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FK12 FIBER CLEAVER
REFERENCE MANUAL

GN Nettest's policy of constant product improvement may lead to changes in specification, operating procedure or technical description.

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UNPACKING INSTRUCTIONS

The Model FK12 is shipped enclosed in foam molded material in a cardboard box. This packaging should be retained and used whenever the cleaver is shipped.

PACKAGING REMOVAL

The Model FK12 is shipped with a protective rubber sleeve on the diamond blade and an elastic band holding the blade mechanism in place. These should be removed carefully before using the cleaver. The blade and clamps should be cleaned with methanol or propanol before using the cleaver. The package also includes a screwdriver and socket wrench to be used when making adjustments.

BATTERY INSTALLATION

The Model FK12 requires a 9 volt battery to power the piezo-electric transducer. One is supplied with each unit.



NOTE

Set the Left Clamp Lever to the LOCK position (UP). ALWAYS leave this lever in the BLADE LOCKED position when the Model FK12 is not being used.

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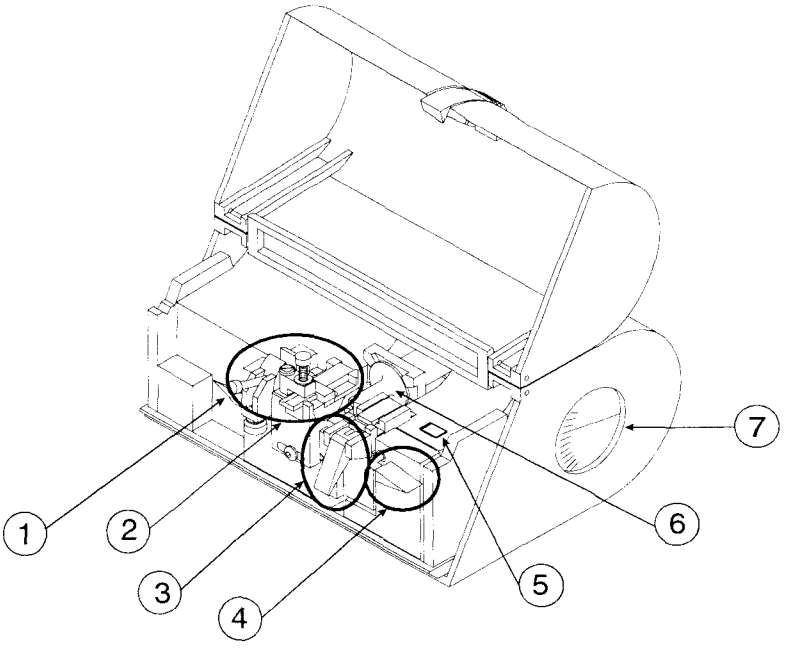


Figure 1. FK12 Fiber Cleaver.

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Figure 1 shows the key components of the FK12. They are:

1. Fiber Cleaving Lever (shown in detail in *Figure 6*)
2. Left Clamp and Lever Assembly (shown in detail in *Figures 2 and 5*)
3. Right Clamp and Lever Assembly (shown in detail in *Figure 3*)
4. Fiber Tension Clamp (shown in detail in *Figure 4*)
5. LED
6. Diamond Blade Horn Assembly
7. Tension Gauge

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OPERATING INSTRUCTIONS

TENSION INDICATOR SETTINGS

The Model FK12 has been preset to cleave 125 μm bare fiber.

If fibers of substantially different specifications are to be cleaved, the tension indicator setting must be changed (the procedure is described in the *ADJUSTMENTS* section of this manual). This may be done prior to delivery if a few meters of sample fiber are forwarded to GN Nettest, Inc. in the UK.

ROUTINE FIBER CLEAVING

1. Clean all pads and V-groove before use. Prepare each fiber by stripping all coating materials over a length of 4.5 to 5 cm, then cleaning the exposed fiber using a suitable solvent. A good "wetting" with the solvent also helps to reduce static on the fiber. Allow the fiber to dry fully before attempting to cleave the fiber.

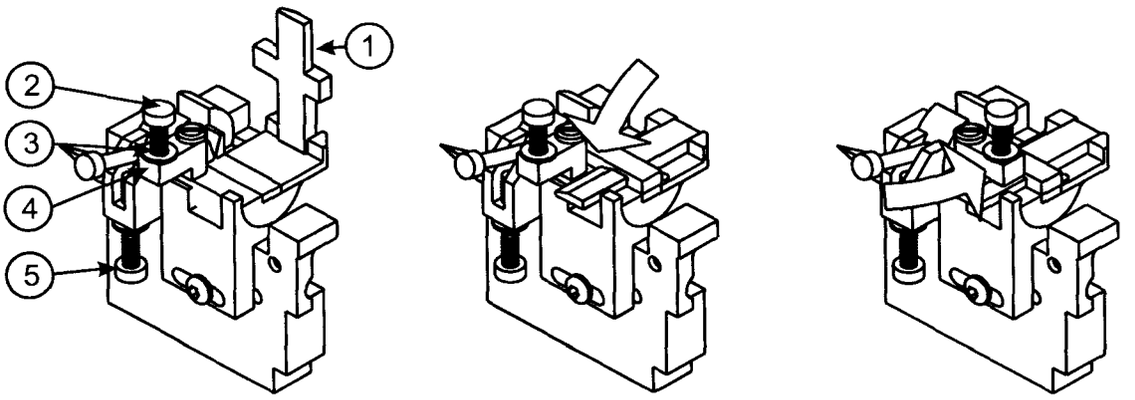


NOTE

Absolute cleanliness is vital to good cleaves. Failure to cleave can cause damage to the diamond blade.

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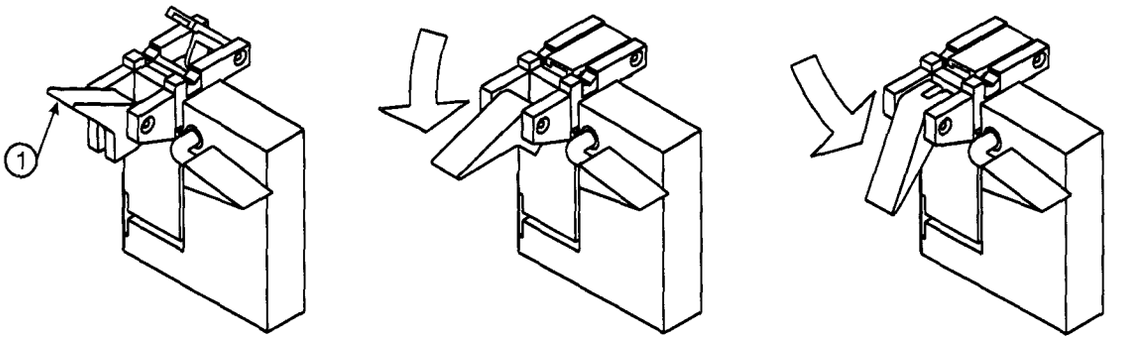
2. Set all levers in the UP position. With the levers in the up positions, the clamps are open, the Left Clamp is untwisted and the blade is back in the START position. The Fiber Tension Lever (shown in *Figure 4*) is in the READY (off) position with the lever up.
3. Place the prepared fiber in the grooves.



1. CLAMP *2. LOAD SCREW* *3. LOCKING NUT*
4. LOCKING ARM *5. FIBER ANGLE ADJUSTMENT SCREW*

Figure 2. Left Clamp and Lever Assembly.

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1. *RIGHT CLAMP LEVER*

Figure 3. Right Clamp and Lever Assembly.

4. Lower the Right Clamp Lever to the CLOSED position (see *Figure 3*). Lower the Left Clamp Lever (see *Figure 2*) with the fiber in the center of the clamp pad.

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NOTE

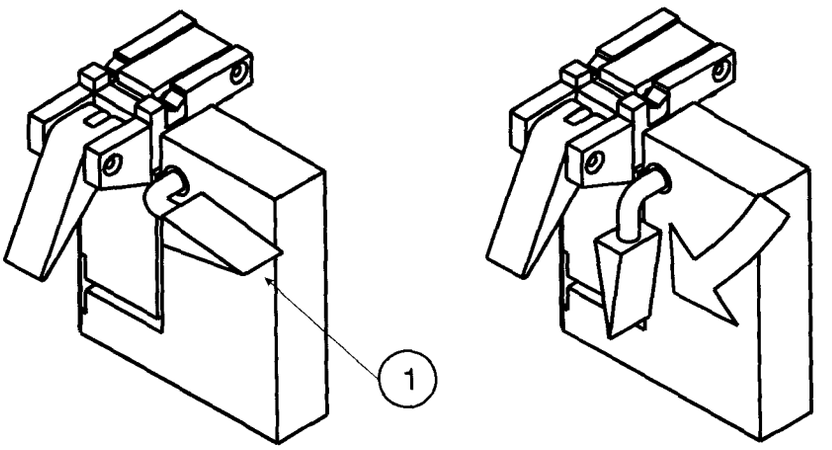
When cleaving 900µm buffered fiber, the curl of the buffer coating can make it difficult to place the fiber in the grooves. In this case, after stripping and cleaning the fiber, place the stripped end of the fiber in the Right Clamp and lower the Right Clamp Lever to the CLOSED position, without locking the clamp, trapping the free end of the fiber. Next, rotate the fiber so that any fiber curl bends the buffered fiber in the vertical plane above the Left Clamp. This will allow the Left Clamp to be closed, trapping the buffered fiber in the 1 mm wide channels in the top and bottom faces of the Left Clamp.

The cleave length (distance between the end of the stripped buffer and the point of the cleave) can be set by locating the end of the stripped buffer against the millimeter scale on the top of the lower Left Clamp. The minimum cleave length which can be achieved is 6 mm. There is no maximum.

5. Rotate the locking arm fully anti-clockwise and turn the locking screw one-quarter turn past the first resistance, thus clamping the fiber. The Right Clamp should now be pressed fully down to the LOCKED position, clamping the free end of the fiber.

6. Move the Tension Lever smoothly downwards to the TENSION ON position (see *Figure 4*).

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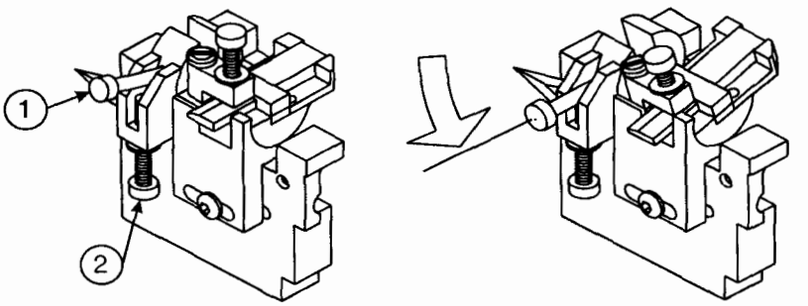


1. *TENSION LEVER*

Figure 4. Fiber Tension Lever.

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7. Depress the Torsion Lever as far as the end-stop (see *Figure 5*). The end-stop should be previously set, using the Torsion Adjust Screw, to achieve the desired end angle on the fiber. This will apply a twist to the fiber while it is under tension.

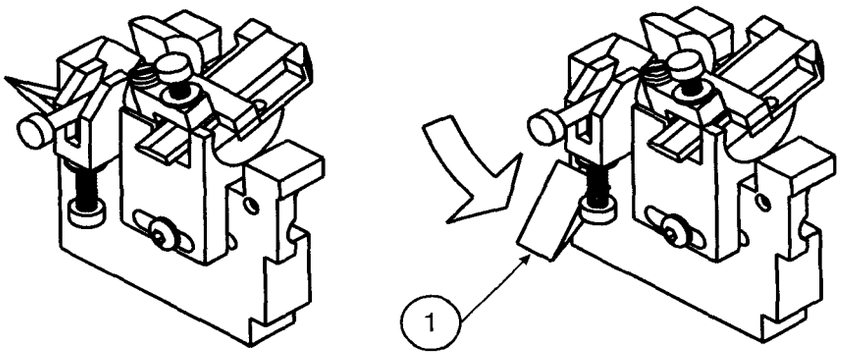


1. *TORSION LEVER*
2. *TORSION ADJUST SCREW*

Figure 5. Torsion Lever on Left Clamp.

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8. In order to cleave the fiber, move the Fiber Cleaving Lever (shown in *Figure 6*) smoothly down to release the blade mechanism. The green LED will glow for approximately 3 seconds (this is to indicate that the blade is oscillating and the battery is in good condition). The blade will advance and cleave the fiber, producing an angled cleaved end.



1. FIBER CLEAVING LEVER

Figure 6. Fiber Cleaving Lever.

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9. After the fiber has been cleaved, raise the Fiber Cleaving Lever to the fully up position (shown in *Figure 6*), raise the Torsion Lever (shown in *Figure 5*) to the ZERO position then open the Left Clamp and remove the cleaved fiber. Return all levers to the START position (UP), ready for the next cleave. Remove the off-cut and store it safely. The cleaver is now ready to cleave a new fiber.

ADJUSTMENTS

TENSIONER

The tensioner is used to apply tension to the fiber before it is cleaved. Normal setting of this tensioner is 200 for 125µm fibers.

To change the tension setting, raise the Right Tension Lever to the TENSION OFF position (up) and using a 2 mm screwdriver, turn the adjuster screw (accessible through the hole in the BOTTOM of the case) clockwise to increase the tension, or vice-versa.



NOTE

If the correct tension is not known, it is best to start with a high tension to ensure a cleave and then gradually reduce it until a satisfactory cleave is obtained. This will avoid damage to the diamond blade caused by failure to cleave.

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BLADE ADJUSTMENT

The diamond blade may become worn after many cleaves, in which case, it should be raised to a new position.

To raise the blade, use a 2mm hexagonal wrench to turn the adjuster screw (accessible through the hole in the REAR of the case marked Blade Adj) clockwise a quarter of a turn.



NOTE

The blade cannot be lowered.

ADJUSTING ANGLE OF TWIST

The Torsion Lever (see number 1 in *Figure 5*) is depressed as far as the adjustable end stop in order to apply a twist to the tensioned fiber. To adjust the angle of twist, the Torsion Adjust Screw (see number 2 in *Figure 5*) can be rotated to adjust the position of the end stop.



NOTE

Angle of Twist does NOT equal the Fiber End Angle. See the Fiber End Angle section.

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CLEAVE LENGTH

The cleave length can be adjusted by adjusting the position of the stripped buffer before cleaving. Locate the end of the stripped buffer against the millimeter scale marked on the top of the lower half of the Left Clamp. The minimum cleave length is 6 mm. There is no maximum.

FIBER END ANGLE

The fiber end-angle obtained depends both upon the degree of twist of the fiber and the tension applied to the fiber.

Increasing the angle of twist applied to the fiber, for a given tension, will increase the fiber end-angle. As the twist angle increases, the tolerances involved in the calibration of the tension and the twist gauges give rise to an increased uncertainty of end angle. However, once the correct amount of twist to achieve a certain end angle has been established, each cleaver will give consistent end angle values within the specification of ±1 degree.

INTER-CLEAVER CONSISTENCY

Different cleavers are very consistent in the end angles they produce. For a given angle of twist, there is less than five percent variation in end angle using different cleavers.

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TROUBLESHOOTING AND CLEANING OF COMPONENTS

Cleaving problems may be caused by any of the following.

Problem: **Failure to cleave or bending the fiber.**

Solution: Clean fiber using isopropyl alcohol.

Solution: Increase tension on the fiber by following the instructions described in the *ADJUSTMENTS* section described previously. Tension should be 200 for 125µm fiber.

Solution: Make sure battery is working correctly.

Solution: Clean all clamp faces with isopropyl alcohol, methanol or propanol using a cotton tipped stick and air duster. Dirty clamps are indicated by bad end angles or the fiber breaking under the clamp face.

Solution: Clean the diamond blade by thoroughly wetting it with methanol or propanol (do not use acetone) using a cotton tipped stick. While it is still wet, lower the Fiber Cleaving Lever (see *Figure 6*) and allow the blade to vibrate. The ultrasonic action will clean the blade.

Solution: Raise blade one quarter turn.

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Problem: **Blade not oscillating.**

Solution: Battery needs to be replaced.

Solution: Check for bad connections.

Solution: Insecure diamond blade needs to be replaced (return to GN Nettest for servicing).

Problem: **Damage to the fiber end where the blade was in contact or failure to cleave.**

Solution: Tension may be too low. Increase it to 200.

Solution: Blade may be damaged and need replacing.

Problem: **"Hackle" on the cleaved face.**

Solution: Reduce tension on blade by following the instructions described in the *ADJUSTMENTS* section described previously.



NOTE

Failure to cleave can cause blade damage.

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Problem: **Wrong end angle.**

Solution: Adjust Fiber Angle Adjustment Screw shown in *Figure 2*.

Problem: **Slipping clamp.**

Solution: Clean clamp faces or fiber and check clamp tension.

NOTE

Do not use adhesive tape or other methods to coat the clamp surfaces. Contact GN Nettest if you have problems with clamp surfaces.

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RETURNING EQUIPMENT FOR SERVICING AND REPAIRS

If you need to return your FK12 cleaver for service, return the unit in its original shipping carton if possible. If the original packing case is not available, contact GN Nettest for instructions. Inadequate packaging can lead to serious damage and may invalidate any warranty.

If the cleaver is in the Western Hemisphere (except Greenland), Australia, New Zealand, China, Japan, Vietnam, Hong Kong or Korea it should be returned to GN Nettest's Technical Response Center in Beaverton, Oregon at +1-(503)- 526-4678. Call and get a Return Materials Authorization (RMA) number.

If the cleaver is in the Eastern Hemisphere (except for China, Japan, Vietnam, Hong Kong or Korea) or Greenland it should be returned to GN Nettest in Chandlers Ford for servicing.
Call +44-0-1703-260411 for more information.

Also include the following:

- Model number and serial number
- Your name and address
- Address to which the cleaver should be returned
- Details of the problem
- A purchase order for repair charges (not necessary for repairs during warranty) and
- Shipping instructions; if no shipping instructions are received, shipping arrangements will be made by GN Nettest and charged to the customer.

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