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

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

प्राप्तांक
Marks Awarded :

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

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

अनुदेशक के आद्यक्षर
Instructor Initial :

STUDY OF CIRCUIT CONTROLLER

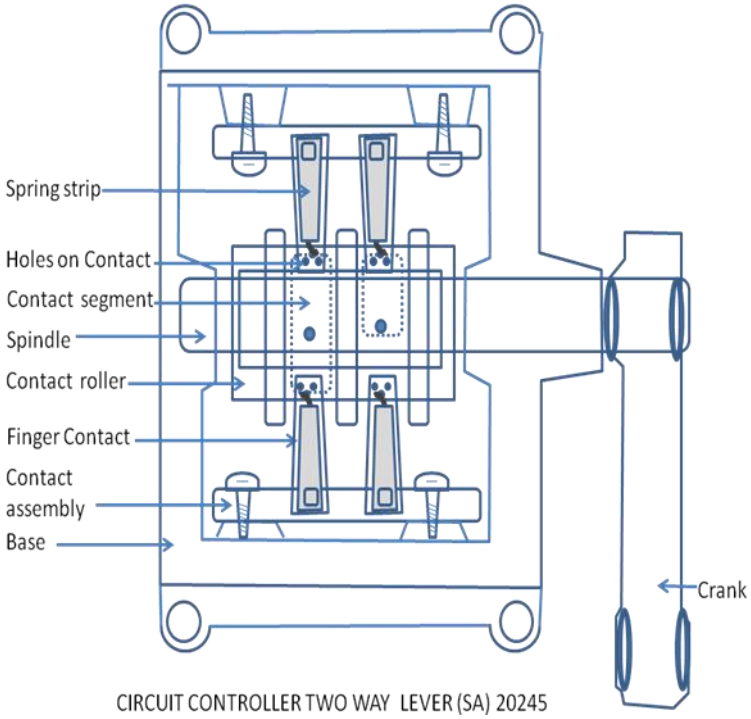
1.0 Description

- A circuit controller contains group of brass contacts, connected to lever (SW/DW) OR signal arm and contacts make OR break as lever moves normal reverse OR vice versa. These contacts are cut / adjusted as per need, as explained below.

1.1 A circuit controller (single wire SA20245) consist of

- Finger contacts
- Contact roller
- Contact assembly
- Spindle
- Contact segment
- Base
- Crank
- Cover and screw with sealing arrangement

A contact segment is a semicircular polished brass strip mounted / screwed on Contact roller (insulated drum). Contact roller is attached to a crank and crank is attached to lever tail by means of down road (SW) OR adjustable coupling (DW). Contact finger is polished brass strip supported by a spring arm strip and one end is terminated on insulated terminal strip and other end rests on contact segment. Two finger contacts and one segment make one circuit controller contact. When lever operates, contact roller & the contact segment also rotate making make OR break of contact as per contact segment length.



CIRCUIT CONTROLLER TWO WAY LEVER (SA) 20245

2.0 **USAGE**

- These contacts are used in various signalling circuits to prove the position of lever Or to incorporate various interlocking conditions in circuit (refer table given bellow).

2.1 APPLICATION AND LOCATION OF CIRCUIT CONTROLLERS

- On Single wire lever frames:- under frame in cabin basement & actuated by a connecting rod connected to lever tail
- On Ground frames:- As per approved plan & actuated by a connecting rod connected to lever.
- On Double wire lever frame:- Behind the levers, actuated by a connecting rod connected to lever tail.
- On Signal post:- Using clips & bolts, its arm shall be directly actuated by the signal arm.

2.2 CLASSIFICATION

- Circuit controller single wire SA20245-26
  - Circuit controller crank type (for lever)
  - Circuit controller slotted crank type (for signal)
- Circuit controller double wire (plunger type) SA22401/20/30/40
- As per number of contacts available in circuit controller they can further classified as
  - 2 Way circuit controller
  - 4 Way circuit controller
  - 6 Way circuit controller
  - 8 Way circuit controller

2.3 **NUMBERING OF CONTACT**: - The contacts are numbered from left to right and number one start from top portion, first circuit controller contact is numbered as 1, 2 and subsequent contacts accordingly.

2.4 INSTALLATION

- Connectivity between circuit controller and lever / signal arm
    - In case of single wire lever, a down road (a solid rod with 32/20 mm joint one end &20 mm adjustable coupling joint other end) is used to provide connectivity . One end of down rod with 32/20mm joint is connected to lever tail in 200mm stroke hole and other end with 20mm adjustable coupling is connected to crank of circuit controller.
    - In case of double wire lever, adjustable coupling is used to provide connectivity and coupling end is connected to circuit controller and other end is connected to eye lug on lever.
    - In case of signal arm circuit, controller has slotted crank in lieu of normal crank attached to circuit controller and a long stud on signal arm is connected in the slot of crank.
- Installation of circuit controller shall be done in accordance with approved plans on a rigid base as under:
- Connect connecting rod on circuit controller arm in its normal position to the lever tail/ lever/ signal arm in their normal position as the case may be. It shall be ensured that stroke available from above gears is not adjusted more than the stroke required by circuit controller in its extreme positions.
- The contact segment shall be cut clean to required length & edge shall be tapered. While 'fixing, it shall be adjusted in required position & ensured that it does not make in any other position.
- If the finger contact is not making firm contact with segment then pressure shall be adjusted with the help of spring strip provided on finger contact and not by any other means.
- Circuit controller shall always kept in covered condition and cover shall be sealed .
- Split pin in down road shall be opened and bend.

VARIOUS CONTACT SEGMENT POSITIONS WHEN USED WITH LEVER.

Lever position	**Description**
N	Full normal position of lever.
A	Normal lock/ Track lock while during movement from Normal to Reverse.
B	Normal indication lock position for point during movement from Reverse to Normal between 'C & 'A' position.
C	Centre position of lever.
D	Reverse indication lock position for point during movement from Normal to Reverse between 'C & 'E' position.
E	Reverse lock/ Track lock during movement from Reverse to Normal.
R	Full reverse position of lever.
Longer contact segments may be used where required. Some typical examples are as under	
AB	For Normal lock cum Normal indication locking.
AC	On lock bar/ Signal lever for door lock release on Double line block instrument.
AE	Normal/ Reverse track locking without indication locking.
AR	To feed electric signal reverser.
DE	For Reverse lock cum Reverse indication locking.

Contact segment adjustments, when used for arm proving

Type of signal Aspect	Lower quadrant	Multi aspect upper quadrant
ON	±5° from horizontal	±5° from horizontal
OFF	45° -60° below horizontal for clear	40° -45° above horizontal for Caution/ attention and 85°-90° above horizontal for clear.
Contact segments provided in electric point machine & signal machine shall always be cut & adjusted in manufacturer's premises.		

Exercise-1

1. Write down maximum and minimum number of contacts available in a circuit controller.

2. Write down the various types of bands that can be cut in a circuit controller and their function.

Date: **Signature of the Trainee**