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Engineering Standard – NSW

Category
Signalling

Title
The Claw Lock Mechanism Installation On Turnouts

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List of Amendments –

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1.1	14/03/2005	Disclaimer	Minor editorial change

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Contents

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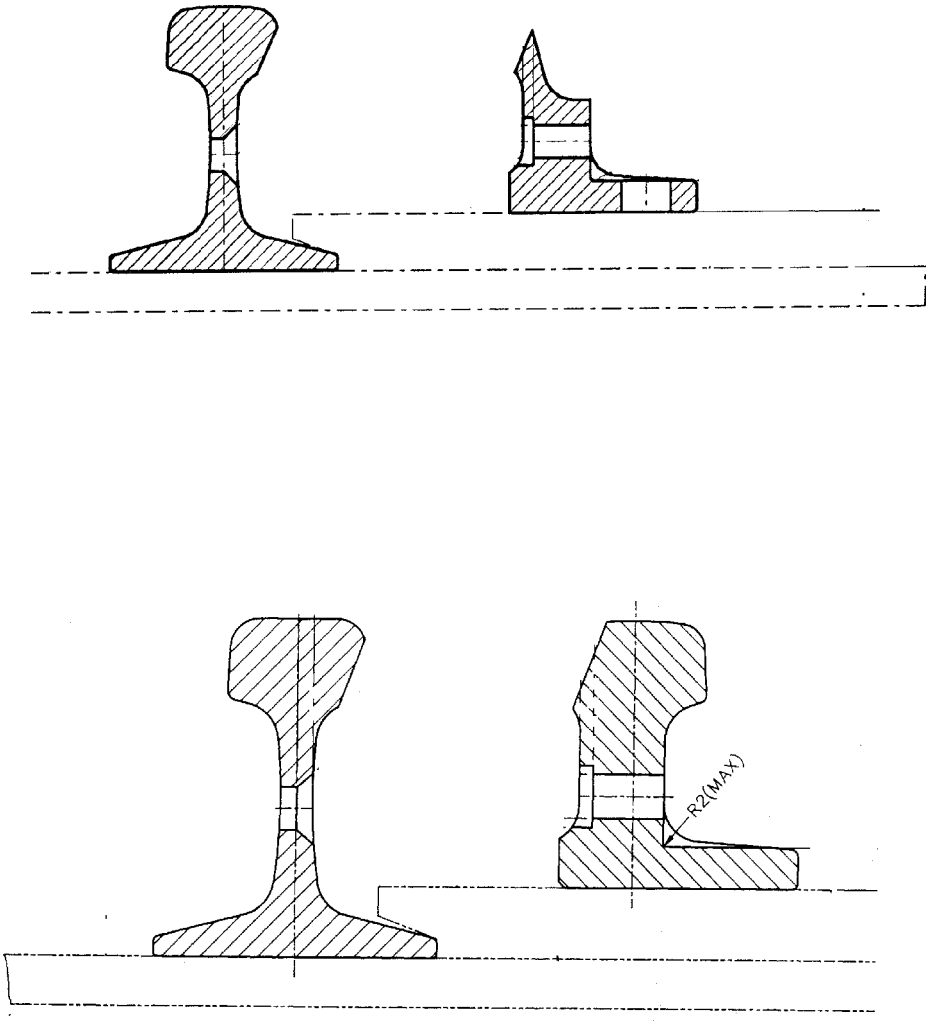

Figure 1.1 – Tangential turnout, switch cross sections

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1 Installation - Tangential turnouts, UIC 60B or similar switch

1.1 Clipping and locking non-commissioned tangential points for traffic operation.

Where a tangential turnout is installed into the track before the claw lock mechanism and/or the operating machine are to be installed, it will be necessary to secure both the normally closed and the normally open switch.

This is done by using the appropriate point clip(s) for the UIC 60B switch section and a tie bar (minimum 50 x 20 steel) between the open and closed switches. The tie bar can be secured through the holes provided for connection of detector rods and, where required, the holes provided for back gauge rods. (Remember these tie bars must be insulated from the switches).

The minimum numbers of point clips and tie bars required are:-

Turnout Radius	No of Point Clips	No of Tie Bars
190 m	1	1
250 - 300 m	2	2
500 m	2	2
800 m	2	2
1200 m	2	3

After the claw lock mechanism and operating mechanism has been fitted, but not commissioned it will still be necessary to retain one tie bar between the open and closed switches at the tip plus the number of point clips specified above. The second and third tie bars on larger turnouts are no longer required.

It will usually be necessary to detach one detector rod to provide fixing holes for the tie bar.

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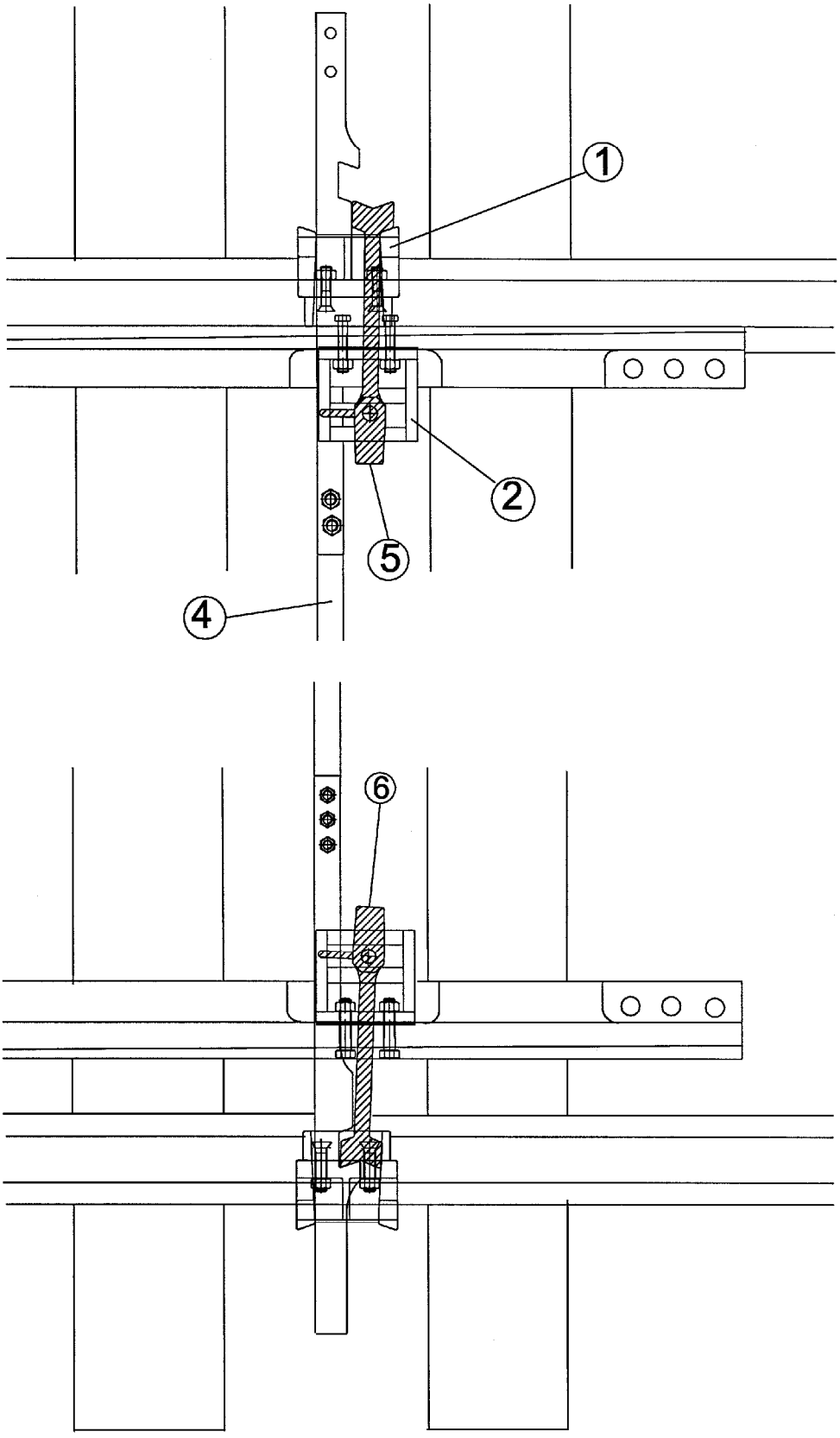

Figure 1.2 – Claw lock assembly

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1.2 Claw lock installation

To install the claw lock mechanism to a tangential turnout, carry out the following steps, in the order presented, using figures 1.2 and 1.3 for reference:-

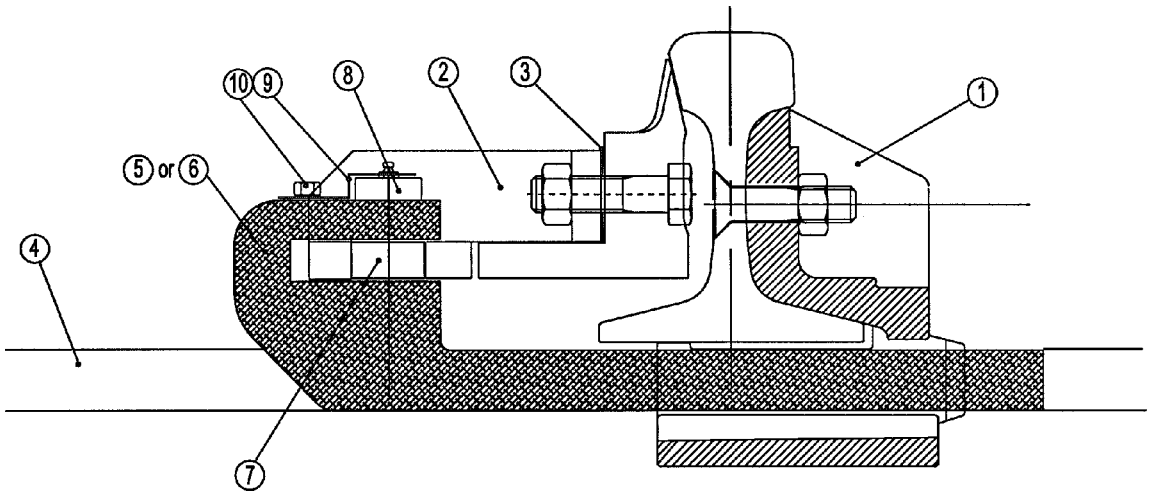

Figure 1.3 – Claw lock assembly

1. Disconnect any gauge rods or tie bars which may be fitted to the points. The switches must be free to move independently of one another.

2. Check the fit of the claw lock **(1)** to the stockrail. The claw lock has two stops on the rail underside section, refer to figure 1.4. These stops are deliberately left oversize to cover tolerance variations in rail cross section and are provided to limit any rotation of the claw lock and consequent misalignment.

   If required grind these stops down until, with the claw lock bolted correctly into the web of the rail and the under-rail section parallel with the foot of the rail, the stops are just clear of the foot of the rail

   The claw lock must fit into the stockrail by hand. ***It must not be forced in by hammering or by using the bolts to pull it in. Forcing into the stockrail will lead to cracking and failure of the claw lock casting.***

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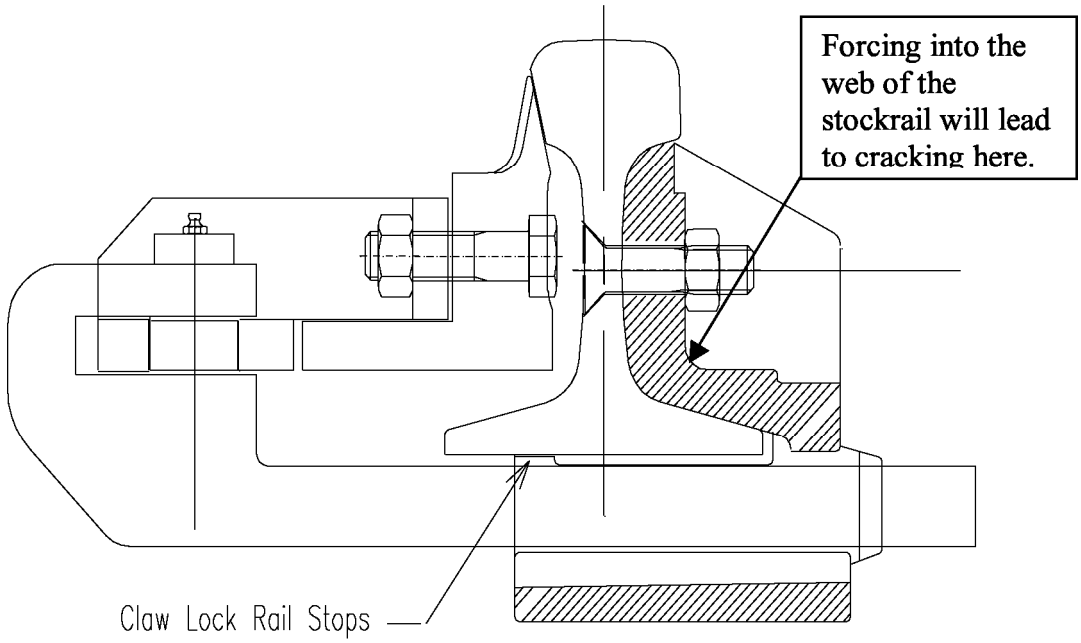

Figure 1.4 – Claw lock rail stops

3. Fit the claw lock to one stockrail only and tighten the bolts sufficiently to hold the box in place. Do not fully tighten.

4. Fit the claw bracket **(2)** to the switch on the same side. Tighten the bolts sufficiently to hold the bracket in place. Do not fit any shims **(3)** behind the bracket at this stage.

5. Offer the coupling bar **(4)** through the lock box from the "four foot" taking care to ensure that the notches in the operating bar are facing towards the tip of the switches. Leave the notch in the coupling bar exposed on the "four foot" side of the stockrail.

   Where the points are fitted with a back drive, the front coupling bar may be differentiated from the back coupling bar by measuring the length of the centre section of the bar. For the front bar, the length is 740 mm and for the back bar, 790 mm. Refer to figure 1.5

6. Fit the correct handed claw **(5)** or **(6)** (the hook on the pivot end of the claw fits around the coupling bar) into the notch in the coupling bar and move both until the claw fits over the claw bracket on the switch.

7. Fit the eccentric sliding bush **(7)** into the slot in the claw bracket and into the claw with the hole in the bush as close as possible to the switch. Refer to figure 1.6. Fit the claw pin **(8)** but do not fit the claw pin retaining cap and screw **(9)** and (10).

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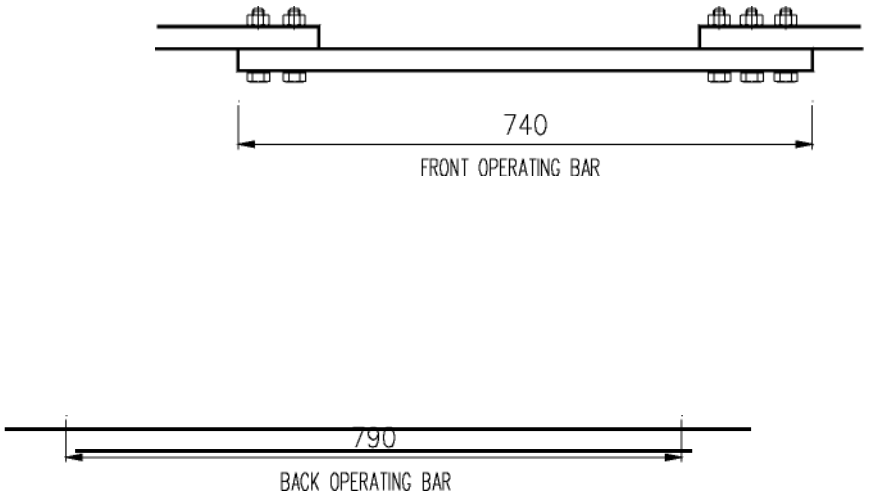

Figure 1. 5 - Comparative Coupling Bar Lengths

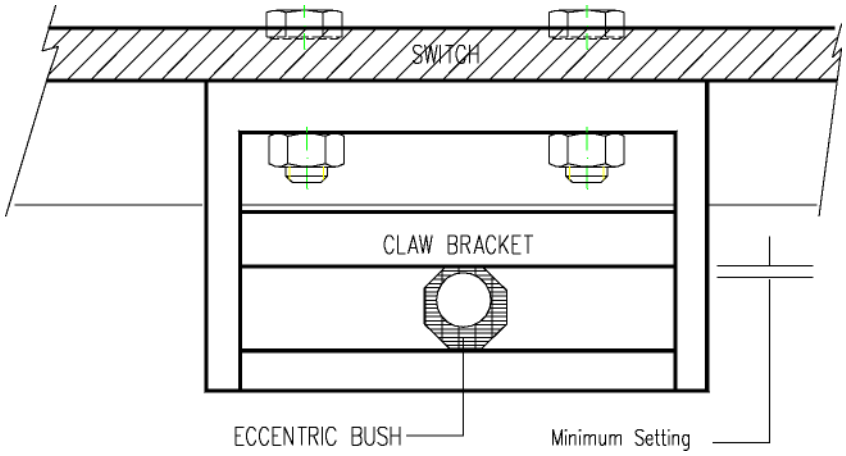

Figure 1.6 - Positioning of eccentric sliding bush

8. Close this switch and hold it closed with a point clip or clamp. Only tighten the clip sufficiently to just hold the switch closed. Do not roll the switch.

9. Fit the claw bracket, sliding bush, claw and claw pin to the opposite switch.

10. Position this switch so that the claw fits into the notch in the operating bar. Do not attempt to set switch opening at this stage

11. Fit the claw lock by sliding it over the coupling bar and claw until it fits correctly into the stockrail. Tighten bolts only sufficiently to hold it in place.

12. Check the coupling bar alignment. This should be at 90° to the straight stockrail. Check also the coupling bar and claw lock position. The face of the closed and locked claw

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should be parallel to the locking face on the claw lock. Adjust the claw locks along the stockrail as necessary. (the point clip will need to be removed while adjusting claw lock position).

13. Tighten both claw locks fully.

14. Where a backdrive is to be fitted, assemble the back drive claw lock by repeating steps 1 to 13. Note that on a tangential turnout the back drive coupling bar will not be parallel to the sleepers but should be at 90° to the straight stockrail.

15. The back drive cranks, rods, guides and links may be installed to the layout drawing(s) at this stage but must not be connected at the front or back operating bars.

16. Close the switch closest to the operating mechanism and hold closed with 'G' clamps (or point clips if a 'G' clamps are not available) at both front and back drive positions. Take care not to roll the switch by over tightening the point clips.

17. Check the clearance between the claw and the locking face on the claw lock (figure 1.7). This should be 0 mm to 0.5 mm with the switch held against the stockrail but the claw must not be tight or binding against the locking face. Add shims **(3)** between the claw bracket and the switch to achieve the required clearance.

    If more than three 2 mm shims are required, then rotate the eccentric bush to its second highest position and then shim as required.

18. Repeat step 16 for the back drive on the same switch but in this case there should be 1to 2 mm clearance between the claw and the locking face with the switch held against the stockrail.

19. Repeat steps 16 and 17 for the opposite switch. Do not attempt to adjust switch opening or drive bar travel at this stage.

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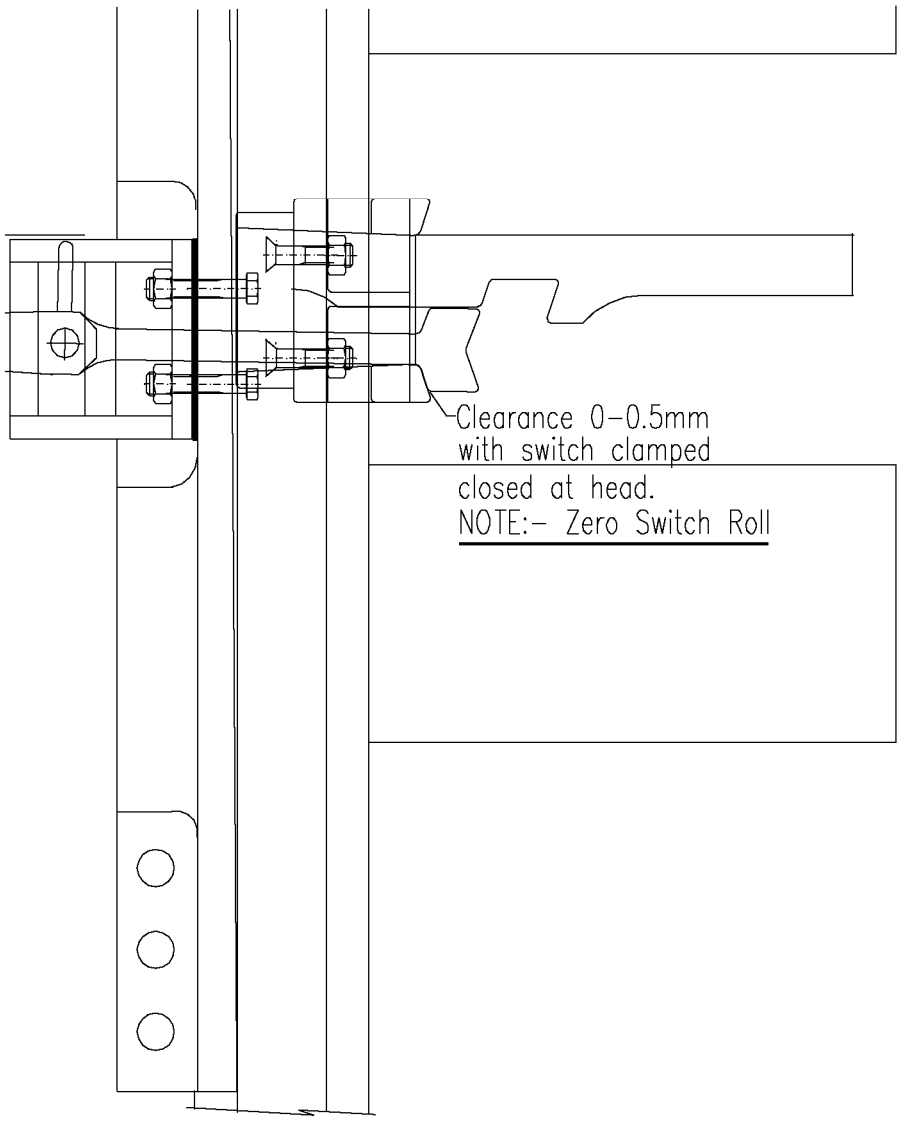

Figure 1.7 - Claw to lockface clearance

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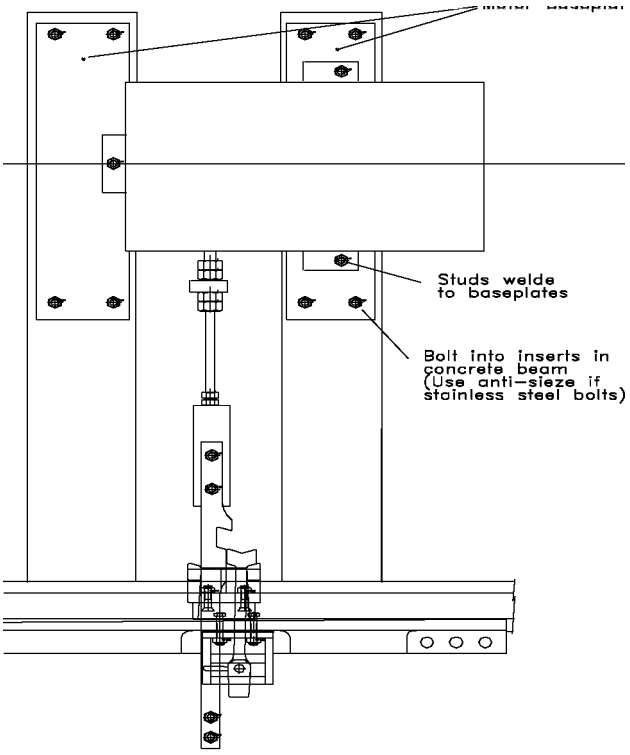
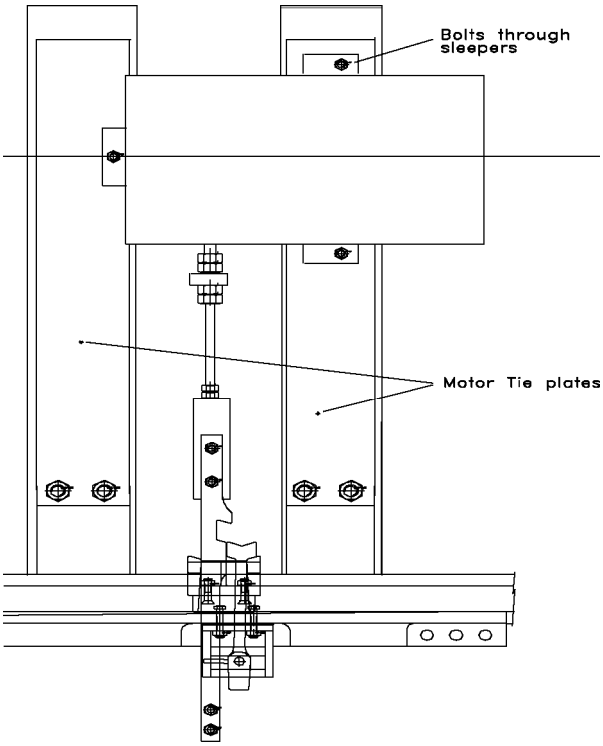


TURNOUT ON CONCRETE BEAMS



TURNOUT ON TIMBER SLEEPERS

Figure 1.8 – motor tie or bed plates

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1.3 Operating machine installation – Westinghouse 84M series

The 84M mechanism, whichever model is used, is normally installed on un-scarfed timbers or concrete beams.

Installation procedure is as follows

1. Fit the tie (or bed) plates to the timber or concrete beams as shown in Figure 1.8

2. Ensure that the machine is correctly configured RHSC (Right hand switch normally closed) or LHSC (Left hand switch normally closed) as appropriate - Figure 1.9. Check the handing plug within the machine.

Note

This configuration applies to which switch is normally closed *not* to whether the machine is to the left or right of the track

3. If the hand of the machine is not correct:-

   - For an 84M or T84M machine, reverse the detector slides, change the handing plug and refit the hand crank aperture and cut out switch to the opposite side of the machine.

   - For a D84M or TD84M machine refer to section 3, “Overhaul”

   - To change the hand throw lever position from normally closed switch to normally open switch refer to clause 4.1

4. Fit the machine to the tie plates and secure the three holding down bolts.

   On resiliently fastened (Pandrol Clip) tangential turnouts it may be necessary to slightly adjust the position of the A or B timber or beam to align the mounting bolts with the mounting holes in the machines. Figure 1.10 shows the correct position of these beams in relation to the tip of the switch.

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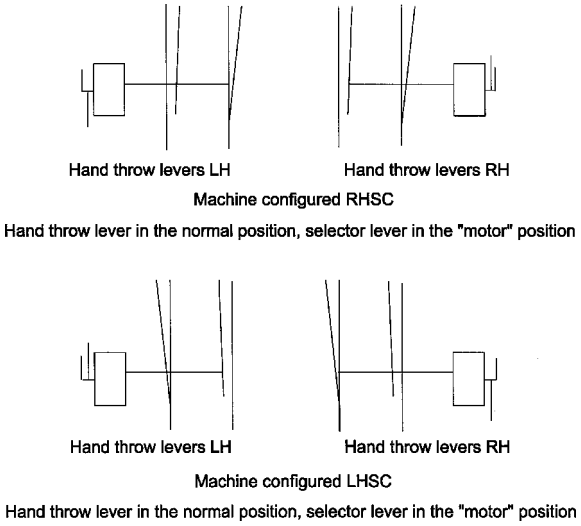

Figure 1.9 – M84 machine handing

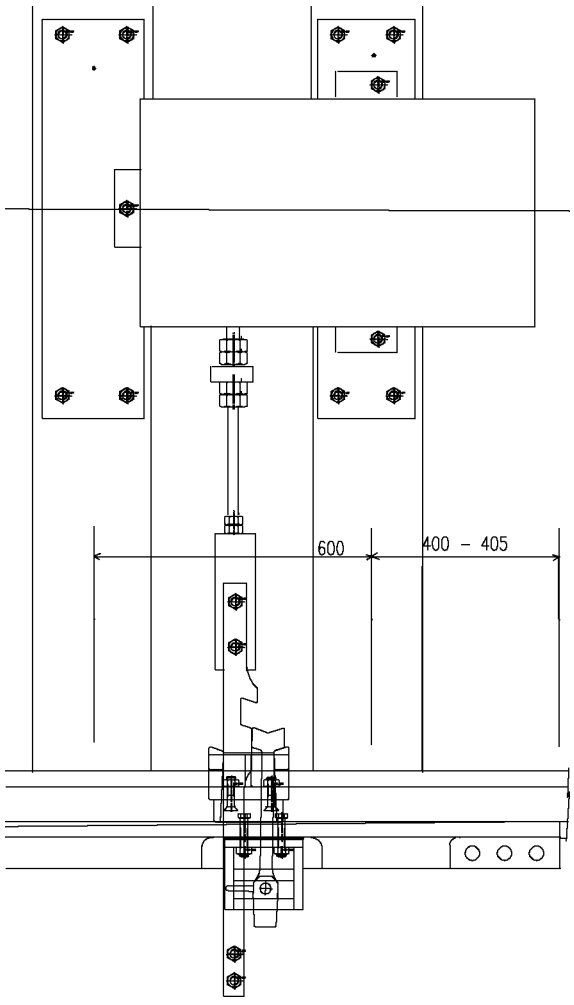

Figure 1.10 – A and B timber (beam) location

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5. Close the switch closest to the machine and ensure that the claw lock drive bar is positioned at the nominal locking set point shown in figure 1.11

6. Fully retract the machine throw rod with the hand throw lever or hand crank

7. Fit the drop lug to the throw rod. Fit the driving rod assembly to the drop lug.

8. Position the drop lug approximately in the centre of the thread on the machine throw rod. Position the drive rod so that the drop lug is approximately in the centre of the thread on that end of the rod. Refer to figure 1.12

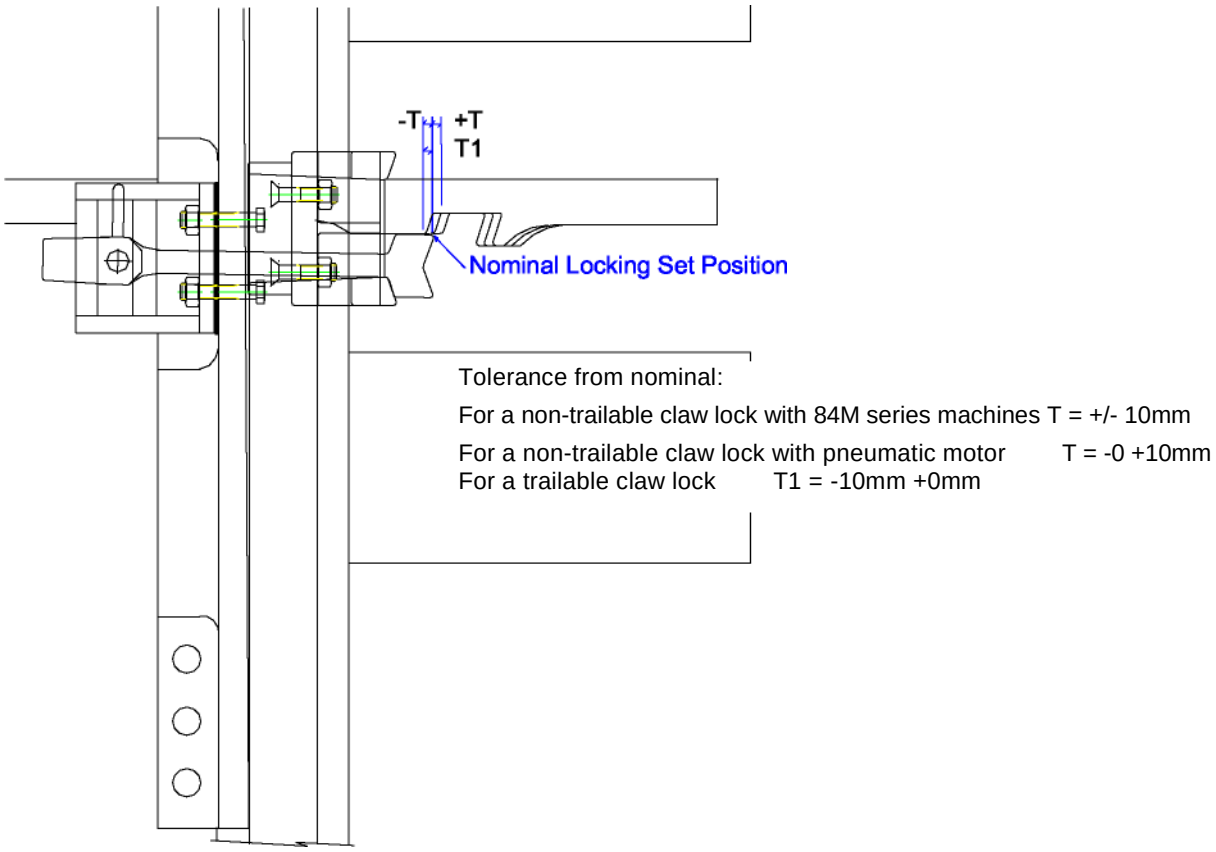

Figure 1.11 – Claw lock locking set point

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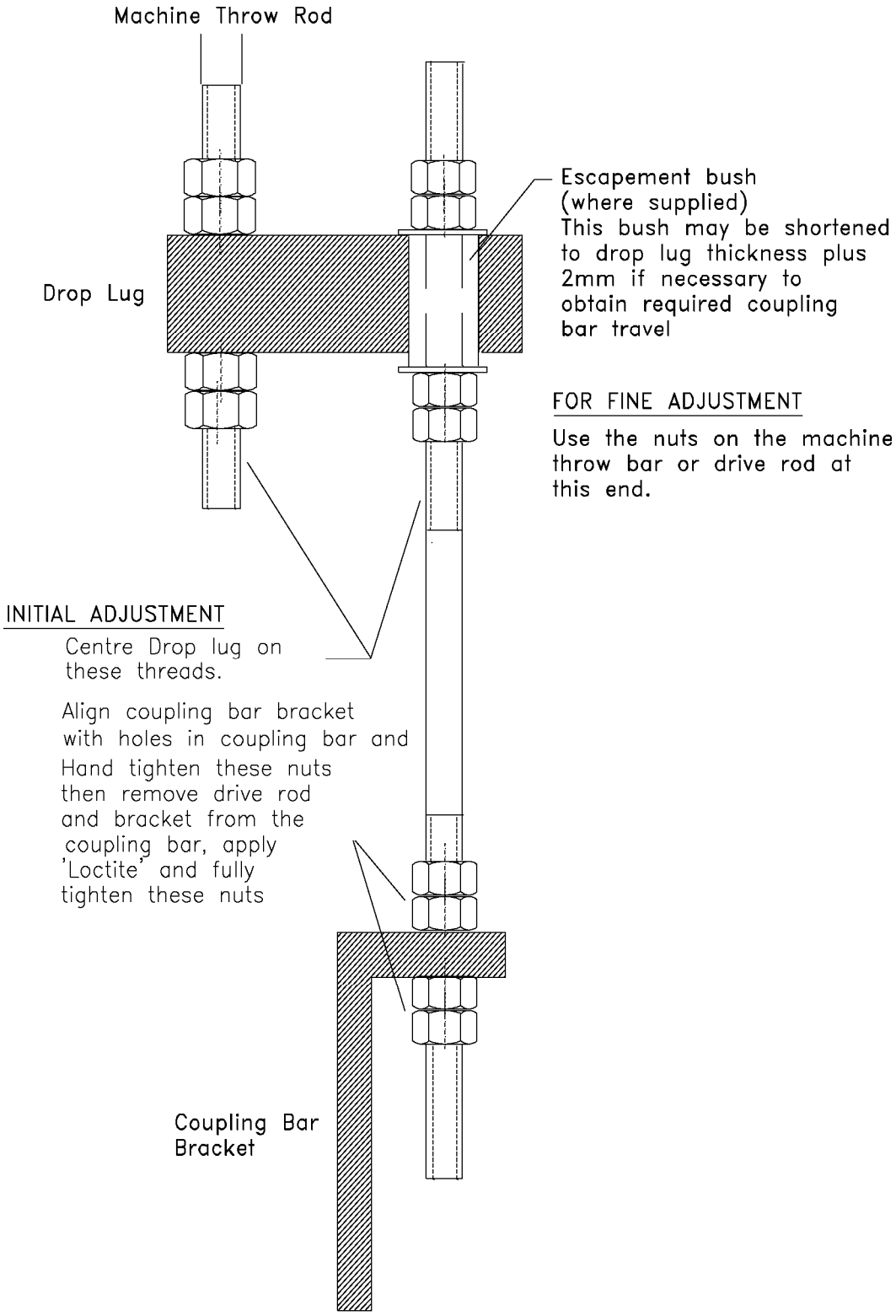

Figure 1.12 – Drive rod adjustment

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9. Test fit the coupling rod bracket to the coupling bar. Ensure that the coupling bar has not moved from the locking set dimension Finger tighten the nuts either side of the drive rod bracket or mark the position of the bracket on the drive rod.

10. Remove the drive rod assembly and fully tighten the nuts and locknuts either side of the coupling bar bracket. Use Loktite 262 or equivalent on these nuts.

11. Refit the drive rod assembly

12. Fit the drive rod bracket to the claw lock coupling bar and fully tighten the bolts. Use Loktite 242 or equivalent on these bolts.

13. Again ensure that the claw lock coupling bar has not moved from the locking set dimension.

14. Tighten the nuts (but not locknuts) on either side of the drive lug on the throw rod and drive rod.

1.4 Operating machine installation – latched pneumatic motor

The motor is normally installed on scarfed timbers or concrete beams.

Prior to commencing installation of the motor, adjust the motor detection microswitches, if fitted, as follows :-

Remove any air supply from the motor.

Move the piston shaft to approximately the mid-stroke position

Adjust the head on the microswitch actuators at each end of the motor so that there is not less than a 1 mm gap between the actuator and the microswitch plunger as shown in figure 1.13.

Move the motor to the normal position. Chech that when depressed the groove in the microswitch plunger is approximately in line with the body. Repeat for the reverse position

Lock the actuator heads in this position with the locknut. (Apply Loctite 242 before tightening the locknut or Loctite 290 “wick-in” after tightening the locknut

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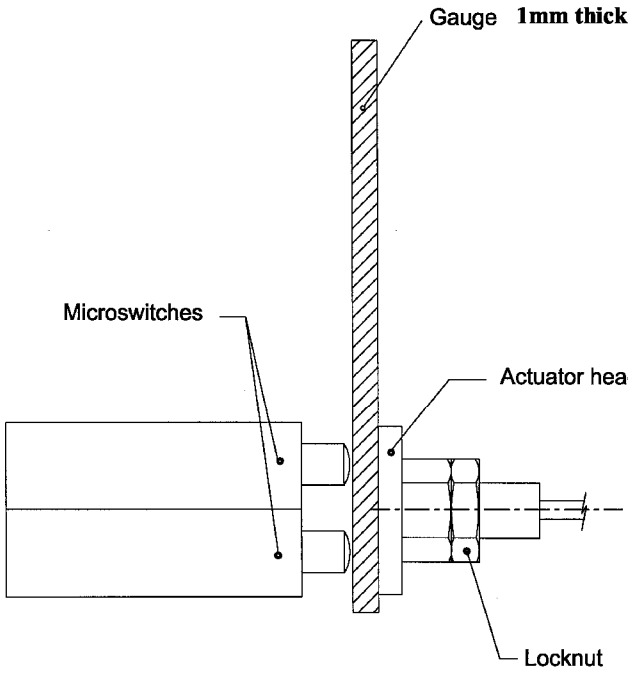

Figure 1.13 – Motor detection switch adjustment

To install the motor :-

Fit the bed plate to the "A" and "B" timbers, or concrete beams.

If on timber the bed plate is to be attached to the "A" and "B" rail plates and bolted (or coach screwed) to the timbers as shown in figure 1.14. If on concrete, the bed plate is bolted down to the inserts in the concrete beams.

Bolt the driving bracket to the end of the claw lock. Use Loctite 242 or equivalent on these bolts.

Fit one nut and locknut to the motor piston rod. Offer the piston rod through the driving bracket then bolt the motor to the base plate.

Close the switch closest to the motor and ensure that the operating bar is positioned at the previously adjusted locking set dimension. Refer to figure 1.11.

With the piston shaft fully retracted, fit the other nut and locknut to the piston shaft and bring both nuts up to the driving bracket. Nip up but do not tighten fully.

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1.5 Installation of detector

A Westingouse HM2 detector is used in association with pneumatic motors to provide switch detection. Installation is as follows:

Bolt the detector baseplate to the A1 timber (or beam) on the same side as the air motor.

Bolt the detector to the baseplate. Position the detector slides with the lugs on the track side of the detector.

Offer the detector rods through the detector slide lugs ensuring that there are nuts and locknuts each side of the lug and that there is one concave and one convex washer each side of the lug (these washers are provided to permit some mis-alignment between lug and rod)

For Tangential turnouts, fit the detector rods to the switch.

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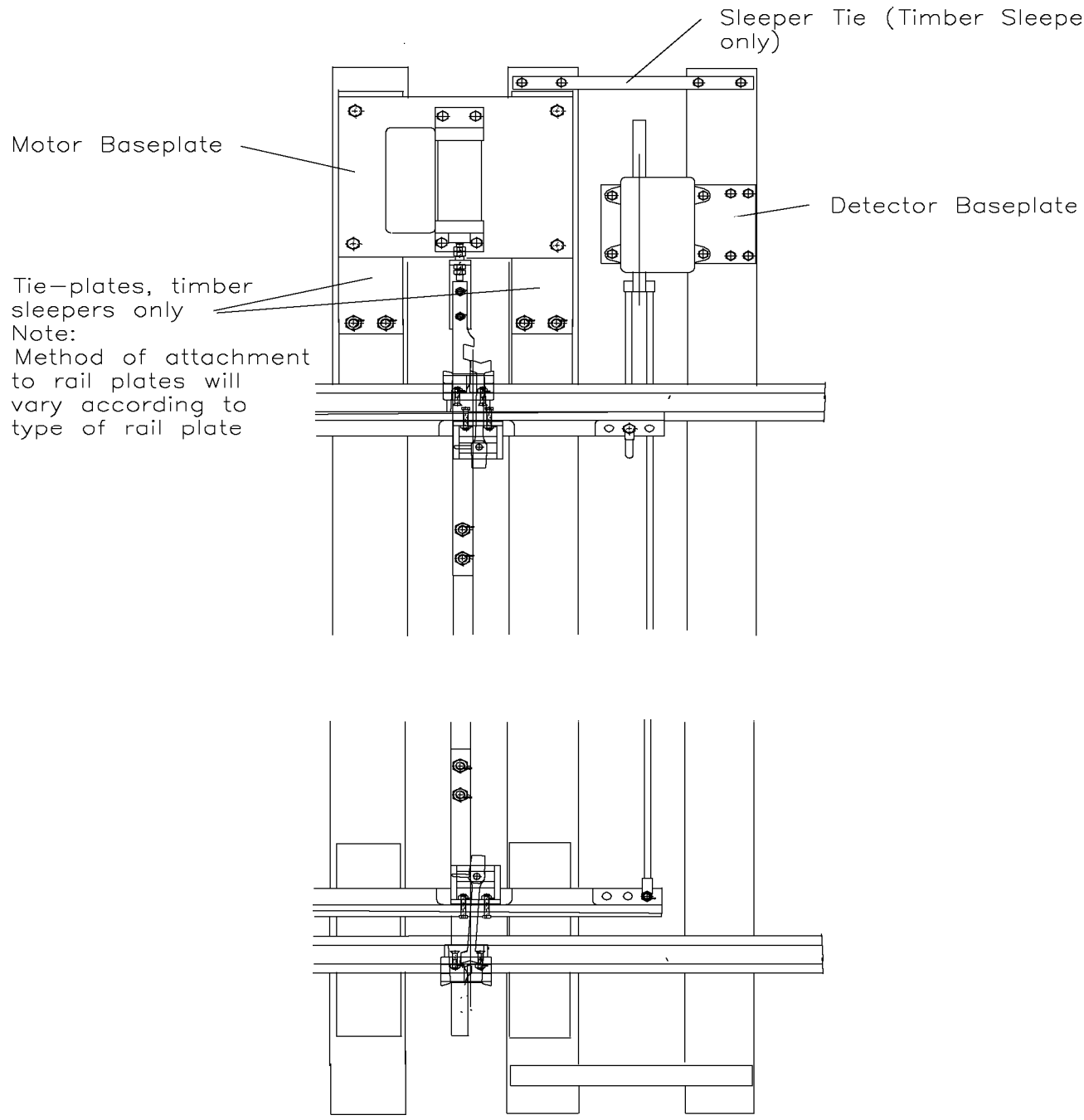

Figure 1.14 - EP Motor and Detector Installation

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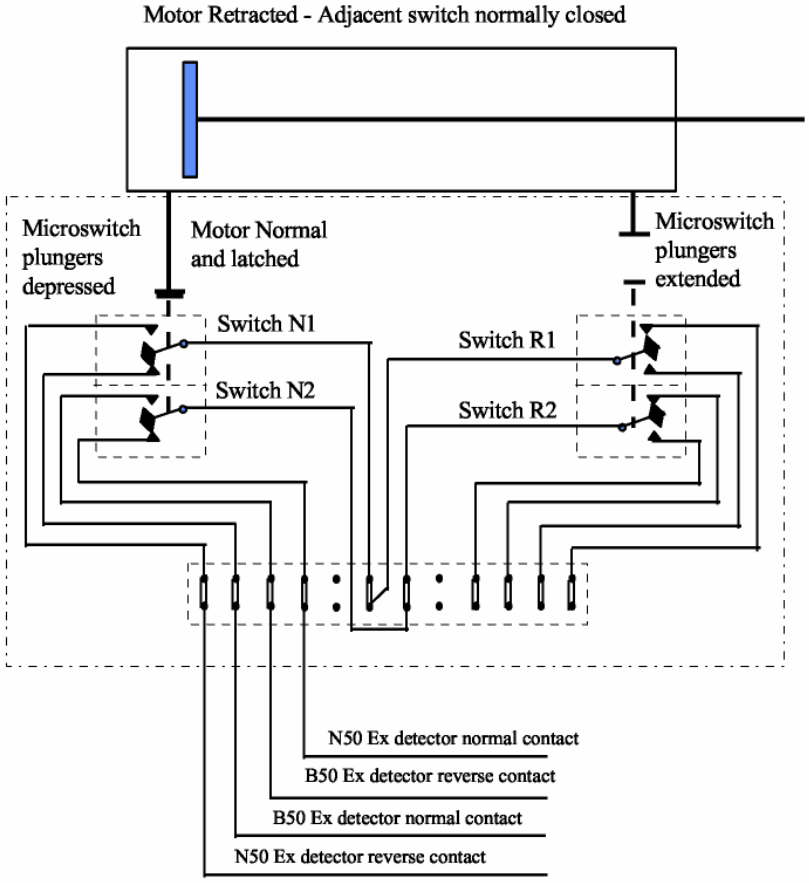

Figure 1.15 - Pneumatic motor detection circuit

Normal Position - Motor retracted, adjacent switch closed

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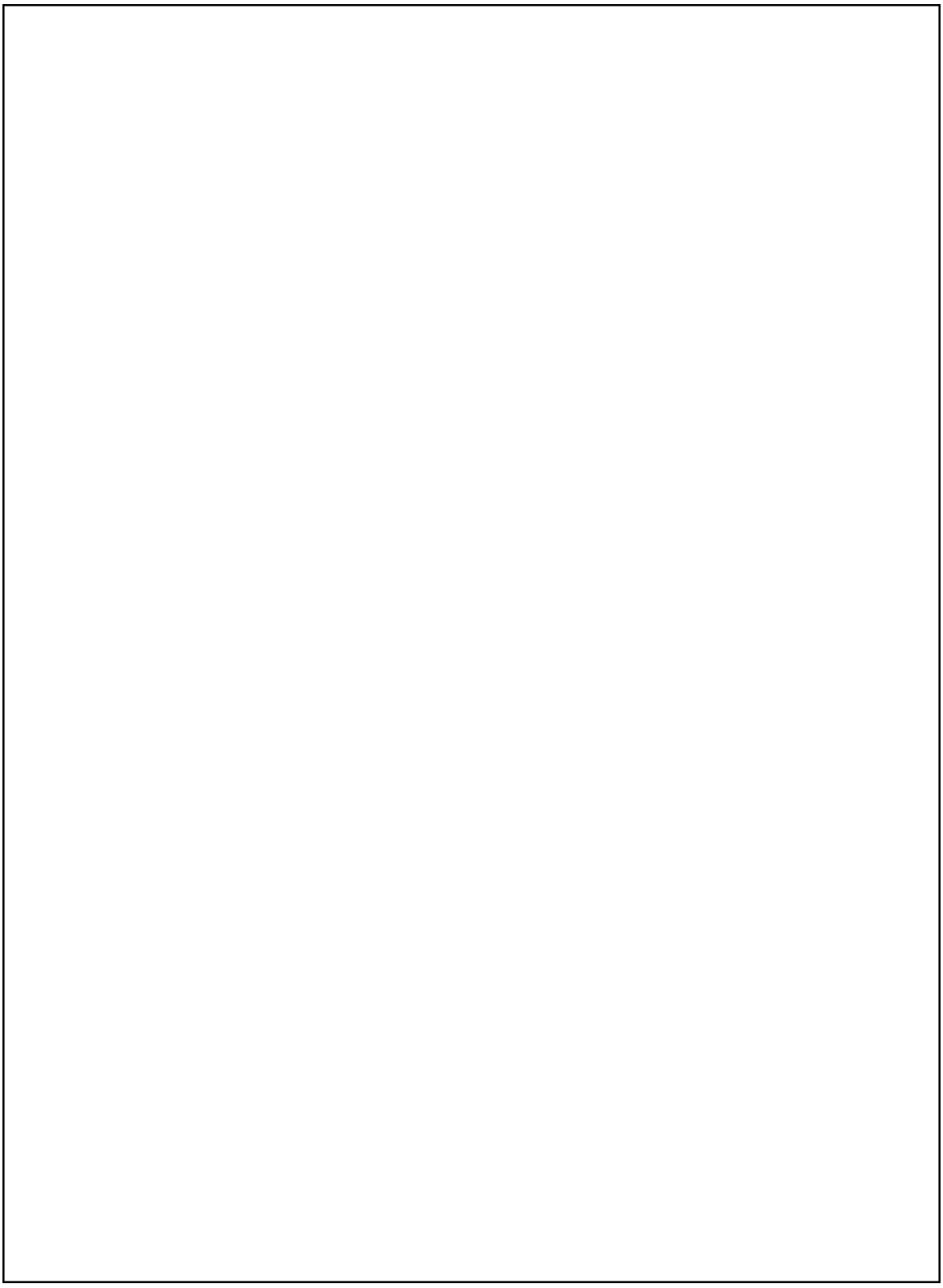

Figure 1.16 - Pneumatic motor detection circuit

Normal Position - Motor extended, opposite switch closed

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2 Setting to Work

In the following steps the words "operate the machine" will be used. to mean:

For an electric machine: operate by hand crank or hand throw lever except where otherwise noted.

For a pneumatic motor: operate with air.

For a hydraulic motor: operate under power or hand pump.

1. Close the switch closest to the machine.

2. Check the position of the drive bar relative to the claw - the "locking set dimension". This should be as shown in figure 1.11.

3. Check the opening of the opposite switch. This should be 130 mm nominal. Switch openings should not be less than 125 mm but may be up to 140 mm for 84M series mechanisms only, if this is required to obtain flangeway clearance behind the open switch. If necessary, slacken the bolts at the serrations in the coupling bar and adjust the bar length to give the correct opening. Re-tighten the bolts.

   NOTE: The switch opening must not exceed 130mm where pneumatic motors without motor detection switches are used.

4. Operate the points over.

5. Check the "locking set dimension" for the opposite switch. Again this should be as shown in figure 1.11. If this dimension is not correct to within the tolerances shown, refer to Clause 3 'Troubleshooting'.

Where a backdrive is fitted

6. Do not move the switches

7. Slacken off the bolts and nuts at the serrations in the back operating bar and set the bar to give the "locking set dimension" shown for backdrives in Figure 2.2

8. Connect the back drive to the front and back coupling bars and adjust the drive to give between 100 and 110 mm travel at the backdrive coupling bar.

9. Check the opening behind the open switch. This must provide a flangeway for the wheel at the narrowest point of 50 - 65 mm. The narrowest point is usually at the end of the machining on the head of the switch.

   The opening at the backdrive itself will vary according to the turnout radius and the position of the backdrive. Where two backdrives are used ensure that the open switch has an even curve and is not being kinked by one of the backdrives.

   The opening at the backdrive should be whatever dimension provides a flangeway clearance of 50 to 65mm behind the open switch. Flangeway clearance is measured at the point where the open switch is closest to the stockrail, usually at the end of the machining on the switch.

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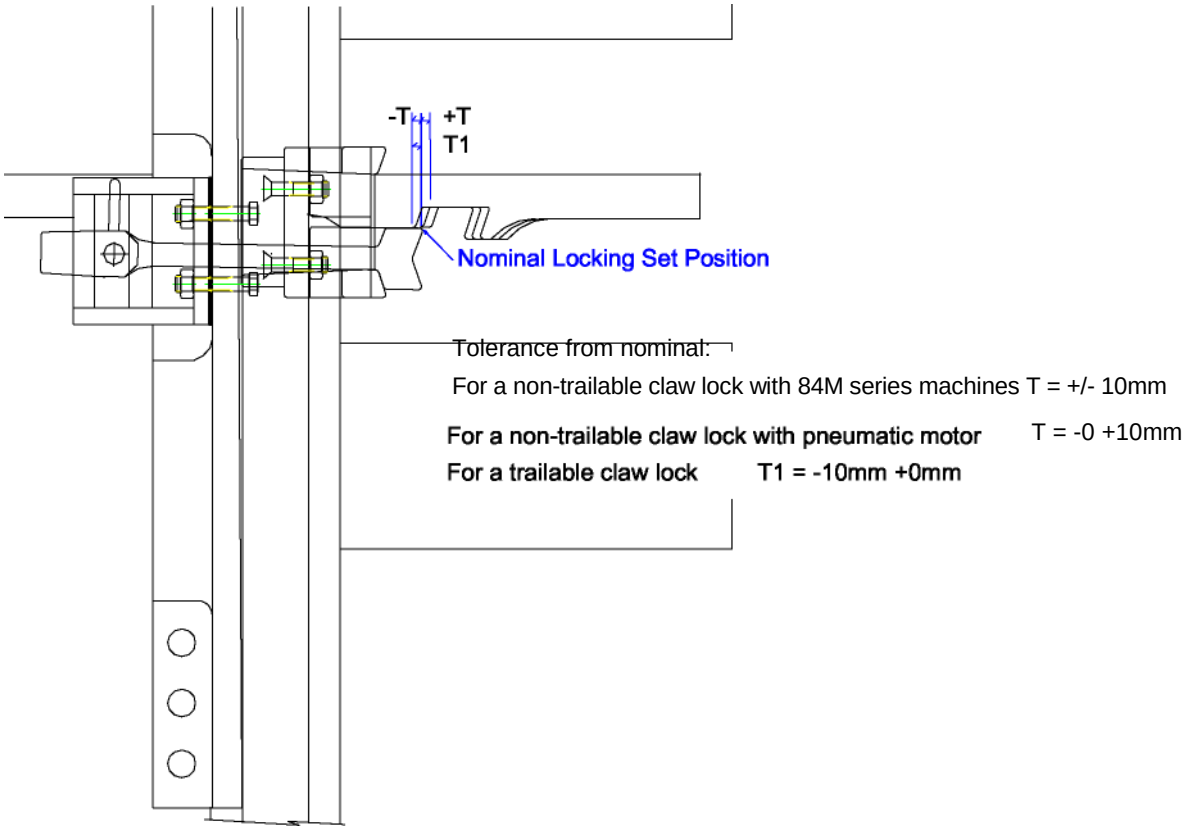

Figure 2.1 - Front drive Locking Set Dimension

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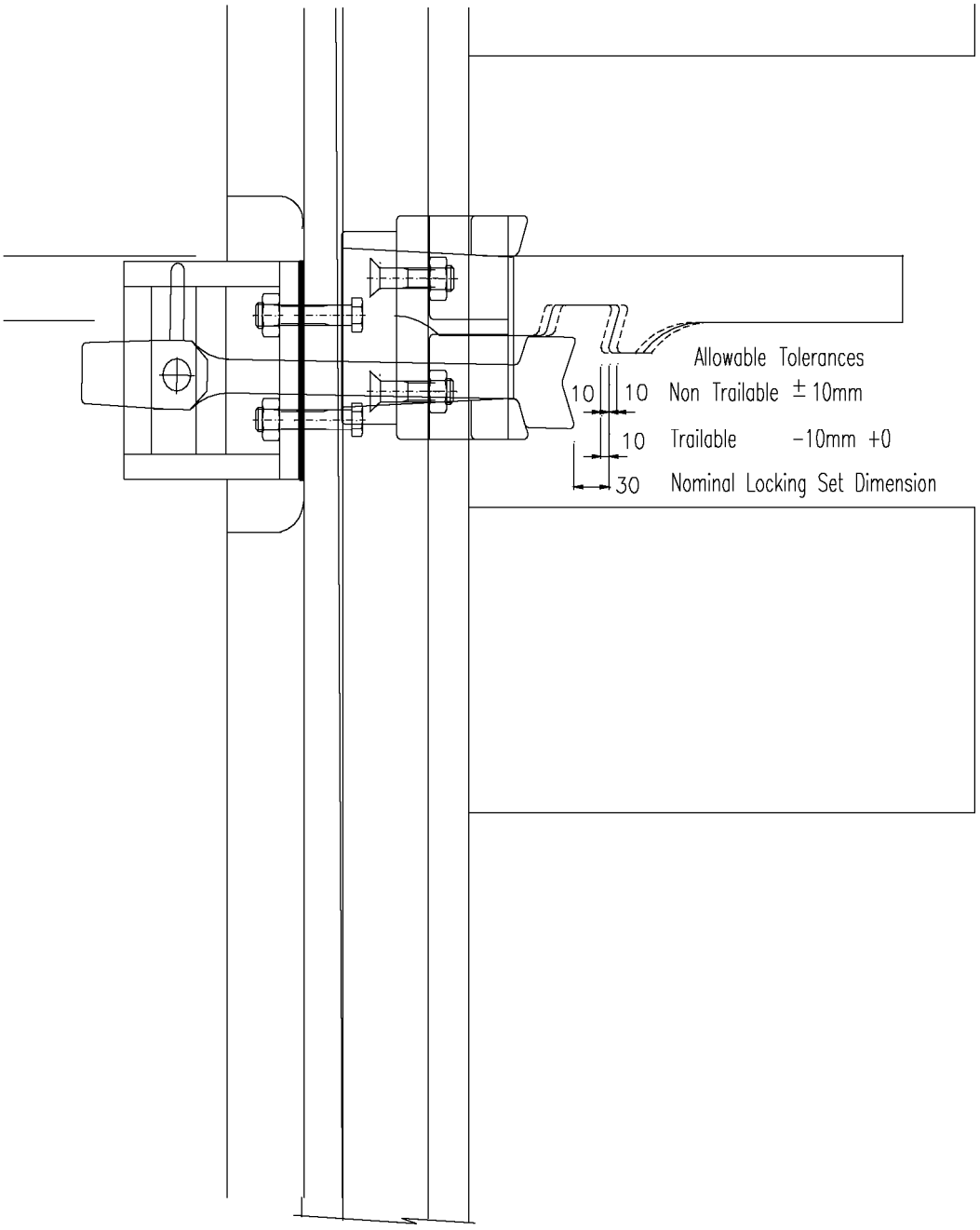

Figure 2.2 - Back drive Locking Set Dimension

10. Adjust the coupling bar length at the serrations to achieve the desired flangeway clearance.

11. Throw the points over.

12. The locking set dimension for the other claw lock and the clearance behind the open switch should be within the required tolerances. If these dimensions are not within tolerances refer to Section 2.3 ‘Troubleshooting’.

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13. Check that all bolts and nuts are tight, that the securing caps and screws **(9)** and **(10)** are fitted over the claw pins and that split pins are fitted and spread.

Ensure that split pins on detector rod connections cannot contact the stockrail

14. Where pneumatic motors are fitted, using a bar to move the points manually, check that the open switch detection breaks at least 25mm before the coupling bar releases the locked claw.

15. Lubricate the claw pins, claws, operating bars and lock faces then fit the lock box covers.

16. Carry out the Locking and detection tests specified in Chapter 2 of this manual

Note

Under power M84 mechanisms may drive a few mm more or less in each direction than under hand operation. This is due to the motor control contacts being factory set to prevent shock loading at the end of each stroke.

Other than a slight change in switch opening, this has no effect on the operation or security of the turnout or claw lock and no effect on the detection adjustment.

1 There is no spring on points fitted with claw locks. With the correctly adjusted claw to lock face clearance, there will be a small gap of between 0 and 1 mm between switch and stockrail with the claw locked and drive bar travel completed. This is the normal condition for claw lock operating mechanisms.

Application of spring to the points will greatly increase the risk of tight lock failures or open switch over-travel which will affect detection. No attempt is to be made to apply spring to points fitted with these mechanisms.

2 When attempting to manually bar over points fitted with claw locks, the OPEN switch must be barred over first to allow the claw of the closed switch to release from behind the claw lock and move into the recess in the operating bar.

Attempting to bar the closed switch will not move the points and if excessive force is used, may result in damage to the switch and/or the claw lock mechanism.

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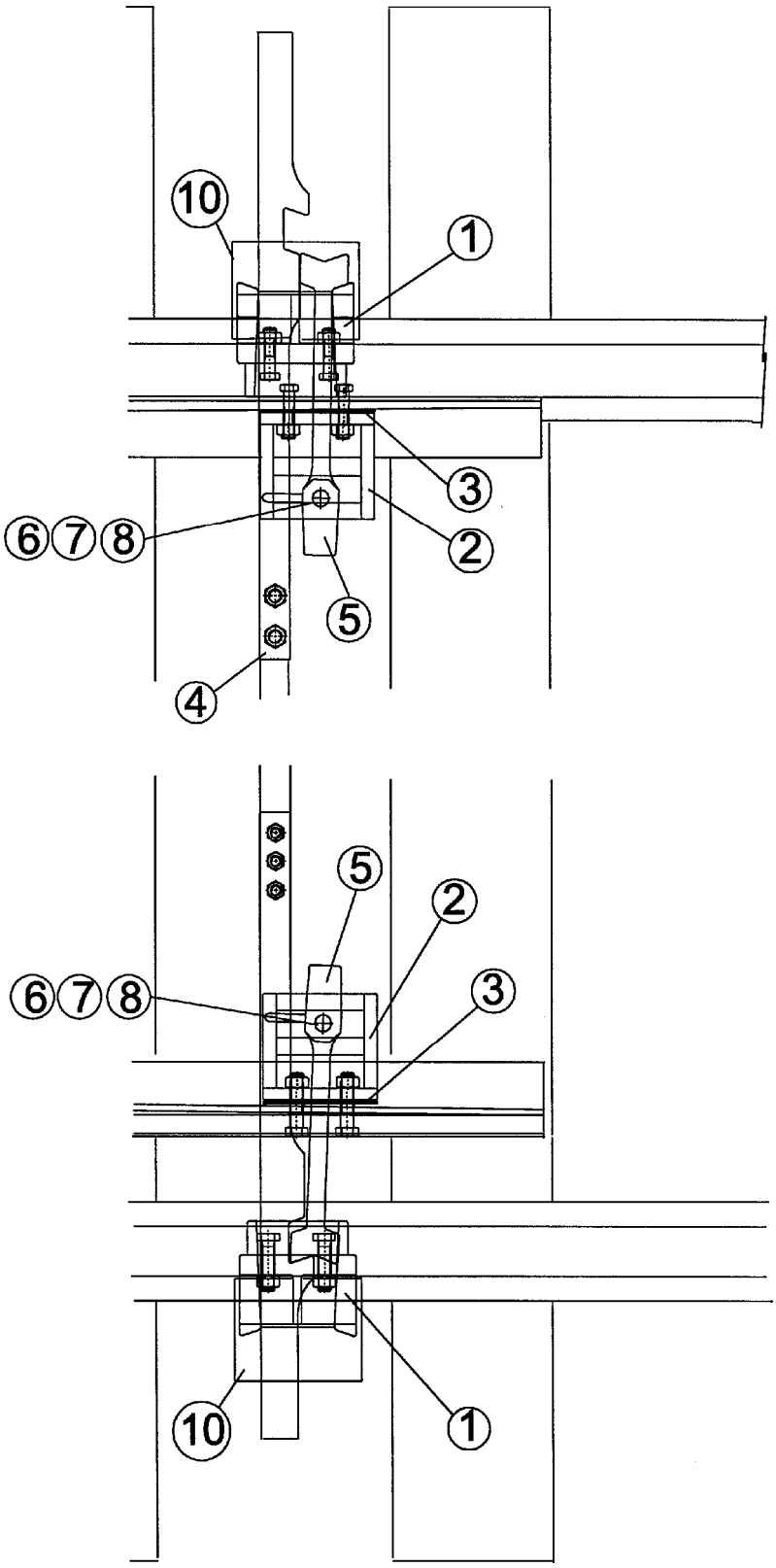

Figure 1.1 - Claw Lock assembly 60 kg conventional turnout

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3 Installation – 60kg or 53 kg conventional turnout – (Switch machined from 60kg or 53 kg rail)

3.1 Clipping and locking non-commissioned turnouts for traffic operation

Where a 60 or 53 kg turnout is to be installed into the track before the claw mechanism and/or the operating mechanism are installed, it will be necessary to secure both the normally closed and the normally open switch.

This is done by using the appropriate point clip(s) for the 60 or 53 kg switch section and a tie bar between the open and closed switch. The tie bar (gauge rod) can be secured through the holes provided for the back stretcher (back rod) and, where required, the holes provided for back drive stretcher.

One point clip and one tie rod will normally be sufficient for 60 kg 6100 switches and 53 kg 10600 switches but a second clip and tie should be used on 60 kg 9150 switches.

After the claw lock and operating mechanisms have been fitted but not commissioned it will still be necessary to retain the one tie bar near the tip of the switch and the number of point clips specified above. However the back tie bar on 9150 switches is no longer required.

3.2 Claw lock installation

To install the claw lock mechanism to a conventional turnout, carry out the following steps, in the order presented, using figures 1.1 and 1.2 for reference:-

17. Disconnect any gauge rods (spreader bars) which may be fitted to the points. The switches must be free to move independently of one another.

18. Check the fit of the claw lock **(1)** to the stockrail. The claw lock must fit neatly into the web of the stockrail and the under rail section must be parallel with the foot of the rail. Ensure that the rail stops on the under rail part of the claw lock do not project above the foot of the stockrail and cannot foul the switch. Grind the stops down if necessary. Refer to figure 1.3.

    Note that the claw lock must fit into the stock rail by hand. *It must not be forced in by hammering or by pulling in with the bolts.*

    Forcing into the stock rail is likely to lead to cracking of the claw lock casting

19. Fit the claw lock to one stockrail only and tighten the bolts sufficiently to hold it in place. Do not fully tighten.

    Note that these bolts must have had the head thickness reduced to 9mm maximum to prevent interference with the claw bracket bolts on the switch.

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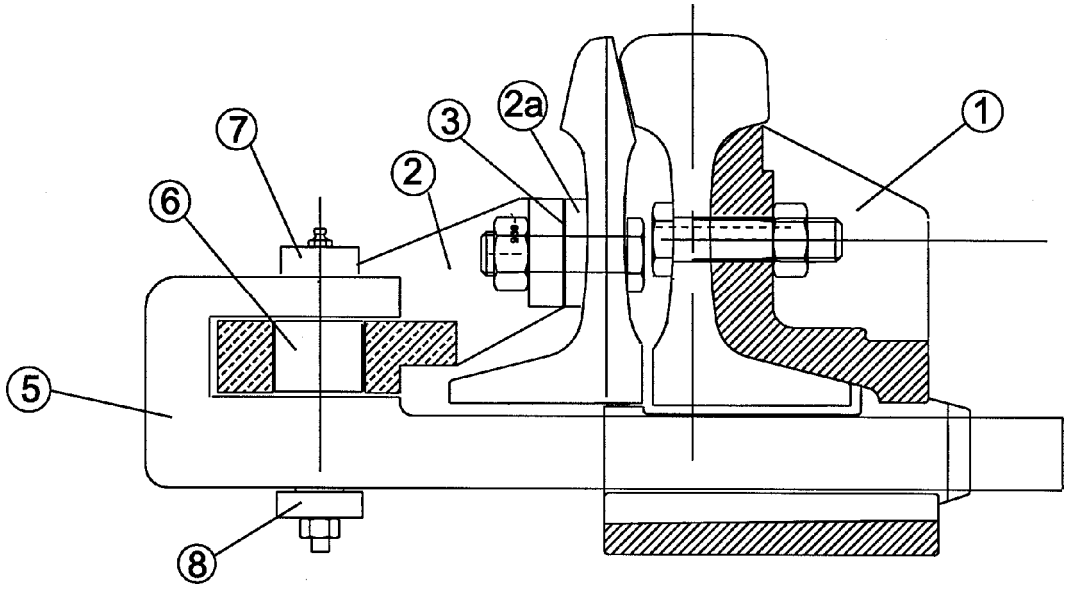

Figure 1.2 – Claw lock assembly 60 kg conventional turnout

20. Fit the claw bracket **(2)** and adapter **(2a)** to the switch on the same side. Tighten the bolts sufficiently to hold the bracket in place. Do not fit any shims **(3)** behind the bracket at this stage. Note that the front drive claw bracket **(2)** is longer than the back drive claw bracket (10). The bolts securing the front claw brackets must have the head thickness reduced to 9mm maximum.

21. Offer the operating bar **(4)** through the claw lock from the "four foot" taking care to ensure that the notches in the operating bar are towards the tip of the switches. Leave the notch in the operating bar exposed on the four foot side of the stockrail.

If the points are fitted with a backdrive, the front operating bar may be differentiated from the back operating bar by measuring the length of the centre section of the bar. For the front bar, the length is 740mm and for the back bar, 790mm. Refer to figure 1.4

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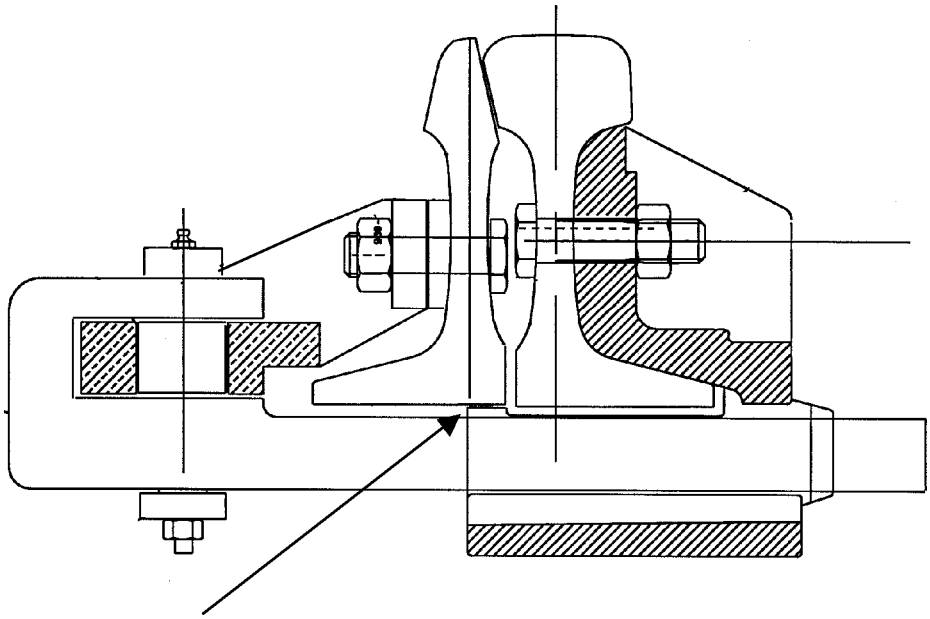

Clock lock rail stops – ensure that switch cannot foul on these stops. Stops must be at least 1 mm below the base of the stock rail.

Figure 1.3 - Claw Lock rail stops

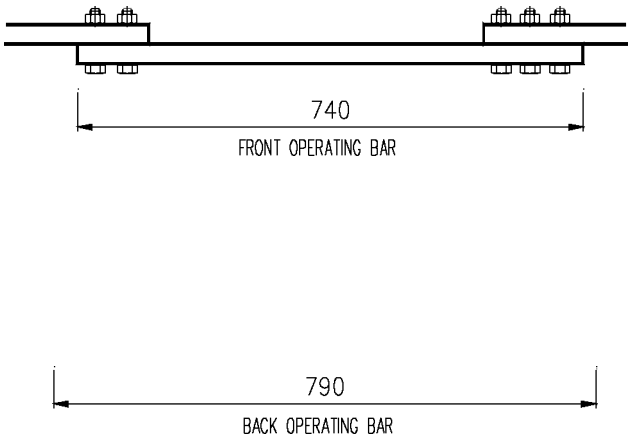

Figure 1.4 - Comparative operating bar lengths

22. Fit the claw **(5)** into the notch in the operating bar and move both until the claw fits over the claw bracket.

23. Fit the sliding bush **(6)** into the slot in the claw bracket. Fit the claw pin **(7)** and the locking claw guide (8).

24. Close this switch and hold closed with a point clip. Take care not to roll the switch by over-tightening the point clip.

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25. Fit the claw bracket and adapter, sliding bush, claw, claw pin and claw guide to the opposite switch.

26. Position this switch so that the claw fits into the notch in the operating bar. Do not attempt to set switch opening at this stage

27. Fit the claw lock by sliding it over the operating bar and claw until it fits correctly into the stockrail. Tighten bolts only sufficiently to hold in place.

28. Check the operating bar alignment. This should be parallel to the sleepers. Check also the operating bar and claw lock position. The face of the closed and locked claw should be parallel to the locking face on the claw lock. Adjust the claw lock along the stockrail as necessary (point clip will need to be removed).

29. Tighten both lock boxes fully.

30. Fit the switch anti-roll bar, Figure 1.9, or anti-roll bracket if a catch point, Figure 1.8.
    If the points are not to be commissioned immediately [during current possession], the anti-roll bar or bracket cannot be fitted since its position will be occupied by the tie bar).

31. Where a backdrive is to be fitted, assemble the back drive claw lock by repeating steps 1 to 13.

32. The back drive cranks, rods, guides and links may be installed to the layout drawing(s) at this stage but must not be connected at the front or back operating bars.

33. Close the switch closest to the operating mechanism and hold closed with ‘G’ clamps (or point clips if a ‘G’ clamps are not available) at both front and back drive positions. Take care not to roll the switch by over tightening the point clips.

34. Check the clearance between the claw and the locking face on the claw lock (figure 3.5). This should be 0mm to 0.5mm with the switch held against the stockrail but the claw must not be tight or binding against the locking face. Add shims **(3)** between the claw bracket and the switch to achieve the required clearance.

35. Repeat step 18 for the back drive on the same switch but in this case there should be 1-2mm clearance between the claw and the locking face with the switch held against the stockrail.

36. Repeat steps 17 and 18 for the opposite switch. Do not attempt to adjust switch opening or drive bar travel at this stage.

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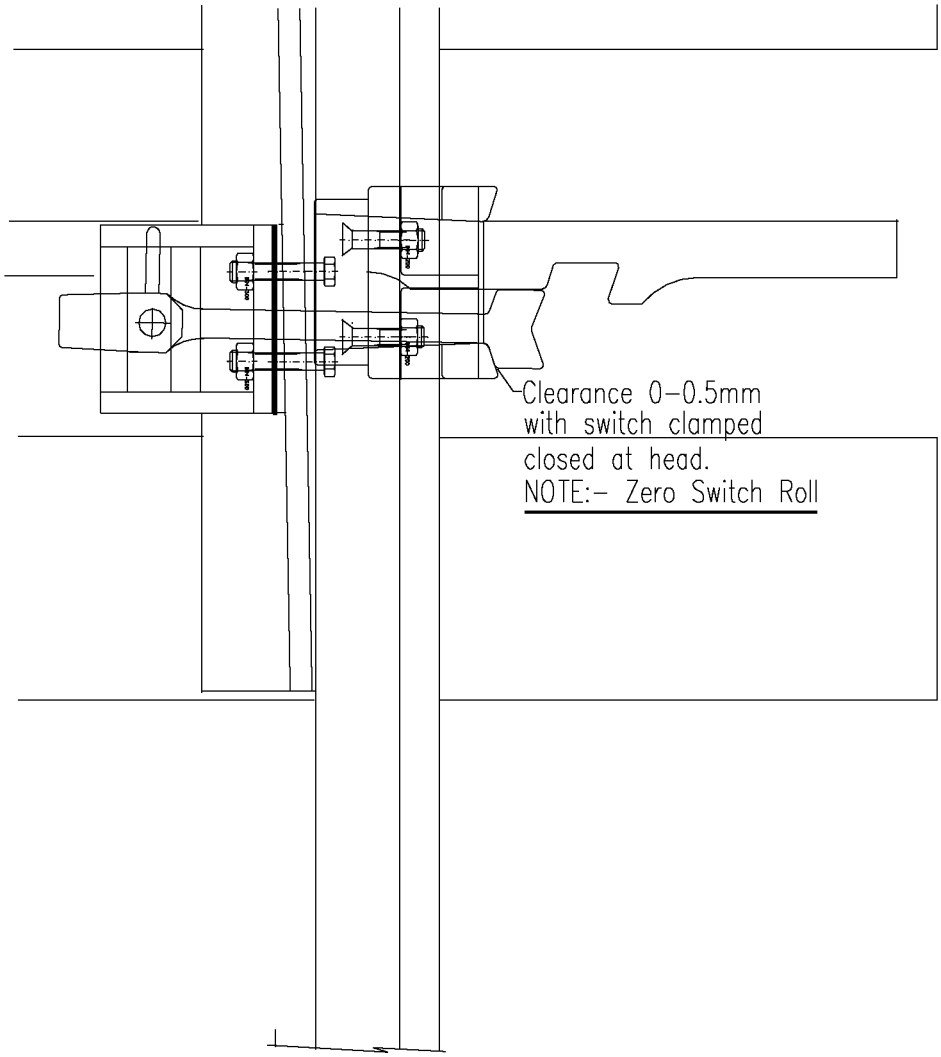

Figure 1.5 - Clearance between claw and lockface

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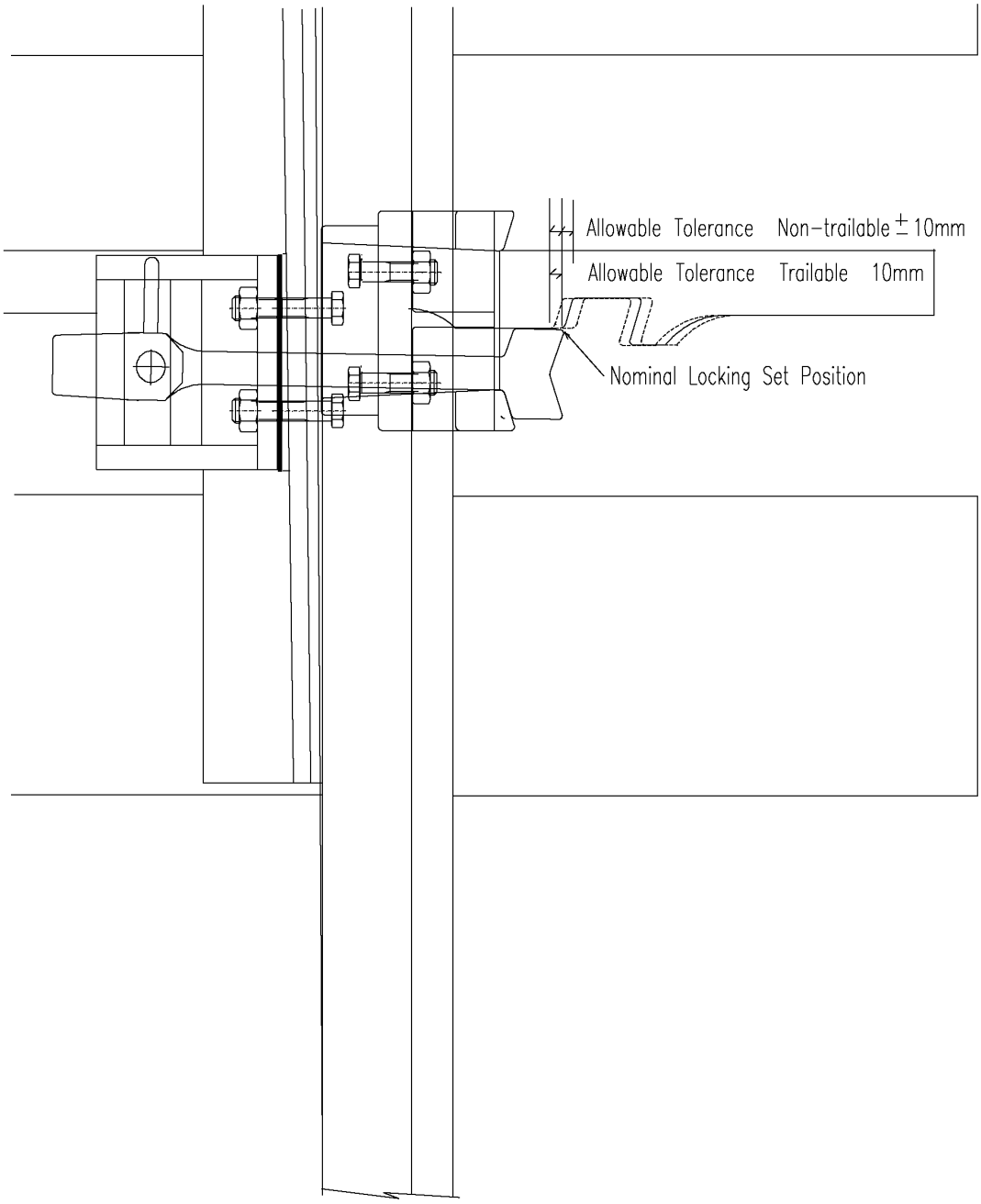

Figure 2.2 - Front Drive locking set dimension

4 Setting to Work

In the following steps the words “throw the points” will be used to mean:

For an electric mechanism: operate by power or hand crank or hand throw lever.

For a pneumatic motor: operate with air.

For a hydraulic motor: operate under power or hand pump.

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1. Connect the driving machine, electric or pneumatic, to the front operating bar as described in clause 1.3 .

2. Close the switch closest to the machine.

3. Check the position of the drive bar relative to the claw - the “locking set dimension”. This should be as shown in Figure 2.1.

4. Check the opening of the opposite switch. This should be 128 mm (124 - 132mm). If not slacken the bolts at the serrations in the operating bar and adjust the bar length to give the correct opening. Re-tighten the bolts.

   NOTE: The switch opening must not exceed 130mm where pneumatic motors without motor detection switches are used.

5. Operate the points over.

6. Check the “locking set dimension” for the opposite switch. This should be within the range shown in Figure 2.1. If this dimension is not correct to within the tolerances shown, refer to Section 3 ‘Troubleshooting’.

   Where a backdrive is fitted

7. Do not move the switches

8. Slacken off the bolts and nuts at the serrations and set the back operating bar to give the “locking set dimension” shown for the backdrive in Figure 2.2

9. Connect the back drive to the front and back operating bars and adjust the drive to give between 100 and 110 mm travel at the backdrive connecting bar.

10. Check the opening behind the open switch. This must provide a flangeway for the wheel at the narrowest point of 50 - 65 mm. The narrowest point is usually at the end of the machining on the head of the switch.

    The opening at the backdrive itself will vary according to the turnout radius and the position of the backdrive.

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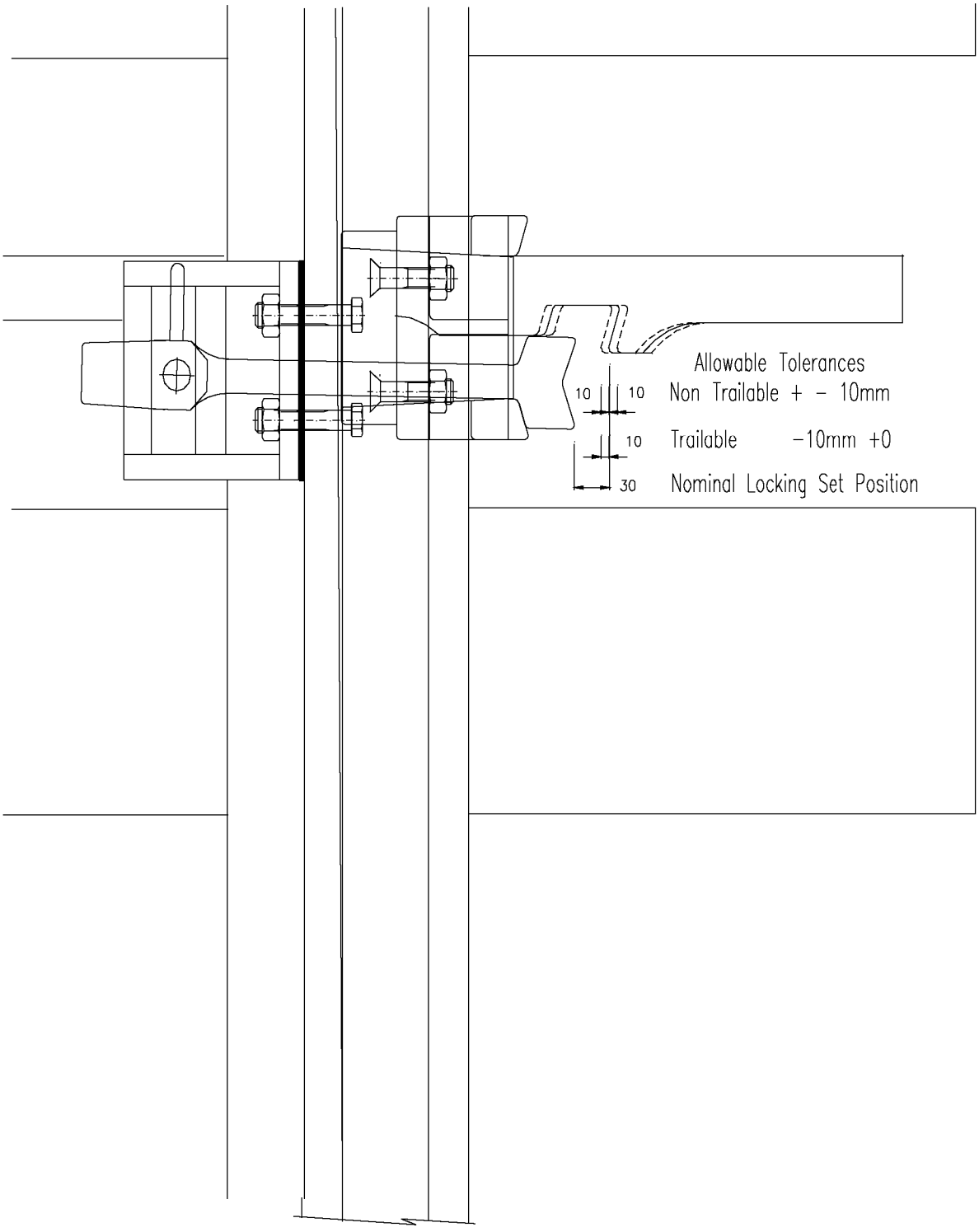

Figure 2.3 - Locking Set Dimension Back Drive

11. Adjust the operating bar length at the serrations to achieve the desired flangeway clearance.

12. Throw the points over.

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13. The locking set dimension for the other claw lock and the clearance behind the open switch should be within the required tolerances. If these dimensions are not within tolerances refer to Section 3.3 ‘Troubleshooting’.

14. Check that all bolts and nuts are tight and fit and spread the split pins to the claw lock pins and crank pins

15. Where pneumatic motors are fitted, using a bar to move the points manually, check that the open switch detection breaks at least 25mm before the coupling bar releases the locked claw.

16. Lubricate the claw pins, claws, operating bars and lock faces then fit the lock box covers .

17. Carry out the locking and detection tests specified in Chapter 2 of this manual

Note

Under power M84 mechanisms may drive a few mm more or less in each direction than under hand operation. This is due to the motor control contacts being factory set to prevent shock loading at the end of each stroke.

Other than slightly reducing the switch opening, this has no effect on the operation or security of the turnout or claw lock and no effect on the detection adjustment.

1 There will be no spring on points fitted with claw locks. With the correctly adjusted claw to lock face clearance, there will be a small gap of between 0 mm and 1 mm between switch and stockrail with the claw locked and drive bar travel completed. This is the normal condition for claw lock operating mechanisms.

Application of spring to the points will greatly increase the risk of tight lock failures or open switch over-travel which will affect detection and no attempt is to be made to apply spring to points fitted with these mechanisms.

2 When attempting to manually bar over points fitted with claw locks, the OPEN switch must be barred over first to allow the claw of the closed switch to release from behind the claw lock and move into the recess in the operating bar. Attempting to bar the closed switch will not move the points and if excessive force is used, may result in damage to the switch and/or the claw lock mechanism.

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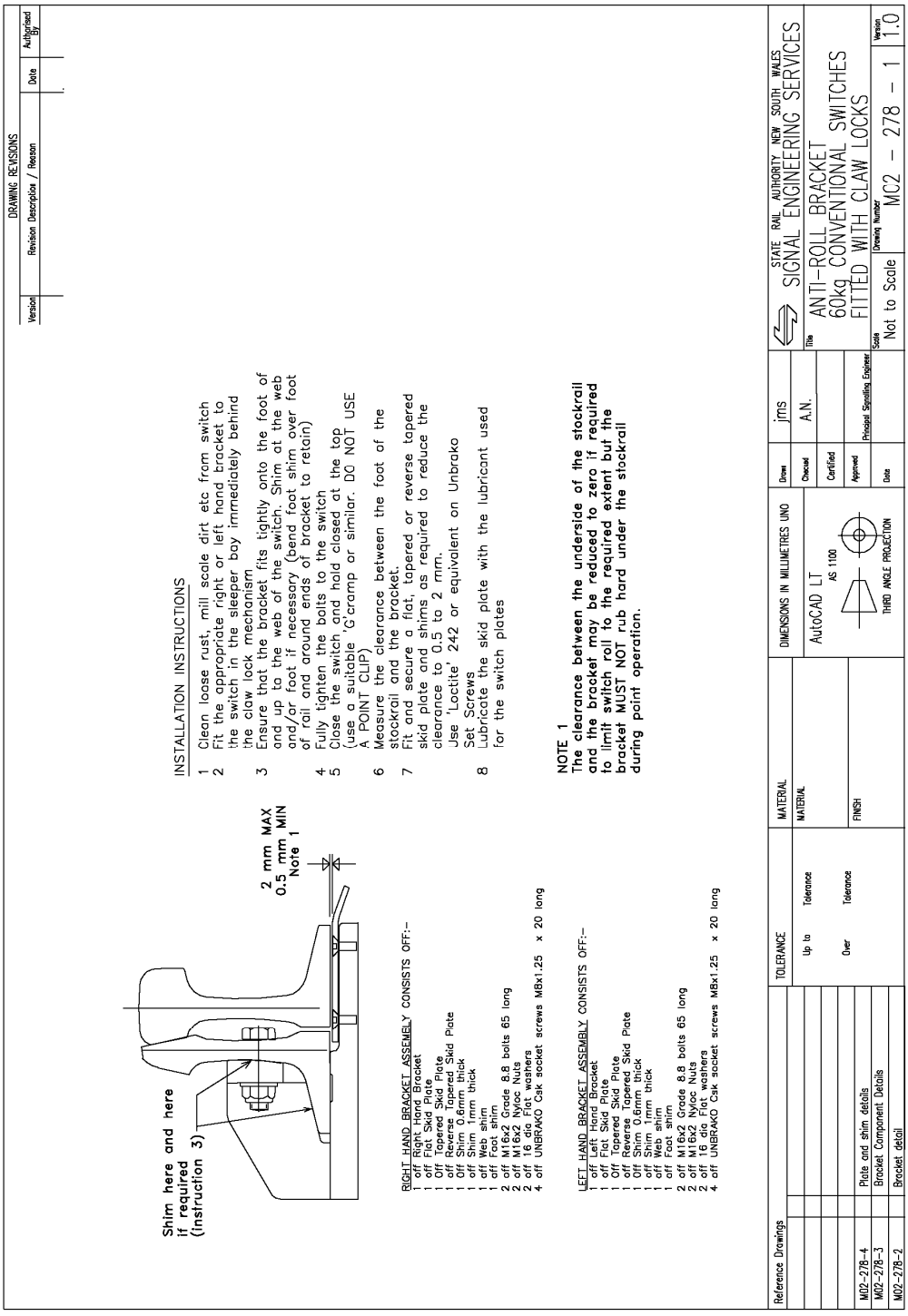

Figure 3.8 - Anti-roll Bracket

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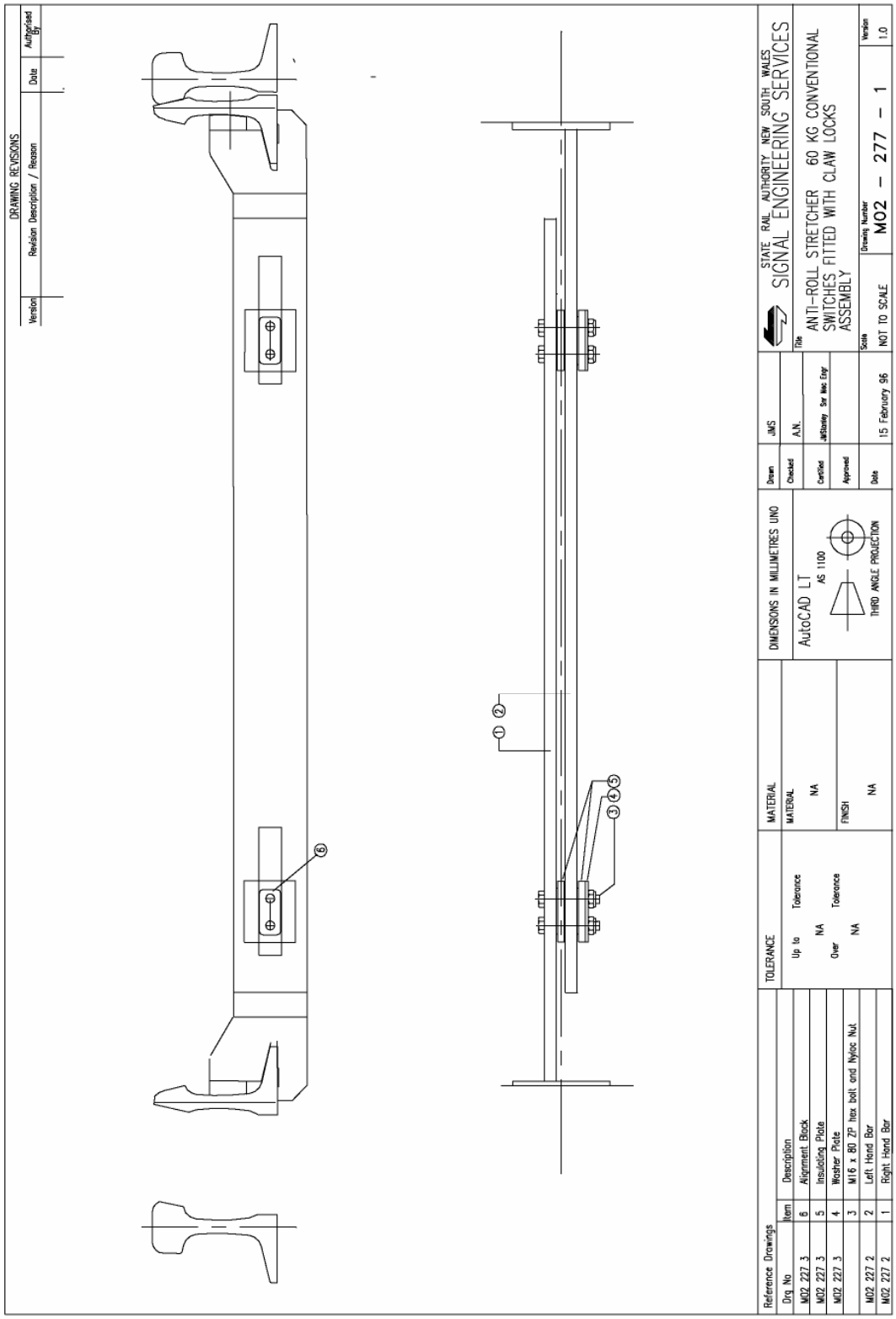

Figure 3.8 - Anti-roll Stretcher Bar

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5 Trouble shooting

On ***Non-trailable*** claw locks it is not important for locking set dimension and switch openings to be equal on both sides of the points. As long as the dimensions on one side are within the required tolerances, the claw lock mechanism and points will operate reliably and safely.

On ***Trailable*** claw locks it is more important to achieve close to balance, and it is more important to ensure that the locking set dimensions, both at front and back drives are not greater than the nominated dimensions since this can cause excessive loading on the mechanism and switch when trailing is taking place.

Non trailable claw locks are those fitted with:

- Westinghouse 84 M machines
- Westinghouse D84M machines
- Latched Air motors

Trailable claw locks are those fitted with

- Westinghouse T84M machines
- Westinghouse TD94M machines
- Non latched Air motors with specialised “air off” valving. Where it is

necessary to improve the side to side balance proceed as follows:-For the front

drive:-

18. Measure the difference between each side. (Generally the difference in locking set dimension side to side will be approximately equal (±2mm) to the difference in switch opening side to side except where the claw bracket on one side has considerably more shims behind it than the claw bracket on the other side).

19. Close the switch closest to the operating mechanism.

20. Using, the adjusting nuts on the machine throw bar or piston rod, adjust the locking set dimension by half of the amount measured in (1) above.

21. Measure the switch opening of the open switch. If within the range 122 to 132 mm do not adjust. If outside this range, adjust using the serrations in the connecting bar.

22. Throw the points and check the locking set dimension and switch opening. These should now be within the ±10mm tolerance (for non-trailable installations) or -10+0 (for trailable installations).

For the backdrive:-

23. Measure the difference side to side.

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24. Adjust the turnbuckle on the backdrive rod by half this measurement.

25. Operate the points and check that the flangeways behind the switches are not less than 50mm.

26. If the flangeway behind the switch closest to the backdrive is less than 50mm it will be necessary to adjust the turnbuckle on the back drive rod to achieve this figure, then shorten the backdrive coupling bar by an equal amount to maintain the flangeway on the opposite switch

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