How to splice a 144-core fiber optic cable

Overview

This is where fiber optic cable splicing—the process of creating a permanent, high-performance join between two fiber ends—becomes critical.

Key Takeaways

Splicing a 144-core fiber optic cable is typically done using fusion ribbon splicing with multiple 24-fiber splice trays in a high-capacity inline closure for organized, low-loss connections.

Overview of Splicing Methods

For a 144-core fiber optic cable, the two main splicing methods are: Fusion Splicing: This is the preferred method for high-capacity cables due to its low insertion loss (~0. 1 dB) and minimal back reflection. Fusion splicing uses an electric arc to melt and fuse fiber ends, creating a permanent, highly reliable joint.

It is ideal for long-haul networks and FTTH deployments. Mechanical Splicing: This method aligns fibers in a self-contained assembly using an index-matching gel. It is faster and suitable for temporary or emergency repairs but has higher loss (~0.

3 dB) and is less durable for large-scale deployments. Ribbon Splicing for 144-Core Cables144-core cables are usually ribbon fiber cables, where fibers are grouped in 12-fiber ribbons. The splicing process involves: Organizing the Ribbons: A 144-core cable typically contains 12 ribbons of 12 fibers each.

Splicing is done ribbon by ribbon using a fusion ribbon splicer. Using Splice Trays: High-capacity closures accommodate multiple 24-fiber splice trays, allowing orderly management of all 144 fibers. For example, four 24-fiber trays can handle 96 fibers, and additional trays are used for the remaining fibers.

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Single-

Fiber Drops: Some fibers may be dropped individually for specific connections, requiring careful routing in the splice tray to avoid bending or stress.

Recommended Equipment and Best Practices

Fusion Splicer: Ensure it supports ribbon splicing and has proper alignment for 12-fiber ribbons. Cleaver: Precision cleaving is critical; a poor cleave can cause high loss or splice failure. Splice Sleeves: Use manufacturer-recommended sleeves to protect the fused fibers.

Inline Fiber Joint Closure: Choose a high-capacity, IP68-rated closure for environmental protection, suitable for aerial, wall, manhole, or direct burial installations. Cable Preparation: Strip the outer jacket carefully, clean fibers with IPA, and avoid tension or bending below the minimum radius.

Step-by-

Step Summary

Strip the cable jacket and buffer tubes to expose the ribbons. Clean and cleave each fiber ribbon precisely. Place ribbons in the fusion splicer and perform the fusion splice.

Protect spliced ribbons with splice sleeves. Organize spliced ribbons in the splice trays inside the closure. Seal the closure using mechanical sealing to ensure durability and environmental protection.

By following these steps, a 144-core fiber optic cable can be spliced efficiently, maintaining low loss, high reliability, and organized fiber management for large-scale network deployments.

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