
Splicing/Joining Electrical Conductor

Written Assessment

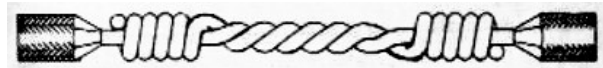




Identifying Splices and Joints

1. Joining and splicing of electrical conductor plays a very important role in the field of electricity. Some experts say, “there is no better conductor than the unjoined or unspliced conductor”, unfortunately, any wiring installation is impossible to accomplish without cutting the conductor for a certain length and then join or splice together afterwards to satisfy the desired connection for the operation of the circuitry. Therefore, an electrician must be equipped with proper technical skills in this activity
2. The Philippine Electrical Code relative to electrical joints and splices specifies that conductors must be spliced or joined as to both mechanically and electrically secure prior to soldering.
3. The code emphasizes that the joint or splice must be secured mechanically and electrically. Loose connection due to improper joining/splicing of conductor may lead to a big problem a few months after the commissioning, especially if the spliced conductor carries huge amount of electric current. The connection will generate heat that will cause the joined conductor to expand and thereby increasing the gap between the surfaces which then lead to arcing.

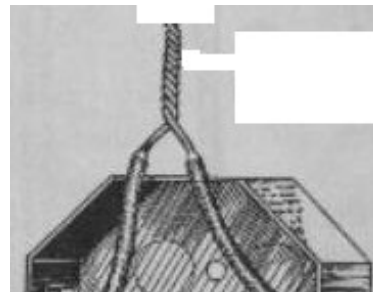
4. **Joint** is the tying together of two single wire conductors so that the union will be good both mechanically and electrically.



5. **Splice** is the interlaying of the strands of two stranded conductors so that the union will be good both mechanically and electrically.



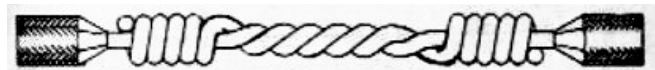
6. **Rat Tail or Pig Tail** - This kind of joint is commonly used to joint two or more conductor inside the junction box. It is suitable for service where there is no mechanical stress as where wires are to be connected in an outlet box, switch or conduit fitting.



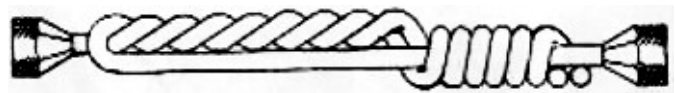
7. **Bell Hanger's Joint (Western Union Short Tie).** This joint is commonly used to join continuous run conductor where the tensile stress is not too great, such as conductors inside conduit bodies.



8. **Western Union Long Tie** - The modified form of bell hanger's joint, made in the same way as the latter with the exception that a number of twists is made to make it more efficient mechanically as the tensile stress brought on this joint is considerable.



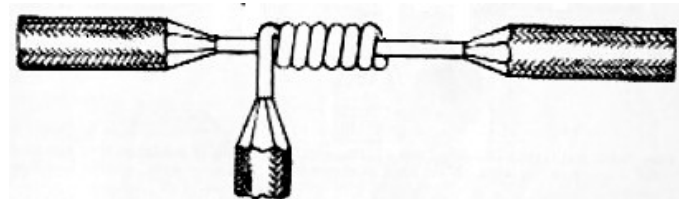
9. **Turn Back Joint (Through Fixture Joint)** - This joint is used to connect two continuous run conductors under extreme tension.



10. **Duplex Joint** - Duplex wire joint is used where twin wire is employed, that is two-wire cables. It consists of two bell hanger's joints spaced so that they do not come opposite each other.

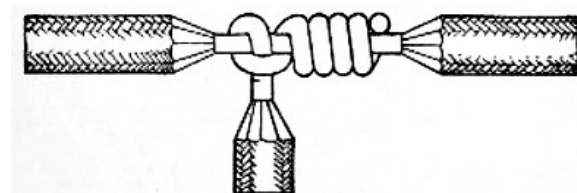


11. **Tap Joint** - Tap is the connection of the end of one wire to some point along the run of another wire. There are various taps to meet different conditions.

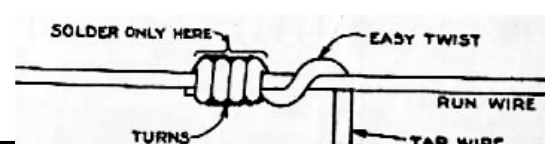


12. **Plain tap joint**-is used where the tap wire is under considerable tensile stress.

13. **Knotted Tap**-is used where the tap wire is under heavy tensile stress.

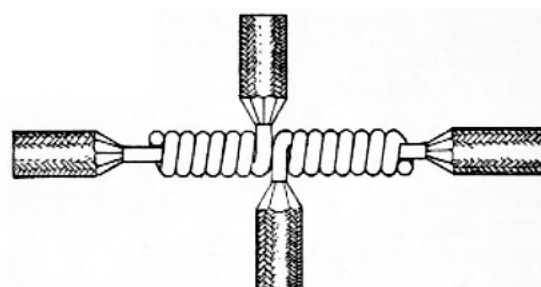


14. **Aerial Tap**-is used as temporary taps usually done in construction sites. The easy twist will facilitate tap wire

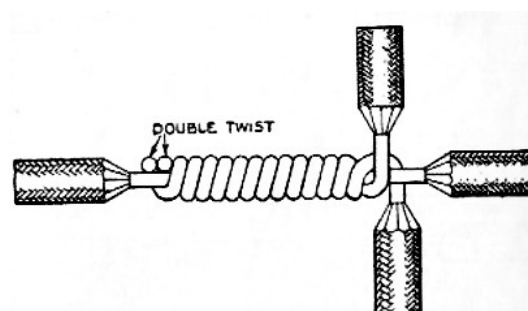


movement.

15. Double cross joint-the same application as plain tap do, the only difference is that this tap a combination of two plain taps place side by side with each other..



16. Duplex cross joint-a two tap wire turned simultaneously and is used where the two tap wire is under heavy tensile stress.



17. **Running Butt Splice** - Running butts link to splices formed by butting together the end of two cable lengths to extend the run or length of circuit. Running butt splices are classified as single wrapped splice and multi wrapped splice.

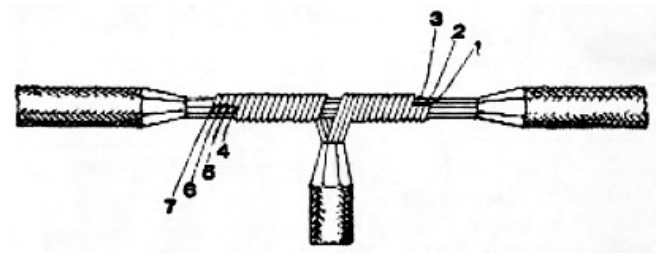


18. **Single Wrapped Splice** This splice is used for large wire (14 mm² and larger) because it is easier to wrapped a single wire at a turn than to wrapped them all at once.

19. **Multi Wrapped Splice** - This method of wrapping is generally used on small cables because the strands are flexible and all can be wrapped in one operation. A three strand cable is selected so as to clearly show the method of wrapping

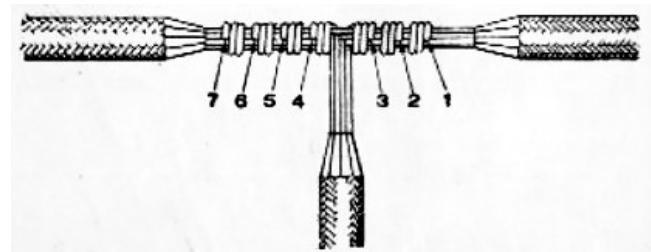


20. Tap Splices - These are made when the end of one stranded conductor is to be connected at some point along the run of another stranded conductor. They are classified as ordinary, split and y-splice.

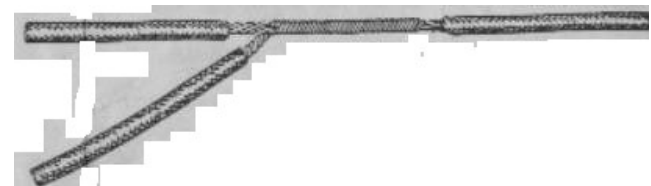


21. Ordinary tap splice

22. Split tap splice-This splice is used for large wire (14 mm² and larger) because it is easier to wrapped a single wire at a turn than to wrapped them all at once.



23. Y-splice- This method of wrapping is generally used on small cables because the strands are flexible and all can be wrapped in one operation.

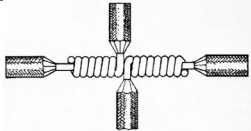

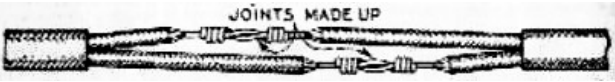
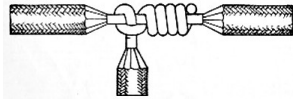



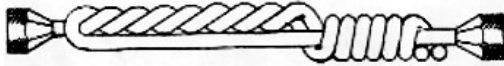
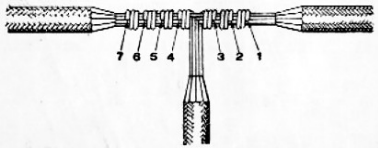
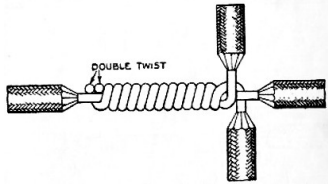
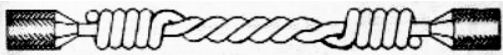
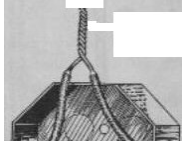




Identifying Splices and joints

IDENTIFICATION:

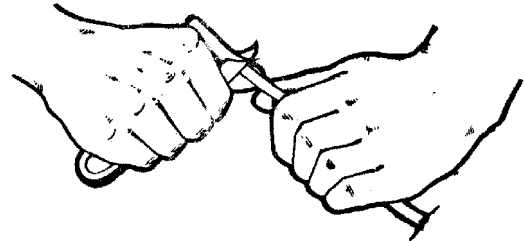
Direction: Identify the following splices and joints and describe their applications.

| | |
|--|--|
| <p>1.</p>  | <p>2.</p>  |
| <p>3.</p>  | <p>4.</p>  |
| <p>5.</p>  | <p>6.</p>  |
| <p>7.</p>  | <p>8.</p>  |
| <p>9.</p>  | <p>10.</p>  |
| <p>11.</p>  | <p>12.</p>  |



Stripping Electrical Conductor

1. In preparing insulated conductors for making joints or splices, the insulation must first be removed from each conductor a proper distance depending upon the type of joint or splice to be made.



2. For smaller size of wires a wire stripper can be use to remove the insulation.

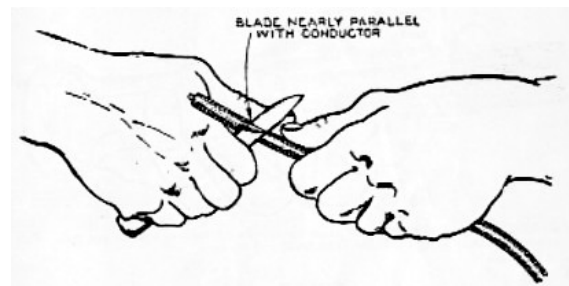


3. A stripping knife or electrician knife can be use to remove insulation of bigger conductors.

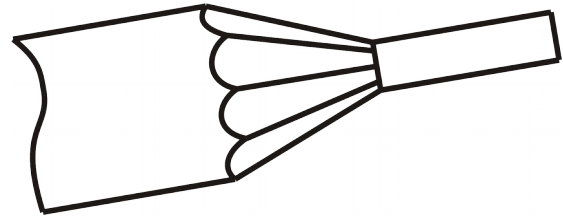


4. When using electrician's knife, hold the blade so that it will lie almost flat with the wire to avoid groove or nicking.

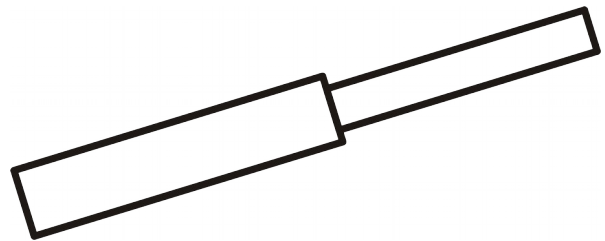
NOTE: Don't stretch the insulation when you are stripping the conductors otherwise the stretched part will be thinner and give less insulation protection.



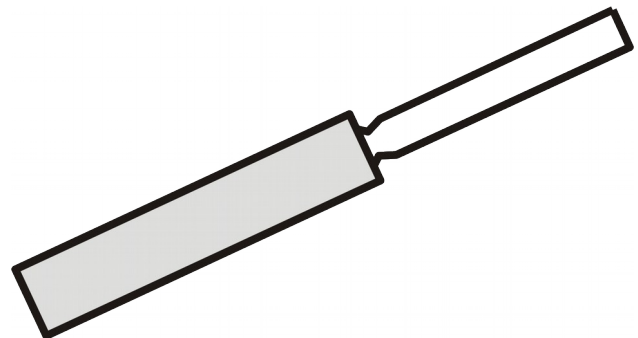
5. The stripped conductor should look like this.



6. Do not place the blade of the knife perpendicular to the conductor.



7. The groove or nick lessens the ampacity of the conductor.



8. The conductor will be cut easily through accidental bending during joining or splicing

9. Scrape or clean the surface of the conductor lightly with the knife to ensure good contact between wires.

