Tab 119

I.B. 36-250-1

INSTALLATION • ADJUSTMENT

INSTRUCTIONS

WESTINGHOUSE TYPE "V" SWITCHES

7.5 Through 69 Kv - 600 and 1200 Amperes

Standard Duty, 3" Bolt Circle Insulators

WESTINGHOUSE ELECTRIC CORPORATION

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NEW INFORMATION

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INTRODUCTION

It is the purpose of this book to assist in the proper installation and adjustment of the Type "V" Switch with ratings from 7.5 thru 69 KV, 600 and 1200 amperes.

By closely following the instructions in this book, the Purchaser will, in a minimum amount of time, be able to install these switches correctly and insure proper performance and low operating effort.

INSTALLATION AND ADJUSTMENTS

1. HANDLING AND STORAGE

When the equipment is received it should be carefully examined to determine any loss or damage in shipment. The carrier should be notified immediately of any claims.

Disconnecting switches rated 7.5 thru 46 KV are shipped with the insulators completely assembled on the pole units. Insulators for the 69 KV pole units are shipped separately and must be assembled in the field as shown on I.L. 36-150-5 supplied with the switch. Since these are outdoor switches, they may be stored either indoors or outdoors. When storing outdoors, all components should be removed from their packing.

2. ADJUSTMENT AND ERECTION OF POLE UNITS

In order to assure proper tracking of the switch blades, for 69 KV where stacking insulators are used, the setting of the operating levers should be checked and adjusted if necessary. This can be done either on the ground or after the 69 KV pole units are mounted on the structure. If the pole units are adjusted on the ground, they should be lined up side by side on a common mounting surface. To check the setting of the operating lever for the proper angular relationship with the operating arm, the following procedure should be followed. Refer to Figure #1 for this setting. Open all switch blades to the full open position. Adjust the blade stops so that the blades are lined up evenly when in the open position. Stand back and sight across the blades to insure uniformity. This blade stop adjustment must be made accurately if the switch blades are to "Track" or open and close simultaneously.

After the blades are aligned in the open position, insert the pointed stud, which is furnished with the switch, through the hole in the operating lever as shown in Figure 1. Measure the distance from the tip of the stud to the side of the base. Mark this dimension on the base for reference, then make the same measurements on the other two pole units, marking the measurement on each base for reference. If there is more than $\pm$ 1/8 inch difference between these three dimensions, the position of the levers should be adjusted to bring these dimensions within the tolerance of $\pm$ 1/8 inch. To make this adjustment, loosen the bolts holding the bottom of the rotating insulator to the bearing. Hold the blade in the full open position and tap the lever to the desired dimension. If there is not enough clearance in the bolt holes to get sufficient adjustment, it will be necessary to loosen the bolts at the top of the rotating insulator or between the two units of the stack. After the desired lever settings are obtained, tighten <u>all</u> the bolts securely. Correct "Tracking" of the switch blades depends on this adjustment being made properly and held securely so all bolts must be <u>tight</u>. This alignment procedure is not necessary where single insulators are used (46 KV and below) and where switch blade lengths are relatively short.

Rub a small amount of silicone base grease onto the break jaw contact surfaces. The switch blade should then be rotated in and out of the jaw several times to wipe this grease into the pores of the metal. The excess grease should then be wiped off so that dirt does not collect on the contact surfaces.

The pole units should now be mounted in place on the structure as shown on the field erection drawing. If it is shown on the erection drawing, the pole unit next to the outboard bearing may require a special double lever, or "Universal Lever". This universal lever, if required, may be mounted on the pole unit at the factory, or it may be shipped crated with the operating mechanism. Its purpose is to allow the connection of the outboard pipe at the optimum angle for ease of operation. Make certain that this universal lever is mounted in the proper position with respect to the outboard bearing as shown on the field erection drawing. By inverting the universal lever it is possible to obtain finer angular positioning.

Care should be taken to avoid warping the switch bases when mounting them on the structure. If the mounting surface is uneven, shims should be used as spacers beneath the base before it is tightened down.

In making electrical connections to the switches, avoid placing stress on the insulators. Use strain insulators or bus supports where necessary.

3. ADJUSTMENT OF THE TORSIONAL TYPE (TP) MECHANISM

When installing the various components of the operating mechanism, make certain that all parts are in correct mechanical alignment. The outboard bearing, if one is used, should be reasonably level. The guide bearings and operating handle should be positioned properly so that the vertical pipe is free to rotate. Do not drill the pipe and fasten the operating handle at this time.

(a) For offset connected switches, where an outboard bearing is used, set the outboard bearing lever in a position so that it points directly toward the hole in the pole unit operating lever when the pole unit is closed. This setting is shown in Figure #2.

(b) Adjust the rod ends on the outboard connecting pipe so that the pipe will fit between the driven pole unit lever and the outboard bearing lever. Tighten only the clamping bolts on the rod ends at this time. Do not tighten the set screws. When making this connection, the driven pole unit blade must be completely closed, and the outboard bearing lever must be in toggle as shown in Figure 2.

(c) Set the operating handle to the closed position shown on the erection drawing. With the handle in this position, drill a 11/16 diameter hole in the vertical pipe and bolt the operating handle securely to the pipe.

(d) The driven pole unit can then be operated from the ground by means of the operating handle. Set the "Stops" on the operating handle to stop the pole unit in the open and closed positions.

(e) For direct connected mechanisms, in which no outboard bearing is used, the vertical pipe is pinned directly to the shaft extension beneath the driven pole unit. Connect the operating handle and set the stops as described in Paragraphs "c" and "d".

(f) With all three pole units in the full open position, the interphase pipes should be connected in place. With the switch operated from ground level, all three blades should track properly. If so, tighten the set screws in the rod ends so that they pierce the pipe and the head of the set screw rests against the body of the rod end. If the blades do not track properly, check the pole unit adjustments described in Paragraph 2. It may also be necessary to make minor adjustments in the length of the interphase pipes.

4. ADJUSTMENT OF THE RECIPROCATING TYPE (RP) MECHANISM

When installing the various components of the mechanism, make certain that all parts are in correct mechanical alignment. The bell crank, the idler assemblies, and the operating handle should be positioned properly so that the vertical pipe can move up and down freely.

(a) Set the driven pole to the fully closed position.

(b) Assemble the outboard connecting pipe and adjust its length until the arms on the bell crank are 45 degrees from horizontal. The outboard pipe should be connected between the non-adjustable arm of the bell crank and the operating lever on the driven pole unit.

(c) Adjust the length of the adjustable bell crank arm to have a 6 inch radius.

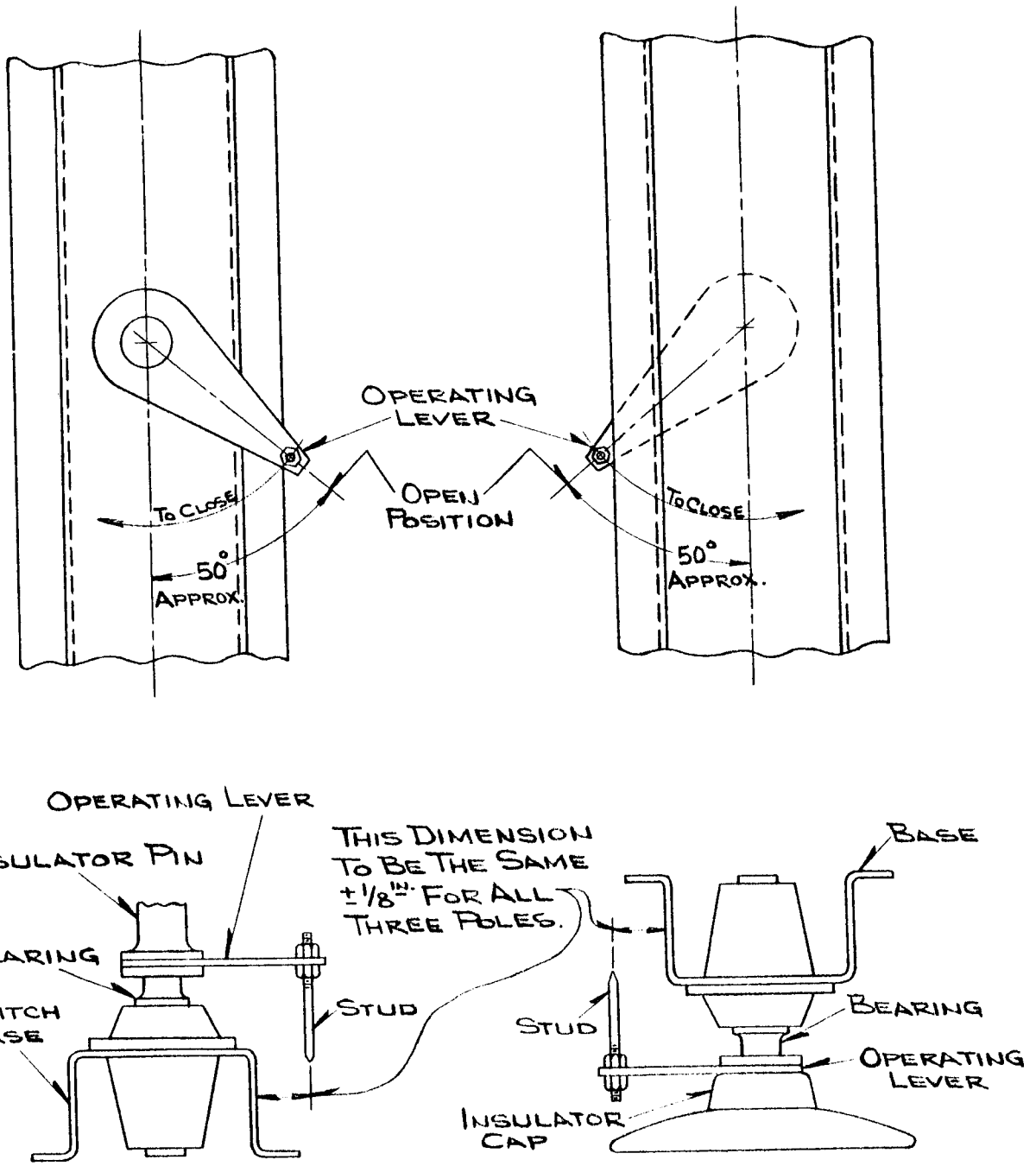
(d) The vertical pipe should then be installed. If an idler is used, its arm should be set 30 degrees above the horizontal when connected to the vertical pipe with the pole units closed.

(e) With the handle in the "Up" position, drill and pin the vertical pipe to the operating handle.

(f) Open the driven pole with the operating handle and observe the handle position as the switch comes fully open. If the handle is not in the fully "Down" position when the switch is open the radius of the adjustable bell crank arm should be increased. If the switch has not opened fully when the operating handle is down the radius of the adjustable bell crank arm should be decreased. The rod end on the upper end of the vertical pipe should be adjusted to compensate for any change in the length of the adjustable bell crank arm.

(g) After the bell crank has been adjusted so that full travel of the operating handle results in full travel of the driven pole unit, all three pole units should be set to the open position. Assemble and connect the interphase pipes.

(h) All three pole units should now "Track" and close properly. If not, check the pole unit adjustments described in Paragraph 2. It may also be necessary to make minor adjustments in the length of the interphase pipes. After proper operation is obtained, tighten all set screws so that the pipe is pierced.



HORIZONTAL & VERTICAL MTG.

INVERTED MOUNTING

FIG. 1

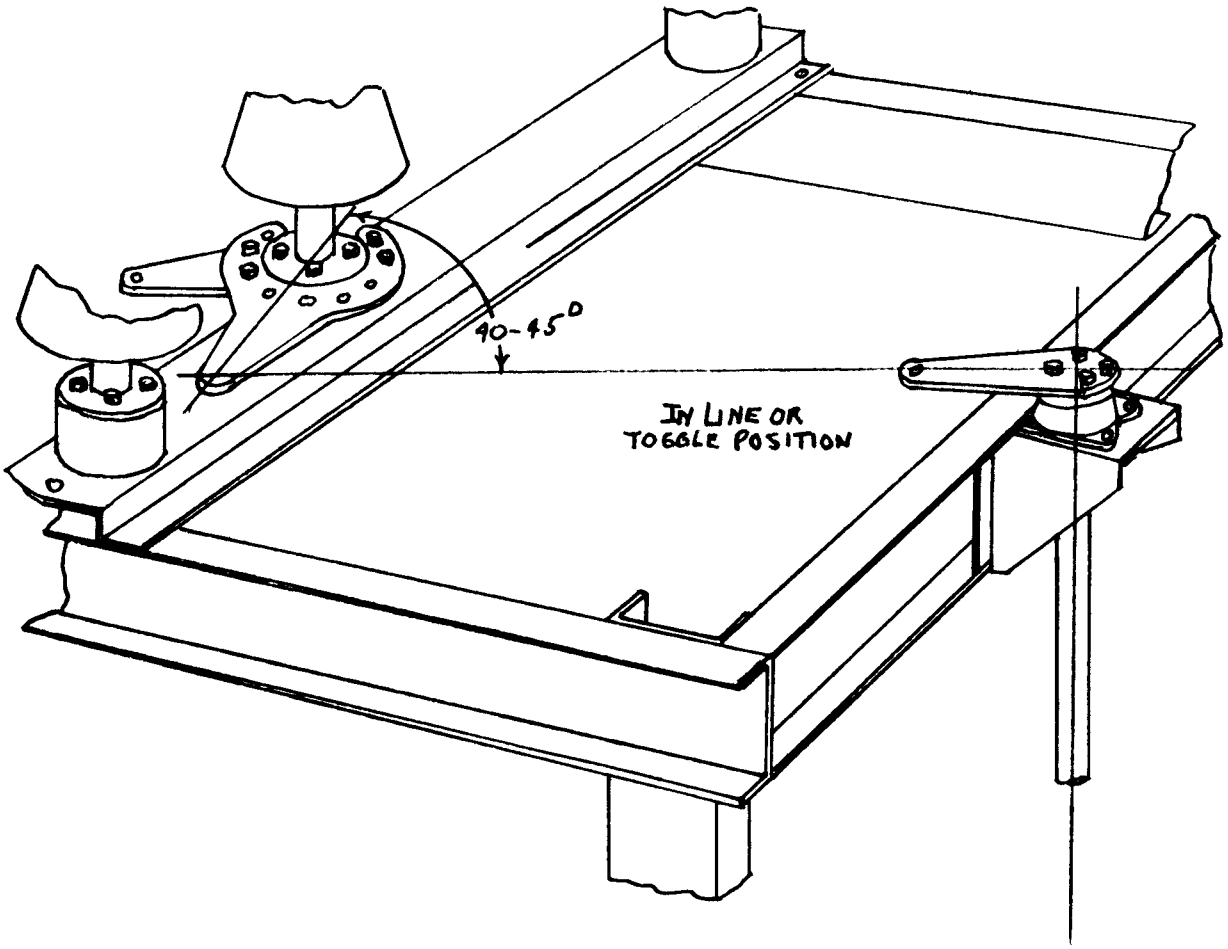


FIG. 2


WESTINGHOUSE