What to do if there is a break in the middle of a multimode fiber fusion splice

Overview

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Key Takeaways

If a multimode fiber breaks in the middle of a fusion splice, the recommended approach is to carefully inspect, clean, re-cleave, and re-splice the fiber under controlled conditions to restore low-loss connectivity.Immediate Steps
• Visual Inspection Examine the splice area using the splicer's built-in camera or a low-power microscope. Look for visible cracks, bubbles, or misalignment at the break point, as these indicate where the fiber failed and whether the ends are suitable for re-splicing .

• Clean the Fiber Ends Use lint-free wipes with 99%+ isopropyl alcohol to clean both fiber ends thoroughly. Remove any dust, oil, or debris from the cleaved surfaces, as contamination can trap gas during splicing and cause bubbles or high splice loss .

• Re-cleave the Fiber Using a precision cleaver, cut the fiber ends to produce smooth, perpendicular surfaces. Ensure the cleave angle is accurate and free of chips, as poor cleaves are a common cause of misalignment and high loss .

• Check Splicer Settings Confirm that the fusion splicer is set to the correct program for multimode fiber. Perform an arc calibration to adjust for environmental conditions such as temperature, humidity, or altitude, which can affect arc behavior .

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• Re-splice the Fiber Place the cleaned and re-cleaved fiber ends into the splicer. Ensure proper alignment in the V-grooves and secure clamping. Execute the fusion splice, monitoring for any visible imperfections like bubbles or offset cores .

• Protect the Splice After splicing, apply the appropriate heat-shrink sleeve and allow it to cool properly. Verify that the sleeve has shrunk evenly without bubbles to protect the splice from mechanical stress .
Verification
• Optical Testing Use an OTDR (Optical Time-Domain Reflectometer) or a power meter to confirm that the splice loss is within acceptable limits. A Visual Fault Locator (VFL) can help identify any remaining microbends or leaks .

• Documentation and Maintenance Record the splice location, loss measurements, and any corrective actions. Regularly maintain the splicer, clean electrodes, and track arc usage to prevent future failures .
Preventive Tips
• Handle fibers gently to avoid microbends or stress points.

• Keep the work area clean and shield the splicer from dust and wind.

• Re-clean fiber ends if splicing multiple fibers in sequence to maintain low-loss performance .

• Replace worn electrodes and perform routine calibration to ensure consistent arc quality . By following these steps, a break in the middle of a fusion splice can be effectively repaired, restoring multimode fiber performance and minimizing signal loss.

Article Content

The FOA Reference For Fiber Optics

All require the use of a precision fiber cleaver that scribes and breaks (cleaves) the fibers to be spliced precisely, as the quality of the

Related Video Reference

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