



Scotchlok™ Connectors Splicing Dos and Don'ts

Tech Tip

Don't strip the wires

3M™ Scotchlok™ connectors have insulation displacement contacts (IDC) designed to cut through the insulation, with minimal craft effort and make direct “spring” contact with the copper conductor. If you strip the wires, the IDC will still function but the conductor is exposed to humidity, direct moisture, and corrosive pollutants that could result in a short or a high-resistance connection point. A high-resistance connection will increase the signal-to-noise ratio and could prevent or reduce higher speed data transmission. Further, if insulation is stripped so far back that conductors are exposed outside of the connector, the result could be low resistance or shorts to ground or other circuits due to direct contact or humidity even without corrosion. Even if bare copper does not extend outside the connector, it will be closer to the conductor entrance and less protected and more vulnerable to failure.

Don't use channel type pliers or similar tools to crimp

Scotchlok connectors are designed to be crimped to a given height and lock into place. The moving parts are designed to move in a parallel- like movement.

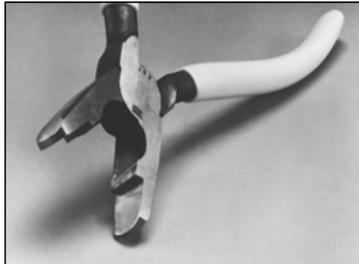
- Crimped to a given height: If a Scotchlok connector (or any other two-wire connector) is not crimped to the required height and locked in position, the possibility exists that with temperature cycling the cap may lift. With additional temperature cycling over time, the cap can start to pull the wire out of the IDC element resulting in an intermittently open circuit. This usually happens during wide temperature swings (early morning or dusk). As the temperature stabilizes during the day (or night), electrical contact may resume. Many “no fault found” trouble calls are due to this method of improper installation.
- Another problem of using channel type pliers or similar tools for crimping the connector is that too much force is easily applied, and the connector can be cracked or crushed. This can destroy the cap locking mechanism and can deform the IDC element inside of the connector. Either defect can result in failure at a later date if not repaired immediately.
- Parallel movement of jaws: It is important that the cap engage the connector jacket in a parallel movement. Using channel type pliers or similar tools can result in a “cocked” cap in which one side of the cap is engaged and locked and the other side is tipped up. The failure mode for this is the same as the above. The cap may start to lift over time.

Don't use small pliers or similar tools to crimp

- Most small pliers operate at a very low mechanical advantage. Because of this, the hands of craft technicians may tire, resulting in incomplete crimps. In addition, most pliers have a non-parallel movement that may tip the connector caps.

Do Use 3M™ Scotchlok™ Crimping Tools

- 3M offers multiple crimping tools that vary from 3/1 to 10/1 mechanical advantage.
- 3M™ Scotchlok™ Tools operate in a parallel like movement to ensure that caps are not tipped. They also all have mechanical stops to ensure that the connector is not over-crimped (crushed). The following tools would be recommended for the CATV Industry:



E-9Y: 3/1 mechanical advantage (has wire cutter feature)



E-9E: 4/1 mechanical advantage



E-9J: 10/1 mechanical advantage



E-9R: 10/1 mechanical advantage (has wire cutter feature, spare blade & ratchet release)

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