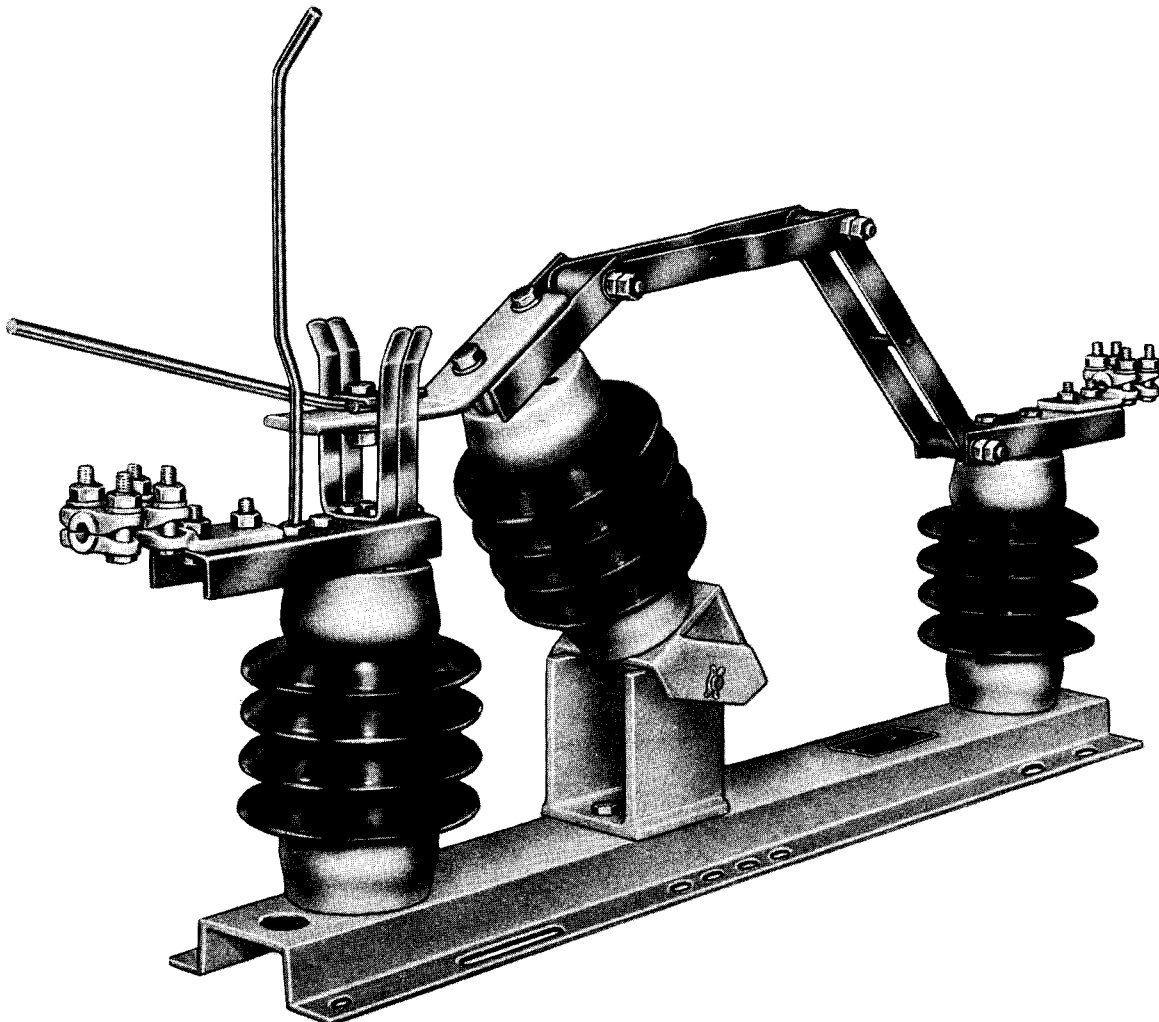


AIR SWITCHES—OUTDOOR

INSTRUCTIONS

INSTALLATION AND MAINTENANCE

**3ST SHUNTLESS, TILTING-INSULATOR,
GROUP-OPERATED
7.2 THRU 34.5 KV**



I-T-E CIRCUIT BREAKER COMPANY



INSTRUCTIONS FOR INSTALLATION AND MAINTENANCE OF 3ST SHUNTLESS, TILTING-INSULATOR SWITCHES

GENERAL

This manual contains instructions for installing and maintaining 3ST Shuntless, Tilting-Insulator Switches and should be reviewed thoroughly with the switch and switch operating mechanism drawings.

RECEIPT

Check the total shipment for completeness against the bill of materials and installation drawings. Examine the equipment thoroughly for shipping damage. Report any shortage or damage to the carrier immediately and file the proper claim.

INSTALLATION INSTRUCTIONS

All single-pole 3ST Switches normally are shipped assembled and adjusted except for the arcing horns.

1. ATTACH ARCING HORNS

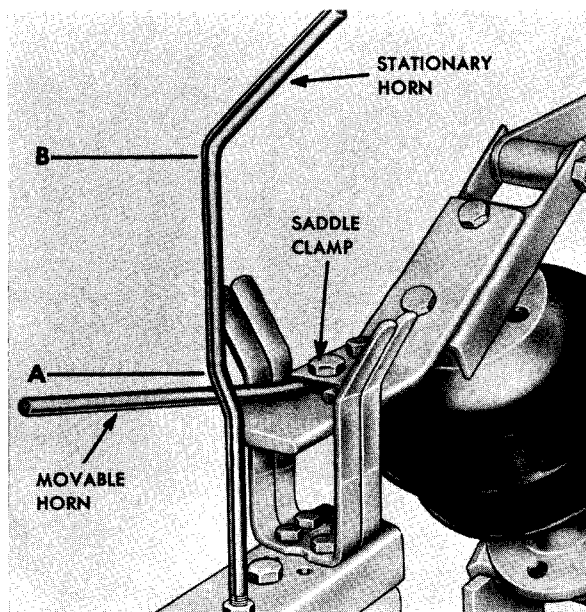


Fig. 1. Arcing horns on 3ST Switch.

Attach the BLADE ARCING HORN to the blade moving contact with two $\frac{1}{2}$ -inch bolts and horn saddle plate. Tighten loosely to allow adjustment. Place the threaded end of the STATIONARY ARCING HORN in the offset hole of the jaw terminal and attach with two nuts, one above and one below the jaw terminal.

With the switch in closed position, check for correct alignment of the arcing horns. In the fully closed position, the arcing horns should not touch each other. In opening and closing, the arcing horns should make continuous contact

between points A and B. If necessary, bend the STATIONARY ARCING HORN to get the desired contact.

After attaching and adjusting the arcing horns, place each single-pole switch in the *closed position*.

2. MOUNT SWITCHES

Drill the mounting structure as indicated in Fig. 5.

Install the mounting bolts and set the single-pole switches level and parallel with each other on the crossarm or mounting structure. Level and align the switch bases by running adjustment nuts up or down as indicated in Fig. 2.

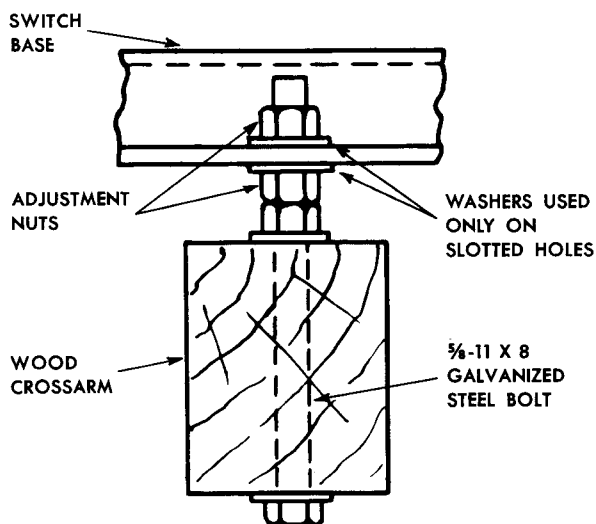


Fig. 2. Adjustment nuts.

3. CONNECT INTERPHASE SHAFT

a. For wood: Drill holes in the INTERPHASE SHAFT as indicated in Fig. 5. Place the INTERPHASE SHAFT against all three single-pole INSULATOR BRACKETS and bolt on as indicated in Fig. 3a.

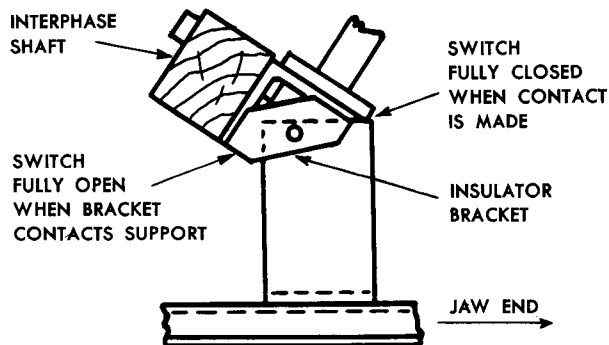


Fig. 3a. Attaching wood interphase shaft.



b. For metal: Place the INTERPHASE SHAFT against all three single-pole INSULATOR BRACKETS and bolt on, using clamps, as indicated in Fig. 3b.

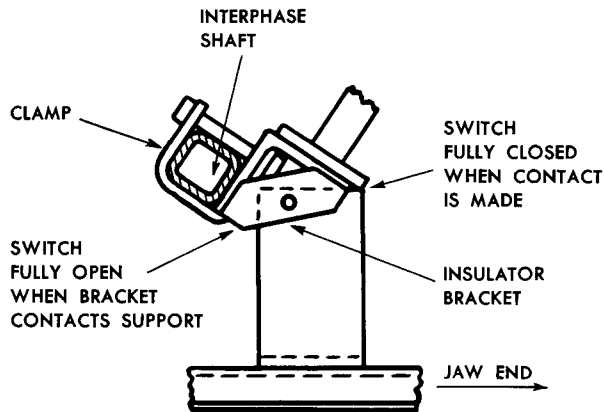


Fig. 3b. Attaching metal interphase shaft.

4. ATTACH OPERATING CRANK

Bolt the OPERATING CRANK on the INTERPHASE SHAFT, as indicated in Fig. 4, directly in front of and on the center line of the wood pole.

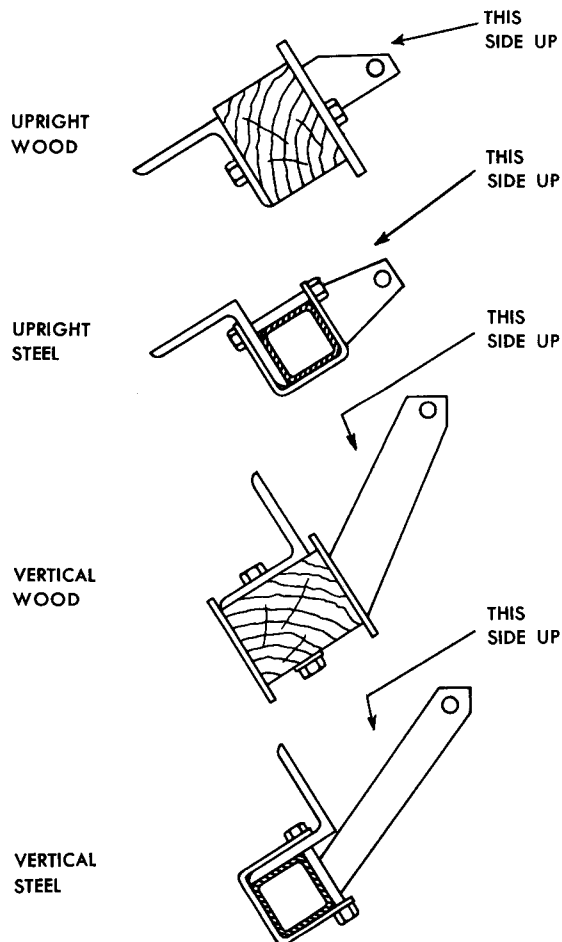


Fig. 4. Attach operating crank.

5. ASSEMBLE VERTICAL OPERATING PIPE

Allow 1¼-inch of pipe to extend beyond the clevis "U" bolts. Do not pierce the pipe with set screws until final adjustments are completed.

Pin the top of the VERTICAL OPERATING PIPE to the OPERATING CRANK.

Assemble INTERMEDIATE GUIDE BEARING to top section and swing toward the pole. Then, with the INTERMEDIATE GUIDE BEARING at 45 degrees above horizontal, use the bearing bracket to mark mounting hole location. Gain or block pole, drill, and bolt the INTERMEDIATE GUIDE BEARING in place.

Connect the bottom vertical section and the OPERATING HANDLE. If OPERATING HANDLE is to be in down position when switches are open, assemble as in Fig. 7a, and proceed with switches in *fully closed position*. If OPERATING HANDLE is to be in up position when switches are open, assemble as in Fig. 7b, and proceed with switches in *fully open position*. Pin the bottom vertical operating section to INTERMEDIATE GUIDE BEARING. Swing toward the pole and mark mounting hole location for the handle. Make small adjustments by detaching the bottom vertical section from the OPERATING HANDLE, turning the threaded rod in or out, and repinning in place on the OPERATING HANDLE. Make further adjustment by cutting off top of lower operating pipe to desired length.

Gain or block the pole, drill, and bolt the handle mounting bracket to the pole.

6. FINAL ADJUSTMENTS

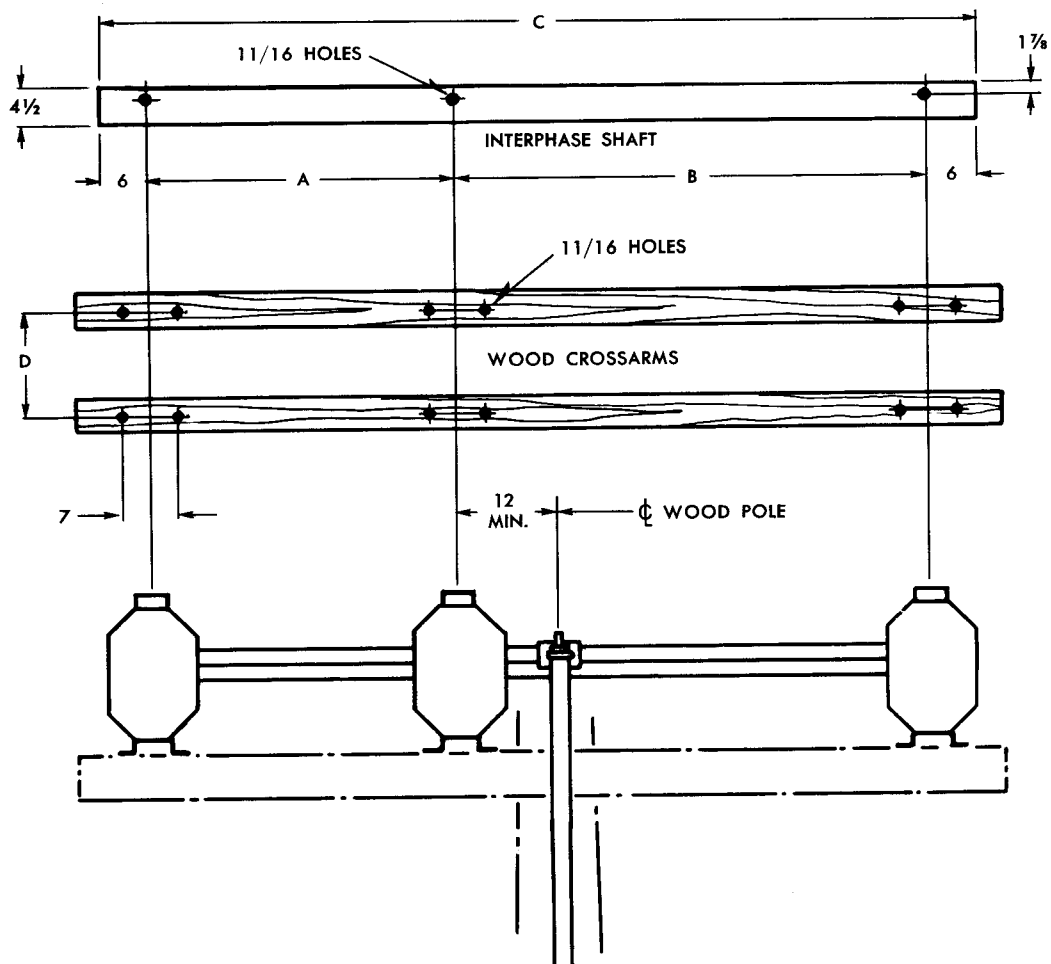
Lock and set piercing screws. Install ground clamp and flexible lead on bottom operating pipe. Check to see that:

- All bolts are tight and all cotter pins are bent adequately.
- The operating effort required to operate the switch assembly is not excessive. If necessary, readjust handle as indicated in step 5.



These instructions do not purport to cover all details or variations in equipment nor to provide for every possible contingency to be met in connection with installation, operation or maintenance. Should further information be desired or should particular problems arise which are not covered sufficiently for the purchaser's purposes, the matter should be referred to the nearest I-T-E Sales Office.

**I-T-E CIRCUIT BREAKER COMPANY**



TABULATION OF DIMENSIONS

KV	A	B	C	D-Min.	D-Max.
7.2 - 14.4	30	54	96	6	19 1/4
23	42	66	120	6	19 1/4
34.5	42	66	120	9 3/4	23 1/4

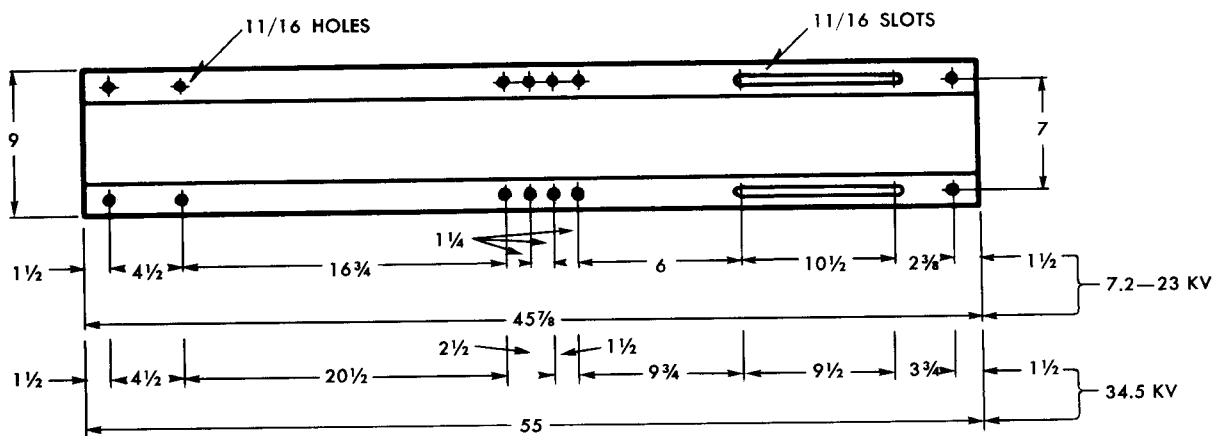
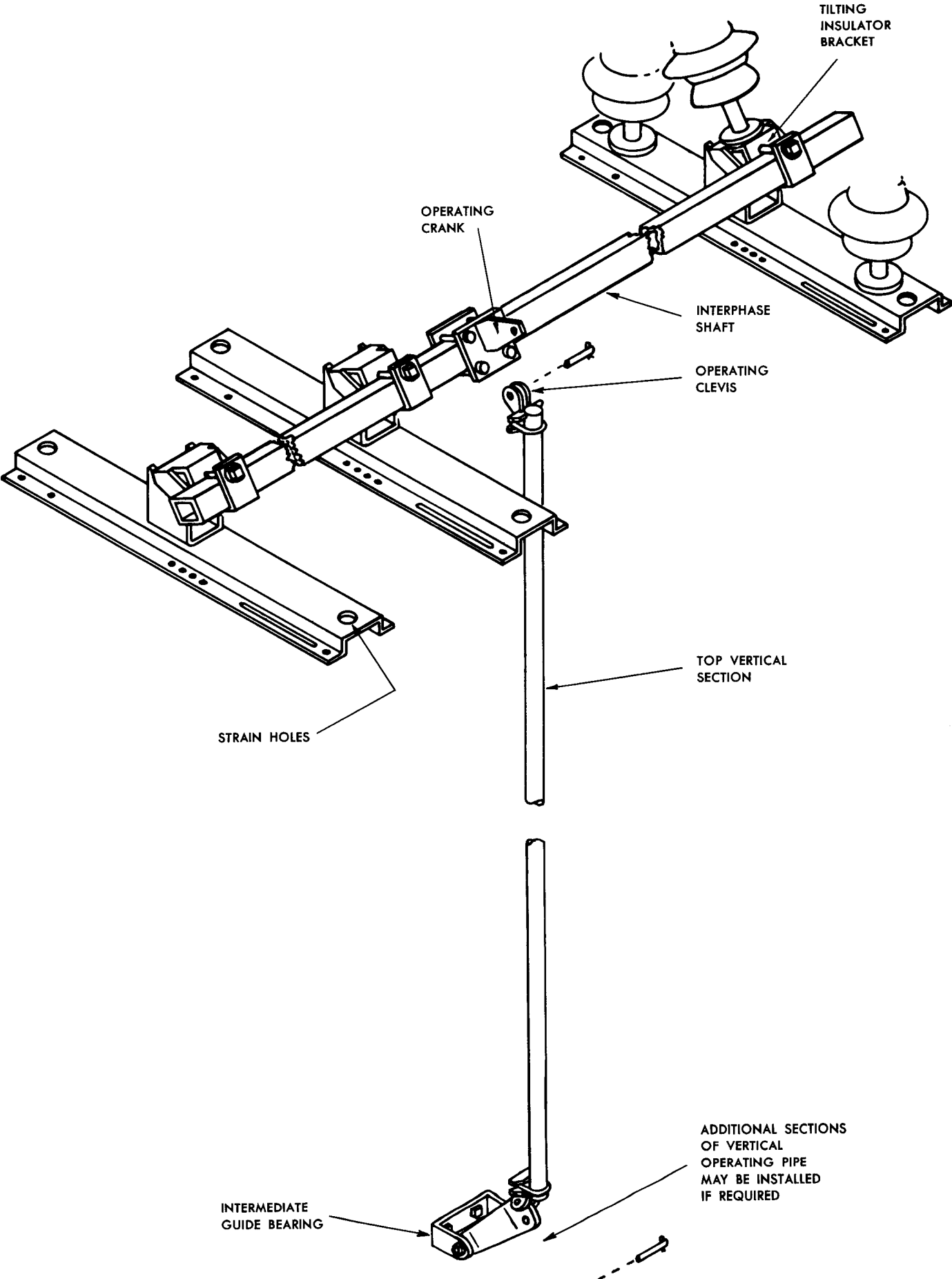


Fig. 5. Mounting hole locations.





MAINTENANCE

1. JAW CONTACTS

Under normal service the jaw contacts should be examined and maintained at least once a year, depending upon the type of atmosphere to which they are exposed.

Periodic maintenance should consist of cleaning the contact surfaces thoroughly by carefully scraping off any contamination or deposit and sanding the surface to a smooth finish with clean fine emery paper, being careful to wipe off evidence of sand. With the contact surfaces entirely clean, a coating of lubricant should be applied. The lubricant may either be NO-OX-ID Grade XX, or Dow Corning DC-44 medium consistency silicone grease.

Caution: Heavy scraping of silver contact surfaces should be avoided. Rub lightly with steel wool until a bright surface is attained. Jaw contact lubricants are suitable for the silver contacts.

2. OPERATING LINKAGES

In general, operating linkages require no maintenance. If the atmosphere is very contaminated or sleet conditions are common, exposed bearings should receive special attention. Lubricate at the tilting-insulator hinge pin, reciprocating handle bearing pins, and intermediate guide bearing. Dow Corning DC-4 silicone compound is recommended.

NO-OX-ID greases can be purchased from the Dearborn Chemical Co., 310 South Michigan Avenue, Chicago, Illinois, and silicone greases from Dow Corning, 592 Saginaw Road, Midland, Michigan.

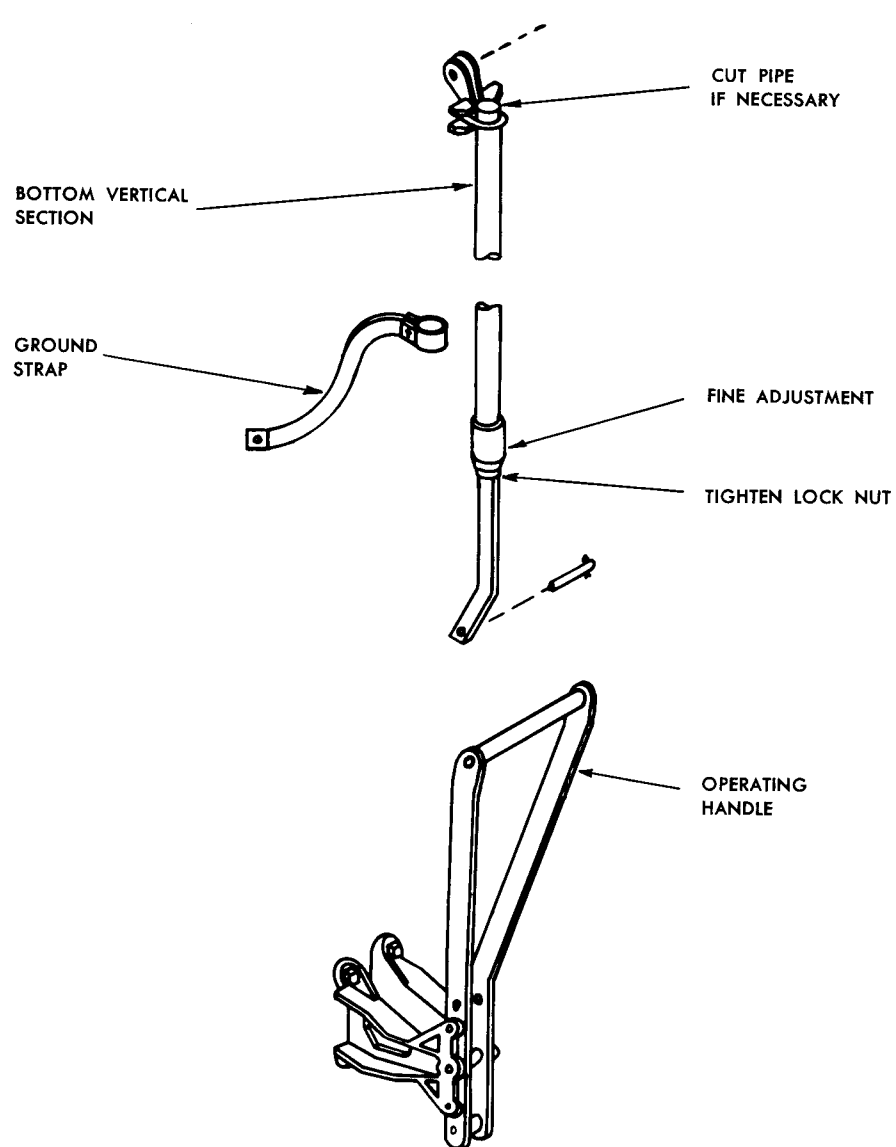


Fig. 6. Typical operating mechanism arrangement.

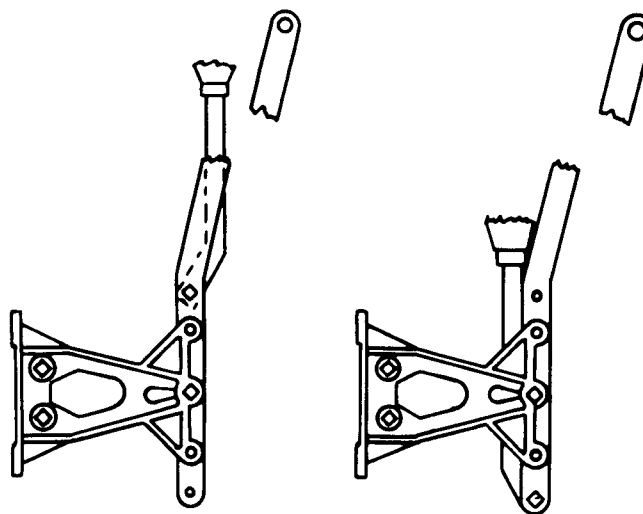


Fig. 7a. Operating handle down, switches open.

Fig. 7b. Operating handle up, switches open.