Signal cable ground box splicing



Overview

The following procedure has been tested and found to produce good adhesion between the uncured thermosetting tapes and the cable jacket in a standard vulcanized splice.

Key Takeaways

Grounding wires in a signal cable junction box should be spliced together using pigtails and appropriate connectors, ensuring continuity to the panel and bonding to any metal box.

Preparing the Ground Wires

Turn off power to the circuit feeding the box and verify de-energization using a non-contact voltage tester or multimeter to ensure safety. Strip the insulation from the ends of the ground wires, typically 1/2 to 3/4 inch, to expose bare copper for connection. Align the wires so that all stripped ends are even, preparing them for a secure splice.

Splicing Methods

Pigtail Method: Use a short conductor (pigtail) to connect multiple incoming ground wires to the device or fixture terminal. This ensures the protective path remains continuous even if the device is removed. Connectors: Twist-on wire nuts (green for grounding) or crimp connectors can be used.

Crimp connectors are often preferred in metal boxes to avoid crowding and provide a more secure connection. Bundling: Pre-twist the wires clockwise with pliers before applying the connector to create a robust mechanical bond.

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Bonding to Metal Boxes

Metal boxes must be bonded to the grounding system. Use a dedicated green grounding screw or a metal ground clip to attach the ground bundle to the box. Non-metallic boxes do not require bonding to the box itself; only a pigtail to the device is needed.

Code Compliance

According to NEC 250. 148, all equipment grounding conductors entering a box must be connected together, and a pigtail must be used to connect to the device or to exit the box to the panel. Ensure the pigtail and any exiting grounding wire are sized appropriately, typically matching the largest conductor in the circuit, to maintain proper fault current capacity.

Best Practices

Keep the ground wire accessible for future connections to devices or fixtures. Avoid overcrowding the box; use crimp connectors if multiple grounds are present. Verify continuity from the box to the panel after splicing to ensure a low-resistance path.

By following these steps, signal cable ground splicing will maintain a safe, continuous grounding path, comply with NEC requirements, and ensure proper operation of connected devices.

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10.1.1 Type/Size/Use of Pull Boxes TDOT Standard Drawing T-SG-2 shows the various pull box sizes and their normal application or use. Type A Pull Boxes should be used exclusively for splicing loop

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No uninsulated copper should be visible below the plastic skirt of the wire nut, confirming the splice is safely encapsulated. After the connection is made, a gentle tug on each individual wire

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