Custom Process for 12-Core Fiber Optic Fusion Splices for Island Use

Overview

How to Splice Fiber Optic Cable – Step-by-Step Fusion Splicing GuideIn this guide, you will find a chronological description of the fusion splicing process.

Key Takeaways

A precise, low-loss 12-core fiber fusion splice process involves careful stripping, cleaning, cleaving, alignment, arc fusion, and OTDR verification, optimized for remote or island environments.1. Workspace and Safety

Set up a clean, stable workspace to minimize dust and static. Use anti-static mats and wrist straps to protect splicer electronics, and wear high-rated safety goggles and cut-resistant shoes to prevent injury from fiber shards or the fusion arc, which can exceed 5,000°C . Ensure stable power supply for portable splicers, especially in island deployments where AC power may be intermittent .

2. Fiber Preparation
• Strip the outer jacket and buffer: For 12-core fibers, strip 30–40 mm of coating using a precision multi-hole stripper suitable for 250 µm or 900 µm coatings . Apply uniform pressure to avoid microfractures.

• Clean each fiber: Use lint-free wipes soaked in 99–99.9% isopropyl alcohol, wiping from the coating edge to the cleave tip in a single motion. Inspect under a microscope or splicer camera to ensure no dust, oil, or debris remains .
3. Fiber Cleaving
• Use a high-precision cleaver (e.g., Weunion CK12) with 0.2° angle tolerance.

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• Cleave each fiber to produce a smooth, perpendicular end face. Imperfections can increase insertion loss by 0.2–0.5 dB .

• For 12-core fibers, maintain consistent cleave length (10–16 mm) across all cores.
4. Alignment and Arc Fusion
• Load fibers into a multi-core compatible fusion splicer with active core alignment (e.g., AI9 or AI10).

• Activate auto-alignment to achieve sub-micron precision (0.1 µm).

• Set arc parameters according to fiber type: for single-mode fibers, typical settings are 12–15 mA and 1200 ms arc duration .

• Fuse fibers sequentially or in parallel if the splicer supports multi-core operation, ensuring mechanical integrity >95% of fiber tensile strength .
5. Splice Protection
• Place each fused fiber into a heat-shrink splice sleeve or pigtailed splice cassette for modular management and environmental protection .

• For island conditions, consider pre-routed, preloaded cassettes to reduce installation time and protect against humidity or mechanical stress.
6. Quality Control and Testing
• Verify each splice using an OTDR to measure insertion loss and return loss. Aim for ≤0.05 dB insertion loss and >60 dB return loss for APC splices .

• Document all splices for future maintenance and troubleshooting.
7. Environmental Considerations
• Protect fibers from dust, humidity, and temperature fluctuations during splicing.

• Use portable clean enclosures or temporary covers for extended splicing sessions.

• For island deployment, ensure battery-powered splicers can handle the expected number of splices per charge (e.g., 350+ splices for AI9), .
Summary

By following this workflow—careful stripping, cleaning, precise cleaving, active alignment, controlled arc fusion, protective housing, and OTDR verification—you can achieve high-performance, low-loss 12-core fiber splices suitable for island or remote deployments, ensuring long-term reliability and minimal signal degradation.

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The process requires a fusion splicer, a high-precision machine that aligns the fiber cores

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AFL 100S + Core Alignment Fusion Splicer B & C - S018655 Spec Sheet Automated wind protector, tube heater and splice operation

VHO-Splice-fusion

It features: Electrical arc fusion Automatic programs stored for different types of fibers Approximately 25 second splice time 2-axis

how fusion splicing works

Understanding fusion splicing is critical for fiber network technicians. It ensures high performance and long-term

12 Core Fiber Splice Using The KR7 Fusion Splicer

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In this video, we demonstrate how to perform a 12-core ribbon splice using the KR7 by

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Fiber optic cable splicing stands as the foundational skill enabling this vision, expertly uniting fiber strands to maintain

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When done right, splicing ensures minimal loss and long-lasting performance. When done poorly, it can lead to

The Ultimate Guide to Splicing of Fiber: Techniques and Tips

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Designed for simultaneous fusion of multiple strands, up to 12 at once, ribbon splicers

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In this video, we will show you how to fusion splice two fiber optic strands together in an

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