depressed the switch changes state after approximately 2mm of travel	
1C & L	When the plunger is IN the resistance is between 0.1Ω & 0.5Ω	
1C & L	When the plunger is depressed the switch changes state after approximately 2mm of travel	
2B & K	When the plunger is OUT the resistance is between 0.1Ω & 0.5Ω	
2B & K	When the plunger is depressed the switch changes state after approximately 2mm of travel	
2D & K	When the plunger is IN the resistance is between 0.1Ω & 0.5Ω	
2D & K	When the plunger is depressed the switch changes state after approximately 2mm of travel	
Right Hand Microswitch – Connect the meter and measure between terminals		Is this correct Yes / No?
3E & L	When the plunger is OUT the resistance is between 0.1Ω & 0.5Ω	
3E & L	When the plunger is depressed the switch changes state after approximately 2mm of travel	
3G & L	When the plunger is IN the resistance is between 0.1Ω & 0.5Ω	
3G & L	When the plunger is depressed the switch changes state after approximately 2mm of travel	
4F & K	When the plunger is OUT the resistance is between 0.1Ω & 0.5Ω	
4F & K	When the plunger is depressed the switch changes state after approximately 2mm of travel	
4H & K	When the plunger is IN the resistance is between 0.1Ω & 0.5Ω	
4H & K	When the plunger is depressed the switch changes state after approximately 2mm of travel	

Advice to be followed when fitting replacement switch plate assembly

Check for incorrect adjustment of the tappet screws. If the length is greater than 25mm this could indicate component wear which may have caused the original fault. The 25mm length can be checked by using the 25mm insulated gauge found in the point care kit.

It is also advisable to check that when the switch rail is open 25mm, the left and right hand tappets should be level.

Further information on the microswitch assembly can be found within the Clamp Lock Handbook, [NR/GN/SIG/11774](#).