Diode Replacement on ThermoFlex Mid and Narrow

Product

- *Kodak ThermoFlex* Mid
- *ThermoFlex* Mid II
- *ThermoFlex* Narrow

Background

You can replace a faulty diode by cutting the diode fiber and splicing it to the cut fiber of a spare diode. This procedure describes the following stages of the process:

- "Accessing and Removing the Diode" on page 2
- "Stripping Off the Outer Fiber Shield" on page 7
- "Stripping Off the Inner Fiber Shield" on page 8
- "Cleaving the Fiber Ends" on page 9
- "Fusing the Fiber Ends" on page 10
- "Reinstalling the Diode" on page 15

Requirements

Samples of the following instruments are illustrated in this procedure. Directions are given for using the sample instruments. For more detailed instructions on using instruments that are not illustrated in this document, see the manufacturers' web sites.

- **Fiber stripper**: Strips the layers of covering from the diode fiber to expose the fiber
- **Cleaver**: Cuts the exposed diode fiber
- **Fuser**: Splices together the exposed diode fiber and the fiber connected to the laser head
- **Long cross-head screwdriver**



Note: Request the kit from your regional manager. In the future, a part number will be available for the kit.

Procedure

WARNING: Since residual laser light can leak from the loose ends of fibers, it is imperative that you follow all safety guidelines during this procedure.

Accessing and Removing the Diode

1. In the Controller software, open the relevant door.
2. Quit Controller, turn off the platesetter, and disconnect the main power supply.
3. Open the relevant doors of the platesetter to access the L-box.
4. On the L-box, close the power switch.



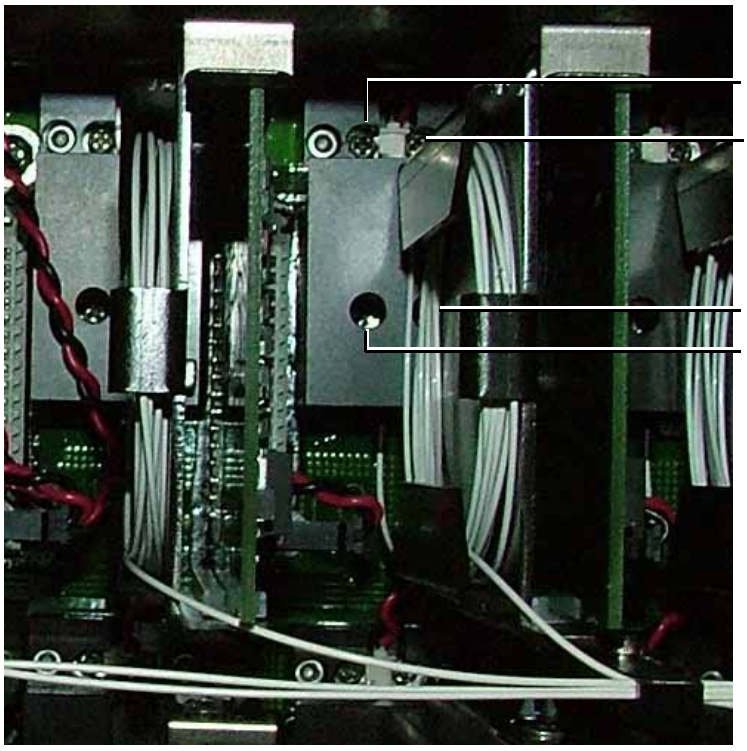
5. On the L-box door, open the cross-head screw and open the door.

WARNING: Make sure to put on the antistatic wrist band before performing any actions inside the L-box.



6. With the long cross-head screwdriver, release the four screws that secure the bracket of the diode that you want to replace.

Note: When releasing the lower-right screw, take care that the screwdriver does not damage the fibers.



7. Carefully pull out the diode assembly.



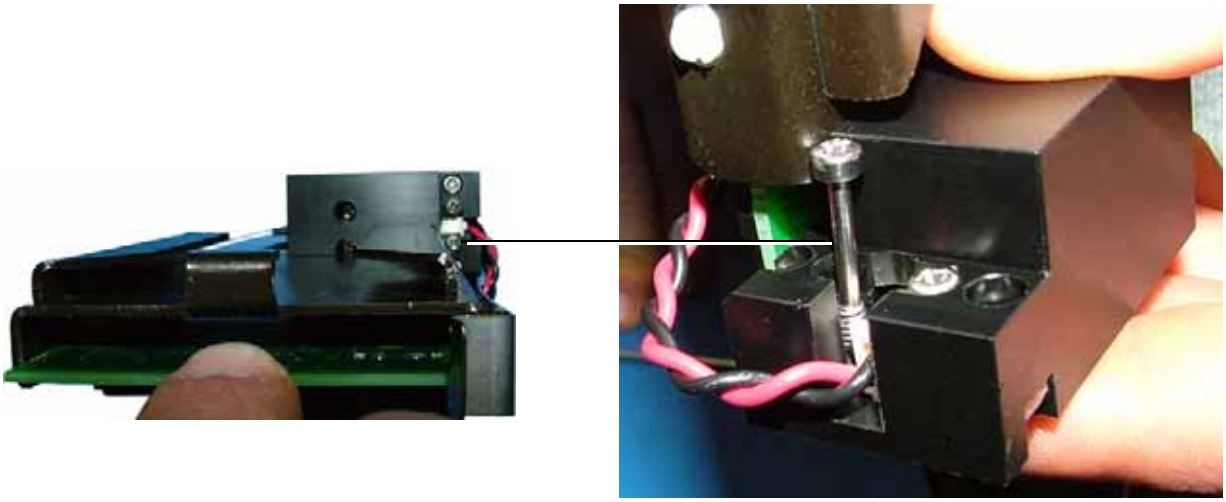
8. To remove the diode from its bracket:

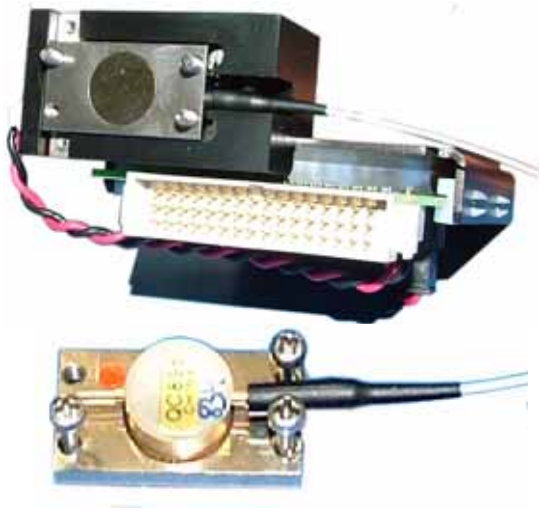
   a. Disconnect the voltage connector.



   b. Remove one of the four screws and then remove the diode.

   Note: Save the screw. You will need it to secure the replacement diode.





9. Remove the remaining three screws from the diode.

Note: Save all four screws. You will need them to secure the replacement diode.

10. Cut the diode fiber 30 cm (12 inches) from the defective diode.

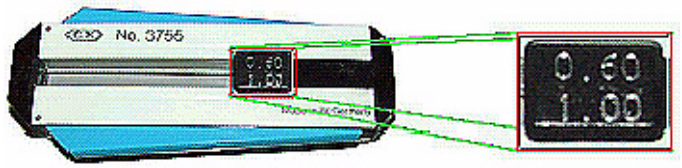
Note: If the diode fiber has already been spliced in the past, you must make sure to leave enough fiber for the splicing procedure. If required, cut the fiber closer to the diode. In this case, the lab will not be able to check the faulty diode.

11. If required, send the defective diode to the lab for analysis, as described in the Packing Diodes for Shipment procedure.

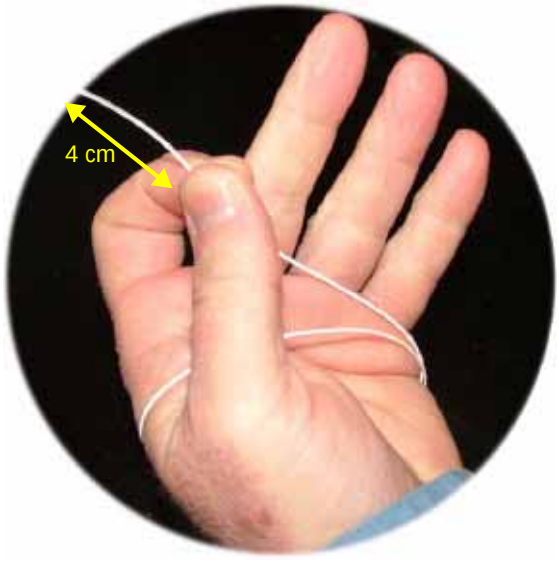
Stripping Off the Outer Fiber Shield

Be sure to strip off the outer fiber shield on both fibers—the fiber connected to the head, and the fiber connected to the replacement diode.

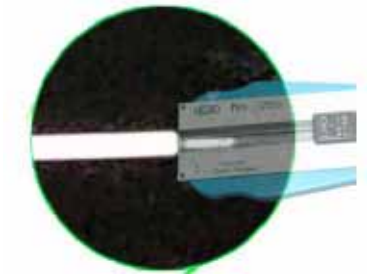
1. Set the stripper to **0.60** and **1.00**. Set the stopper on the stripper to allow about **4 cm** (1.5 inch) of fiber to be inserted.



2. Wrap a strand of fiber once around your hand and then pinch the fiber between your thumb and finger 4 cm (1.5 inch) from the end, as shown.



3. Insert the 4-cm (1.5-inch) end of the fiber into the stripper until the fiber is against the stopper.



4. Keeping the fiber firmly grasped in your hand, with your free hand, squeeze the stripper together firmly and then quickly pull the stripper away.

5. Closely inspect the shielding above the stripped area.
   - **Successful stripping**: A successful strip completely removes 4 cm of the outer shield without distorting or compressing the remaining outer shield above the stripped area.
   - **Unsuccessful stripping**: Above the stripped section, a portion of the shielding is stretched and appears compressed or distorted.
     If any part of the shielding above the stripped section is damaged, you must cut the damaged portion off and start again.

Stripping Off the Inner Fiber Shield

Be sure to strip off the inner fiber shield on both fibers—the fiber connected to the head, and the fiber connected to the diode.

1. Set the stripper to **0.18** and **0.30**, and set the stopper on the stripper to **4 cm**.
2. Repeat steps 2–4 of the "Stripping Off the Outer Fiber Shield" section, but this time, slide the fiber carefully out of the stripper.

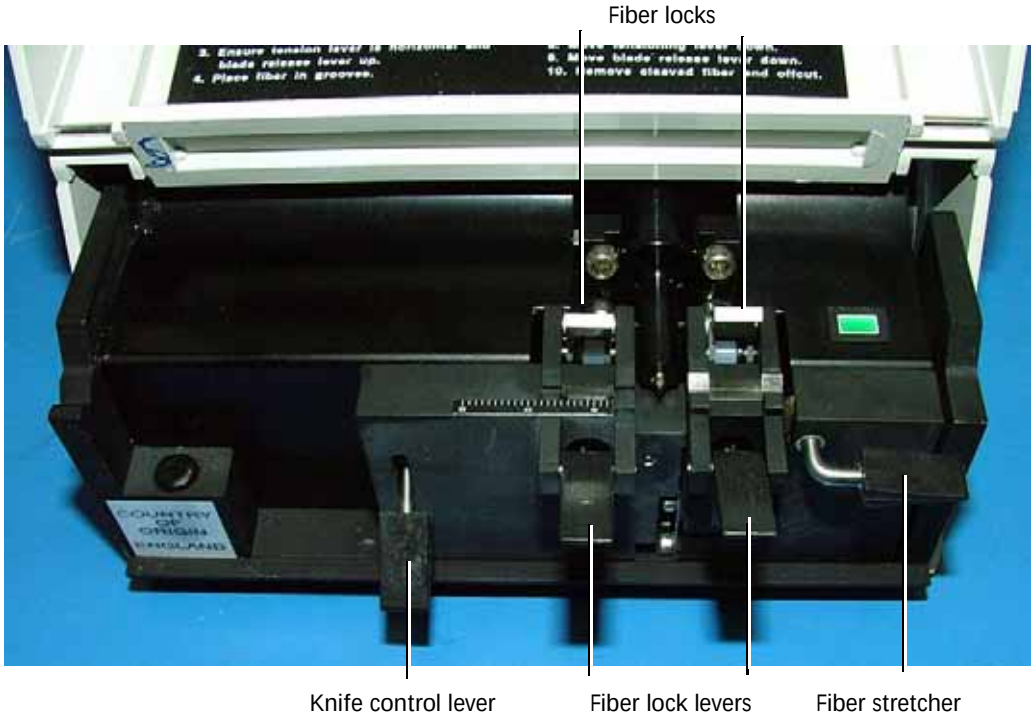
   The inner shield is very thin and should be removed completely. A successful strip will leave 4 cm (1.5 inch) of exposed fiber core material.
3. To clean the exposed core, fold a lint-free cloth into a 8 cm (3 inch) square, and then fold it in half. Dampen the cloth with isopropyl alcohol, place the exposed core between the final fold and pull the wipe along the core.

   The fiber makes a squeaking sound when properly cleaned.

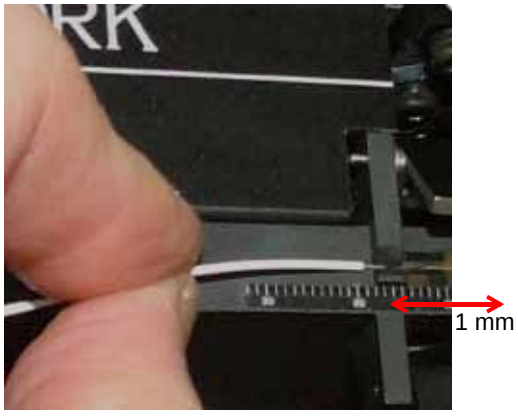
Cleaving the Fiber Ends

You need to cut both fibers—the fiber connected to the replacement diode and the fiber connected to the head.

1. To prepare the cleaver, verify that the following cleaver components are in the **up** position:
   - Knife control lever
   - Fiber lock levers
   - Fiber locks
   - Fiber stretcher



2. Position the fiber in the cleaver groove with about 1 mm (.04 inch) of stripped fiber visible before the guide.



3. To lock the fiber in place, close the left fiber lock lever, and then close the right fiber lock level.

4. To stretch and tighten the fiber, close the fiber stretcher.
5. To cut the fiber, close the knife control.
6. To remove the cut fiber from the cleaver, open the left fiber lock lever and then the right fiber lock lever and lift both fiber locks.

Note: Before cutting the next fiber, remove any pieces of fiber left in the cleaver.

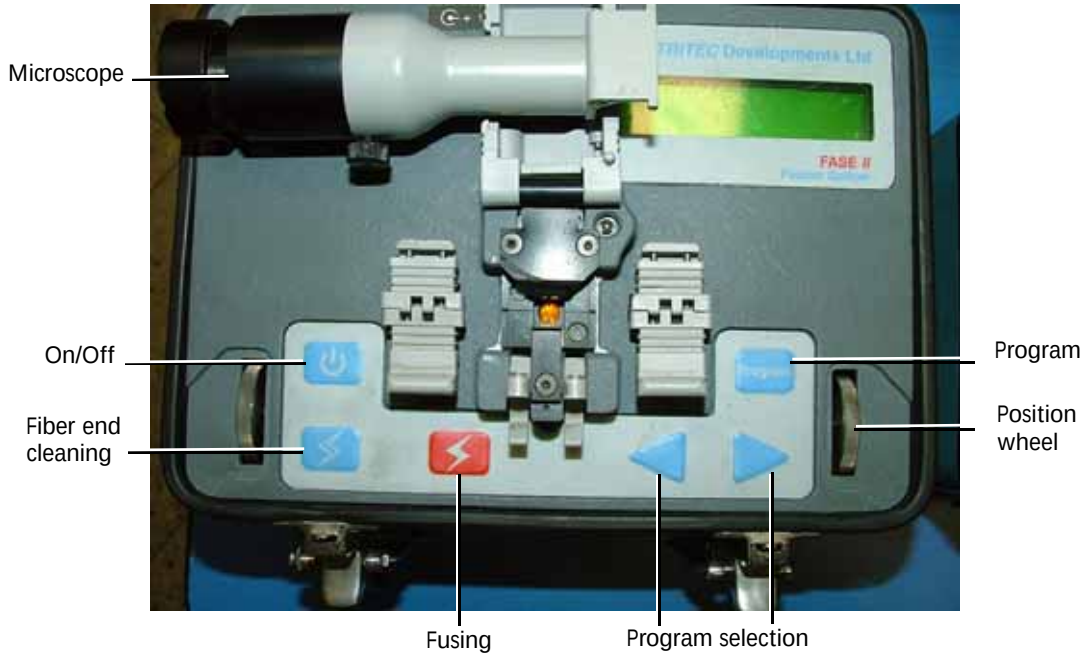
Fusing the Fiber Ends

To fuse the fiber ends, you must first fuse the exposed core in the fuser, and then adjust the shrink tube over the fused core and heat the shrink tube in the oven.

A *Sample* of a splicer is shown following. For more detailed instructions on using instruments that are not illustrated in this document, see the manufacturer's web site.

1. Press the fuser's program button and select the setting according to the thickness of the fiber:
   - **30 microns**: Select single mode
   - **40 microns**: Select single mode
   - **60 microns**: Select multi mode

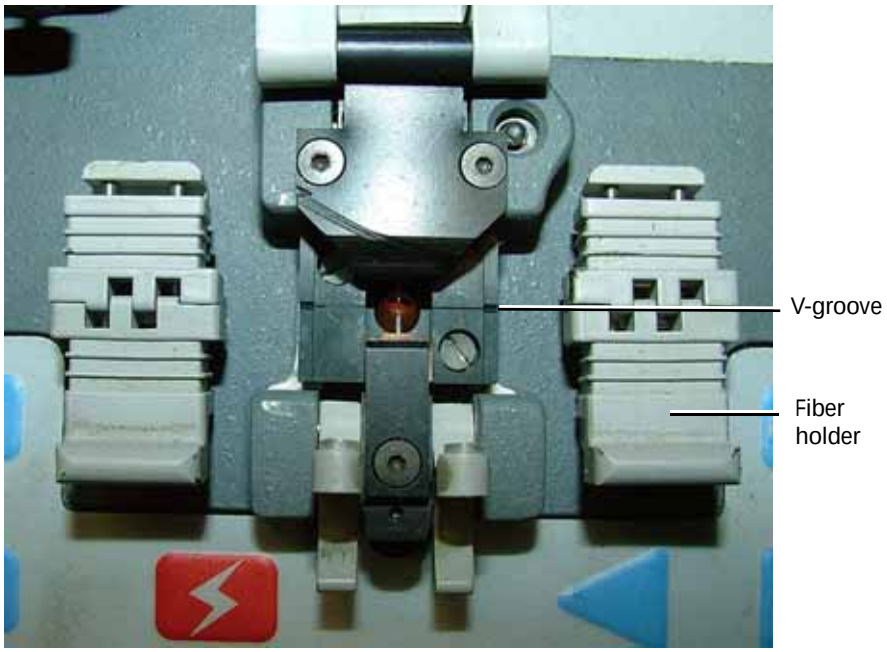
Note: New 60-micron fibers have a solid inner shield, while older 60-micron fibers have a stranded shield. If you must fuse a new fiber to an old fiber, you may require more attempts until the procedure succeeds.



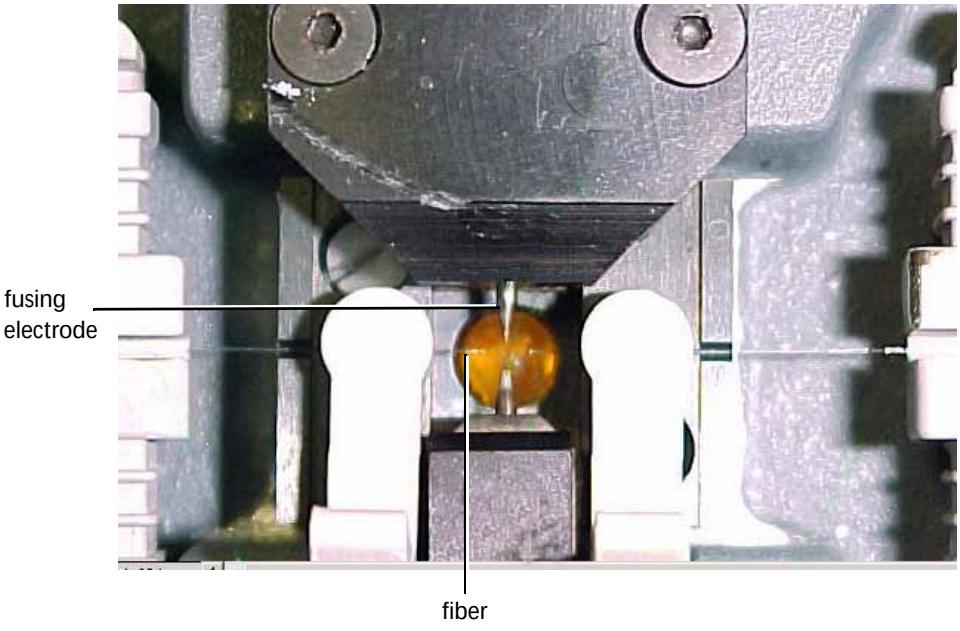
2. Put a protective shrink tube on the end of the fiber to cover the exposed fiber core upon completion.



3. Lift and pull back the fiber holders.



4. Position the fiber in the V-groove of the fuser. Make sure that the fiber ends are within 1 mm from the fusing electrodes.



5. Release the fiber holders. Verify that the fiber holders come into contact with the fiber shield and not the stripped core material.
6. Lower the fiber holders to ensure the fiber is seated properly in the grooves.



7. To prevent the fiber shielding from slipping against the core material, attach a clamp to the right fiber just before the right gripper.

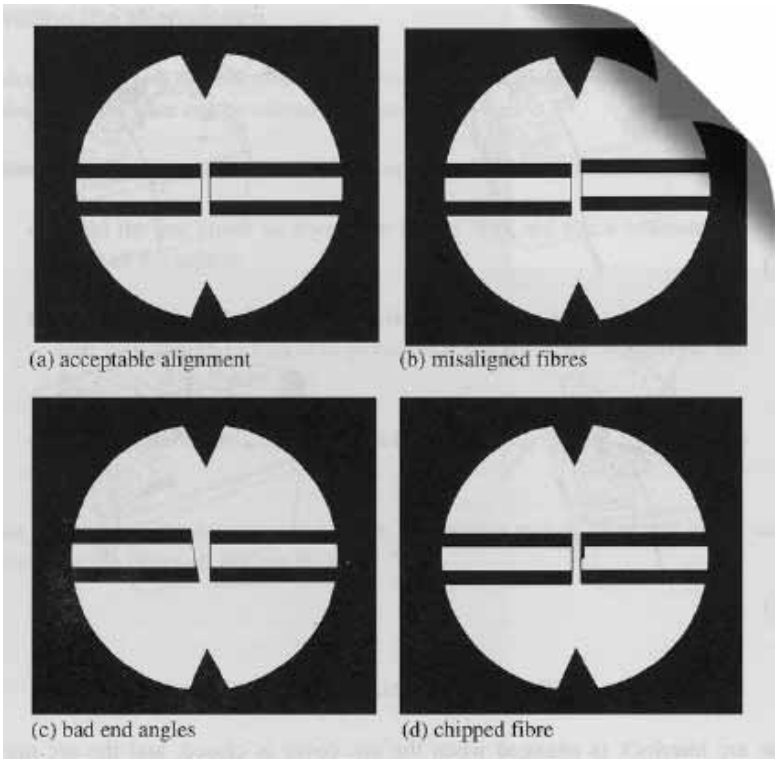


8. To turn on the fuser, press the On/Off button.

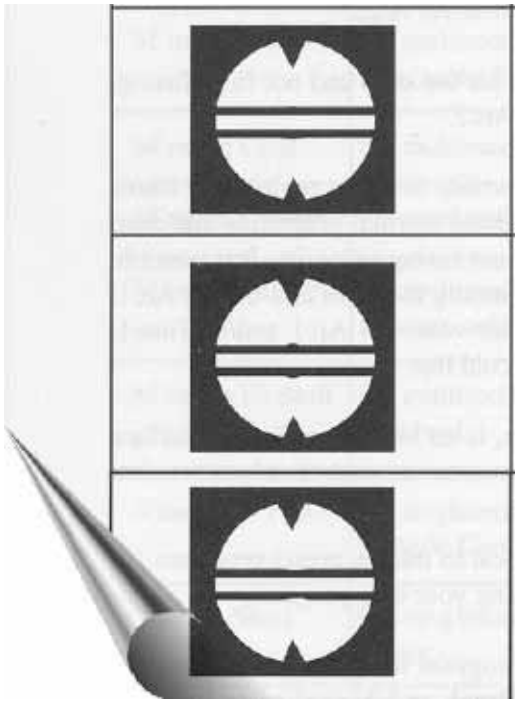
9. To view the placement of the fiber ends, raise the microscope.



10. To bring the fiber ends into the correct position for cleaning, adjust the position wheels (see step 1).
11. To clean the fiber ends, press the fiber end cleaning button (see step 1). One cleaning is usually sufficient. Do not clean more than twice, since this can partially melt the fiber ends.
12. To bring the fiber ends into the correct position for fusing, in which they are slightly touching, adjust the position wheels.



13. To fuse the ends, press the fusing button.
14. Use the microscope to examine and confirm correct fusing.



Good splice

Unacceptable bulging
Fibers are over-butted, and stuff parameter is too large.

Bad cleaves
Splice was performed on fibers with bad end angles.

15. Release the fiber holders, and remove the clamp on the right shielding.

16. Very carefully slide the protective shrink tube over the exposed fused core. The shrink tube should be centered over the fused area and overlap the shielded fiber at both ends.
17. Place the portion of the fiber with the shrink tube into the oven and start the heating process. This process takes about one minute to complete.



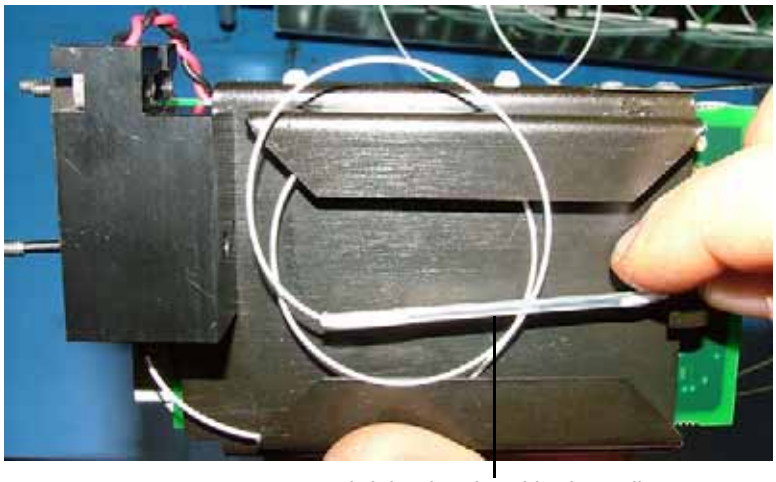
18. Remove the repaired fiber from the oven.

Important: Before touching the shrink tube, allow it to cool.

Reinstalling the Diode

1. Insert the three screws that you removed in step 9 in the “Accessing and Removing the Diode” section into the spliced diode.
2. Insert the spliced diode into the diode bracket.
3. Secure the spliced diode in the diode bracket with the screw that you removed in step 8 in the “Accessing and Removing the Diode” section.
4. Connect the diode voltage connector.

5. Wind the spliced diode fiber into the bracket. Make sure to place the protective shrink tube horizontally inside the bracket, as shown.





Shrink tube placed horizontally

6. Carefully insert the diode bracket into the L-box.
7. With the long cross-head screwdriver, tighten the four cross-head screws that secure the bracket of the diode.
8. Return the static band to its place.
9. Close the L-box door and secure it with the cross-head screw.
10. Turn on the platesetter and start *ThermoFlex* Controller.
11. In the registry, locate ...**LOTEMFLEXO\EXPOSE** and update the following parameters:
    - Default First Laser Number: 0
    - Default Last Laser Number: 23 (or 47)
12. In the registry, locate ...**LOTEMFLEXO\IO OBJECTS\LASER GROUP\Laser Group** and update the following parameters:
    - First Expose Laser Active: 0
    - First Laser Active: 0
    - Last Expose Laser Active: 23 (or 47)
    - Last Laser Active: 23 (or 47)

Testing the Procedure

➢ Perform laser calibration to verify that the spliced diode is working correctly.