

OPEN WIRE INSTALLATION OF RS COPPER SLEEVES

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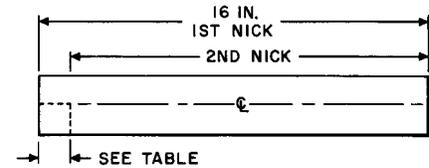
1. GENERAL

1.01 This section covers the procedure for installing point transpositions by cutting the wires at each transposition, transposing the wires, joining the ends with RS sleeves, and placing the wires on the insulators on the Point Transposition brackets. RS sleeves provide the additional length needed to make the crossover at the point transposition without cutting in slack.

1.02 General considerations to be observed in doing the work and arrangement of tools are covered in Division 623 of the Bell System Practices.

1.03 Prepare a measuring stick as shown in Fig. 1 to facilitate remeasuring on large transposition jobs. The cut-out in the corner is used only when

cutting out a point transposition where the wires are in service.



WIRE SPACING (INCHES)	6	8	12
CUTOUT (INCHES)	1-1/2	2-13/16	5-7/16

NOTE:
REFER TO FIG. 8 FOR USING MEASURING STICK.

Fig. 1—16 Inch Measuring Stick

1.04 Before starting the work, make sure the line wires of the pair have been:

- (1) Placed on the tops of the crossarms parallel with each other at the desired wire spacing (or when the wires are in service left in loose ties at the desired spacing).
- (2) Placed at corners as described in Part 11 of this section.
- (3) Given standard sag and the sags of wires of the pair made even.
- (4) Snubbed at intervals of every 10 or 20 spans to assure retention of standard sags until the wires are tied in and point transposed.

1.05 This method can be used on wires in service or for wires not in service except that dc telegraph service must be removed from wires in service.

1.06 If in service:

- (a) Use 5A type transposition switch boxes to maintain lines in service. The phantom

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circuit key should be thrown to straight through position (\equiv) and fixed in that position. The right or left side circuit key to which the line leads are connected should be thrown to the straight through position ($=$).

(b) Take precautions not to interrupt the service at any step in the work. Watch the line wires when they are untied to prevent wire hits or metallic contacts through hardware or tools. Gloves should be worn at all times while handling wires in service.

2. MARK LINE WIRES

2.01 To cut in a point transposition without changing the wire sags proceed as follows:

(a) Untie the line wires of the pair being transposed at the proposed location of the transposition and replace the pins with a point transposition bracket equipped with pins and insulators.

(b) Lift the wires one at a time and place them in the wire groove of the insulator on the end of the transposition bracket away from the spans already transposed and tied in, or away from the terminal.

(c) With the 16-inch measuring stick seated in the neck of the wire groove of the insulator (Fig. 2), lightly nick each line wire with pliers at the end of stick as shown in Fig. 3. Place the cutting edges of the pliers next to the stick in all cases.

(d) Make the light nicks with the pliers just deep enough so that they can be seen and felt but not so deep that the wires will break at the nicks.

(e) Clean each line wire at a point about 2 inches on each side of the 16-inch nick.

3. PLACE SNUBBING CLAMPS

3.01 Snub each wire to the insulator on the transposition bracket on the side of the crossarm toward the spans already transposed, or toward the terminal using right and left hand wire snubbing clamps (Fig. 4).

3.02 Use care not to lean against the crossarm while doing this work as the equalization of

NOTE:

CLEAN EACH WIRE NEAR END OF MEASURING STICK WITH ABRASIVE CLOTH AND NICK WIRE WITH CUTTING EDGES OF PLIERS AT END OF STICK WHEN STICK IS TOUCHING NECK OF INSULATOR WIRE GROOVE.

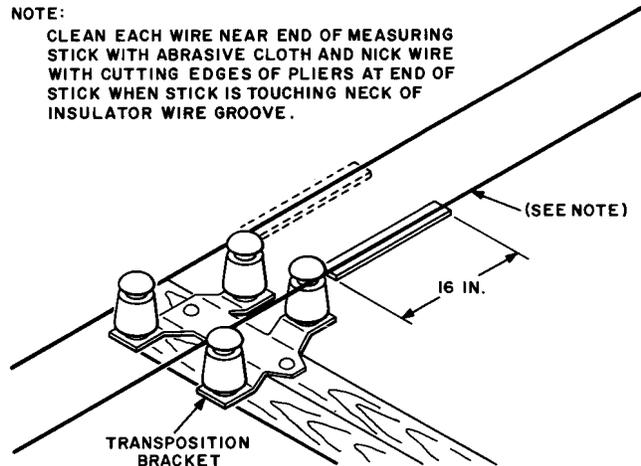


Fig. 2—16 Inch Measuring Stick Placed

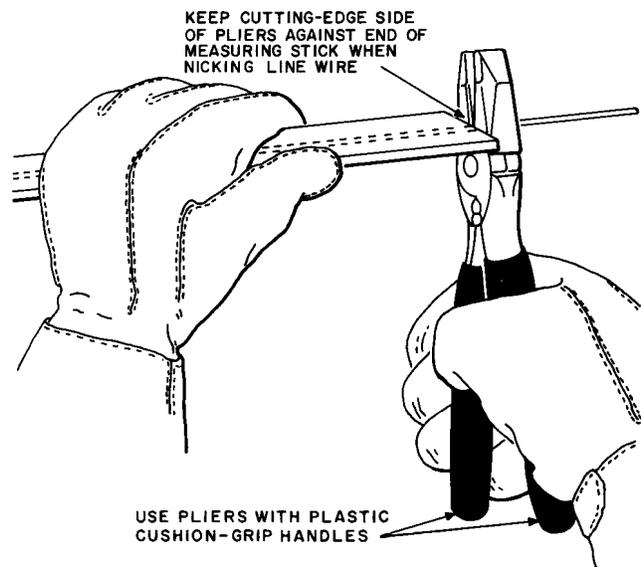


Fig. 3—Nicking Wire With Pliers

sag would be changed when the crossarm returned to its normal position.

3.03 When placing each clamp, hold the hook firmly against the insulator and make sure the wire is in the wire groove of the clamp throughout its length.

3.04 Screw the clamp tight so the wire will not slip, but not so tight as to damage the wire. Use hands only to tighten clamps.

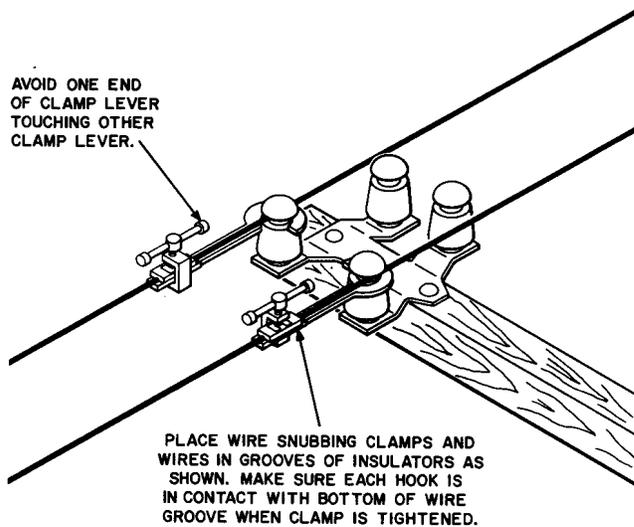


Fig. 4—Wire Snubbing Clamps Placed

3.05 When both clamps are in place, check that both hooks bear against the insulators.

4. PLACE B WIRE PULLER

4.01 Prepare an equalizing block locally as shown in Fig. 5. Attach the 3-inch single sheave block to a B Wire Puller with a loop of 109H Steel Line Wire. Join the ends of the 109H Wire loop with a 109H S Steel Sleeve. Pass a length of manila rope or B Plastic Rope through the sheave and fasten wire grips to each end of the rope.

4.02 Hook a B Wire Puller (see also 4.04) to the crossarm at the Point Transposition Bracket (Fig. 5).

4.03 Extend the chain to place the equalizing block and wire grips about eight inches beyond the nicks made in the line wires.

4.04 Place the wire grips opposite each other on the line wires so the wire loop of the equalizing block is approximately parallel to the line wires.

4.05 Block and tackle described in Section 623-200-200 may be substituted for the B Wire Puller if working on 104 Copper Wires at temperatures of 60°F or more.

5. WIRES IN SERVICE

5.01 If the wires are in service:

- (a) Place a 5A type transposition switchbox on the crossarm. The phantom circuit key should be in the straight through (\equiv).
- (b) Connect the leads to the line wires beyond the snubbing clamps and wire grips.
- (c) Throw the appropriate side circuit key to straight through (=).
- (d) Also see 6.01(f) for later operations if wires are in service.
- (e) Use care in handling the wire ends and tools in order to prevent electrical contacts directly or through metal tools between the two wires of the circuit.

6. CUT THE WIRES

6.01

- (a) Take up only enough slack with the B Wire Puller to permit cutting the wires and joining them again.
- (b) Cut the lower wire first exactly at the nick where transposition is left over right; this would be the right hand wire.
- (c) Place a short piece of P Wire Guard over the lower wire between the insulators and place this wire in the grooves of lower insulators (Fig. 6).
- (d) Cut the upper wire exactly at the nick.
- (e) Place this wire in the wire grooves of the upper insulators.
- (f) If the wires are in service, throw the side circuit key in the 5A type transposition switchbox from the (=) position to the (X) position. Do this with a quick positive motion.
- (g) Temporarily remove the wires from the unsnubbed insulators (one at a time) and connect the wire ends with RS Sleeves to form the complete transposition (Fig. 7). Install the proper size RS Sleeves as outlined in the 623

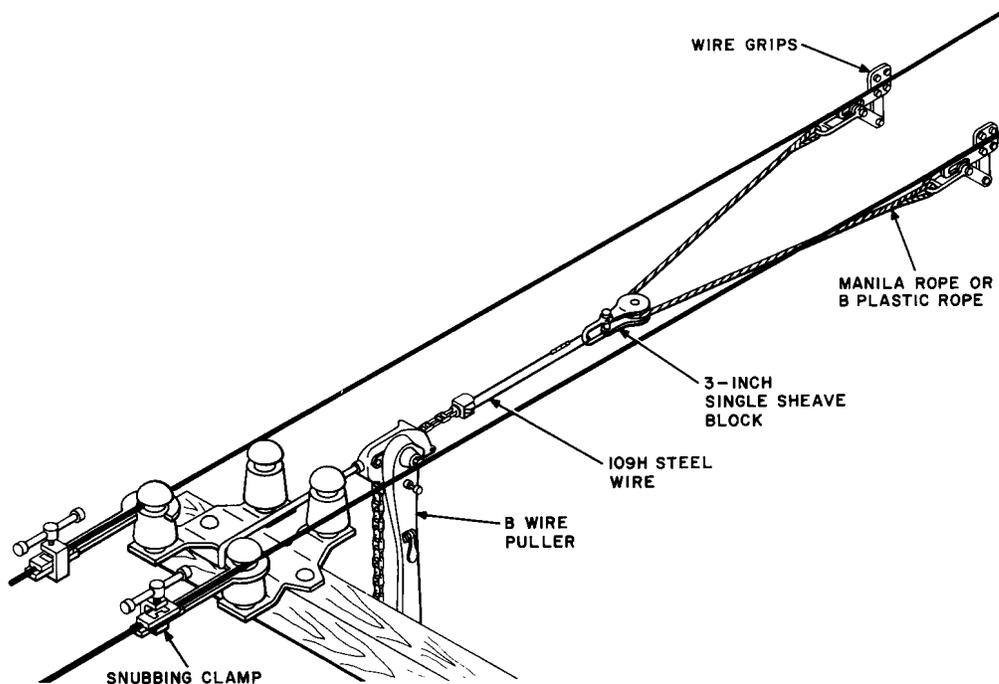


Fig. 5—B Wire Puller Placed

Division practices. Restore the wires to the insulators taking sufficient slack with the puller so as not to force the wires over the tops of the glass.

- (h) Release the slack by reversing the B Wire Puller.
- (i) Remove all tools.
- (j) Test the wires for equalization of sags.

7. SAG ADJUSTMENTS

7.01 At the completion of cutting in a point transposition with RS Sleeves, the wire sags should be the same as they were at the start of the work.

7.02 If the sags are uneven before the start of work, the wire with the greater sag can be shortened to even the sags before joining the wires together with the RS Sleeves. On a 130-foot span, the sag can be reduced one inch by cutting 1/8 inch off the wire with the greater sag.

7.03 Do not adjust sags when variations between the wires of the pair are within the required limit as specified in the 623 Division practices.

7.04 To change the wire sags by reducing the length of one wire, consider the temperature, span length, present sag, and the 1/8-inch adjustment in 7.02, and cut off an amount that will even the sags.

8. JOINING WORKING SECTIONS

8.01 When working in one direction with the wires temporarily snubbed at intervals along the line, remove the snubs before cutting the transposition when the location of the transposition is two spans or less distant from the deadend.

8.02 When the ends of the wires are reached at a junction of working sections:

- (a) Temporarily snub the wires with wire snubbing clamps to the insulators from both directions on nearby poles.
- (b) Release the tensions in the end sections of the wires.

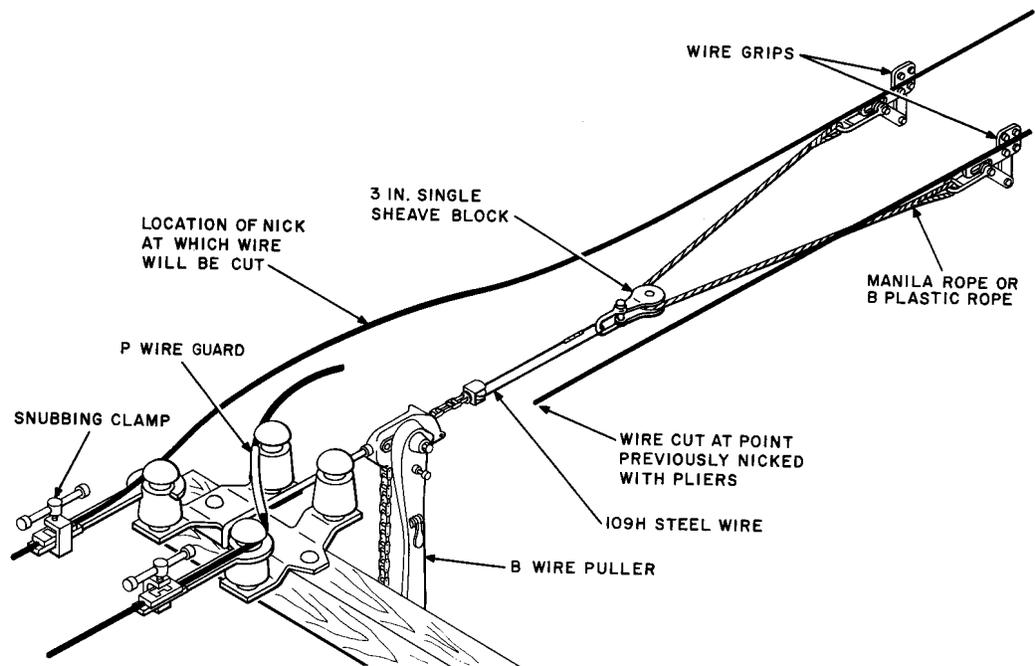


Fig. 6—Wire Placed in Grooves of Lower Insulators

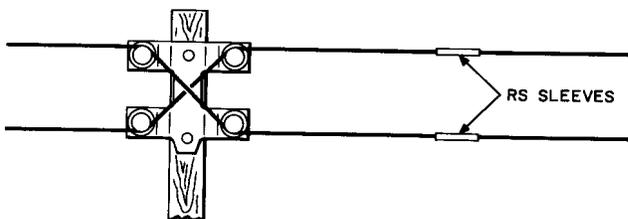


Fig. 7—Completed Transposition Using RS Sleeves

- (c) Pull up the free ends of the wires with block and tackle to standard even sags preparatory to joining them.
- (d) Join the wires in one working section to the corresponding wires in the adjacent working section.
- (e) Remove the tools (including the snubbing clamps on the nearby poles).

9. CUTTING IN SCATTERED POINT TRANSPOSITIONS

9.01 Scattered point transpositions are cut in a pair of wires in the same manner described for consecutive transpositions using RS Sleeves.

10. CUTTING OUT SCATTERED POINT TRANSPOSITIONS

10.01 The method for cutting out a point transposition is similar to that used for cutting one in. Cut out a short length of each wire after the wires are untransposed and join the wires with *S Sleeves*.

10.02 To cut a point transposition out, proceed as follows:

- (a) Prepare a 16-inch measuring stick with the proper corner piece cut from one end depending upon the wire spacing to be used as a gauge (See Fig. 1.)
- (b) Measure out from the wire grooves of the insulators and nick each line wire as described in 2.01 using the full length of the stick.
- (c) Place the stick in the wire groove of the insulator using the corner cut out as shown in Fig. 8. With the cutting edge of the pliers make a second nick in each wire at the end of the stick. The distance between these nicks is the amount which must be cut out so that when the transposition is removed, the sag of the wires will remain the same.

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- (d) Clean each line wire around the nicks preparatory to placing a sleeve.
- (e) Place snubbing clamps on each wire on the side of the transposition away from the nicks in the wires as described in Part 3.
- (f) Place a B Wire Puller (or alternate block and tackle) on the transposition as described in Part 4.
- (g) If the wires are in service use a 5A type transposition switchbox as described in Part 5 and throw the switch before the wires are cut to the X position. Protect one of the wires at the crossover in the transposition by covering it with a piece of P Wire Guard.
- (h) Take up enough slack with the B Wire Puller to cut the wires and join them again.
- (i) Cut off the piece between the two nicks of the upper wire.
- (j) Cut the lower wire keeping the wires out of contact with each other, with metal tools, or with the point transposition bracket that would complete electrical contact between them if they are in service.
- (k) Throw the switch in the 5A type transposition switchbox from the (X) position to the (=) position with a quick motion.
- (l) Connect the wire ends straight through with S Sleeves, eliminating the transposition.
- (m) Release the slack by reversing the B Wire Puller. Remove all tools.
- (n) If the wires are in service, guard them from electrical contacts with each other or other wires while the transposition hardware is removed and the pin supports placed.

11. CORNERS IN THE LEAD

11.01 At all corners at which transpositions occur, place the line wires in the wire grooves of the insulators as shown in Fig. 9. Ease the wire around the corner by hand as it is pulled up or let off during the tensioning and sagging operations, so the insulators will not turn from their positions on the pins. It is important to

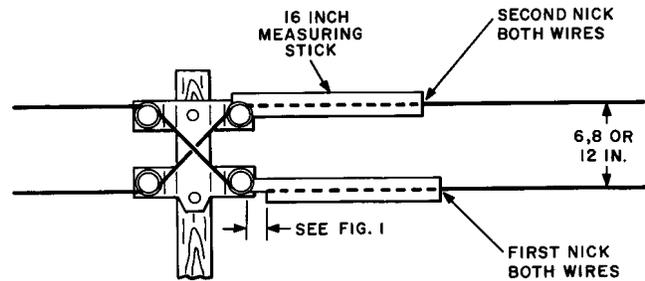


Fig. 8—Measuring Stick Placed for Nicking Sleeves

obtain a close equalization of sags around corners for wires to be point transposed.

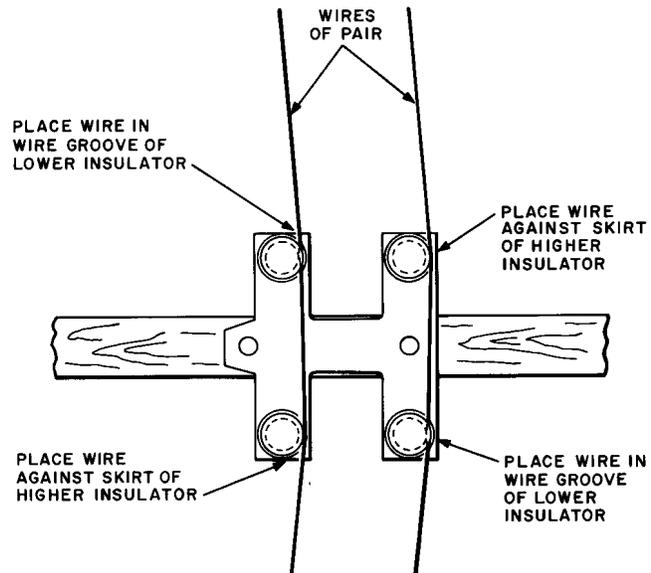


Fig. 9—Wires Placed at Corner Transposition

11.02 At corners where point transpositions do not occur, place the wires in the wire grooves of the insulators.

11.03 When transposing the wires, raise the wire to be measured from the skirt of the higher insulator to the wire groove, leaving it at the same time in the wire groove of the lower insulator. Do the same with the other wire of the pair. Measure and nick the wires forward and attach the snubbing clamps on line. Complete the transposition in the manner described for straight sections of line.