UGL REGIONAL LINX

CLAW LOCK MECHANISM DESCRIPTION & OPERATION

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LINKING COMMUNITIES. CONNECTING CUSTOMERS.

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Document Control

Function	Position	Name	Date
Approver	A&E Manager	Lucio Favotto	30.01.2022

Revision	Issue Date	Revision Description
1.2	30.01.2022	UGLRL Operational Standards Template applied
2.0	30.01.2022	First approved and issued UGLRL version

Summary of changes made from previous version

Section	Summary of change
All	This document is based on the previous rail infrastructure maintainer (RIM). Full revision history is available on request from UGLRL.

1 Claw Lock Description

The claw lock type of mechanism was introduced into railways in Europe more than 50 years ago and is currently in common usage in a number of forms. The mechanism was first introduced into NSW at Glenfield where it was used to drive and lock the swing nose V-crossings on the 1 in 21 medium speed turnouts.

The Claw lock is a device in which the drive and facing point lock for the points are combined into a single mechanism. It provides direct locking between each switch and stockrail and any form of manual, electrical, pneumatic or hydraulic mechanism that can provide the required drive travel may power it.

It is suitable for 60 kg conventional turnouts and 60 kg tangential turnouts in main line application and 53 and 47 kg turnouts in sidings and yards. Depending on the drive mechanism used, the claw lock may be trailable or non-trailable.

There are no fixed gauge rods (stretchers, front rods, backs rods) connecting the switches since the switches must be able to move independently of one another at each end of the drive stroke to allow the claws to unlock and lock. Conventional 60, 53 and 47 kg turnouts do, however, require a slotted “anti-roll” stretcher to be fitted to prevent excessive switch roll caused by the claw rolling the foot of the switch in towards the stockrail.

The mechanism itself consists of cast steel claw locks bolted to each of the stockrails - this can be between the “A” and “B” timbers for a convention turnout and within a steel bearer for an in-bearer installation. Similarly, if a backdrive is required in the appropriate bay or another steel in-bearer unit.

A claw bracket is bolted to each switch blade, and this supports a locking claw pinned or bolted to the bracket such that the claw can swing in the horizontal plane.

An operating bar connects the locking claws on each side but is not physically fastened to claw, switch or stockrail.

Figure 1.1 shows an assembled claw lock installation on a conventional tangential turnout.

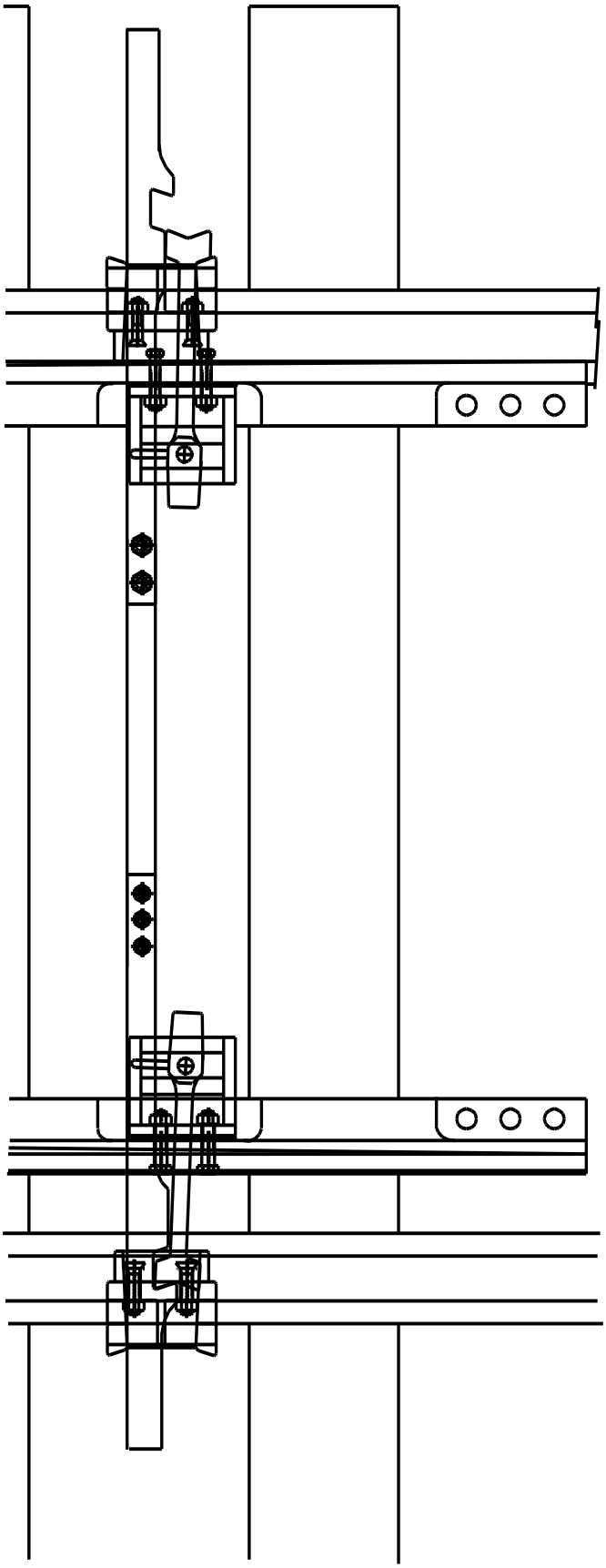

Figure 1.1- Claw Lock Assembly on a Conventional Turnout

2 Claw Lock Operation

Providing a driving force to one end of the coupling bar actuates the mechanism. This may be done with an electric mechanism, a pneumatic cylinder, a hydraulic cylinder or a mechanical lever.

Using Figure 2.1 for reference

The top drawing shows the switch at the right of the diagram in the closed and locked position. The tail of the locking claw is hooked around the locking face of the claw lock and is held in this position by the coupling bar.

The switch at the left of the diagram is held in the open position by the tail of the claw being constrained within the notch in the coupling bar and being still within the claw lock.

To move the points force is applied to move the coupling bar to the left. The open switch will immediately commence to move towards the closed position.

When the notch in the top of the coupling bar is opposite the tail of the claw of the closed switch, the claw will release from behind the claw lock into the notch and free the switch.

Continued movement of the coupling bar will move both switches until the switch at the left of the diagram is closed and its claw hooks behind the locking face of the claw lock.

The operating bar then travels past the claw and locks it behind the claw lock, at the same time completing the open switch travel.

When a trailable mechanism is attached to the coupling bar, the claw lock can be trailed without damage and operation is as follows:

As the train wheel rolls towards the tip of the switch from the “V”-crossing, it tries to force the open switch towards the closed position. When the force on this switch reaches a pre-determined level, it will release a clutch or similar in the drive mechanism which frees the coupling bar to move.

As the wheel forces the open switch towards the closed position it will move the coupling bar through its locking claw which is engaged in the notch in the bar.

Once the switch and bar have moved approximately 45 - 50 mm, the locking claw on the closed switch will be freed from behind the claw lock and will allow the closed switch to open.

Generally, points which have been trailed will be neither normal nor reverse after the trailing movement. It will be necessary for the signaller to re-stroke the points unless automatic normalising has been provided.

The claw lock mechanism may also be used on single blade catchpoints. A claw lock is fixed to the stockrail opposite the switch, and this acts as a guide for the coupling bar. On the switch side, the assembly is identical to that of a full set of points.

It is also possible to use the claw lock mechanism on single and double slips. However, this does require some modifications to the standard assembly. For example, it is necessary to dispense with the claw bracket on the switch or switches in the “V” of the slip and pin the claw directly to the flange of the switch. To maintain commonality of parts the opposite switch is treated in the same manner.

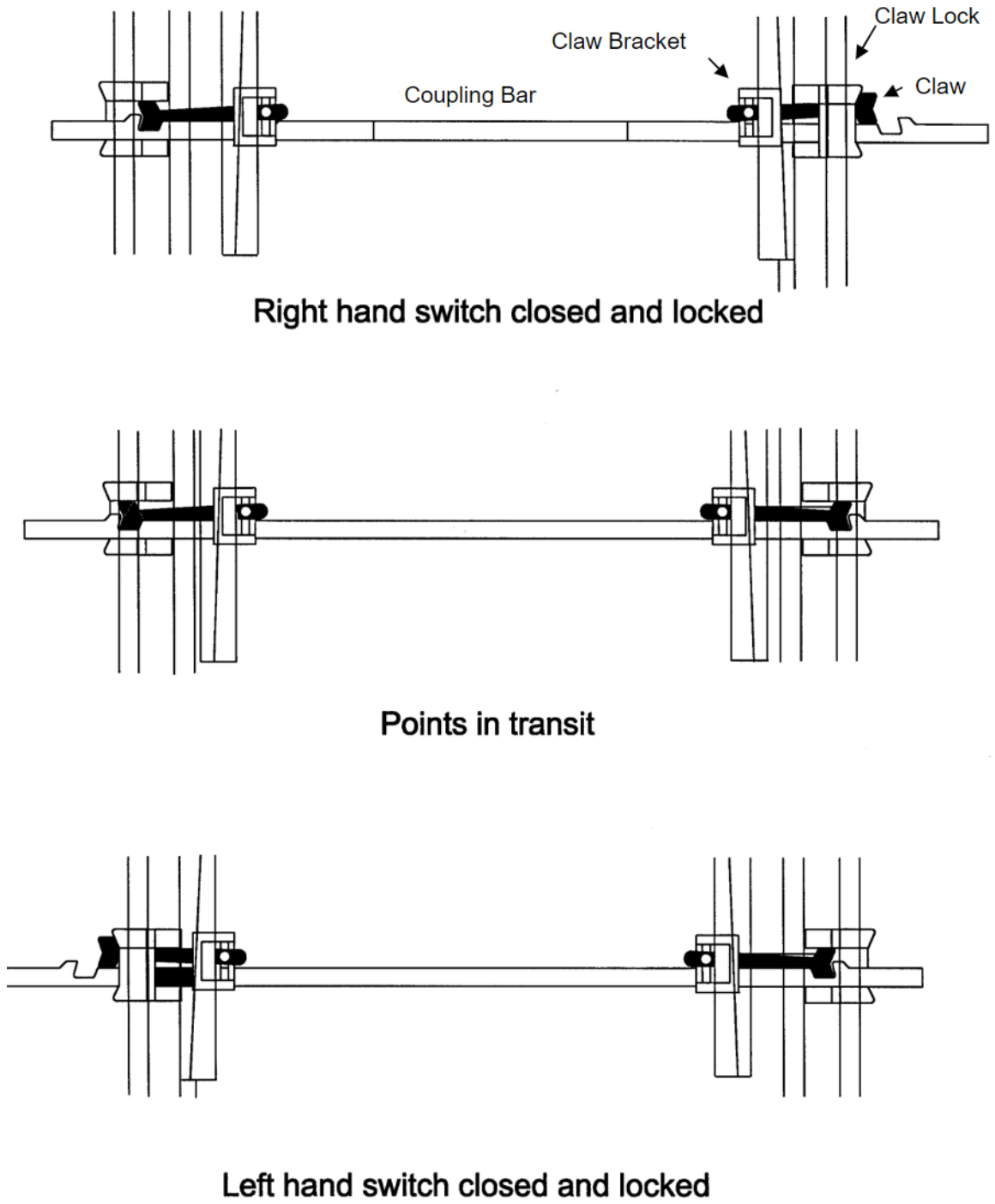

Figure 2.1 - Claw Lock Operation

Figure 2.2 - Single Slip Fitted with Claw Locks

Figure 2.3 – Single Slip, Claw Pinned Directly to Switch Flange

3 Terminology

Name Used In This Manual	Name Which May Be Used In Other Publications
Coupling Bar	Operating Bar
Drive Rod	Throw Rod
Jaw	Clevis
Crossing Base Frame	Crossing Base Plate
Point Machine Throw Bar	Point Machine Operating Bar