नाम
Name : _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _

अनुक्रमांक
Roll No : _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _

प्राप्तांक
Marks Awarded :

पाठ्यक्रम
Course : _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _

दिनांक
Date : _ _ _ _ _ _ _ _ _ _ _ _ _ _ _ _

अनुदेशक के आद्यक्षर
Instructor Initial :

INSTALLATION AND ADJUSTMENT AND BROKEN WIRE TEST OF D.W. OPERATED ECONOMICAL FACING POINT.

In a D.W. Economical point layout, the two wires from the lever in the cabin are connected to the rope drum of an economical point-mechanism. The point and lock connection have to be disconnected, and the mechanism drum alone should first be checked to see whether its adjustment is correct or not.

To check the mechanism operate the lever from 'N' to 'R' and vice versa and see whether the 'R' and 'N' stops on the mechanism rope drum are butting correctly against the stop fixed on the underside of the bracket in 'R' and 'N' positions of the lever. If this is so, it is an indication that the mechanism drum is in correct adjustment. If both 'N' to 'R' stops are not butting against the fixed stop it is an indication that there is loss of stroke in the transmission. Checking up the transmission and removing friction, etc should decrease this loss of stroke. As a last means of increasing the stroke an oversized lever drum may be used. If the 'N' stop is butting with force, and the 'R' stop is falling short of the fixed stop by a certain amount, the wire adjusting screws in the pull and return wires should be tightened and slackened respectively, by an equal amount till the reverse stop butts against the fixed stop. If the 'R' stop butts with force and the 'N' stop falls short of the fixed stop, then the return and the pull wire should be tightened and slackened respectively, by an equal amount, till the 'N' stop butts against the fixed stop. After each adjustment of the wire adjusting screws, the lever should be operated and the position of 'N' & 'R' stops should be checked up.

After the drum has been adjusted, the stroke required for throwing the switches has to be adjusted at that adjustable arm of the escapement. It should be noted that this stroke is equal to point throw +5 mm. (¼") extra for spring, so that the switches house against their stock rails with some force. To adjust the stroke the positions of the hole in the adjustable arm are noted in 'N' and 'R' positions of the lever with reference to any fixed point (the bracket can be conveniently used as such fixed point). The length of the adjustable arm is varied till the difference between its two positions is equal to the stroke required. The adjustable arm is then tightened in this position.

The switches are kept in mid-position by means of a crow bar. That is, the gap between each switch and stock rail should be equal. The lever is operated till the rack has moved a distance equal to 40mm. + 11mm. + ½(107)mm. = 105mm. 1 5/8 + 13/32 + ½ (4.9/32) = 4 11/64, which for

convenience is rounded off to 105mm. (4 3/16). The required length of throw rod is then connected between the adjustable arm of the escapement crank and the lug on the leading Williams flexible stretcher. The lever is operated from 'N' to 'R' and 'R' to 'N' and is checked to see whether the switch rails house, against their stock rails correctly. The spring on the point is then tested by means of a tommy bar.

The tommy bar is inserted between the closed switch and stock rail and an effort is made to lever out the switch away from its stock rail. The spring is considered adequate if the switch springs back and houses against its stock rail on removal of tommy bar pressure. The spring in 'N' and 'R' position, it should first be balanced by adjusting the point screw provided in the throw rod. If the spring is found to be less or more in both positions, then the length of the adjustable arm should be suitably increased or decreased respectively and the spring tested again by means of the tommy bar.

The lock bar is then next to be adjusted. First, the adjustable crank sleeve is adjusted to give the required stroke to the lock bar. This is done as follows –

a) Measure the total stroke of the rack.
b) Connect the mechanism rack to the rod.
c) Operate the lever from 'N' to 'R' and note the stroke reaching the end of the mechanism rod (i.e., the end which to be connected to the 300 mm. (300mm. (12")) arm of the adjustable crank) – say this stroke is 'X'.
d) If 'Y' is the length of the adjustable arm of adjustable crank, then y=12x8/x. Keep the lock bar in its mid-position with the help of the tommy bar.

The mid-position is attained when all the clips are vertical. Keep the adjustable arm of the adjustable crank parallel to track. Operate the lever till the rack has moved a distance of 100mm. (4"). Connect up the mechanism rod to the 300mm. (12") arm of Adjustable crank and the lock bar throw rod from the adjusting sleeve to the lock bar crank provided inside the track. Operate the lever in the cabin and ensure that the lock bar rests on the stops in 'N' and 'R' positions. If it rests in one position and not in the other, adjust by means, of the point adjusting screw provided in the lock bar throw rod. If it does not rest on stops in both positions, increased the stroke at the adjustable crank. After the lock bar has been connected and rested, once again the springs and the points should be tested. This is necessary, because the introduction of an additional load on the lever, by virtue of lock bar being connected, may have caused the spring on the points to be slightly altered. The spring should be adjusted if necessary.

The facing point lock plunger is connected as follows:

a) Keep the points in 'N' or 'R' position and stand facing against the points.
b) If in this position of the points (a) the left hand switch is closed, then push the plunger IN (b) the right hand switches is closed then pull the plunger OUT. The plunger should be pushed in or pulled out of the split lock stretcher notches, so that the lock dog not only locks both stretchers, but also protrudes 3:25 mm. (1/8") beyond. This is called "LEFT IN RIGHT OUT" thumb rule.
c) Connect up the required length of the plunger-driving rod from the plunger to the "Radial guide" or rocker shaft, whichever is provided.

Operate the lever and check up whether the lock dogs correctly lock the switches in both positions. It should be noted that the pitch of notches in split lock stretchers in this case, is equal to 'Point throw + 12mm (½"). The extra 12 mm (½") is due to lock dogs being staggered by 12mm (½") away from each other. Also the split lock stretchers are placed in the throat of the FPL casting in such a manner that always the closed switch is locked first.

If during the obstruction, test it is found that the lever does not trip for even 5mm. 3/16" test, then the transmission should be checked with a view to minimize loss of stroke. If the lever does not trip despite this, then the spring on the points should be slightly increased and the lever tested, again, if it does not trip even now then the clutch spring tension is decreased to the lowest possible value (156 lbs. or 72 Kgs.). Lastly, if all these efforts to trip the lever fails, then an over sized drum may be used irrespective of the length of the transmission.

For the broken wire test, the position of points includes:

a) What position the switches occupy after the break?
b) What is the position of lock bar below rail level?
c) How much the plunger has moved and with what result?
d) The amount by which the mechanism moves in terms of the measurements as taken on the wire nearest to the mechanism at the lever it should be noted whether due to the break in transmission, the lever has tripped or not.

The broken wire lock springs has to be periodically tested to ensure that it does not seeze due to dirt, rust, etc. Lifting the compensator weights, thereby creating simultaneous slackness in the pull and return wires, can give this test. With weights lifted, the broken wire lock spring will collapse completely indicating that it is in good condition. If it does not collapse, it means it is defective.

1. (a) How will you check whether the mechanism drum is in correct adjustment or not?

(b) What is the procedure for adjusting the mechanism drum if it is not in correct adjustment?

2. (a) Measure the opening of the switch:

When the point is in normal:
When the point is in reverse:

(b) What is the stroke required at the adjustable arm of the escapement crank ?

3. How will you connect the points to the point mechanism? Write the procedure?

4. How is the spring of the points tested? Is the spring on both sides equal and sufficient, if not how is it rectified?

5. Check the following:

   a) Length of the lock bar

   b) Number of lock bar clips used.

   c) Number of lock bar stops used.

   d) Stroke of the lock bar.

   e) Position of the lock bar (in both the extreme positions) with respect to the top of the rail.

6. What is the procedure for connecting the lock bar to the point mechanism?

7. What are the precautions to be observed.

a)For cutting the notches on the split lock stretcher bars;

b)Placing the split lock stretcher bars in the throat of F.P.L.

8. How will you connect the lock plunger with the Radial Guide/Rocker Shaft?

9. Place an obstruction test gauge of 3.25 mm. (1/8”) and 5mm. (3/16”) (in turn) at 150 mm. (6”) from the toe of the switch rail. Operate the lever. Observe and indicate what happened at:

a) Facing Point Lock.

b) At the Detector (by pulling the transmission wire)

c) At the lever.

10. What are the adjustments to be done if the lever does not trip with the 5 mm obstruction in the points?

11. With lever normal disconnect the return wire:

a) At the lead out disconnection link and indicate

i) Position of points.

ii) Position of Point Mechanism

iii) Lift of Lock Bar

iv) Movement of FPL Plunger

v) Movement of Rack

vi) Whether the lever tripped or not.

b) At the wire adjusting screw near the point mechanism and indicate

i) Position of points.

ii) Position of Point Mechanism

iii) Lift of Lock Bar

iv) Movement of FPL Plunger

v) Movement of Rack

vi) Whether the lever tripped or not.

12. Repeat the above test with lever reversed by disconnecting the pull wires and record your observations:

13) Lift the compensator weights and observe whether the broken wire lock spring collapse or not.

FORM NO S&T/DN
_______________ RAILWAY
Signal & Telecommunication Department
Acknowledgement of Disconn/Reconn Notice

No
To
The Station Master or Cabinman on duty at
.... Station/Cabin
For disconnecting the following gear
* ....
on .... at .... hrs.
MSM/ESM/TE/ESE(Sig)
Notice about disconnection received at
...... hrs.
on 20
SM/Cabinman
Disconnection allowed/not
allowed **at ...... hrs.
on 20
SM/Cabinman
Disconnection will be allowed at .... hrs.
on 20
SM/Cabinman
Reconnected at .... hrs. on 20
MSM/ESM/TE/ESE(Sig)
Notice about reconnecting received at .... hrs.
on 20
SM/Cabinman

FORM NO S&T/DN
_______________ RAILWAY
Signal & Telecommunication Department
Reconnection Notice

No
Notice for reconnecting Signalling Gear already
Disconnected
Division/District ....
To
The Station Master or Cabinman on duty at
.... Station/Cabin
Please note that the disconnected gear referred to
in Notice No. .... has since been
reconnected on .... at .... hrs.

Date Signature

Designation

FORM NO S&T/DN, Annexure 2
Para No. 11.41
FORM NO. S&T/DN
_______________ RAILWAY
Signal & Telecommunication Department
Disconnection Notice

No
Notice to Transportation Staff for disconnecting
Signalling Gear
Division/District ....
To
The Station Master or Cabinman on duty at
.... Station/Cabin
Please note that the following Gear will be
disconnected on .... at .... hrs.
*

Date Signature

Designation

* *Fill in details of Gear to be disconnected*, ** *Reasons for not allowing disconnection to be recorded*

Date; Signature of trainee