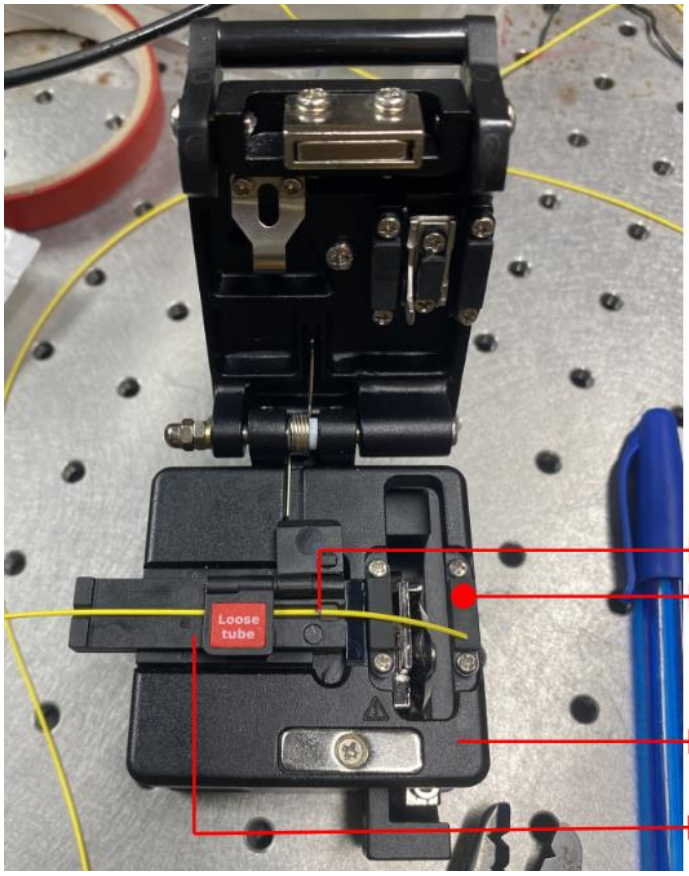
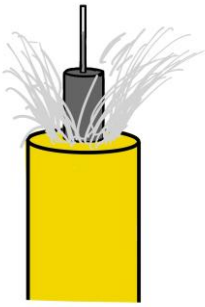
Soldering of broken fibers :

Preparation of the fibers :

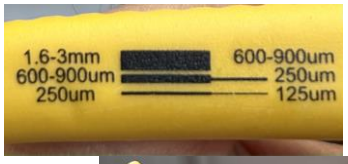
- Before preparing the fiber for splicing, make sure to put the protective sleeve in place over one of the fiber ends, to protect the weld.

- Stripping the fiber : To know the length you need to stripe, put the fiber on the fiber holder, put it in the cleaver. See below how much the fiber needs to be stripped.





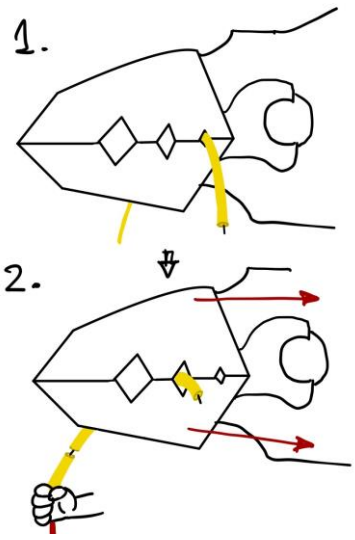
Cross section of a Ø3mm fiber. The core is the last white portion and must be completely exposed to splice it.



- Remove the jackets to leave only the fiber core visible:

Removing the jackets of a Ø3mm fiber is straightforward with the help of a regular wire stripper. The fiber has 3 jackets that must be removed. It is recommended to also cut the protection threads between the first and the second jacket. The second The last protection layer can be removed submerging the tip in ethanol and slightly scratching with an optical cloth.

To remove the jacket of the Ø900µm, using the wire stripper presented in the picture as a reference, use the smallest aperture (~250 µm) to completely cut the yellow jacket. Note that this type of fiber only has two protection jackets. Rotate slightly the fiber inside the aperture to ensure a complete cutting, but do not pull in any direction, the fiber barely fits and it would break. To finish, hold the jacket in another point with the second aperture (without pressing too hard to not make another incision in the jacket) and pull tight and straight. Be careful when holding the other part of the fiber to not break or distend it. See figure in the right.



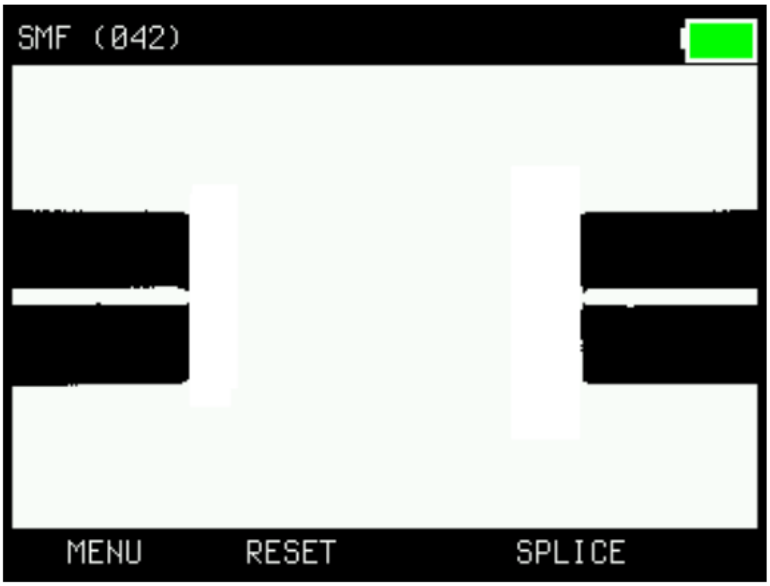
- Place the fibers in the fiber holders (one in right and one in left)

- Lift the lid of the cleaver and position the fiber holder in the cleaver. Insert the fiber holder from above, a little from the right-hand side and let in slide back down into position (where the magnets will lock it). The fiber holder must be placed tightly towards its inner position, as far to the right as possible (check by pressing it gently). Magnets will move it in place. The fiber will be slightly deviated upwards but this is not a problem. Close the lid of the cleaver and push the sliding part away from you. The fiber will be cut off (cleaved) and get a very straight 90º angle. Lift the fiber holder in order to prevent the fiber from getting dirty

- Place the cleaved and ready fibers in the splicer Open the main lid (on top) of the splicer and lift up the little bracket on top of the v-groove. Place the fiber holders in their wagons. - Keep the fiber holder at an angle and move it pass its intended resting place. Lay the holder down and let it slide back into position (where the magnets will lock it). Don´t try to push them in place from the outer position as it will be very hard to make the fiber fall in place into the v-groove

- Close the bracket over the v-groove and lock the fibers in position

- Close the main lid. The fiber should now be visible in the monitor like this:



- If both fibers look good and clean, Press the SPLICE button and the automatic spliceprocedure will take place (moving the fibers together, igniting the spark, melting the glass together, make a pull test and estimate a loss value).

If estimated loss is larger than 0.1dB the splice is bad and the fiber has to be re-spliced.

- Once the fiber is repaired, gently slide the protection sleeve over the weld area. Place the fiber in the oven and press the OVEN button. The plastic protection will melt, covering the spliced area. Be careful to not melt the protector over the core of the fiber, always melt it over the jacket. Once the countdown is over, the fiber is ready.

Authors : Idriss Douss and Juan L. Santana