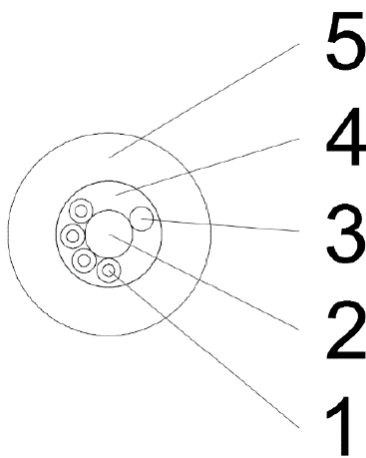


FRMU micro 2,1 4xG.657.A2



Cable construction

1. Optical fibers
2. FRP rod (strength member)
3. Rip cord (blue)
4. Inner sheath (Flex tube)
5. Outer sheath

General installation recommendations

- FRMU micro 2,1mm cables are installed in microducts using blowing method
- Designed for microduct bore diameters 3,5mm – 4,0 mm
- This cable is not designed to be installed by pulling
- During installation it is important to ensure that the cable bending radius is not below the minimum specified value $r_{\min} = 40\text{mm}$ (note, minimum loop diameter $D_{\min} = 80\text{ mm}$, single turn)
- Recommended minimum installation temperature is $-15\text{ }^{\circ}\text{C}$
- FRMU micro 2,1 cable has a di-electric (metal free) construction, so grounding is not an issue
- When installing FRMU micro 2,1 cables to cabinets, closures etc. it is recommended to optimize the cable length so that there aren't big coils of extra cable stored in a loop after the fibers are spliced
 - One loop (turn) of extra cable with loop diameter much greater than the minimum specified bending radius is recommended to ensure a lifespan of tens of years
 - If the cable is stored in a cabinet etc. for later use (not stripped or spliced), the recommended loop diameter for the stored cable coil is 200-300 mm.
- The stripping length of the cable depends on what kind of the closure, termination box or splice cassette is used
- Before stripping the cable, always check the needed fiber length for the closure or box in use and measure at least 100 mm of extra stripping length on the cable

Cable stripping

- In this instruction there are three different methods of stripping the cable
- An installer can choose which method is best for him and his tools
- In all methods the rip cord underneath the inner sheath is used
- As shown in the picture of the cable construction on the first page, the rip cord is located on the opposite side of the central strength member (FRP rod) than the fibers
- It is important to know in which side the rip cord is and to pull the ripcord straight out from the side it is located
- This way the rip cord doesn't harm the fibers

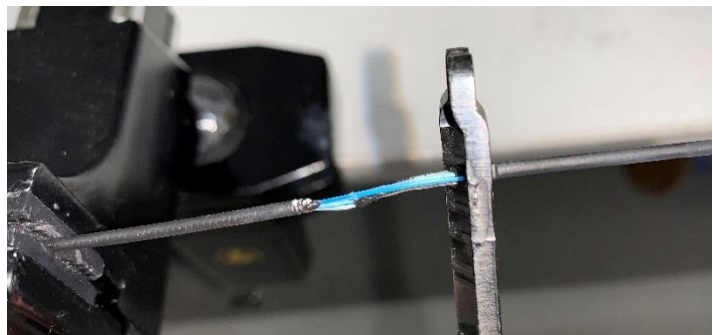
Method 1: Lighter + wire strippers



- For this method you need a regular cigarette lighter and wire strippers that have a groove for about 1,5mm copper wire, like the ones in the picture above

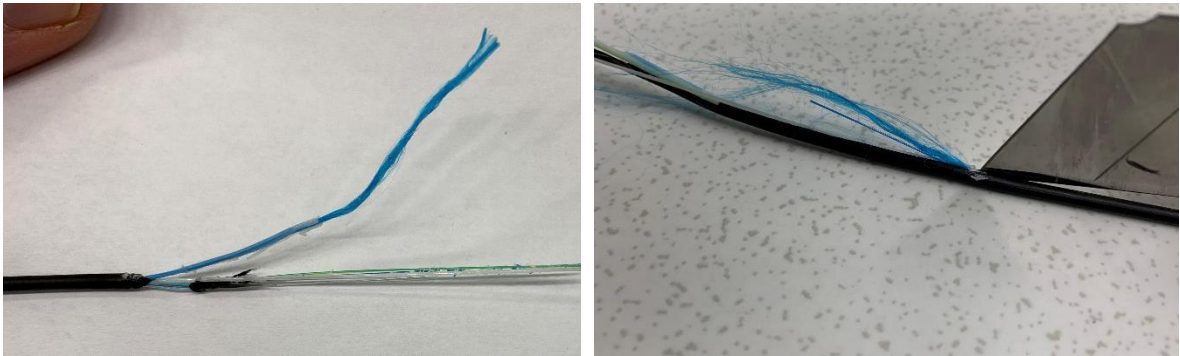


- Measure the needed stripping length + 10 cm extra, and make a mark on the cable
 - If you need for example 140 cm of loose fiber on a splice tray, measure and mark 150 cm on the cable
- Then measure and mark about 6 cm from the cable end

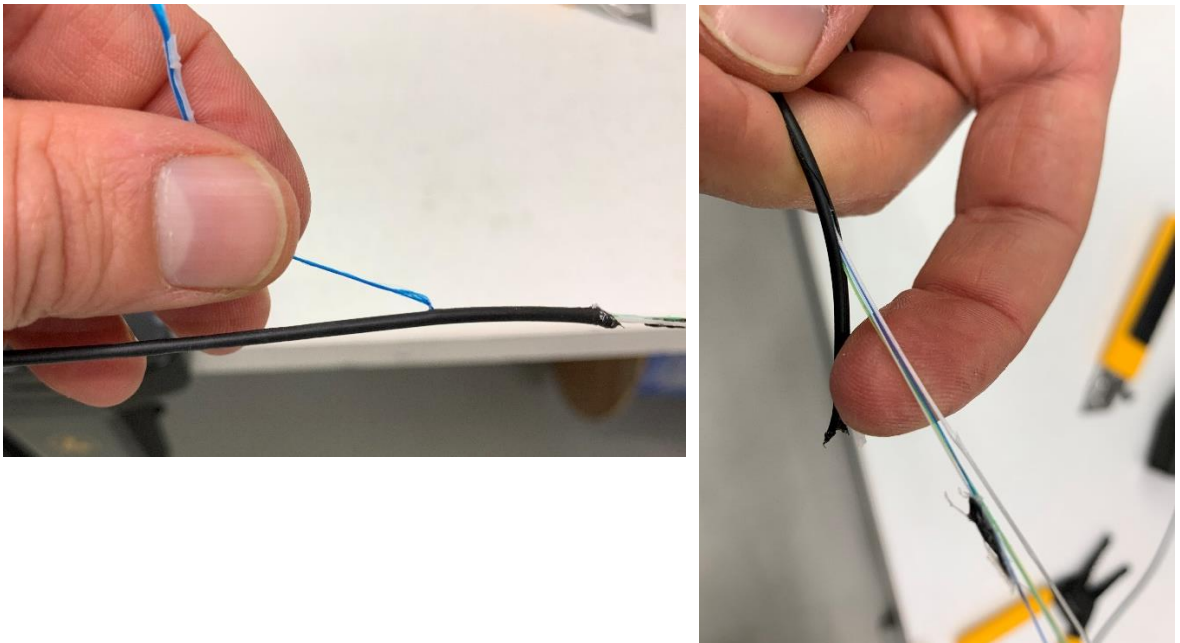


- Take the lighter and heat up the 6 cm piece of cable sheath
 - Don't burn the sheath, just heat it so that it starts to expand a bit
- Then use the wire strippers (about 1,5mm groove) to remove the 6 cm piece of sheath

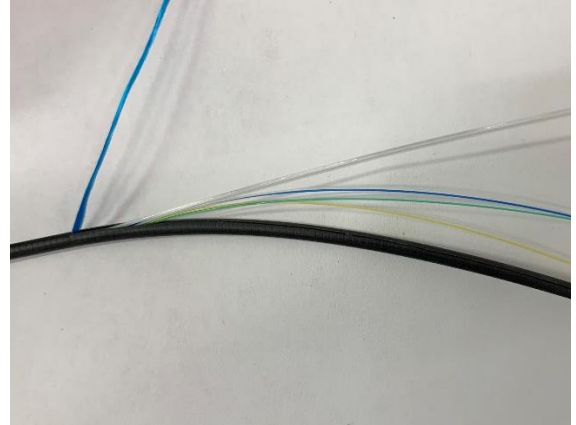
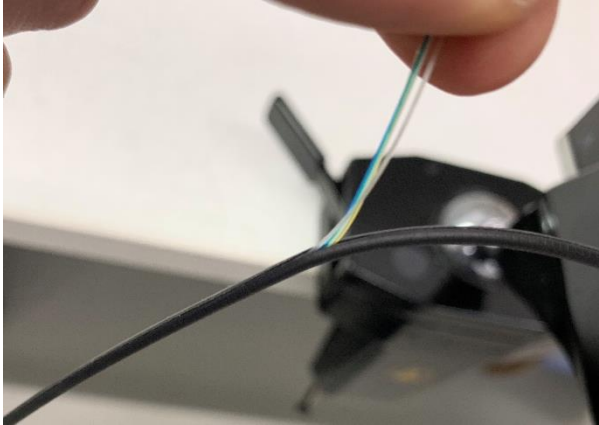
- Some fibers may break or lose color because of the heat, but this is the reason why there is 10 cm extra on the stripping length
- It's important that the blue rip cord survives the heat



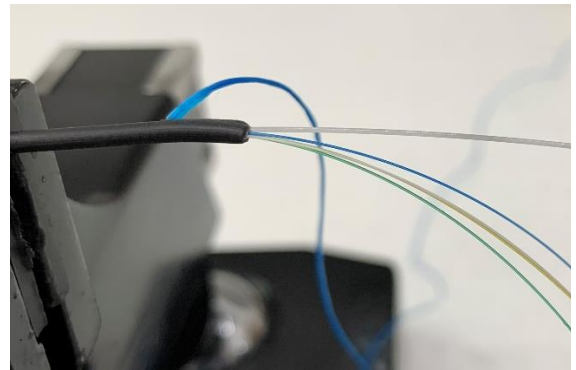
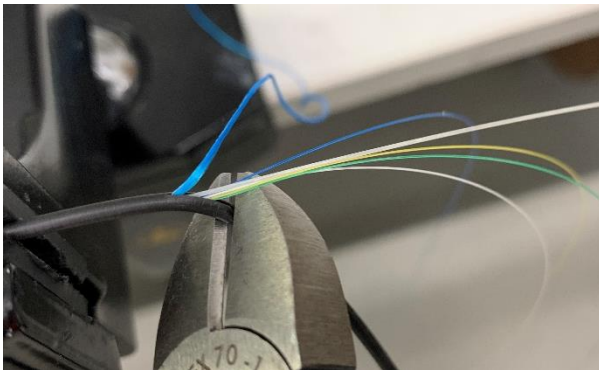
- Locate the rip cord and separate it from sheath remainings
- Carefully check the orientation of the rip cord and pull it through the sheath and flex tube
- If needed, you can help the rip cord at the beginning by making a small cut on the sheath with a sharp knife
 - Sometimes the burned edge of the sheath is difficult to penetrate with the rip cord



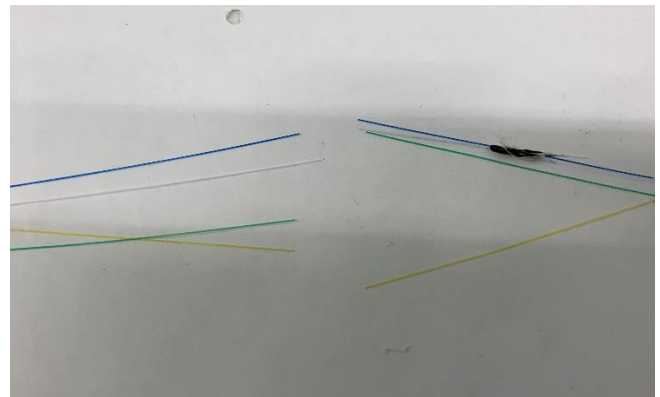
- The rip cord is easy to pull through the sheath when you get it going
 - If it's hard or the ripcord breaks, you may be pulling it to the wrong orientation
- Open the sheath with the rip cord all the way to the mark of stripping length
- Then locate the FRP strength member and all four fibers from the cable end



- Gently pull the FRP and four fibers through the crack as one group
- The FRP comes out through the crack first opening the crack and the fibers follow just after the FRP



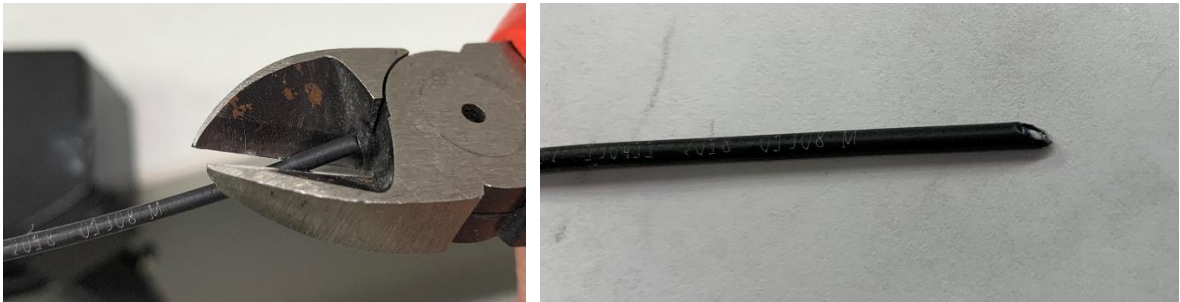
- Make sure you have all four fibers outside the sheath and cut off the stripped sheath without harming the fibers
- When the sheath is cut off, carefully guide the fibers back inside the sheath, so the crack in the sheath doesn't pinch the fibers
- Cut off the FRP strength member and rip cord



- Cut off the burned and damaged 6 cm pieces from the fiber ends
- The fibers are now ready for splicing

Method 2: Knife

- For this method you only need a sharp knife
- Measure and mark the stripping length as described in Method 1
- Measure and mark a 6 cm length from the cable end as described in Method 1



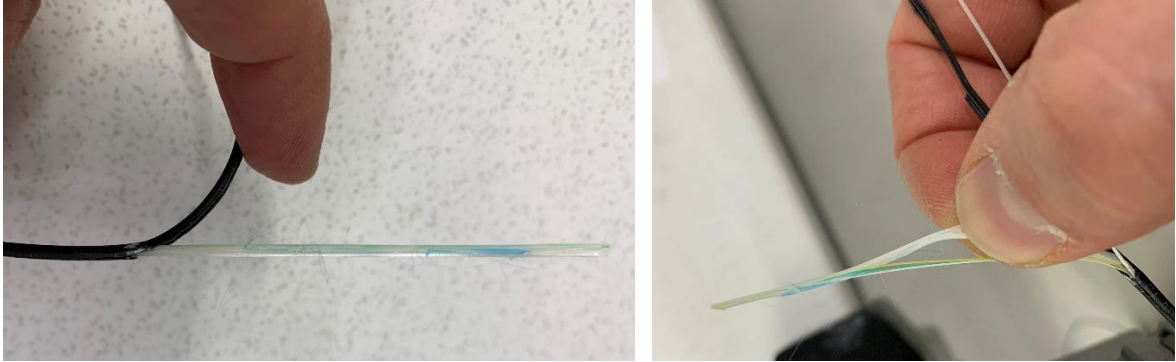
- Cut the cable end to an angle so it's easier to see inside
- Locate the rip cord from the cable end, check on which side of the cable the rip cord is located
- Place the cable end on a table and turn it so that the rip cord is parallel to the table surface (not up or down)



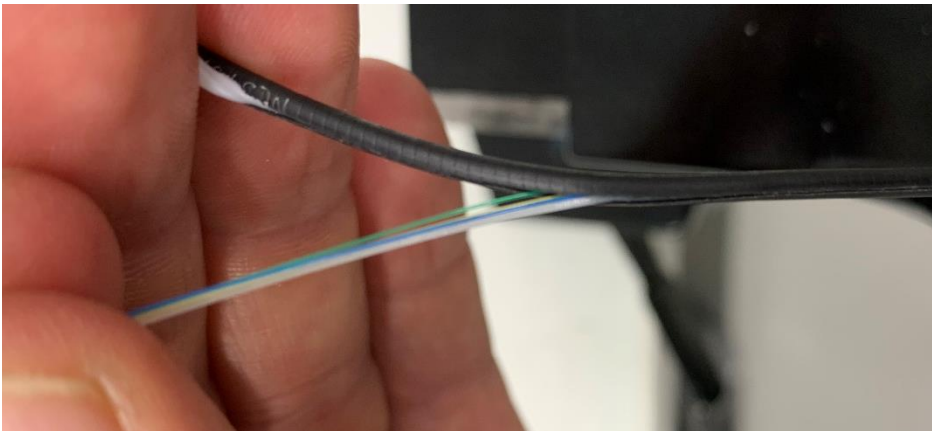
- Slice a 6 cm long slot on the side of the cable so that you can see the insides
- The cable should be turned so that after slicing you can see the ripcord, but you don't cut it with the knife
- Some fibers may be broken but that's not a problem as long as the rip cord is OK



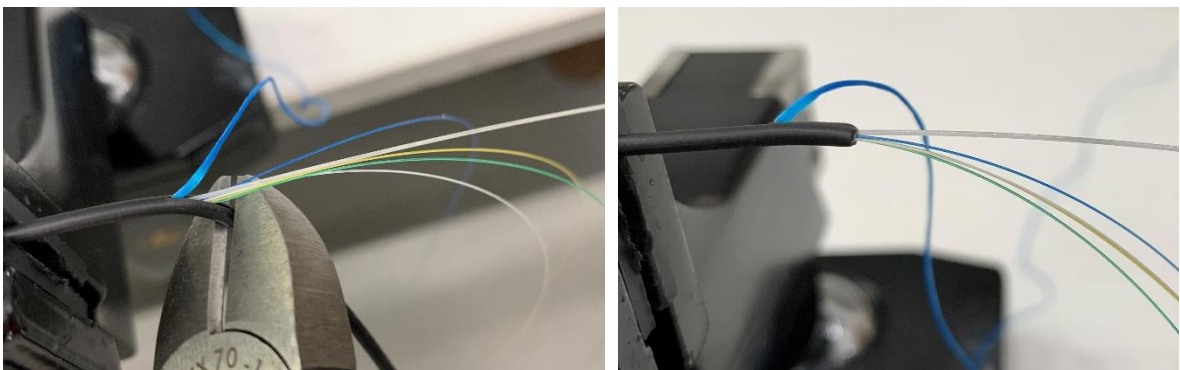
- Dig out the rip cord gently with the knife
- Open the cable sheath by pulling the rip cord straight through the sheath for the whole stripping length



- When the sheath is opened with the rip cord, dig out the FRP and fibers from the cable end, or dig out the whole flex tube
- Separate the flex tube from the FRP and fibers

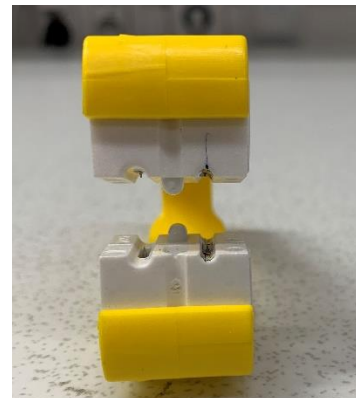


- Make sure you have all four fibers and the FRP in your hand
- Gently pull the FRP and four fibers through the crack as one group
- The FRP comes out through the crack first opening the crack and the fibers follow just after the FRP

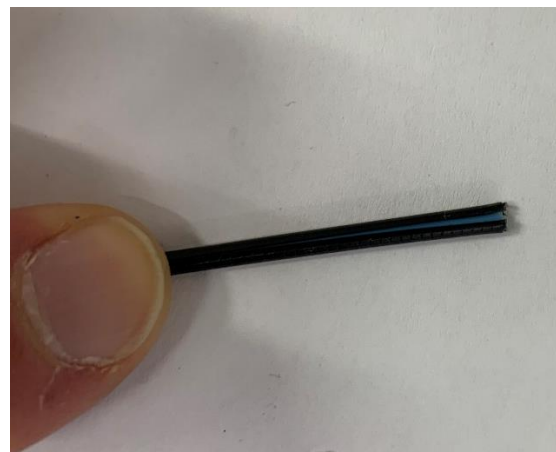
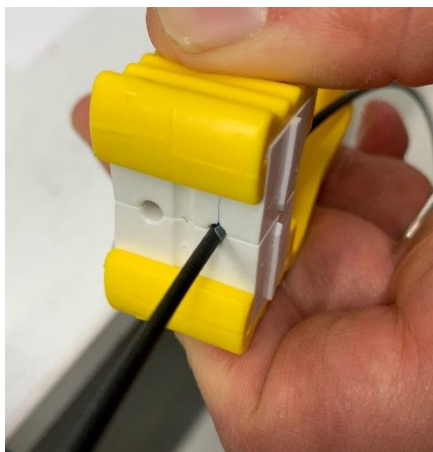


- Make sure you have all four fibers outside the sheath and cut off the stripped sheath without harming the fibers
- When the sheath is cut off, carefully guide the fibers back inside the sheath, so the crack in the sheath doesn't pinch the fibers
- Cut off the FRP strength member and rip cord
- Cut off the damaged 6 cm pieces from the fiber ends
- The fibers are now ready for splicing

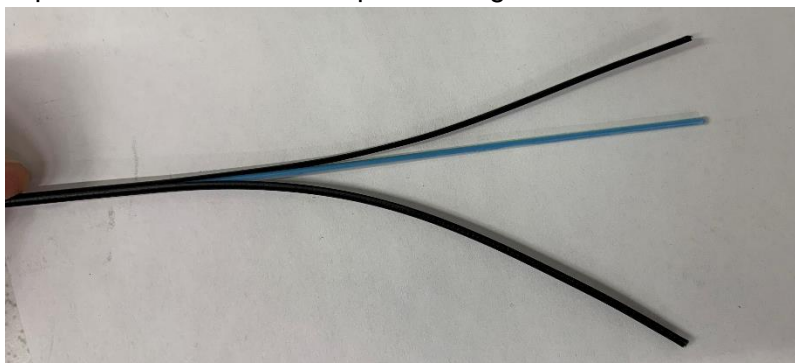
Method 3: Special tool



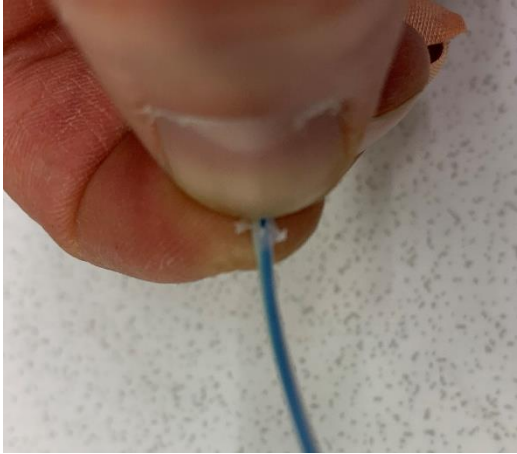
- For this method you need a special cable splitter, Miller FOJST for 2,0mm cables
- The tool has a groove for 2 mm cable with two blades that slit the sheath open from two sides
- Measure and mark the stripping length as described in Method 1
 - 10 cm extra length is not mandatory when using the tool, but it's always good to have some extra



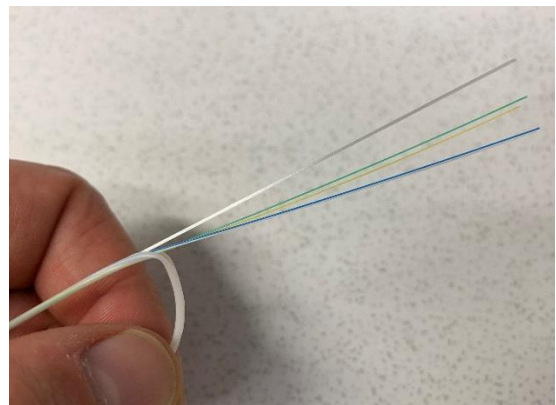
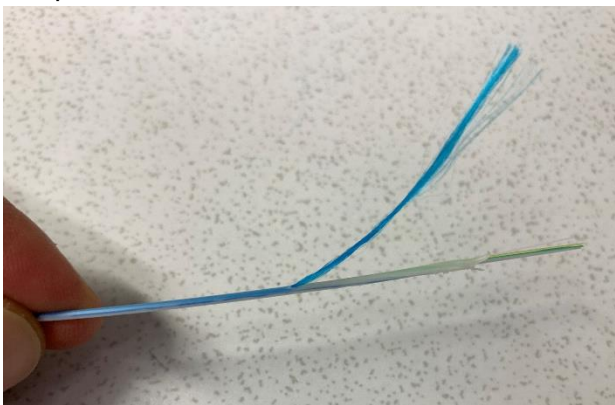
- Place the tool around the cable on the stripping length mark (use the 2 mm groove)
- Squeeze the tool hard and pull it along the cable till the cable end



- Open the sheath from the cable end and pull the two pieces of sheath apart for the whole stripping length



- Take the cable end and scratch open the flex tube with your fingernails to find the rip cord
- Remove a few centimeters of flex tube with your fingers, no tools needed for this
- It is easy to see on which side the rip cord is located, because the flex tube material is transparent



- Use the rip cord to open the flex tube
- Remove the flex tube
- Cut off the stripped pieces of sheath and flex tube
- Cut off the rip cord and FRP
- If some of the fibers were harmed when scratching off the flex tube, cut off the harmed fiber parts
- The fibers are now ready for splicing