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

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

प्राप्तांक
Marks Awarded :

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

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

अनुदेशक के आद्यक्षर
Instructor Initial :

DISMANTLING & ASSEMBLING OF DIRECT LOCKING INTERLOCKING FRAME

(SA-530)

The direct locking interlocking frame standardised to Drg.SA 530 is so called because the actuation of the locking is directly dependent upon the operation of the lever itself.

The lever frame is erected on two supporting girders provided in the cabin basement. These girders are parallel to the track and have their ends embedded in the side walls of the cabin. The distance between these girders and their height from cabin floor are important so as to enable the lever frame to be correctly assembled.

On top of these girders, the standards are bolted. The number of standards depends upon the size of the lever frame. This lever frame is available in bays of *5* levers and 7 levers. The "Bay of levers" can hence be defined as the distance in terms of levers at which the standards are fixed.

The shaft upon which the levers are mounted rests in a groove provided on each standard. The shaft is secured in position by means of bearing caps and shaft end caps. For each standard, one bearing cap is provided, while the end caps are always two in number irrespective of the size of the lever frame. The shaft is available in the lengths suitable for 5 levers and 7 levers.

Each lever is not directly mounted on the shaft, but is connected to a lever shoe, which rests on the shafts. The lever shoe cover is bolted to the lever shoe from beneath the shaft. Lever shoes are of one type only and can be interchanged in between consecutive lever shoes, shaft collars are provided to maintain lever pitch (eg. distance between consecutive levers). Front and back tails can be connected to each lever shoes from the front and-rear respectively. Front tails are available as (1) point tails for roding connections (ii) Signals tails for wire connections.

Point tails give strokes of 3 different magnitudes, while signal tails give only two. The back tails is only of one type and meant for carrying a 25 Kg. weight, which assists in lever operation in case of long distance signal transmission.

Locking box brackets front and rear are respectively attached to the front and rear of the standards. These brackets bear the locking boxes. Locking boxes are available as 1 channel

and 4 channels for 5 levers and 7 levers. The maximum number of channels is obtainable is 4 + 4 = 8 channels.

T section quadrant supporting bars front and rear connect all the standards together at cabin level. The reason for these bear being of T section is to enable the quadrants to be supported on one limb of the (T) and the cabin flooring on the other limb.

Quadrants are available as:

i) L.H. Quadrant.
ii) R.H.Quadrant.
iii) Intermediate quadrant and the functions of each quadrant are:

a) To hold the lever in N&R positions.
b) To guide the lever during operation.
c) To maintain lever pitch.

The lever itself terminates at the top in a handle immediately below, which a smaller handle called the catch handle is connected. -The catch handle is connected to the catch handle rod, which terminates, in a catch box. When pressed and released, the catch handle is restored to 'N' position due to the weight of the catch box which falls into the quadrant notch.

The tappet (plunger) is connected to the lever through a notch cut in the former. As the tappet is connected at a distance from the lever fulcrum, the tappet stroke is much larger than the pitch of channel. Pitch of channel is the distance between consecutive channels. This gives rise to conflicting notches. To avoid conflicting notches, the notches in successive channels are cut of in different sizes, so that during lever operation, a larger size lock cannot enter into a smaller size notch.

Each channel has width sufficient to accommodate 6 Interlocking bars - 3 top and 3 bottom. Slack locking in case of this lever is defined as follows:

If a locked lever can be moved more than 12mm. (1/2") over the quadrant, it is said to have developed slack locking.

1. Study the lever frame and state:

   a) The size of lever frame _____ Lever

   b) Pitch of levers.

   c) The No. of standards used:

   d) Distance in terms of levers at which standards are fixed.

   e) Size of locking box front _____ channels.

   f) Size of locking box rear _____ Channels.

   g) The number of interlocking bars that can be accommodated in each channel.

   h) Size of supporting girder.

   i) The number of girders

   j) The distance at which they are fixed.

   k) The height at which the supporting girders are required to be fitted in a cabin (give the distance from cabin floor).

   l) Press the catch handle and see if it has any effect on the tappet.

   m) Release the catch and see if the catch box is restored to its original position. if so, what are the forces acting on it?

   n) Measure the pitch of locking box channel

   o) Operate one lever and see how much stroke is imparted to the locking plunger.

   p) Note the position of a notch cut at plunger in 'A channel, as the lever is operated. Does it pass through all the remaining channels

   q) Does this give rise to ‘conflicting notches’? How conflicting notches are avoided in this frame?

r) Types of front tail and strokes available.

i.

ii.

s) No. and purpose of back tail.

t) How the plunger is kept engaged on to the lever?

u) Types of quadrants:

i.

ii.

iii.

v) Function of quadrants:

i.

ii.

iii.

w) Types of locking boxes:

i. 4 channel _____ way & _____ way.

ii. 1 channel _____ way & _____ way.

x) How the shaft is kept in position and prevented from working out?

2. Dismantle the lever frame. State briefly how you actually carried out the job in short sentences:

a) All the parts were _____ serially, starting from _____ hand side.

b) Keeping lever no. _____ in _____ position the _____ was removed. This was repeated with all the other levers.

c) _____ materials were removed from all the locking boxes.

d) Then _____ boxes were dismantled.

e) LH _____ and lever no _____ was removed.

f) Then the first intermediate _____ was removed followed by lever No. _____ and so on. Thus all the lever and quadrants were dismantled.

g) All the shoes were removed from the shaft by separating the _____ cover.

h) The _____(s) _____ T bars (front & rear) were removed.

i) Then the shaft was removed by opening out the shaft (e) _____ caps and bearing (C). _____

j) Finally, the (s) _____ were removed from the supporting girders.

3. Having dismantled and separated the parts. Study the following and state:

a) Dia. Of shaft.

b) Section of tappet.

c) Section of interlocking bar.

d) Width of locking channel.

e) Length of lever from centre of lever shoe.

f) Distance of the hole giving 200 mm. (8") stroke from centre of lever shoe.

g) Mechanical advantage of lever for 200mm. (8") stroke.

h) Purpose of shaft.

i) The shape of quadrant supporting bar and the reason for using such a section.

4. State briefly the procedure of assembling the lever frame in short sentences.

a)

b)

c)

d)

e)

5. Indicate the following parts in the given sketch:

a) Dia. Of shaft.

b) Catch box.

c) Plunger

d) Locking box bracket.

e) Standard

f) Shoe and Shoe cover.

g) Lever

h) Locking Box

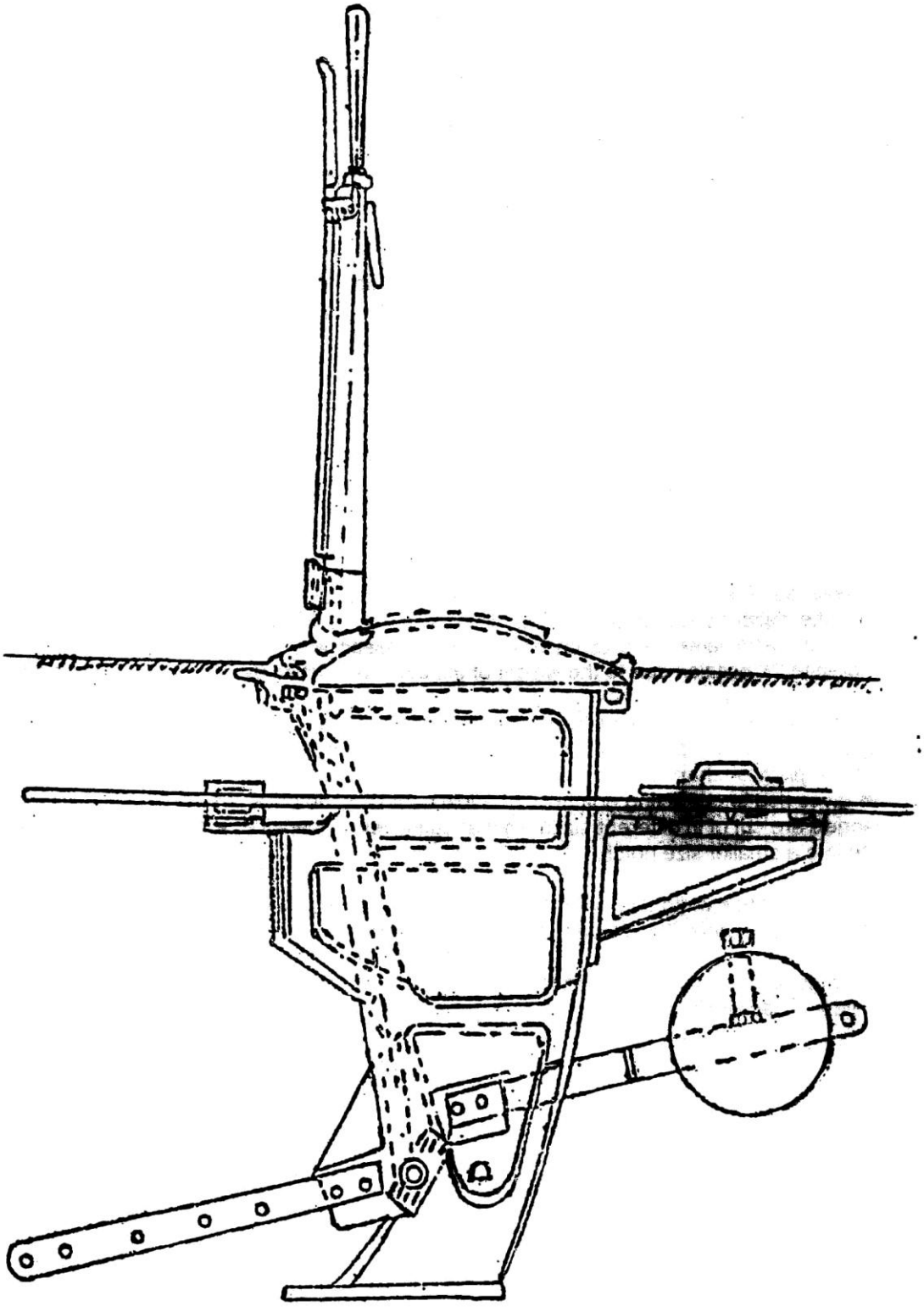
i) Lever tail

j) Catch Handle

6. (a) Try to operate lever no. _____ with lever no. _____ in reverse position and measure its movement over the quadrant _____ .

(b)Try to operate lever no. _____ with lever no. _____ in reverse position and measure over the quadrant _____ .

(c) In which case can the locking be called slack and why?



Date;

Signature of trainee