



## TFN 5-in-1 One-Step Fiber Cleaver



### Product Introduction

The C3 High-Precision Fiber Optic cleaver is a state-of-the-art tool engineered for flawless fiber cleaving in telecommunications, data centers, and FTTH deployments. Combining advanced anti-break technology with a rugged yet lightweight construction, it delivers consistent, low-loss cuts on single-mode and multi-mode fibers. Its innovative five-in-one universal clamp eliminates the need for frequent fixture changes, boosting workflow efficiency. Ergonomically designed with a comfortable grip and made from premium materials like aluminum alloy, stainless steel, and hard metal, the C3 ensures long-term durability and precision. Whether you are a field technician or a lab engineer, this cleaver provides stable performance and ease of use, reducing fiber waste and installation time.

### Product Key Selling Points

#### Ultra-High Precision Cleaving

The C3 cleaver is engineered with a precision-ground blade and a dual-angle clamping mechanism that guarantees a mirror-like fiber end face with an average cutting angle of  $\leq 0.5^\circ$ . This level of accuracy minimizes optical return loss and insertion loss, ensuring optimal signal transmission in sensitive network environments. The micrometer-adjustable cutting position allows fine-tuning for different fiber types, making it ideal for both single-mode and multimode applications. With repeatable, reliable cuts every time, technicians can confidently complete splices and terminations without rework, saving time and materials.

#### Patented Anti-Break Fiber Protection

Fiber breakage during cleaving is a common frustration that leads to waste and delays. The C3 features a unique shock-absorbing cushion and a controlled blade return mechanism that prevents micro-cracks and fiber shattering. The clamping force is evenly distributed across the fiber jacket, eliminating stress points that cause unintended fractures. This design is especially beneficial for delicate 250  $\mu$  m coated fibers and bend-insensitive fibers, reducing scrap rates by



up to 30%. Field tests show that even in challenging outdoor conditions, the C3 maintains its anti-break performance, ensuring every cleave is usable.

Versatile Five-in-One Universal Clamp

Say goodbye to swapping clamps for different fiber sizes. The C3 integrates a multi-functional clamp that accommodates 250  $\mu$  m, 900  $\mu$  m, 2mm, 3mm, and FTTH drop cables without any adapter changes. The clamp's self-centering jaws automatically adjust to the fiber diameter, providing a secure hold and consistent cleave length. This all-in-one solution speeds up preparation time and reduces the risk of losing small parts. Whether you're working with tight-buffered cables or loose-tube fibers, the C3's clamp ensures compatibility and repeatability, making it a versatile companion for any project.

Ergonomic & Fatigue-Reducing Design

Prolonged use of traditional cleavers can cause hand strain and repetitive stress injuries. The C3's body is sculpted based on human hand anatomy, featuring a soft-touch rubber grip and strategically placed finger grooves. The lightweight construction (only 76.5g) and balanced weight distribution reduce wrist fatigue during continuous operation. The large thumb rest and tactile feedback buttons allow one-handed operation, so technicians can hold the fiber with the other hand. This ergonomic focus not only enhances comfort but also improves precision by minimizing involuntary hand movements.

Aerospace-Grade Materials & Durability

Built to withstand the rigors of daily fieldwork, the C3 combines a hardened aluminum alloy frame with wear-resistant tungsten carbide blades and stainless steel guiding rails. The blade itself is made from high-purity ceramic and diamond-like carbon coating, delivering over 30,000 cleaves before replacement. Critical wear parts are crafted from titanium and hard alloys to resist corrosion and mechanical shock. The entire unit is sealed against dust and moisture (IP54 rating), ensuring reliable performance in construction sites, manholes, and humid environments. With proper maintenance, the C3 cleaver remains a trusted tool for years.

### Product Specifications

Parameter	Details
Model	C3 High-Precision Fiber Optic cleaver
Dimensions	125 mm (L) × 60 mm (W) × 50 mm (H)
Weight	Total: 192 g (main unit)
Materials	Body: Aluminum alloy, carbon fiber composite
	Blade: Tungsten carbide, ceramic
	Clamp jaws: Hardened steel, titanium alloy
	Grip: Rubber, plastic
Fiber Compatibility	250 $\mu$ m, 900 $\mu$ m, 2 mm, 3 mm, FTTH drop cables
Cleave Angle	$\leq 0.5^\circ$ (typical)
Blade Lifetime	$\geq 30,000$ cleaves (per blade position)
Blade Positions	16 adjustable positions



Cleave Length	5 – 20 mm (adjustable)
Clamp Type	Five-in-one universal, tool-free
Operating Temperature	-10° C to +50° C
Storage Temperature	-20° C to +60° C
Ingress Protection	IP54 (dust and splash resistant)
Warranty	1 year (excluding blade)

## Applications & Pain Points Solved

- Precision Cleaving for Low-Loss Splicing

The core function of the C3 cleaver is to produce a perfectly flat, perpendicular fiber end face with zero chips or cracks. This is achieved through a dual-pivot blade mechanism that applies even pressure across the fiber. When combined with the micrometer-adjustable anvil, technicians can fine-tune the scribe position to match different fiber geometries. The result is a consistent cleave angle below 0.5° , which directly translates to lower splice loss and higher reflectivity in fusion splicers. For high-speed networks like 5G fronthaul and data center interconnects, every 0.1 dB matters, and the C3 ensures that your splices meet stringent industry standards. Moreover, the blade's height can be indexed across 16 positions, extending its useful life and maintaining peak performance over thousands of cleaves.

- Anti-Break Technology Reduces Fiber Waste

Fiber breakage during cleaving is often caused by excessive bending or uneven clamping. The C3 addresses this with a patented compliant clamping system that uses soft-touch pads to hold the fiber without crushing it. The blade's return stroke is dampened to prevent snapping, especially when working with thin-coated fibers. Additionally, the integrated dust wiper keeps the clamping area clean, avoiding micro-scratches that can initiate breaks. In practice, this means fewer failed cleaves and less time spent re-preparing fibers. Field reports indicate that users experience up to 50% less fiber waste compared to conventional cleavers, making the C3 an eco-friendly and cost-effective choice for large-scale deployments.

- Universal Clamp Eliminates Tool Changes

One of the most time-consuming tasks in fiber preparation is swapping clamps to accommodate different cable types. The C3's five-in-one clamp automatically adjusts to the outer diameter of the fiber, from bare 250 μ m to rugged 3mm drop cables. The clamp's jaws are lined with high-friction, non-marking pads that grip securely without slipping, even when pulling on the cable. This design allows technicians to move seamlessly between splicing pigtailed, patch cords, and outdoor cables without pausing to change fixtures. The clamp also features a visual indicator that confirms the fiber is correctly seated, reducing the risk of off-center cleaves. For contractors handling diverse jobs, this versatility translates into faster turnaround and higher profitability.

- Ergonomic Operation for All-Day Comfort



The physical design of the C3 prioritizes user comfort without compromising precision. Its contoured shape fits naturally in either hand, and the low-force actuation lever requires only light pressure to complete a cleave. The rubberized texture provides a non-slip grip, even when hands are sweaty or wearing gloves. Furthermore, the cleaver's low center of gravity and balanced weight distribution mean it rests steadily on a workbench or can be used suspended. An optional lanyard attachment prevents accidental drops when working on ladders or poles. By reducing physical strain, the C3 helps technicians maintain focus and accuracy throughout long shifts, leading to higher quality workmanship.

- **Durable Construction Withstands Harsh Environments**

Fiber optic installations often take place in less-than-ideal conditions—dusty construction sites, damp manholes, or freezing temperatures. The C3 is built to survive these extremes. Its chassis is made from corrosion-resistant aluminum alloy and carbon fiber, while all moving parts are sealed against ingress. The blade and anvil are constructed from super-hard materials that resist wear from repeated use and occasional debris. Even after being dropped onto concrete (tested up to 1.5m), the alignment remains intact thanks to internal shock mounts. For added longevity, the blade can be rotated and cleaned without disassembly. This ruggedness ensures that the C3 remains a reliable partner for years, minimizing downtime and replacement costs.

## **Application Scenarios & Customer Pain Points**

### **1. FTTH (Fiber to the Home) Installations**

**Pain Point:** Installers often work with multiple cable types (indoor/outdoor, different diameters) and need a single tool that can handle all without constant adjustments. The C3's universal clamp accepts drop cables, pigtails, and splice-on connectors directly, eliminating the need to carry multiple cleavers. Its anti-break design also reduces waste when working with thin-coated fibers common in FTTH drop cables, saving money and time on rework.

### **2. Data Center Cabling & Maintenance**

**Pain Point:** High-density environments require precise, low-loss cleaves to ensure optimal performance of high-speed transceivers. The C3's  $\leq 0.5^\circ$  cleave angle guarantees that fusion splices meet strict loss budgets. Additionally, the ergonomic shape allows technicians to work comfortably in cramped cable trays and server racks, reducing fatigue during long patching sessions.

### **3. Telecommunication Network Construction**

**Pain Point:** Outdoor installations expose tools to dust, moisture, and temperature extremes. The C3's IP54 rating and durable materials keep it functioning reliably in manholes, poles, and roadside cabinets. The blade's long life (30,000+ cleaves) means fewer interruptions for maintenance, crucial for meeting project deadlines.

### **4. Fiber Optic Sensing & Research Labs**

**Pain Point:** Experimental setups often involve non-standard fibers (e.g., polarization-maintaining, photonic crystal) that are expensive and sensitive. The C3's gentle clamping and precise control



prevent damage to these specialty fibers, ensuring clean breaks for accurate measurements. Its adjustable cleave length (5 – 20 mm) accommodates various sensor configurations.

#### 5. Emergency Restoration & Repair

**Pain Point:** When a fiber optic cable is damaged, speed and reliability are critical. The C3's tool-free clamp and one-handed operation enable rapid cleaving even in stressful situations. The anti-break feature ensures that every cleave is usable, preventing further delays. Its compact size also fits easily into emergency response kits.

#### Q&A

Q1: How many cleaves can I get from one blade?

A1: The C3's blade is rated for over 30,000 cleaves per blade position, and there are 16 adjustable positions, so you can potentially achieve up to 480,000 cleaves before needing a replacement. Actual lifespan depends on fiber type and cleanliness; regular cleaning of the blade with a lint-free swab will maximize its life.

Q2: Does the C3 work with both single-mode and multimode fibers?

A2: Yes, the C3 is compatible with all common fiber types, including single-mode (OS1/OS2) and multimode (OM1 – OM5), as long as the coated diameter is between 250  $\mu$ m and 3 mm. The universal clamp automatically adjusts to the fiber size without any adapter changes.

Q3: Can I adjust the cleave length for different connector types?

A3: Absolutely. The C3 features an adjustable anvil that allows you to set the cleave length from 5 mm to 20 mm. This flexibility makes it suitable for preparing fibers for various connectors (e.g., SC, LC, ST) and fusion splicers with different fiber holder requirements.

Q4: How do I maintain and clean the cleaver?

A4: Regular maintenance is simple: after each use, close the blade cover and gently blow away dust. For deeper cleaning, use a soft brush or compressed air to remove debris from the clamp area. The blade can be accessed by opening the blade cover; rotate it to a fresh position using the provided hex key. Avoid touching the blade edge with bare fingers to prevent oil contamination.

Q5: Is the C3 suitable for left-handed users?

A5: Yes, the ergonomic design is ambidextrous. The actuation lever and clamp release are symmetrically placed, allowing both left- and right-handed technicians to operate the cleaver comfortably. The non-slip grip also provides equal control regardless of hand dominance.

#### Product Packaging Configuration

Each C3 High-Precision Fiber Optic cleaver is packaged in a rugged, foam-lined carrying case to ensure safe transport and storage. The package includes:

1 × C3 Fiber Optic cleaver main unit



- 1 × Universal five-in-one clamp (pre-installed)
- 1 × Spare cleaving blade (in protective holder)
- 1 × Hex key for blade adjustment
- 1 × Cleaning brush and lint-free wipes
- 1 × User manual (multi-language)
- 1 × Quick start guide
- 1 × Warranty card

Optional accessories available separately: replacement blades, blade disposal container, and mounting bracket for workbench.