

Principle of Coarse Grinding of Fiber Optic Connectors

Article Overview

Coarse grinding is the initial stage in fiber optic connector polishing, aimed at rapidly removing material from the connector end face to shape it for subsequent fine polishing.

Purpose of Coarse Grinding

Coarse grinding serves to quickly remove a significant amount of material from the ferrule end face of a fiber optic connector, ensuring that the fiber core is properly exposed and the surface is roughly shaped for further refinement . This step is critical because it establishes the basic geometry of the connector end face, which directly affects optical performance parameters such as insertion loss and return loss .

Process and Materials

During coarse grinding, diamond grinding sheets of larger grit sizes (e.g., D9, D6, or D3) are used depending on the connector type and required material removal . The ferrule is typically pressed against the grinding sheet with controlled pressure, and water or a polishing liquid may be used as a medium to reduce heat and remove debris . For angled physical contact (APC) connectors, coarse grinding also helps form the required 8-degree angle on the end face .

Role in Connector Performance

The coarse grinding stage ensures that the fiber core is positioned at the apex of the ferrule surface, which is essential for achieving physical contact (PC) connections when mated with another connector . Proper coarse grinding reduces the air gap between fibers, minimizes back reflection, and sets the stage for semi-fine and fine polishing, which further smooth the surface and optimize optical performance .

Integration with Subsequent Steps

After coarse grinding, the connector undergoes semi-fine grinding to reduce surface roughness, followed by fine grinding and polishing to achieve a smooth, convex end face suitable for low insertion loss and high return loss . The quality of coarse grinding directly influences the efficiency and effectiveness of these subsequent polishing steps. In summary, coarse grinding is a foundational step in fiber optic co...

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Common fiber end face grinding methods mainly include PC, UPC, and APC, same as the

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Interferometry used a Michelson-Morley interferometer which uses optical interference to profile the fiber optic connector endface.

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How to Properly Polish Fiber-Optic Connectors

How to properly polish fiber optic connectors Fiber Optic Center, Inc., (FOC), is an international leader in distributing

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This article explains the process of optical fiber polishing, which is crucial for preparing high-quality fiber endfaces for applications like

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The optical fiber needs to be trimmed and stripped so that approximately 10 mm of stripped fiber protrudes from both fiber optic

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