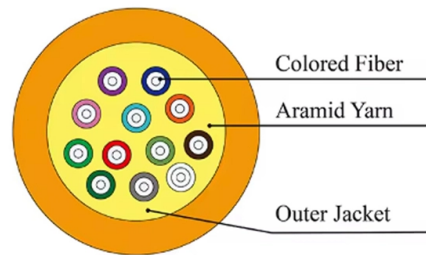


Manufacturing process of lc small square fiber optic cold connector



Overview

LC Connector Assembly LC fiber optic connectors require specific fixturing and tooling. See our materials and equipment designed Automate LC, MT or SC Fibe.

Key Takeaways

The LC small square fiber optic cold connector is manufactured through precise fiber preparation, ferrule insertion, epoxy application, curing, polishing, and inspection to ensure high optical performance. Fiber Preparation

The process begins with stripping the fiber optic cable to remove the outer jacket and buffer layers, exposing the 125 μm glass core. Tools like the UniStrip 2545 or Ripley FO 103-S are commonly used to strip the fiber accurately without damaging it, and Kevlar strength members are cut using specialized machines like the FO 7010 Kevlar Cutter . The fiber end is then cleaved to produce a flat, perpendicular surface for optimal light transmission .

Ferrule Insertion and Adhesive Application

The prepared fiber is inserted into a ceramic ferrule (1.25 mm diameter for LC connectors) which ensures precise alignment of the fiber core . A cold connector uses a low-viscosity epoxy or adhesive to secure the fiber inside the ferrule. Automated systems, such as the SmartDispenser® with AirFree® LDS technology, can deliver consistent epoxy deposits to each connector, improving repeatability and reducing waste . The adhesive is then cured, either at room temperature or under controlled conditions, depending on the epoxy type.

Polishing

After curing, the fiber protrusion is polished to achieve a smooth, flat, or angled end-face. Polishing typically involves multiple steps: initial coarse polishing with silicon carbide films, followed by finer diamond lapping films, and final hand or air polishing to remove residual epoxy . Fixtures like Individual Pressure Control (IPC) jigs ensure each ferrule is held securely and polished uniformly, preventing fiber breakage and maintaining consistent height across connectors .

Quality Inspection

Each connector undergoes inspection for insertion loss, return loss, and end-face geometry. Microscopic inspection ensures the fiber is centered, free of scratches, and properly polished . Connectors are also tested for durability, mating cycles, and environmental resistance to meet industry standards.

Automation and Efficiency

Modern manufacturing often employs automation to increase throughput and reduce human error. Robotic assembly cells can handle ferrule insertion, epoxy dispensing, curing, and polishing in a controlled sequence. Systems like the Offline Gun Reload Station (OLGRS) allow continuous operation by minimizing downtime during epoxy syringe refills . Automation ensures consistent optical performance across high-density LC connector production.

Summary

The LC small square fiber optic cold connector manufacturing process involves:

- Fiber stripping and cleaving
- Ferrule insertion and epoxy application
- Curing of adhesive
- Multi-step polishing
- Inspection and testing

- Optional automation for high-volume production This meticulous process ensures low insertion loss, high return loss, and reliable performance in data centers and high-density network applications .

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FC fiber connector was the first optical fiber connector to use a ceramic ferrule, but unlike the plastic bodied SC and LC connector, it

Fiber Optic Connectors Figure 1

Fiber-to-fiber interconnection can consist of a splice, a permanent connection, or a connector, which differs from the splice in its

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The LC connector (short for Lucent Connector, Little Connector, or Local Connector), It features a 1.25mm Zirconia ferrule in a small

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