INSTALLATION • OPERATION • MAINTENANCE

INSTRUCTIONS

NO-LOAD TAP CHANGER TYPE WSB-1

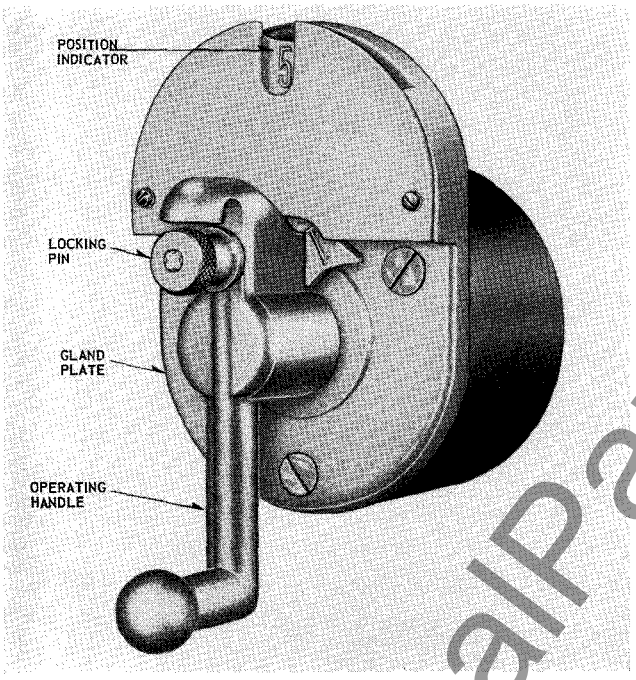

FIG.1. Operating Mechanism and Position Indicator

THE TYPE WSB-1 TAP CHANGER provides an adequate and convenient method for changing transformer tap connections from outside the transformer case. The tap changer is mounted under oil in the transformer case and is intended for operation only when the transformer is disconnected from the line.

Important. No-load tap changers must not be operated with the transformer energized; the transformer must not be energized unless the tap changer is locked on an operating position (see transformer nameplate).

The Type WSB-1 Tap Changers are made to meet voltage and current requirements. When more than one tap changer deck is operated from a single mechanism, the individual decks are mounted axially with a MICARTA® shaft passing through each deck. The stationary contacts, with provision on the opposite end for connecting the leads, are thorugh type studs mounted in a thermoset plastic base, and are arranged on a radius equal to that of the moving contacts. Good connections are assured by silver plated wiping contact surfaces, and by either high pressure indentation or swaging of the stud onto the tap leads. See Fig. 2.

INSTALLATION

Tap changers are usually shipped mounted on the core and coil assembly and connected to the external operating mechanism. Hence, when shipment of the core and coil assembly is made separately from the tank and fittings, it is necessary to make the connection of the tap changer drive shaft to the external operating mechanism on assembly in the

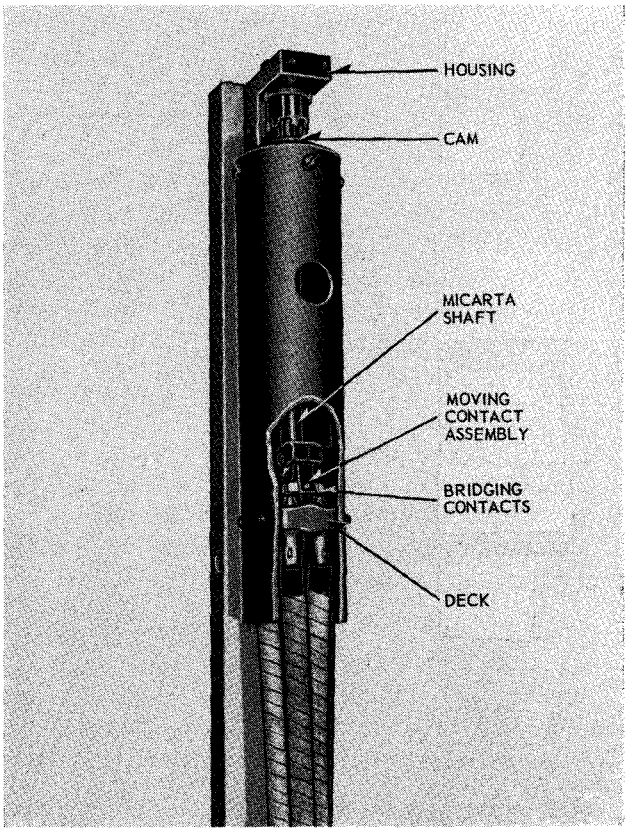

FIG. 2. Cutaway View of Single Deck, WSB-1 Tap Changer

® Registered Trade-Mark

field. Care should be taken to see that the position indicated on the external indicator corresponds to the position indicated on the tap changer housing, and that the internal operating cam is positioned as shown on Fig. 4.

The external operating mechanism is connected to the tap changer drive shaft through a flexible shaft and slip joint. This arrangement permits tank expansion and slight shaft misalignment without hindrance to operation. When a tap changer or external operating mechanism is installed in the field, a check of the slip joint for free operation should be made (see Fig. 4.)

OPERATION

One tap change requires one complete revolution of the external operating handle which is connected to a flexible shaft assembly for transfer into the transformer case through an oil-and-gas-tight stuffing gland. A position indicator is geared to the operating handle and provision is made for locking the mechanism on each position. (See Fig. 4.)

Motion of the tap changer operating handle is transmitted through the flexible shaft assembly to the ninety degree Geneva gearing in the internal tap changer housing. This gearing provides the motion which lifts the moving contacts and rotates them to a new tap position. Cam action in the gearing maintains a closed circuit condition through thirty degrees rotation of the operating shaft, thus eliminating the need for extreme accuracy in pinning the handle to the operating shaft in cases of field assembly. A pin and slot locking arrangement in the tap changer mechanism locks the MICARTA shaft against rotation, except when the contacts are lifted to change position.

Silver-plated copper bridging contacts which move around the circle of fixed contacts provide a connection between any two adjacent contact points. The bridging contacts are spring loaded and supported from an overhead assembly. This assembly is attached to the MICARTA shaft which passes through the center of each deck.

As indicated in Fig. 4 all leads of the WSB-1 tap changer are connected regardless of the number of taps for the transformer. This assures that no damage will result from accidental operation on positions not shown on the transformer nameplate.

This arrangement is necessary because the studs are molded into the deck.

Position "OFF" is indicated on the operating mechanisms, but is not used as a tap position on the tap changer. Accidental operation on position "OFF" will produce a voltage corresponding to one of the other tap positions, and will give an unbalance of the two legs of the transformer winding. This unbalance may affect the impedance or magnetic forces, but would not be detrimental to the transformer.

MAINTENANCE

The WSB-1 Tap Changer is designed to operate without maintenance; therefore provision for dismantling is not made. Unit replacement is recommended in case of breakdown.

If replacement of a tap changer or a high voltage coil is necessary, the connection should be made by cutting the tap leads adjacent to the tap changer and brazing the leads from the new tap changer at this point. The replacement tap changer leads are marked from A to F, and may be identified with each tap changer position as shown in Fig. 3. Corresponding winding taps are indicated on the transformer nameplate.

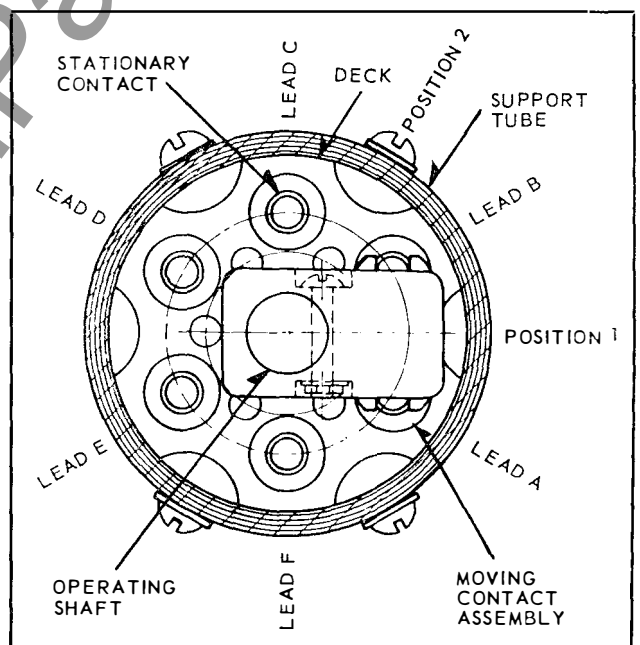

FIG. 3. Connection Diagram for the WSB-1 Tap Changer

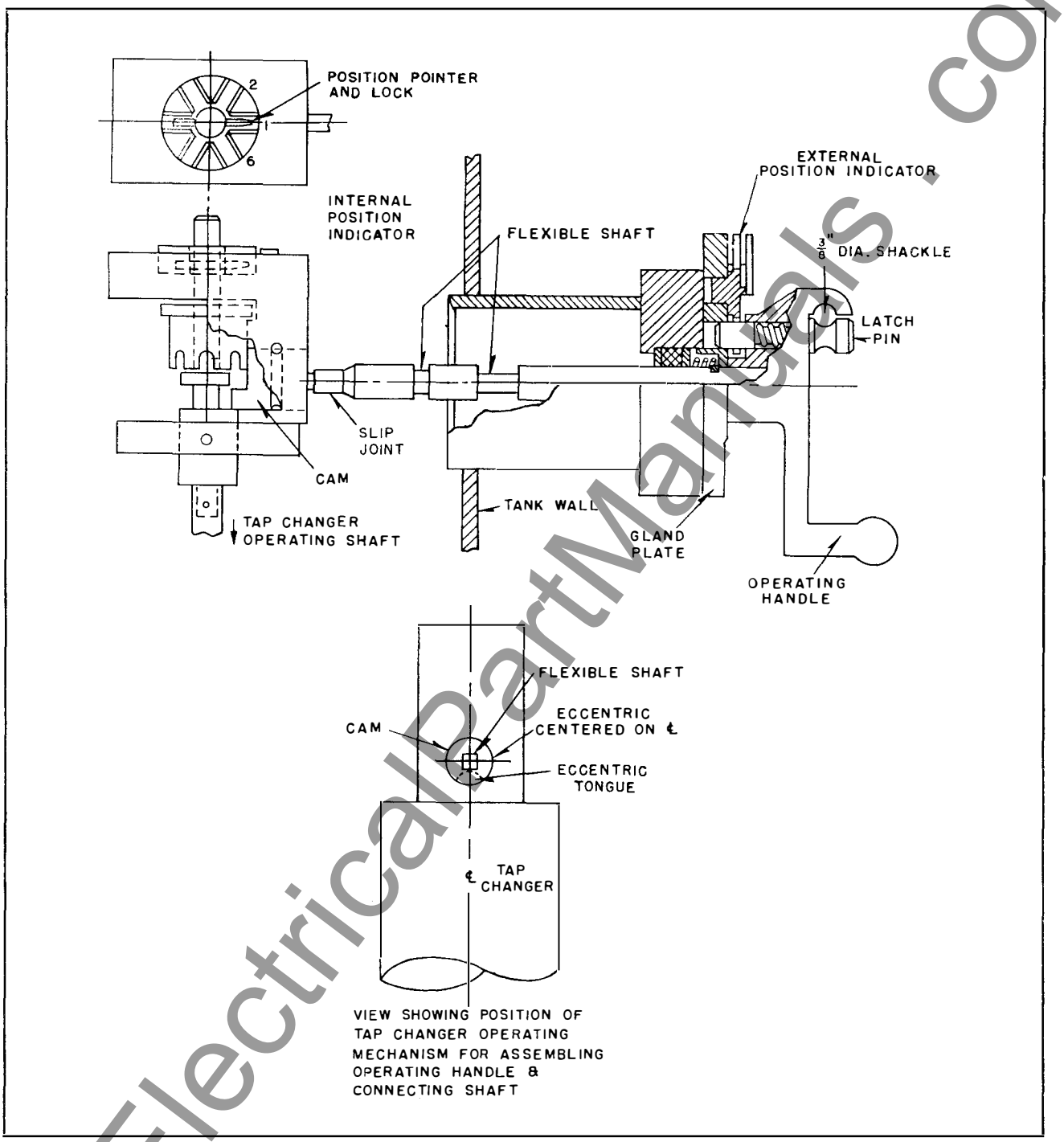

FIG. 4. Outline of Type WSB-1 No-Load Tap Changer Operating Mechanisms Mounted on Transformer (In Top View, Looking Down, Internal Position Indicator is on Position One)

RENEWAL PARTS

Order renewal parts from the nearest Westinghouse office. Include a complete description of the part wanted along with the data on the nameplate attached to the transformer tank wall.

WESTINGHOUSE ELECTRIC CORPORATION
SHARON PLANT • TRANSFORMER DIVISION • SHARON, PA.
Printed in U.S.A.