BELL SYSTEM PRACTICES
Outside Plant Construction and Maintenance

SECTION G31.148.3
Issue 1, February, 1958
AT&TCo Standard

OPEN WIRE
SPAN TRANSPOSITIONS
B SPAN TRANSPOSITION BRACKET AND B TRANSPOSITION-SPACER BRACKET

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1. GENERAL

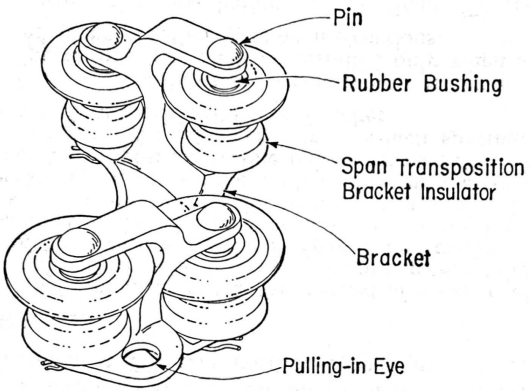
1.01 This section describes the method of making left-over-right 4-inch point transpositions in adjacent pairs within a span of open wire using the B Span Transposition Bracket. It is installed in the wire pairs near the crossarm, then pulled to the specified location in the span by means of a handline. This section also describes the method of making left-over-right 4-inch point transposition in one pair of wires within the span and "pinching-in" the adjacent pair to 4-inch spacing, by installing a B Transposition-Spacer Bracket.

1.02 B Span Transposition Brackets and B Transposition-Spacer Brackets shall be installed only when specified on detailed plans or other specific instructions.

1.03 During the installation of B Span Transposition Brackets and B Transposition-Spacer Brackets, observe the precautions for preventing service interruptions on working circuits, as outlined in Section G31.150, covering "Open Wire—Transposing Working Circuits."

2. DESCRIPTION OF 4-INCH SPAN TRANSPOSITION BRACKET

2.01 The 4-inch Span Transposition Bracket is shown in the following illustration.

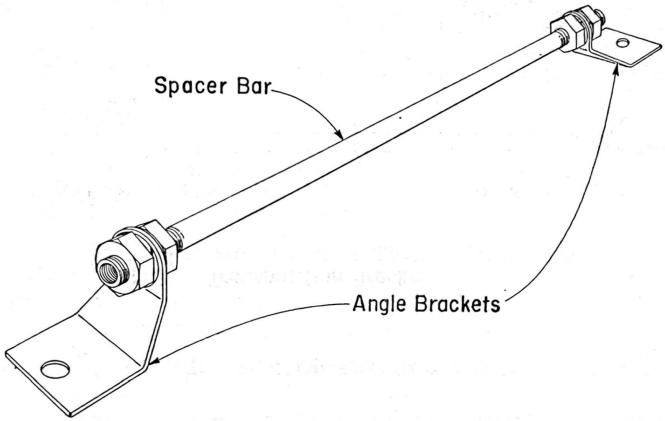


4–INCH SPAN TRANSPOSITION BRACKET

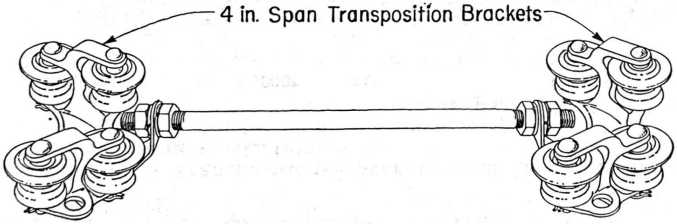
2.02 The bracket is made of aluminum, and is furnished with aluminum alloy pins, equipped with cotter pins, for assembling the insulators. Four Span Transposition Bracket Insulators equipped with rubber bushings are required for each bracket and must be ordered separately.

3. DESCRIPTION OF B SPAN TRANSPOSITION BRACKET

3.01 The B Span Transposition Bracket is shown in the following illustrations.



B SPAN TRANSPOSITION BRACKET



B SPAN TRANSPOSITION BRACKET EQUIPPED WITH TWO 4-INCH SPAN TRANSPOSITION BRACKETS

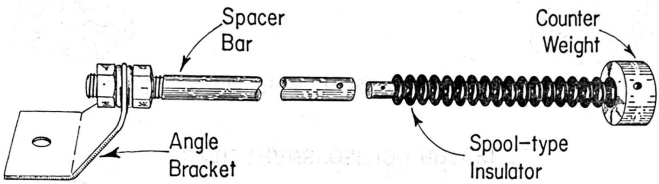
3.02 The bracket consists of an insulating plastic spacer bar equipped with an aluminum alloy angle bracket at each end. Each angle bracket is equipped with an aluminum carriage bolt and lock washer for mounting span transposition brackets. Two 4-inch Span Transposition Brackets and eight Span Trans-

position Bracket Insulators are required for each installation and must be ordered separately.

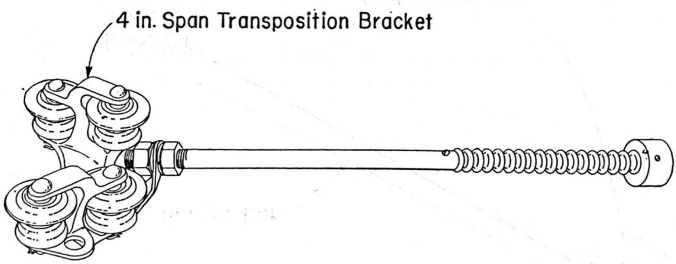
3.03 The nuts holding the metal angle brackets to the plastic spacer bar have been tightened at the factory to a definite torque. In order to avoid damaging the threads at the ends of the spacer bar, **THE NUTS SHOULD NOT BE ADJUSTED BY THE WORKMAN.**

4. DESCRIPTION OF B TRANSPOSITION-SPACER BRACKET

4.01 The B Transposition-Spacer Bracket is shown in the following illustrations.



B TRANSPOSITION-SPACER BRACKET



B TRANSPOSITION-SPACER BRACKET EQUIPPED WITH ONE 4-INCH SPAN TRANSPOSITION BRACKET

4.02 The bracket is furnished in two parts. One part consists of a plastic spool-type insulator and a counterweight. The other part consists of an insulating plastic spacer bar

equipped with an aluminum alloy angle bracket at one end, and a stainless steel bolt and lock washer at the other end for attaching the spool-type insulator. One 4-inch Span Transposition Bracket and four Span Transposition Bracket Insulators are required for each installation and must be ordered separately. An aluminum carriage bolt with a lock washer is furnished for joining the angle bracket to the 4-inch Span Transposition Bracket. B Tie Wires are used to attach the line wires to the spool-type insulator, and must be ordered separately.

4.03 The nuts holding the metal angle bracket to the plastic spacer bar have been tightened at the factory to a definite torque. In order to avoid damaging the threads at the end of the spacer bar, **THE NUTS SHOULD NOT BE ADJUSTED BY THE WORKMAN.**

5. INSTALLATION OF B SPAN TRANSPOSITION BRACKET

5.01 The B Span Transposition Bracket, when equipped with two 4-inch Span Transposition Brackets, is used for making left-over-right point transpositions in adjacent pairs within a span of open wire. Install the B Span Transposition Bracket as outlined in the following steps.

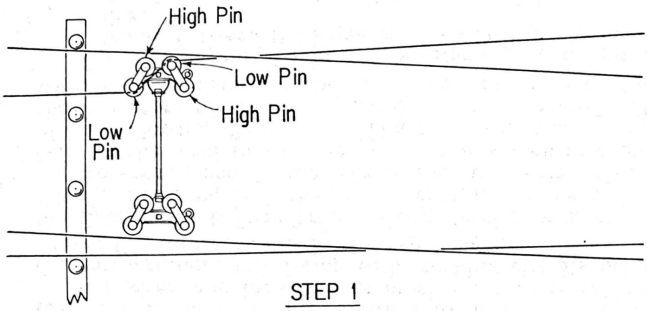
(1) Equip the B Span Transposition Bracket with two 4-inch Span Transposition Brackets, making sure that both pulling eyes are facing the same direction.

(2) Untie the wires at the pole where the work can be performed most conveniently. For example, if a transposition is to be installed in a span adjacent to a corner pole, it will usually be desirable to cut in the transposition at the pole away from the corner.

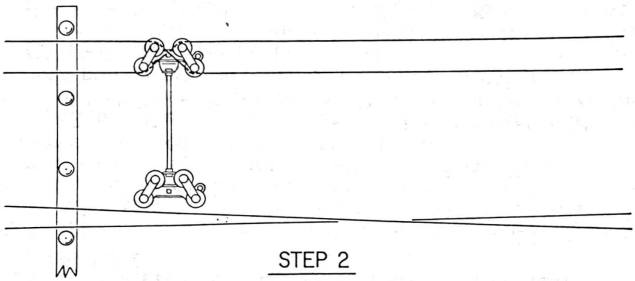
(3) Place slack blocks on the wires to be transposed, cut the wires, and introduce as much slack as possible in the wires without interfering with working circuits below. Throw the transpositions in the usual manner.

(4) Holding the B Span Transposition Bracket parallel with the crossarm, with the pulling eyes facing away from the crossarm, place the low wire of the outside pair (1-2 or 9-10) in the insulators of the low pins as shown in Step 1 of the following illustration. Then place the high wire in the insulators of the high pins as shown in Step 2. The wires shall be placed in the low groove of the insulators.

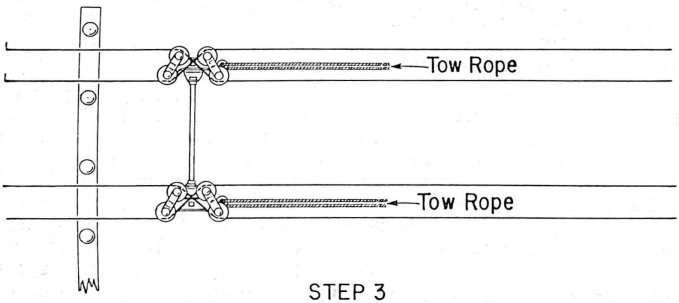
Caution: Strain should not be placed on the plastic tubing between the angle brackets during this operation.



STEP 1



STEP 2



STEP 3

(5) Repeat the operations described in the preceding paragraph on the inside pair of wires (3-4 or 7-8).

(6) Thread separate handlines through the pulling eye of each 4-inch bracket (see Step 3) to serve as tow lines. The handlines should be free of knots and should be about two times as long as the distance from the wires to the ground.

(7) The doubled ends of both handlines should then be joined together. Attach the four rope ends to a single handline and make adjustments to assure that both ends of the B Span Transposition Bracket will be pulled equally, and at right angles to the line wires.

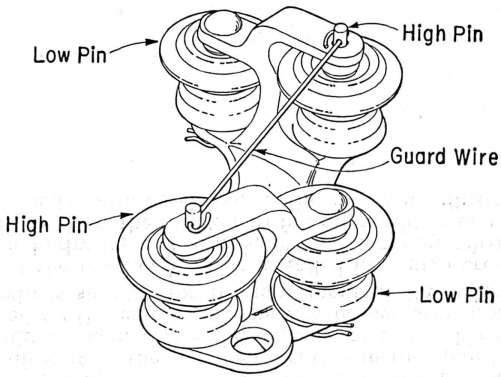
(8) Using the single handline, pass the rope over the crossarm at the far end of the span and pull the bracket to the specified location in the span. Remove the handlines from the brackets. To avoid fouling of the rope, it should be pulled out of the bottom of the pulling-in eye.

Note: Do not attempt to pull the bracket past sleeves or bad bends in the line wire. If there are any sleeves or bad bends in the section of wire along which the brackets are to be towed, that portion of the wire should be replaced before the transposing operation is started, unless it is determined that the brackets can be pulled from the other end of the span without encountering sleeves.

(9) Tension the wires to the proper sag and splice. Place spiral ties at each end of the span containing the bracket.

5.02 The B Span Transposition Bracket can also be installed directly at the specified location in the span by using a tower ladder truck, where the expense of using this equipment is justified by the amount of work to be performed, and where the terrain is suitable for the movement of the vehicle.

5.03 If the bracket is to be installed in a span crossing over a highway, a walkway, or any location where broken wires might allow the bracket to fall on a vehicle or pedestrian, install a guard wire as shown in the following illustration.



4-INCH SPAN TRANSPOSITION BRACKET

Reverse the two "high" pins and place a guard wire through the cotter pin holes. Guard wires may be made of 109 Steel Construction Wire, 109 Steel Line Wire, or 109 Steel Tie Wire (10-inch length). **Do not use copper or copper-steel wire.**

6. INSTALLATION OF B TRANSPOSITION-SPACER BRACKET

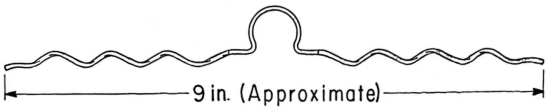
6.01 The B Transposition-Spacer Bracket, when equipped with one 4-inch Span Transposition Bracket, is used for making a left-over-right point transposition within a span of open wire in a pair of line wires, and to "pinch in" the adjacent pair of wires to 4-inch spacing on a spool-type insulator. Install the B Transposition-Spacer Bracket as outlined in the following steps.

(1) Assemble the B Transposition-Spacer Bracket and equip with one 4-inch Span Transposition Bracket, making sure that the pulling eye will be in the direction away from the pole where the work is to be performed.

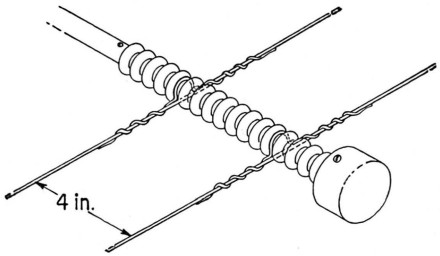
(2) Install the B Transposition-Spacer Bracket on the line wires in the manner described for the B Span Transposition Bracket in Steps (2), (3), and (4) of Paragraph 5.01.

(3) Tie the adjacent pair of wires to the **underside** of the spool-type insulator with B Tie Wires, which are supplied in size 104 and 128, as shown in the following illustration. Proper wire spacing (4 inches between wires of the

pair and 24-inch centers between pairs of wires) will be obtained if the wires are placed at the fifth groove from each end of the spool-type insulator.



B TIE WIRE



(4) Place a handline over the spool-type insulator, between the "pinched-in" wires. Thread another handline through the pulling eye of the 4-inch Span Transposition Bracket. The lines should be free of knots and should be about two times as long as the distance from the wires to the ground.

(5) The doubled ends of both handlines should then be joined together. Attach the four rope ends to a single handline and make adjustments to assure that both ends of the B Transposition-Spacer Bracket will be pulled equally. Proceed as described in Steps (8) and (9) of Paragraph 5.01.

6.02 The B Transposition-Spacer Bracket can also be installed directly at the specified location in the span by using a tower ladder truck, where the expense of using this equipment is justified by the amount of work to be performed, and where the terrain is suitable for the movement of the vehicle.

6.03 Guard wires are not necessary on the B Transposition-Spacer Bracket.