

## DROP AND BLOCK WIRING REPAIR

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### 1. GENERAL

- 1.01 This section describes the method and material required to repair drop and block wire.
- 1.02 This section is reissued to update text, delete reference to friction tape, and include information on vinyl tape and the AMP® drop wire splice. Since this is a general revision, arrows used to show changes have been omitted.

® AMP Telecon Division, Harrisburg, Pa.

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1.03 The workmen engaged in the repair of drop and block wires should be familiar with the construction methods and details of drop and block wiring as covered in the 627 series and should be guided by those sections as well as by the practices included in this section.

1.04 The method of repair using DR tape, vinyl tape, and the AMP drop wire splice apply to C and F drop wire only. With the exception of its outer neoprene jacket, C or F multiple drop wire should not be repaired because the difficulty in equalizing the length of all spliced conductors results in uneven distribution of wire tension.

1.05 The following general principles should be applied in making repairs to drop and block wire:

- (a) Correct the condition which has caused the service to be impaired, doing the work in a manner to prevent the recurrence of the same trouble and to eliminate, as far as practicable, any unsatisfactory conditions that might result in the development of trouble in the near future.
- (b) The employees should keep in mind there may be many conditions in the plant not conforming to the present standard requirements, but do not present a hazard to or a potential impairment of the service. It is not usually economical in these cases to bring such conditions into conformity with standard practices.
- (c) Where it is necessary to repair drop or block wires by replacing a damaged portion of wire, make the repairs by cutting in a short piece of new wire unless the portion to be repaired is 25 feet or less from a wire end which can be conveniently disconnected. Under such conditions it will usually be advisable to splice in a new piece of wire to the end of the wire run.

(d) In making repairs involving splicing in new portions of wire, avoid making more than two additional splices in each conductor in any one span. Splices which already exist in the span should be cut out if they are within 5 feet of the new splice to be made.

(e) When a drop or block wire is taken down for the purpose of making repairs and the insulation is found to be badly weatherworn or deteriorated, replace the entire portion of the wire in that condition.

(f) In making drop wire rearrangements on poles where it is necessary to splice out the existing drop wire in order to properly reach the cable terminal, the splice may be made at any convenient point, provided the wire is new or the condition of the insulation is good. Where the insulation is considerably aged or weatherworn, the splice should be made at a point in the span well beyond the wire support so good insulation will be provided at the point where the wire clamp is attached.

(g) Avoid making temporary repairs whenever possible. Where the workman is unable to permanently repair defects or to correct hazardous conditions because of lack of proper equipment, material, or due to the nature of the work involved, he should be governed by local practices.

**1.06** Before leaving a line upon which work has been done or repairs have been made, suitable tests should be made in accordance with local instructions to determine that the line is in good working condition.

## **2. ABRADED WIRE**

**2.01** When repairing drop or block wires where the insulation is abraded to such an extent that repairs are necessary, one of the following methods should be used to repair the wire:

(a) Where abrasion is caused by tree limbs and trimming the trees to obtain satisfactory clearance is more economical than rerouting the wire, trim the trees if the necessary permission can be secured. In pruning or trimming trees follow the methods outlined in the instructions covering tree pruning. Repair the abrasion as outlined in 2.04 and 2.05 if possible, otherwise splice in a new portion of wire.

(b) Where it is not practicable to avoid abrasion by tree trimming, replace or repair the abraded portion of the drop or block wire as outlined under (a), and

(1) Reroute the drop or block wire if practicable to avoid tree interference (see 2.02), or

(2) If it is not practicable to reroute drop or block wire, place wire guards at exposed points (see Section 462-450-100).

**Note:** Wire guards should never be placed over portions of the wire on which the insulation is abraded and has not been repaired.

(c) Where a twisted pair or parallel drop wire span which is exposed to twigs or foliage is in such condition as to require repairs and it is not practicable to trim trees or reroute wire, replace span using a new portion of drop wire. Protect the drop wire from contact with tree limbs or branches larger than 1/2 inch in diameter at point of contact with P or S wire guards.

(d) If abrasion in wire runs along building walls is caused by projections, replace or repair the abraded portion of the wire and to prevent further injury place additional attachments or provide mechanical protection for wire as outlined in Section 462-450-205.

**2.02** Where it is not economical or practicable to clear contacts with trees, building roofs, poles, or other structures which have caused abrasion or to adequately protect wire from mechanical injury by one of the methods outlined in 2.01, reroute the wire. This may be done by one of the following methods which are listed in order of preference:

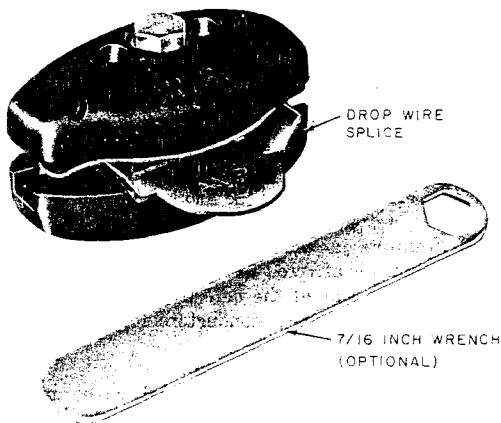
(a) Distribute from a different pole or from a different point on the same pole provided such a change will not interfere with proper clearances. If permission for an attachment to an existing nearby pole or building can be obtained, this may enable the interference to be cleared.

(b) Make the point of attachment to the customer's premises at a different location, provided such a change will not interfere with proper clearances.

(c) Use span clamps. Span clamps make the wire less accessible for maintenance, but should be used if a clear run cannot be secured in any other manner.

**2.03** When necessary to reroute wires, the work should be done in accordance with the instructions outlined in the placing sections.

**2.04** In parallel wire, when only the insulation on one wire has been damaged for a distance of less than 12 inches and the wire shows no signs of corrosion, repair by taping over both wires as outlined in 3.01. Where insulation on both wires is damaged for a distance of less than 12 inches, repair the wires with an AMP drop wire splice (Fig. 1) as described in Fig. 2 or wrap each wire separately with DR tape as outlined in 3.01 before applying the vinyl tape over both wires.



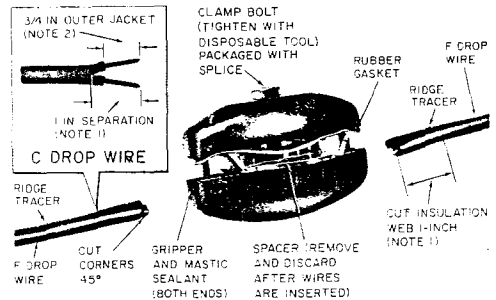
**Fig. 1—Amp Drop Wire Splice**

**Note:** Do not use AMP drop wire splice for splicing block wire or drop wire to block wire.

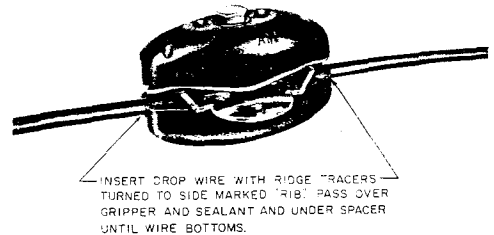
**2.05** In twisted pair wire, where the insulation on one or both wires has been damaged for a distance of less than 12 inches and the wires show no indication of corrosion, repair by taping wires separately over the damaged parts as outlined in 3.01.

**2.06** In cases where the length of the damaged insulation exceeds 12 inches or where the

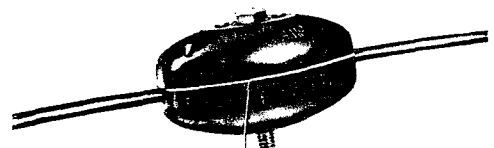
insulation has been damaged at several points in the span, the abraded portion of the wire should be replaced as outlined in 2.01. In every case either the cause of the abrasion should be removed or suitable mechanical protection or additional attachments should be placed on the wire so further abrasion will be avoided.



**(1) DROP WIRE PREPARATION**



**(2) DROP WIRE INSERTION**



**(3) COMPLETED SPLICE**

**Fig. 2—Splicing Drop Wire With Amp Drop Wire Splice**

**3. PLACING DR AND FRICTION TAPE**

**3.01** When placing DR and vinyl tape in connection with repair of drop and block wires, wipe off any excess dirt or dust from surface of insulation or jacket and proceed as follows:

(a) **Placing DR Tape**—Wrap a single half-lapped layer of 3/4-inch DR tape starting 1 inch beyond the end of the insulation defect, wrapping tape to 1 inch beyond the insulation defect on the opposite end. Wrap the tape under slight tension removing separator as taping progresses. Press the taped section firmly between the fingers or in the palm of the hand to cement layers together.

(b) **Placing Vinyl Tape**—Wrap two half-lapped layers of 3/4-inch vinyl tape starting at the center of insulation defect, wrap to 3/4 inch beyond one end of DR tape, then reverse direction of wrap to 3/4 inch beyond the other end of DR tape. Reverse direction again and end wrapping at center.

**4. WEATHERED OR DETERIORATED WIRE**

**4.01** When the insulation on drop or block wires becomes weather-worn or deteriorated to such an extent that the service has been impaired because of low insulation resistance, it is generally advisable to replace the entire section of weathered or deteriorated wire. The new wire should be placed in accordance with the instructions outlined in Section 462-400-205 or Section 462-400-206.

**5. TROUBLE AT SUPPORTS**

**5.01** When clearing drop or block wire trouble which locates at a clamp, replace the damaged portion of the wire. Clamps should not be placed over splices or taped portion of the wire.

**6. OPENS**

**6.01** Repair opens in drop or block wires by splicing in a section of wire unless there is sufficient slack available in existing wire so both wires of the pair may be spliced out with a single splice in each wire. Where only one conductor is open, repairs can often be made by splicing in a short section in the wire affected.

**6.02** Where opens cannot be readily located after test and a careful visual inspection with the wire taken down, replace the span or section in which the open is located.

**6.03** Where opens are located in block wires not under tension such as in ring runs, repairs may often be made by pulling sufficient slack to permit splicing both wires of the pair.

**6.04** When repairing opens in drop or block wires, care should always be taken to make the splice in such a way that any strain will be equalized between both wires of the pair.

**7. SHORTS AND GROUNDS—NOT DUE TO ABRASION OR AT DROP WIRE SUPPORTS**

**7.01** If an exact location of the trouble cannot be obtained after test and a careful visual inspection with the wire taken down, replace the span or section in which the trouble is located.

**7.02** When trouble location is exactly known, make repairs to parallel wire as follows:

(a) Separate the conductors for a distance of approximately 2 inches beyond each end of the defective portion of the insulation.

(b) Remove jacket and insulation from the conductor affected for a distance of 1/2 inch beyond each side of the defective portion of the insulation and inspect conductors for corrosion, nicks, or other injuries.

(c) If conductors are not injured, cover each conductor from which the insulation has been removed with single half-lapped wrappings of 3/4-inch DR tape and both conductors with two wrappings of 3/4-inch vinyl tape applied in the same manner as when making a splice.

**7.03** When trouble location is exactly known, make repairs to twisted pair wire as follows:

(a) Remove rubber or vinyl insulation from the conductor affected for a distance of 1/2 inch from each side of the wire defect and inspect conductors for corrosion, nicks, or other injuries.

(b) If conductors are not injured, cover each conductor from which insulation was removed

with single half-lapped wrappings of 3/4-inch DR tape and two wrappings of 3/4-inch vinyl tape applied in the same manner as when making a splice.

**7.04** If the inspection of the wire at the point of trouble indicates that a conductor is corroded or injured to such an extent that subsequent breakage of the wire is probable, cut out the defective piece and complete repairs in the manner outlined in 6.01 to 6.04.

#### **8. KINKS**

**8.01** Kinks which have been pulled tight in wire runs or spans and which require repairs should be cut out and wires spliced in a manner similar to that outlined in 6.01 to 6.04.

#### **9. LOOSE, DEFECTIVE, OR MISSING ATTACHMENTS OR SUPPORTS**

**9.01** When it is necessary to replace loose, broken, deteriorated, or missing attachments or supports follow the instructions outlined in Section 462-350-213. Never reinstall attachments, which have become loose, by using holes for original fasteners except where longer screws or larger anchors can be satisfactorily installed.

**9.02** Where crimped cable rings, used to support block wire runs on messenger, have slipped, replace rings with the present standard type rather than respace the slipped rings.

#### **10. DETERIORATED, DEFECTIVE, OR SLIPPED WIRE GUARDS**

**10.01** Deteriorated or defective guards that are required to protect drop and block wires from abrasion should be replaced. Wire guards that have slipped to the extent that abrasion to the insulation may occur, should be reinstalled to afford proper protection. Wire guards should be placed as outlined in Section 462-450-100.

#### **11. CLEARANCES ON BUILDINGS**

**11.01** Adequate clearances from obstructions should be provided for existing drop and block wires. It may be necessary to place straps, brackets, rings, tape, etc. as outlined in Section 462-350-214.

**11.02** P or S wire guards should be placed when other means will not provide the required protection. Install the wire guards as outlined in Section 462-450-100.

#### **12. HAZARDS FROM ELECTRIC WIRES OR STRUCTURES**

**12.01** When clearances from electric wires or structures require correction, follow local instructions with reference as to whether the telephone plant should be rearranged or the power company should be requested to rearrange their plant. Where the location of the telephone plant is to be changed to provide proper clearances, follow the methods of rerouting outlined in 2.02.