EasySplicer

Service manual

First, make sure that the latest firmware is installed. Firmwares can be found at our website: http://www.easysplicer.com/support/ And the password is easysplicer1234

The current firmware version is shown at the bottom right when powering on the splicer. Always upgrade to the latest version when it is available.

If additional support is needed, please email support@easysplicer.com

Common faults and where to find more information:

Type of fault:	Check section:
Splicer complains **TOO MUCH OFFSET**.	Clean v-groove
Spark is not working properly.	Adjust electrodes
If fibers are too long or too short.	Adjust fiber length
Faulty battery.	Replace battery
Faulty oven.	Replace oven
If You get **FIBER DIRTY** even though fiber is clean.	Adjust white LED
If fibers move up or down even though the clamp-arm is down.	Adjust clamp arm height
Black spot's on screen. (often says **BAD FIBER**).	Clean camera
If fibers are much too high or low.	Adjust fiber's vertical position
If the fiber shape is not sharp, bad focus.	Adjust focus

Table of Contents

Tools that can be good to have when working with the EasySplicer:

Torx screwdriver: T15, T8, T7

Allen key: 0.9mm

A pincer.

A small flat screw driver.

And material to clean and splice.

Service menu

EasySplicer has a service menu that is hidden from the normal user. Here You can do some settings, tests and adjustments.

Enter the service menu by pushing **up-button** for more than 2 seconds

and then push the **down-button** for more than 2 seconds.

EXIT

Exit from service menu.

CHECK CAMERA

Show camera in gray scale mode. This is useful to show if there are dirt on the camera or if the white LED is out of position.

CALIB LIGHT

Automatically adjust the strength of the white LED. See separate instructions in this manual.

FIBER VERTICAL

EXIT

AUTOMATIC

Let the splicer find the correct vertical position of fiber.

MANUAL

Manually set the vertical position of fiber.

CONFIG

Set some configuration parameters. For example what type of oven that is installed.

CENTER MOTORS

Put the motors in the ideal zero position.

RUN L MOTOR

Manually run the left motor in and out. Used to verify that the splicer is able to move the fiber correctly.

RUN R MOTOR

Manually run the right motor in and out.

CHECK PARAM

Check some parameters. Normally not very useful.

OFFSET TEST

Does the same thing as a splice but never uses the spark. Perfect when cleaning v-groove to see how big the offset is without melting the fiber ends.

Clean v-groove

When the splicer complains of too much offset, it is in 99.9% of cases a dirty v-groove. In very rare cases, the problem may be that the fibers are not clamped in the v-groove. To test that the ball-bearings clamp the fibers in the v-groove correctly, lift the fiber holder like in the picture below. Check that the fiber is moving horizontally but not vertically. Test both sides.

If fibers are moving up or down, even a tiny bit, check this section in this manual: Adjust the clamp arm height.

The v-groove is best cleaned by a newly cleaved fiber. Remember that if a splice has been tried the fibers are no longer sharp and You need to strip, clean and cleave the fiber before using it as a cleaning tool.

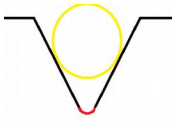
Normally it's very easy to clean the v-groove. A few strokes with the fiber and it is clean.

But if the fibers have been very poorly cleaned before put into the splicer, it might be a plastic layer in the v-groove that can be quite hard to remove. In this case use a cotton-bud to apply a very small amount of alcohol on the v-groove to melt the plastic, wait a few seconds and then scrape with the fiber to remove the dirt.

If this does not get rid of the plastic layer then You can use a retractable segment blade knife like this:

To scrape the v-groove. The v-groove is made out of ceramic and is very durable. So it is almost impossible to destroy it with this tool.

The v-groove is not a perfect V-shape. The bottom has a small radius, Here is how the v-groove looks from the side:



Yellow part is the fiber and the red part is the bottom radius. So when using the knife remember to not push it into the bottom of the v-groove because it will not clean the walls of the v-groove.

The red part is the knife. Because of the bottom radius it does not reach the wall of the v-groove.

Don't push down, push in the direction of the wall and find the correct angle that matches the wall of v-groove and scratch. A good technique is to scratch back and forth many times and every time change the angle a tiny bit. It only takes one stroke at the correct angle to wipe away the dirt. Sometimes You can feel the resistance when the knife hit's the dirt.

After using the knife do more cleaning with a freshly cleaved fiber.

To test if the v-groove is clean You can use this technique to move the fibers close to each other. Lift the fiber holder like in the picture below and the fiber will move inwards.

This way it is easy to see if the fibers are at the same level (height).

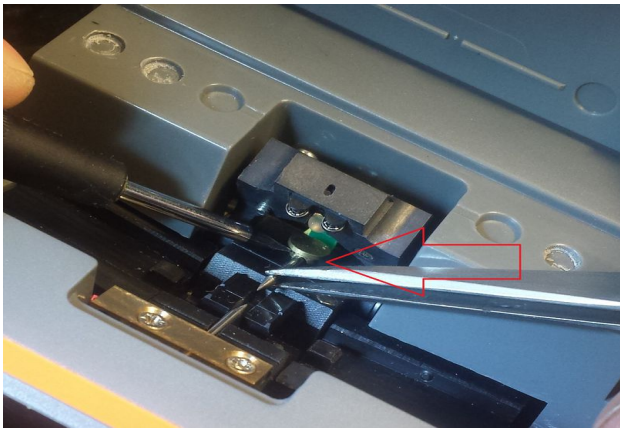
When they looks to be at the same height, do a test splice and check the offset value. You can also use the OFFSET TEST in the service menu. it will perform the the same movement and measurement as a splice but it will not use the spark. So the fibers will still be sharp when done. A really clean v-groove should give You zero or one in offset. And You should always keep offset below 10 when using the splicer.

If the “Offset error” persist after cleaning it´s 99% due to the fact that You haven´t cleaned it well enough. Sometime smudge is really sticky and it can take 10-15 minutes to scratch away the dirt from the V-grove. But just keep working and in the end...it will be like new (with close to “zero degrees” offset again) !

Here is a video showing how to clean: http://www.easysplicer.com/video-showing-how-to-clean-the-v-groove/

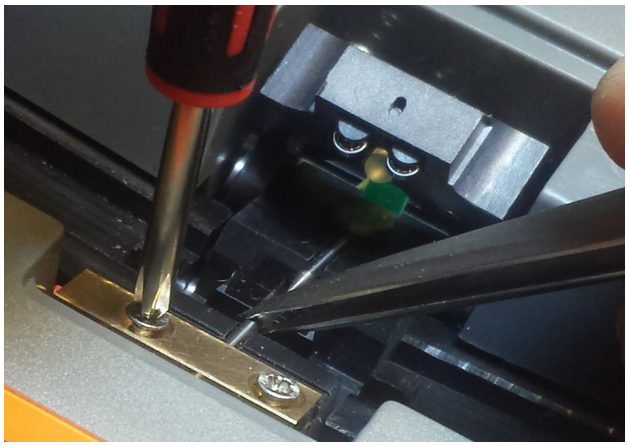
Adjust electrodes

This is needed if the spark is not coming on at all or stops working in the middle of a splice.



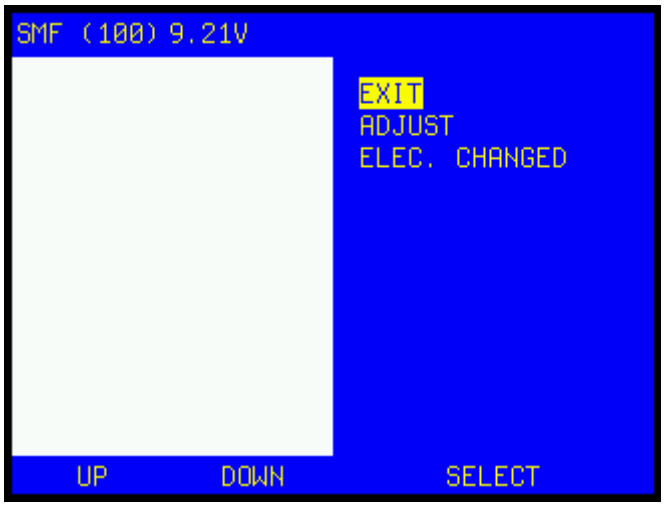
Upper electrode.
Use a small flat screwdriver to lift the electrode lock (the circular brass part).
While lifted use a pincer to carefully remove the old electrode.
No strength is required, be careful.

Keep the lock lifted with the screwdriver and insert the new electrode.



Lower electrode.
Loosen the two screws to loosen the electrode lock.
Replace the electrode with a pincer.

Adjust the position of both electrodes so that they are a just outside the camera view (not to be seen in the display). Enter the menu system and go to Setup and then to Electrodes. Select Adjust.



First thing to do is to place a fiber in the v-groove. This will guide the splicer to find the exact vertical center of the fiber.

Then press NEXT.

Adjust the upper electrode so that it is within the green area.

When done, press NEXT and adjust the lower electrode within the green area.

No strength is required, be careful.

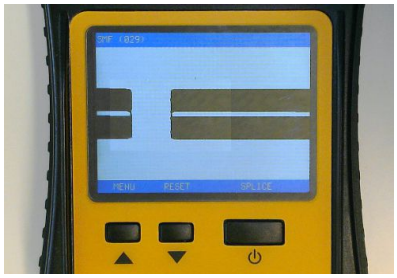
Carefully tighten the two screws to lock the electrode in position.

CAUTION! DO NOT TIGHTEN TOO HARD. Just enough to lock the electrode in place.

Done !!!

Adjust fiber length

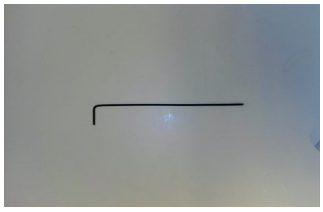
This is often needed if the cleaver has been changed since all cleavers cut a little bit different in length. Or if the splicer/cleaver had some rough handling.



First thing to test is MENU/SETUP/FIBER POSITION/CAL. FIBER POS

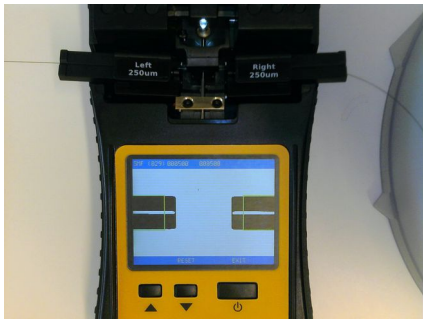
If this fails or if You got the error **MOTOR LIMIT** You will have to adjust mechanically because the motors can't move far enough without reaching motor limit. Here's how to do that.

Tools needed: 0.9mm Allen key.

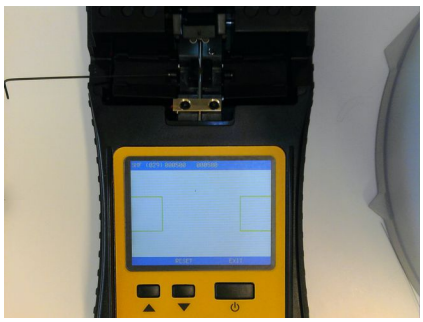


Put two fibers in place as if they where to be spliced.

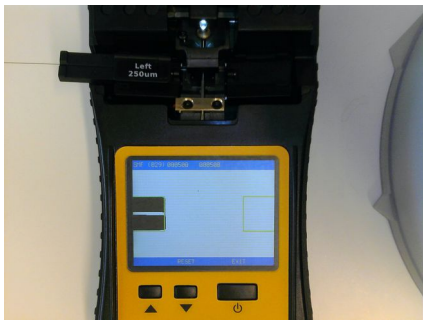
Enter **MENU/SETUP/FIBER POSITION/CENTER MOTORS**



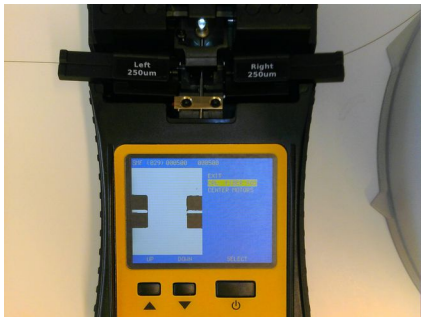
Two green boxes will be displayed showing the optimum position of the fibers.



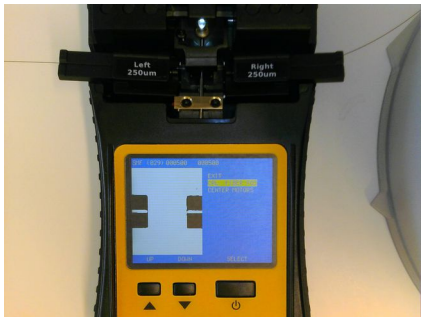
Remove the fiber-holder and adjust the small screw to adjust fiber length. Screwing it inwards will make the fiber longer. Adjust very little and test the new position by inserting the fiber-holder, fall down the clamp and press reset. Adjust until fiber fits into the green box.



Do the same procedure for the other side.



Press **EXIT/CAL. FIBER POS**



Check the fiber positions at top of the screen. They should be between 600 and 800.

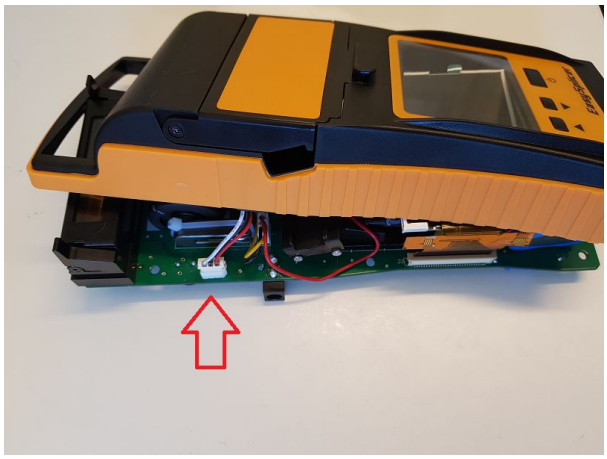
Select and press **SAVE**.

Done.

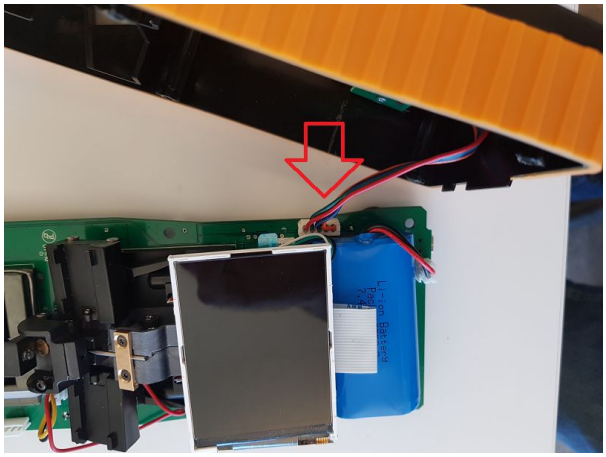
Replace battery

First remove the 6 screws at the bottom of the splicer and remove the bottom of the housing.

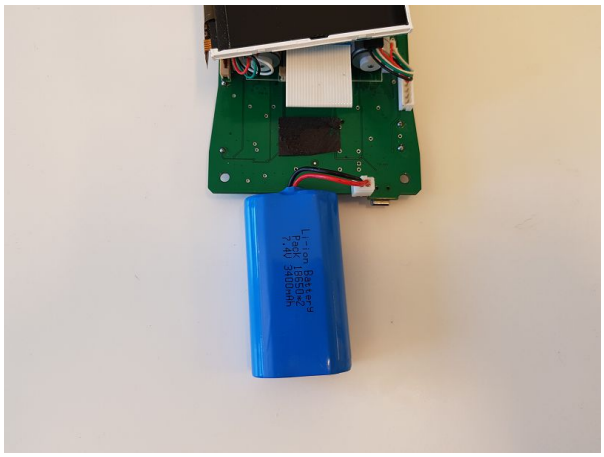
Now You can lift the PCB a little bit, enough to see the connector that should be disconnected.



Disconnect this connector too.



Now the battery can be removed. It is fastened with double sided tape so it may have to be cut away carefully.



When putting the PCB back in place, make sure that the LCD display is in the correct place. You can look at the front side that it is in position.
Also make sure that no cables have been placed where the screws will go to hold the bottom in place. Put back the bottom and the 6 screws.

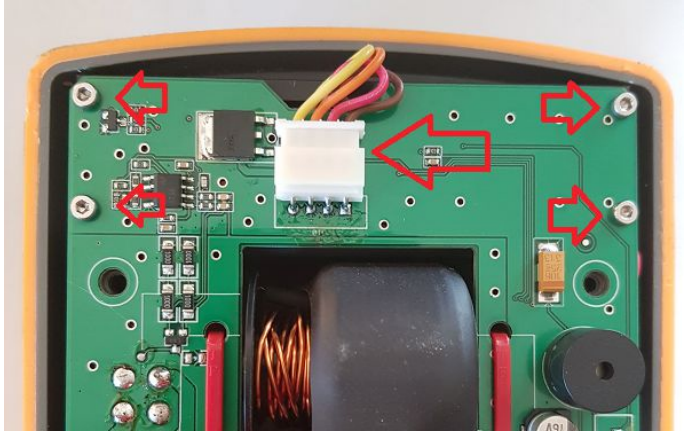
Done.

Replace oven

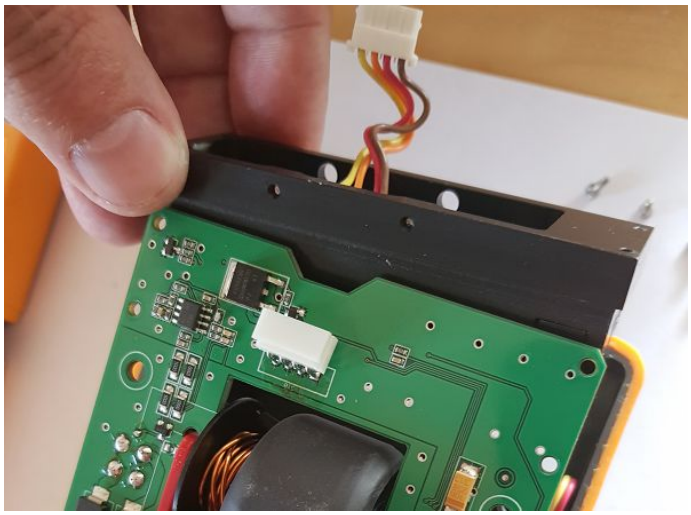
First remove the 6 screws at the bottom of the splicer and remove the bottom.

Now You can see the 4 screws that holds the oven in place.

Remove these and the connector.



Now You can lift the PCB a little bit, enough to lift the old oven out.



Slide in the new oven, connect it and put the 4 screws back.

When putting the PCB back in place, make sure that the LCD display is in the correct place. Look at the front side and check that it is in the correct position. Also make sure that no cables have been placed where the screws will go to hold the bottom in place. Put back the bottom and the 6 screws.

Now You need to setup the splicer for the new oven.

If the type of the new oven is the same as the old one You can skip this step.

OBS ! It is very important to set up the oven to the correct type.

Failing to select the correct oven type might burn Your new oven.

The two oven types looks like this:

Flex heater oven:

Ceramic heater oven:

First, make sure that You have the latest firmware installed. Instructions are in the top of this document.

Enter the service menu, described elsewhere in this manual.

In the service menu:
Choose **CONFIG**
Enter password **ES**

For ceramic heater oven:
Choose **OVEN TYPE**
Choose **CERAMIC**
Choose **YES** when asked if You are sure.
Choose **5.0 OHM**
Chose **EXIT**

For flex heater oven:
Choose **OVEN TYPE**
Choose **FAST**
Chose **EXIT**

Done.

Adjust white LED

Due to rough handling of the splicer, the LED might have been moved slightly out of position and a re-calibration is needed. The fault is shown by bad focus, dark corners or what looks like dirt on the camera. Here's how to calibrate the LED.

Remove any fiber. This adjustment needs the camera to see the whole LED.

Enter the service menu by pushing up-button for more than 2 seconds

and then push the down-button for more than 2 seconds.

In the service menu that shows up:

Choose **CALIB LIGHT**

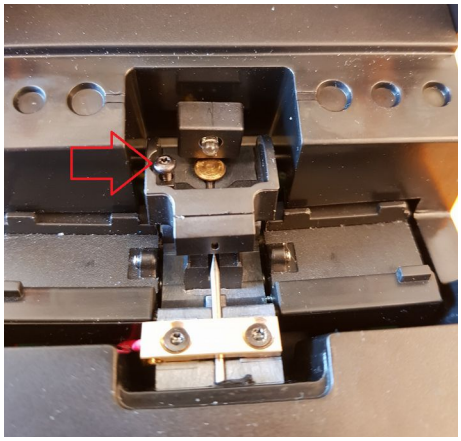
When the calibration starts, the screen will be all black. After a few seconds the light will start to spread like in the picture below. And after a few seconds more the calibration is complete.

Done.

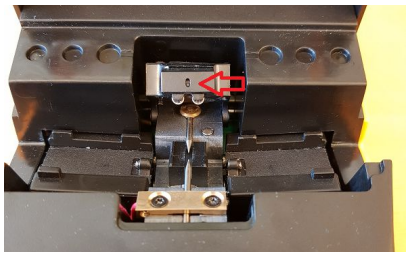
Adjust clamp arm height

This adjustment is made from factory and should never have to be readjusted. But if this adjustment screw has been adjusted by someone that doesn't know how to do it.... This is the way to adjust it correctly.

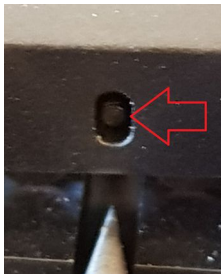
Height adjustment screw.



Ball-bearing knob.



Insert fibers and adjust the height so that the ball bearing knob is in the center of the oval hole.



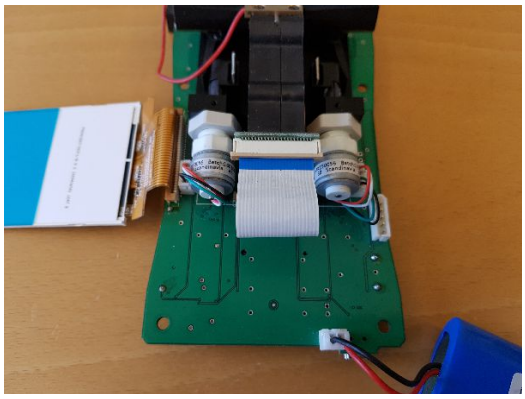
Verify that the ball-bearings clamp the fibers in the v-groove by lifting the fiber holder like in the picture below. Check that the fiber is moving horizontally but not vertically. Test both sides.

Done.

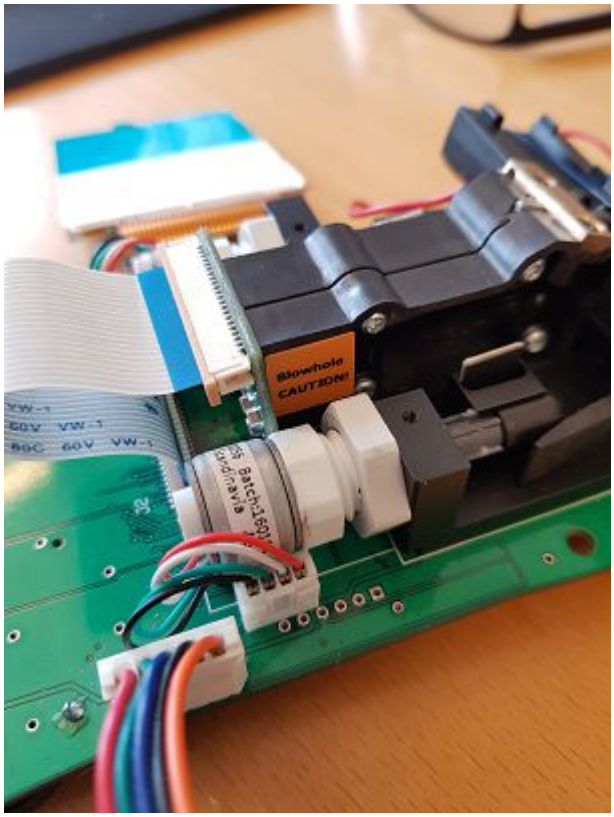
Clean camera

If there's black spot's on the display it is probably due to dirt on the camera. Do not confuse this with the tips of an electrode. These also makes dark areas if they are adjusted wrong.

Open up the splicer and carefully put the display as in the picture.

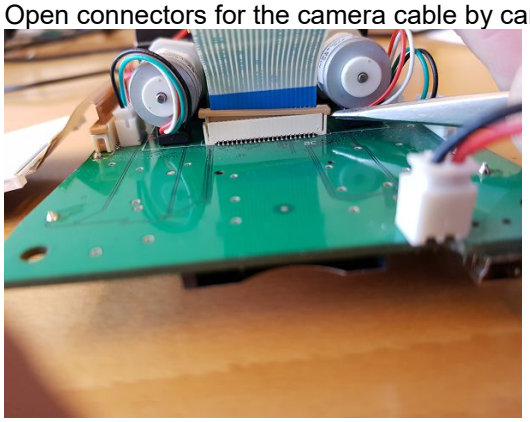


There is a very simple way to clean the camera that might work.
In the center of this picture below there is an orange label marked 'Blow hole CAUTION!'
Remove that label and You will find a small hole where You can insert the hose of a compressed air can and blow away any loose dirt that might have got on the camera. **Only use compressed air from a can. Because the air needs to be absolutely clean.**

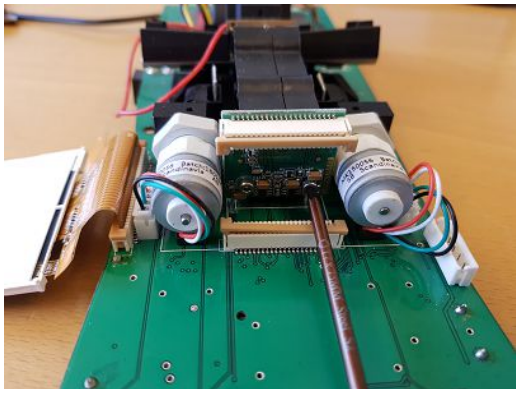


If You still have a dirty camera You have to clean it as described below.

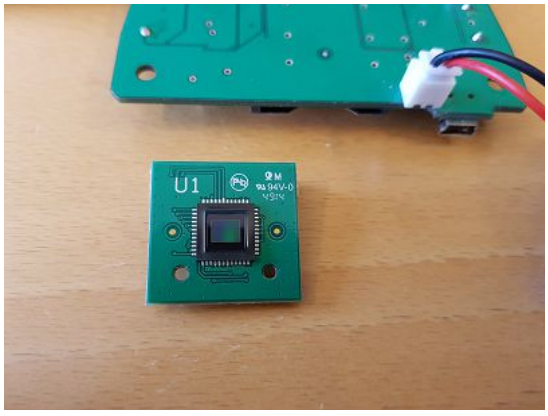
Open connectors for the camera cable by carefully lifting the brown plastic part like this:



Remove the cable and the two screws that holds the camera PCB.

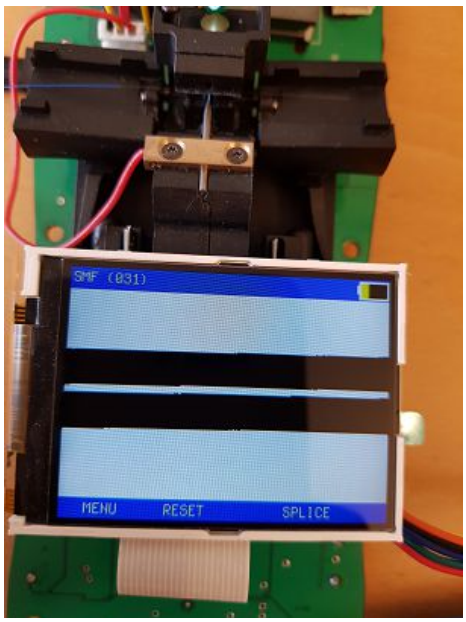


Now the camera is loose and You can clean the glass surface. Use wipes and fluids made for eye-glasses.

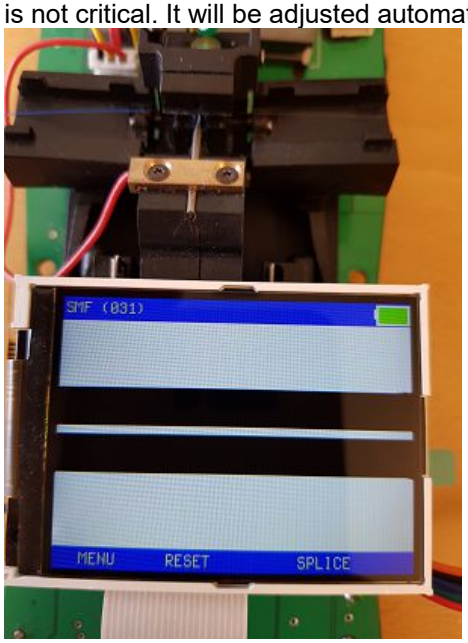


Put the camera PCB back in place. Tighten the screws so that it is still possible to move the camera.

Connect the buttons and turn on the splicer. Put a fiber in the v-groove.



Rotate the camera until the fiber is perfectly horizontal like the picture below. The vertical position of the fiber is not critical. It will be adjusted automatically by the **CALIBRATE** below.



Turn off splicer and remove the camera-cable again. Tighten the screws a bit more so that the camera is secured but **don't over tighten the screws, the plastic threads might break**. Reconnect the cable and verify that the fiber is still perfectly horizontal.

Assemble the whole splicer.

Do a **CALIBRATE**.

Done.

Adjust fiber's vertical position

This problem might occur if the user has tried to splice without clamping the fiber. It is very unusual but can happen. First do a **CALIBRATE** and if that doesn't move the fiber to the center of the screen then do what's described below.

The center position is forced like this:

Insert a fiber as if You where to do a **CALIBRATE**. Enter the service menu (explained elsewhere in this manual) and select **FIBER VERTICAL/MANUAL.** Now You can adjust the fiber position with up and down buttons. Place the fiber close to center of the screen and press **SELECT**. Then select **AUTOMATIC** and the splicer will position the fiber exactly in center. Select **EXIT**.

In this picture the fiber is way too high and the electrode tip can bee seen at the bottom of display.

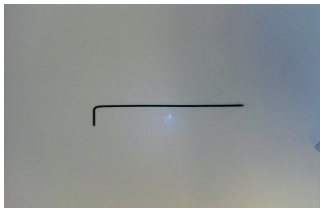
Done.

Adjust focus

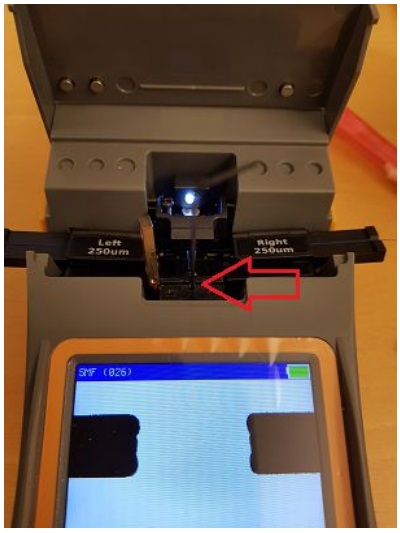
OBS! Always do a **Adjust white LED** before adjusting the focus. It is much more likely the cause of what looks like bad focus. And it's very unusual that the focus needs to be adjusted.

This adjustment is not easy to do so please consider sending the splicer to us for service.

Tools needed: 0.9mm Allen key.

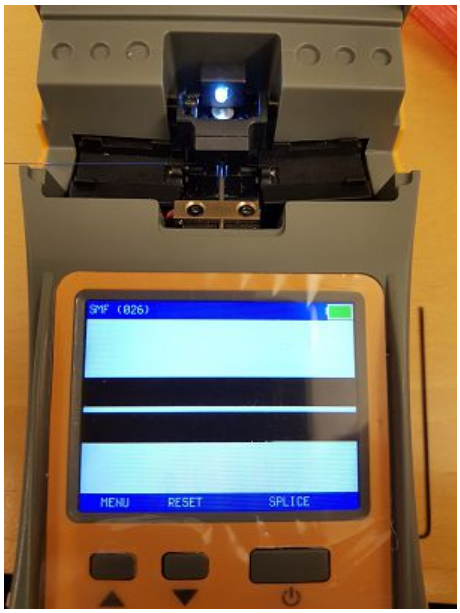


Remove bottom electrode and the two screws holding the electrode.
Put two fibers as if You where to splice them.



Use a 0.9mm Allen-key to loosen the lens. It is the screw closest to the white led (red arrow). **The screw closest to the screen is height adjustment for the electrode, don't adjust this screw.**

Adjust focus by moving the lens in or out (carefully, it is probably very loose). Lock with the screw when focus is good. Don't tighten very hard, just so that the lens can't be moved. **The lens tube is made of plastic so it can't be locked too hard or it will break.** When adjusting and locking the lens, fiber positions will move. Next step will take care of this.



Put back the electrode and adjust it so that it is just outside of the screen. **Do not over tighten the screws,** just tighten to lock the electrode in place.

Do a **CALIBRATE** to get the fiber in the middle of the screen vertically and the spark position in center horizontally. If the electrode becomes visible, readjust electrode so that it is just outside of the screen.

Put two fibers in place and check that they are positioned correct. If one is short and the other is long do a **FIBER POSITION** to set the correct fiber positions.

Done.