Steps for splicing drop fiber optic cables

Overview

The Ultimate Guide to Splicing of Fiber: Techniques and TipsMaster fiber splicing with Phoenix Communications in Shrewsbury, MA. Discover expert techniques.

Key Takeaways

Splicing drop fiber optic cables involves careful preparation, precise alignment, and protective finishing, using either mechanical or fusion splicing methods for a low-loss, reliable connection. 1.

Safety and Preparation

Before starting, ensure you are wearing protective gloves and safety glasses to prevent injury from glass shards. Work in a well-lit, clean area to avoid contamination of fiber ends. Gather all necessary tools: cable stripper, fiber optic stripper, precision cleaver, alcohol wipes, dust-free cloth, fusion splicer or mechanical splice kit, and protective sleeves.

2.

Cable Preparation

Strip the outer jacket of the fiber optic cable using a cable slitter, exposing the inner buffer tube and strength members. Typically, strip 3–5 cm for fusion splicing or as recommended for mechanical splicing. Remove the buffer coating carefully to expose the bare fiber.

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Avoid bending the fiber below a 30 mm radius to prevent breakage. Clean the bare fiber with an IPA-soaked swab to remove oils and debris. Insert a protective sleeve onto the fiber before stripping if using fusion splicing; this sleeve will protect the splice after completion.

3.

Fiber Cleaving

Use a precision fiber cleaver to cut the fiber ends perpendicular to the axis. A clean, flat cleave is critical for low-loss splicing. Inspect the cleaved ends under a microscope to ensure a mirror-like, smooth surface.

4.

Splicing Methods

Mechanical Splicing

Place the cleaved fiber ends into the mechanical splice unit. Apply index-matching gel (or epoxy in older units) to bridge the microscopic gap between fibers, allowing light to pass with minimal reflection. Ensure precise alignment using the splice holder or alignment device.

Once aligned, place the fibers in a splice tray and then into a splice closure to protect against moisture and mechanical stress.

Fusion Splicing

Open the fusion splicer and place each fiber in the V-groove clamps. The splicer aligns the fibers automatically and uses an electric arc to fuse the ends together, creating a continuous optical path. After splicing, slide the protective sleeve over the joint and shrink it using a heat source to reinforce the splice.

Place the completed splice in a splice tray for organization and protection. 5.

Final Inspection and Testing

Inspect the splice visually or with a microscope to ensure proper alignment and no cracks. Test the splice using an optical power meter or OTDR to verify low insertion loss and minimal back reflection. Secure the cable in the closure and seal it to prevent moisture ingress.

6.

Cleanup

Dispose of fiber scraps in a designated container to prevent injury. Ensure all tools are cleaned and stored properly for future use. By following these steps carefully, you can achieve high-quality, low-loss splices for drop fiber optic cables, whether using mechanical or fusion splicing techniques.

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