

# How to repair scratches on fiber optic patch cords



## Overview

Now that you have the essential tools ready, it's time to repair the damaged fiber optic cable. Follow these seven steps carefully to ensure a precise, low-loss, and reliable connection.

## Key Takeaways

Scratches on fiber optic patch cords can affect signal quality, and whether they can be used depends on their size, location, and severity; minor scratches outside the core may be acceptable, but critical scratches in the core usually require replacement.

## Inspection and Assessment

Scratches on fiber end-faces are defined as defects longer than they are wide and can impact network performance depending on their location and size. The most critical area is Zone A, the fiber core, where light enters or exits. Scratches in this zone can cause significant signal loss due to scattering and reflection, while scratches in Zone B (surrounding the core) are more tolerable but still monitored.

Zone C, the outer areas, is less critical but should still be free from major defects. Use a fiber optic microscope or specialized inspection tool to locate and measure scratches.



## **The IE**

C 61300-3-35 standard provides guidelines for pass/fail criteria based on scratch size and location.

## **Cleaning and Minor Scratch Management**

While dirt, dust, and oil can be removed with lint-free wipes and fiber-specific cleaning solutions, scratches themselves cannot be cleaned away. However, minor scratches outside the core may not prevent the patch cord from passing inspection. Cleaning steps include: Wet cleaning with a fiber-specific solvent to remove oils or residues.

Dry cleaning with dust-free paper or fiber cleaning pens to remove remaining particles. Re-inspection under a microscope to ensure no contaminants remain.

## **Repair or Replacement**

Repolishing: Deep scratches or cracks may require repolishing of the connector end-face, which restores the surface for proper light transmission. Replacement: If scratches are in the core (Zone A) or exceed allowable limits in Zone B, the patch cord should be replaced to maintain network performance and prevent signal loss.

## **Prevention Tips**

Always handle patch cords with gloves and avoid touching the end-face. Use protective caps when connectors are not in use. Avoid excessive bending, pulling, or dropping the cords, as mechanical stress can cause scratches or cracks.

Inspect patch cords regularly, especially in high-use environments like data centers or FTTH networks. By following proper inspection, cleaning, and handling procedures, you can minimize the impact of scratches and ensure reliable fiber optic network performance.

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