

Fiber Polisher Manual

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This manual is for the Ultra Tec CTC Fiber Polisher, Part Number 8802.4. The fiber polisher is a useful tool for polishing fibers, and is simple to learn to operate. There are a few phases to polishing a fiber. These phases are the preparatory phase, the polishing phase, and the post-polishing phase. We will describe each of these in the order they would be done while polishing.

The preparatory phase is there to prepare both the fiber and the polisher for the polishing phase. The fiber must have the excess fiber protruding from the end cut with a diamond tip scribe. Then, it must be air polished with the more coarse grit polishing paper. This air polishing should be done without water, and with the paper held in air rather than placed on the table to prevent polishing too far on the fiber. The air polishing should be done in the standard technique of either figure eights, or circles where the direction of the circular polishing is switched periodically. This is done until most of the epoxy is removed, leaving only a light grey circle of epoxy on the fiber. The fiber should not be polished until all of the epoxy is gone, as this may polish the fiber too far and break the fiber slightly into the ferrule. If this happens, it is easier to polish the ferrule down by hand rather than use the polisher, as more force can be applied to polish down the ferrule by hand. It is also recommended that, if possible, the fiber be replaced with a different fiber rather than waste time trying to polish down the ferrule.

The polisher uses metal disks with rubber on top for the polishing paper to go on to. There are two useful grits, the 5u and the 1u. Use two disks, each with a different grit attached to it. Remove the back of the paper and stick it onto the disk.

It is also important that the polisher is zeroed before polishing. To zero the polisher, put whichever grit pad you wish to zero to (5u or 1u) inside the polisher. Unlock the top by loosening the knob on the side of the top, and then spin the top of the polisher clockwise until it just touches the pad. If unsure of when it touches, repeat this multiple times and take the average of the zeros. It is useful to mark on the polisher where the zero is for that pad and metal top (e.g. an arrow with “5u ferrule” for the zero spot on the 5u with a ferrule holding top). The zero is different for each grit, as well as for each top (FC and ferrule holders). Make sure the machine top is relocked when done adjusting the height.

At this point, the fiber can be polished. The fiber(s) are inserted in the top of the polisher, with the lid open. For FC ends, they are screwed into the top, while for ferrule ends they are pushed in and locked in by pulling up and spinning the latches for each ferrule. They are then measured using the gauge stored with the polisher. Notice where the gauge is when placed up to the metal of the holder so the zero of the gauge can be verified or corrected. Then push it against the protruding ferrule until it is flush with the metal top. Check each ferrule to ensure they each are protruding the same amount. This is especially important for the FC top, as it can have variations in this measurement. If the ferrules vary by more than one or two thousandths of an inch, try removing and reinserting an outlier or switching it with the opposite outlier (e.g. one protruding too far with one not protruding far enough) to fix the variation. If it cannot be fixed, remove a fiber or two so the overall variation on protrusion is no more than two thousandths of an inch, and take the protrusion to be the middle of the individual protrusions. Raise the entire top by spinning it counter-clockwise until it is .010” less than the read height on the gauge from

above the zero for the 5u pad with the metal top being used. Then wet the 5u pad by dabbing water onto it until most of the pad has a slight layer of water. Ensure there is not so much water that it drips over the side of the pad, to keep the machine as dry as possible inside. Then, with the pad inside the machine, it can be lowered down and locked into place with the latch on top.

The polisher should then be run for about 15 seconds, by turning the time knob next to the power button. Then the power button is pressed to start it. If it has been run until the time ran out recently, it may still be in the on position. In this case, press the button, then again a second later. If pressed too quickly, it will not run. Unplugging and re-plugging in the machine will accomplish the same result. After the 15 seconds, open up the top and wipe the ferrule tips with a tissue, clean the pad with a tissue, and replace the 5u pad with the 1u pad. The 1u pad should be dabbed wet in the same way as the 5u. Then change the top height to accommodate for the different zeros between the 5u and 1u pads. The 1u pad is typically .0025" - .003" higher than the 5u pad, but use the zero found earlier if this is no longer true. After this, relock the lid down and polish the fibers for about 45 seconds.

Next is the post-polishing phase. Open up the lid, and wipe off the 1u pad and the tips of the ferrules lightly to remove the excess water. Remove one ferrule carefully, making sure to not pull on the fiber itself as this may break the fiber. If the fiber is short, it may be easier to remove both ends from the machine to inspect it. Wipe the ferrule lightly on a microfiber cloth. Then inspect it with the optic scope, viewing the center of the ferrule. If it appears dirty, another wiping with the microfiber cloth may clear it up. The most important part of the ferrule is the center where light travels through, so ensure

that this section is clear of any dirt or scratches. If the fiber is not completely polished, polish it again in the polisher. For very slight scratches and bits of epoxy, starting with the 1u pad should be sufficient. If polishing with the machine seems slow for some reason, polishing by hand may work best. If the fiber is polished, cap the ends of the fiber to prevent future scratching. Make sure the polisher is clean and dry after polishing, and the polishing pads are in good shape. If the pads look worn out or ripped, they may need replacing. Worn out pads tend to give worse polishes and require multiple polishing attempts, so check the pads if having polishing issues.

General Instructions:

- 1) Zero the machine
- 2) Air polish the fiber
- 3) Wet and insert the 5u polishing pad
- 4) Measure each ferrule protrusion and set machine height to .01" less
- 5) Polish for about 15 seconds
- 6) Change the pad to 1u and adjust the height accordingly, clean the 5u pad
- 7) Polish for about 45 seconds
- 8) Clean the fiber and inspect it
- 9) Re-polish if necessary, starting at step 3 or 6 depending on fiber condition
- 10) Cap the fiber and clean up machine