

BURIED PLANT

JOINING UNDERGROUND AND BURIED WIRE

KIT ENCAPSULATION WIRE BURIED Z

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1. GENERAL

1.01 This section describes the methods and materials used in joining Z Service and ND Underground Wires using the Kit Encapsulation Wire Buried Z. It also includes connecting of the outer armour wire at these locations which, to be fully effective as lightning protection, must be made electrically continuous. This method of joining is to be used on all types of buried wires.

1.02 This section replaces Sections 629-760-200, 629-760-206, 629-760-211, and 629-760-900.

1.03 The description of buried and underground wire can be found in Section 629-700-011CA.

1.04 Joining buried wires with the Z buried wire encapsulation kit employs the butt splice method. Once completed the joint may never be reentered.

1.05 Joining should follow as soon as practical after placing, but not before the wire has been tested and found free of faults.

1.06 In wet weather, joining of the wires should be done under a shelter or tent to keep surfaces of the wires dry.

1.07 The joint may be buried after completion, however the first six inches of back fill should have no rocks in it.

2. MATERIAL AND TOOLS

2.01 The following tools and materials are required for joining and encapsulating Z Service Wire or ND Underground Wire:

- | | |
|---------------------------------------|---|
| (a) Kit Encapsulation Wire Buried - Z | Used for encapsulating the connected conductors of the buried wire. See Fig. 1. |
| (b) Connector Wire B | Used for joining the conductor of the buried wire as outlined in Section 632-205-201. |
| (c) Connector Bridging 22031 | Used to make the armour of the buried wire electrically continuous through the joint. |
| (d) Tape Vinyl | 1 inch vinyl for wrapping the top of plastic bag containing the encapsulation compound. |
| (e) Pliers Long Nose | For general use in removing outer insulation of Z Service Wire only. |
| (f) Slitter Wire Underground N. D. | Used for removing the outer and conductor insulation from ND Underground Wire only. |

- (g) Presser Connector B Used to connect the conductors of the buried wires.
- (h) Scissors Splicer's C Used for skinning the conductors of Z Service Wire and cutting plastic encapsulation bag.

POLYURETHANE BOOT USED TO CENTER JOINED CONDUCTORS IN THE ENCAPSULATION COMPOUND.

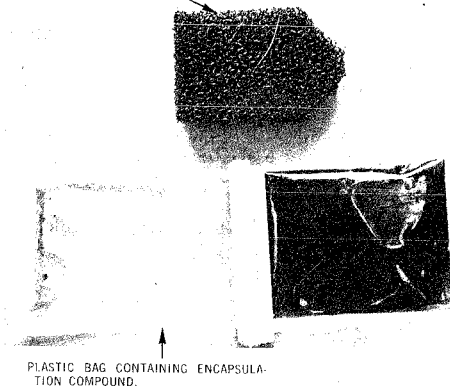


Fig. 1 — Contents of the Z Encapsulation Kit

3. PRECAUTIONS

- 3.01 Avoid prolonged or repeated contact with skin or breathing of vapor. Use only with adequate ventilation. In case of contact with eyes, flush with flowing water for at least 15 minutes and get medical attention.
- 3.02 In cold weather preheat the plugging compound to approximately 70° degrees before mixing. This may be accomplished by placing the compound near the truck heater or inside winter clothing.

4. PREPARING WIRE ENDS

- 4.01 In preparing the ends of the Conductors for joining, using the Kit Encapsulation Wire Buried Z, measurements will remain the same as for the Z Service Wire indicated herein.
- 4.02 The removal of the outer jacket of buried wires differ, as does the installation from the inner conductors and should be completed as indicated in this section.

Wire Service Z

- 4.03 In preparation for splicing the conductors, remove the outer black polyvinyl-chloride jacket as follows:
- 4.04 Using splicer's scissors make approximately a 1/2 inch slit in the end of the jacket to expose the white nylon slitting cord.
- 4.05 Grasp the slitting cord firmly between the jaws of the long nose pliers. Pull the cord with the long nose pliers and slit the jacket for approximately 5 inches from the end of the wire as shown in Fig. 2. Trim off the slit portion of the jacket using the splicer's scissors.

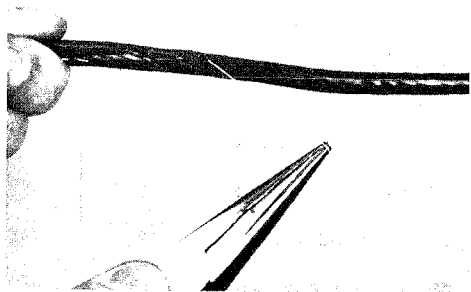


Fig. 2 — Removing Outer Jacket

- 4.06 Install a 22031 Bridging Connector over the exposed shield wire of the two Z Service Wires as close as practical to the outer black polyvinyl-chloride jacket as shown in Fig. 3. Hand tighten the nut of the bridging connector being careful not to damage the inner conductors.



Fig. 3

- 4.07 Free the armour wires from the wire core and cut them off about 3/4 inch from the bridging connector. Fold the armour wires back over the bridging connector and tuck neatly in place.

4.08 Slit and remove the inner jacket to within a distance of about $\frac{1}{2}$ inch from bridging connector using the procedures in 4.04 and 4.05.

4.09 Measure 2 inches from the bridging connector and cut off excess portion of conductors using the larger skinning notch of the C Splicer's Scissors, remove $\frac{3}{4}$ inch of insulation from the end of each conductor.

The prepared wire as seen in Fig. 4 is ready for joining.

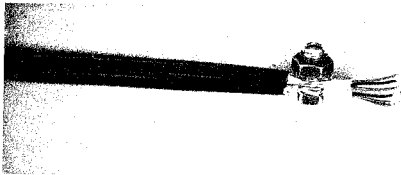
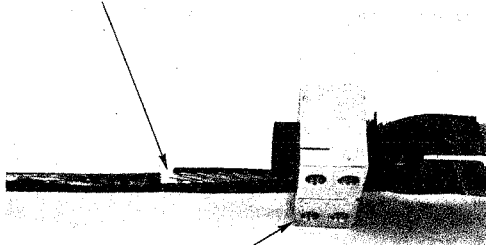


Fig. 4

Wire Underground ND

4.10 In preparation for splicing the conductors of the ND Underground Wire remove 5 inches of the outer PVC jacket as shown in Fig. 5.

1. RING PVC JACKET WITH SPLICER'S SCISSORS, CUT THROUGH TO ARMOUR, BUT DO NOT NICK OR CUT ARMOUR ITSELF.



2. USING LARGE GROOVE OF D UNDERGROUND WIRE SLITTER MAKE LENGTHWISE CUT IN JACKET ON EACH SIDE OF WIRE.

Fig. 5

4.11 Place the 22031 Bridging Connector as indicated in Para. 4.06. Free the armour wire from the insulation, cut and fold them back over the bridging connector as indicated in Para. 4.07.

4.12 Using the smaller groove of the D Underground Wire Splitter split the insulation between the conductors to separate them as shown in Fig. 6.

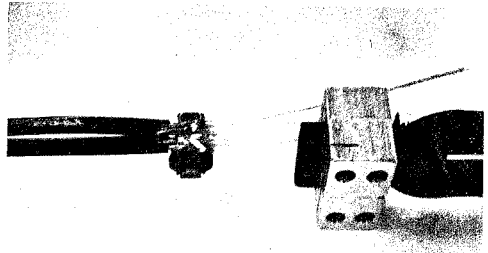


Fig. 6

4.13 As indicated in Para. 4.09 measure 2 inches from the bridging connector and cut off the excess portion of the conductors. Using the skinning notch on the D Underground Wire Slitter remove $\frac{3}{4}$ inch of insulation from the end of each conductor.

4.14 The prepared ends of the ND Underground Wire is ready for joining.

5. JOINING CONDUCTORS

5.01 Conductors of the buried wire are matched colour to colour and joined together with B Wire Connectors. Only the B Connector Presser shall be used. *The use of long nose pliers must be avoided.*

5.02 Once the conductors of the buried wire are joined together, gently fold them back over the bridging connector in preparation for encapsulation as shown in Fig. 7.

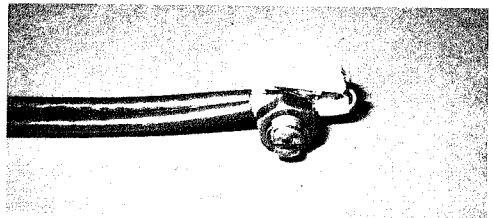


Fig. 7

6. ENCAPSULATION OF CONDUCTORS

6.01 Remove the polyurethane boot and plastic bag containing the encapsulation compound from the cardboard container. If the temperature is below 60 degrees the compound should be placed in a warm place before mixing to shorten the set-up time.

6.02 Slide the polyurethane boot over the joined ends of the conductors as shown in Fig. 8. Care must be taken to ensure that the joined ends of the conductor do not protrude from the open end of the polyurethane boot.

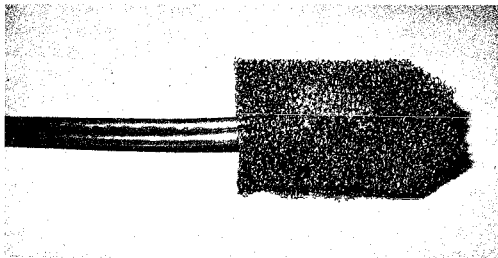


Fig. 8

6.03 The use of the polyurethane boot is required to ensure that the conductors of the joined wire will remain centered in the encapsulation compound during the set-up period.

6.04 Remove the separator clip on the encapsulation compound by grasping the outer ends of the plastic bag and giving a quick firm snap. Fig. 9.

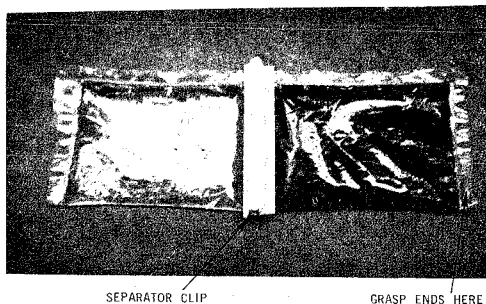


Fig. 9 — Encapsulation Compound

6.05 Mix the resin thoroughly by laying the plastic bag on a flat surface and using the clip removed in 6.04. Scrape back and forth across the plastic bag for approximately one minute or until the bag begins to feel warm to the touch. When the compound is thoroughly mixed scrape all contents to one end.

6.06 With splicer's scissors cut $\frac{1}{2}$ inch off plastic encapsulation bag at the opposite end of contents.

6.07 Gently slide the polyurethane boot containing the joined conductors into the encapsulation compound contained in the plastic bag. The polyurethane boot must be completely submerged beneath the encapsulation compound.

6.08 The plastic bag containing the polyurethane boot, joined conductors and encapsulation compound must then be gently worked to remove any air bubbles that may be trapped or otherwise contained in the encapsulation solution.

6.09 Once the air bubbles have been removed simply twist the remainder of the plastic bag around the encapsulated wires and tape tightly with vinyl tape. Fig. 10.

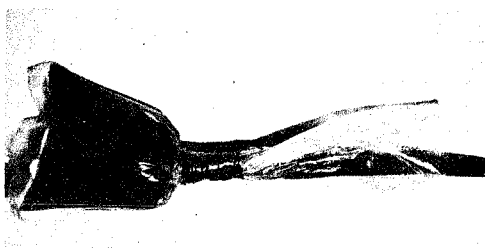


Fig. 10 — Encapsulated Wires

6.10 The compound will begin to set within approximately 5 minutes. At this time the splice may be placed in the trench and covered with no additional protection.

7. SECTION REPLACEMENT

7.01 No replacement of service wire should be completed with a smaller gauge than the existing facility. Any service wire required for repair, or to be used in a section replacement, must be of the same or larger gauge to avoid fusing in the repaired or replaced section.