SUMITOMO ELECTRIC EUROPE Ltd.

User Guide

T-25S-L (Coating Clamp)
T-25U-L (Coating Clamp)

DESCRIPTION

The T-25 is a fast compact fusion splicer, designed for joining optical fibres where the unit's small size and low weight are significant advantages, or where splicing performance requirements do not justify the added cost and complexity of a core alignment splicer.

With good quality fibre the T-25 is capable of achieving extremely low loss splices when operated according to this user guide.

FEATURES

The T-25 is a compact splicing system consisting of the following elements:

- T-25 splicer with heatshrink oven
- Rechargable internal battery BU-25
- 2-bay battery charger BC-25A
- AC/DC mains adapter ADC-1635 and mains lead for the battery charger

T25 Splicer

Internal battery BU-25

AC/DC adapter ADC-1635

Battery charger BC-25A

In addition to the basic elements of the T-25 splicing system described above, the following standard accessories are available:

- FC-6S cleaver with automatic off-cut collection, for use with both 250 μm and 900 μm fibre
- IF-25R Interface unit (mains input through the ADC1240 adapter, DC/serial output)
- AC/DC adapter ADC-1240 for the interface unit IF-25R
- Rechargeable internal batteries BU-65
- Fibre stripper
- Loose tube cutter
- Fluid dispenser bottle
- Electrodes ER-9
- Neck strap

FC-6S Cleaver

AC/DC adapter ADC-1240

Fluid dispenser

Fibre stripper

IF-25R Interface unit

Electrodes ER-9

Loose tube cutter

SAFETY

The T25 has been designed and manufactured to assure personal safety as far as is practically possible. Improper or reckless use of this equipment could be hazardous and may result in fire, electric shock or injury. The user should be aware of the following hazards and take suitable precautions:

Arc (electric discharge) – the arc used to fuse the optical fibres is a high temperature electric discharge (spark) that could ignite flammable or explosive gases or materials.

The electrodes and some parts of the heatshrink oven will become hot and should not be touched.

The arc emits intense light that should not be viewed directly, e.g. with the wind cover open. The splicer incorporates a video screen, which shows a magnified image of the fibres for pre- and post-splice inspection of the fibres. This screen is completely safe to view during the arc.

Electricity – the splicer (if using the IF-25R) and the battery charger BC-25A are mains powered products that should not be used near water, wet surfaces or with wet hands. Conductive materials such as metal wires or screwdrivers should not be poked into, or used on, the splicer whilst it is plugged into any electrical supply.

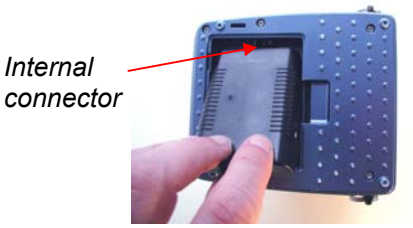
Please use equipment only for its intended purpose, with approved accessories. If in doubt, consult Sumitomo Electric Europe Ltd or your local Sumitomo representative.

PREPARING THE T25

Charging the battery:
Plug the ADC-1635 mains adapter into the external battery charger BC-25A and insert one or both batteries for charging. During charging the red LED by the battery will flash. When the LED is on continuously, the battery is fully charged.
Caution: batteries may become hot whilst charging, and due care should be taken

Inserting the internal battery:

1. Open cover



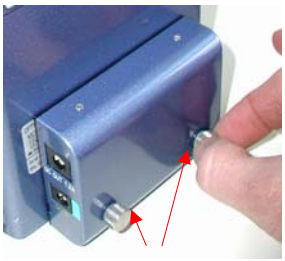
2. Insert battery

Attaching and connecting the IF-25R interface unit:

1. Unscrew the finger screws and remove the blanking plate from the back of the T-25.

Blanking plate

Interface connection



Finger screws

2. Plug the Interface unit in at the back of the T-25 and tighten the finger screws

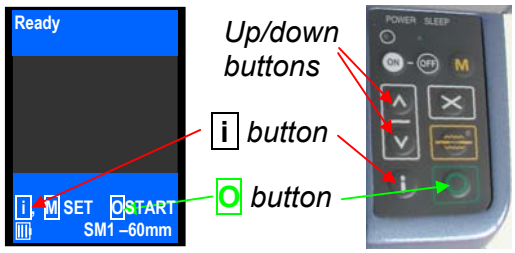
Mains Supply:
Plug the ADC-1240 mains adapter directly into the IF-25R interface unit when fitted.

ADJUSTING THE SETTINGS

Navigating the settings menu system

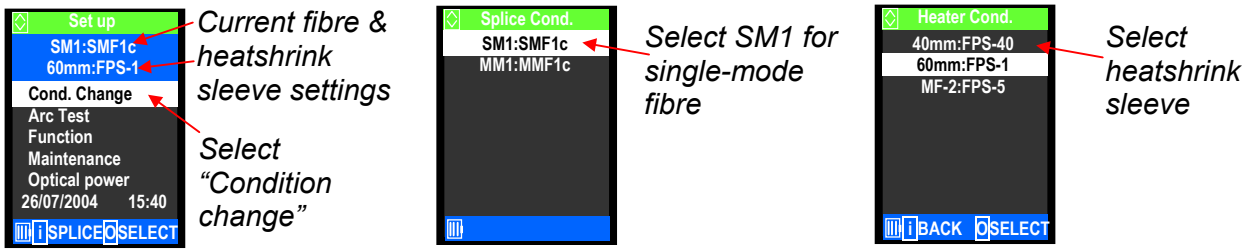
From the initial 'ready' screen, the [i] button gives access to the settings menu shown below. The menus can be navigated using the keypad as follows:

- [^] and [v]: scroll up or down through menu items
- [O]: select menu item
- [^] and [v]: toggle on/off options, or increase/decrease numbers
- [i]: move back up to main menu
- [M]: customise detailed splice program settings (outside the scope of this manual)



Fibre type and heat-shrink sleeve settings:

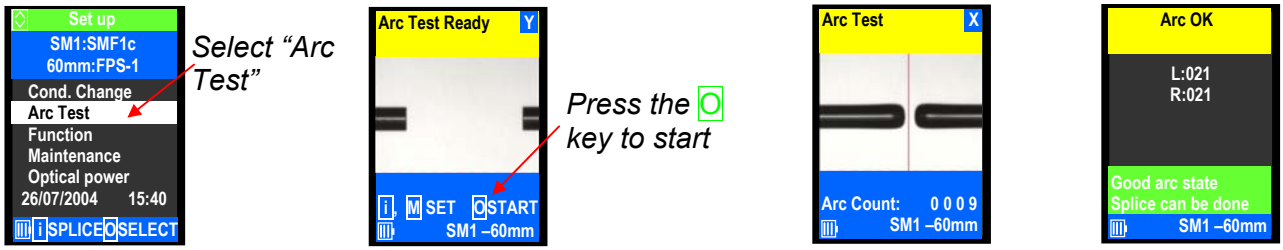
The selected fibre type and heatshrink sleeve size are displayed in the bottom right corner of the screen throughout the splicing process, and at the top of the main menu as shown below



1. Select "SETTINGS", then "Cond. Change". Highlight the desired fibre type and press the [O] "select" button.
2. Select the correct heat-shrink sleeve size.

Perform Arc Test

Performing an Arc test allows the splicer to optimise the arc for the current fibres and environmental conditions. Please note, the arc test must be done with fibres in the splicer; the ends of these fibres will be melted during the arc test and will need recleaving before splicing.



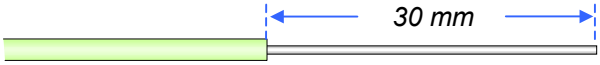
Power settings

Select "function" on the main menu to adjust power save settings and the "Auto Start" feature.

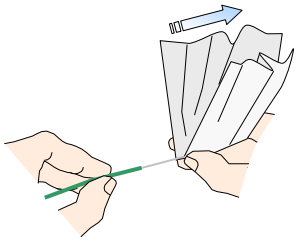
- Arc pause: if enabled, the T25 brings the fibre together but does not start the arc until the "O" button is pressed.
- Sleep: switches off the monitor after programmable delay - open/close the hood or press any button to wake it up
- Power off: switches off the splicer after programmable delay
- Autostart: splicer starts on closing hood

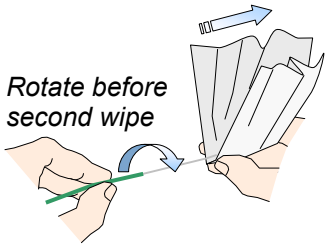
FIBRE PREPARATION:

1. Place a heat-shrink splice protection sleeve on one of the fibres prior to fibre preparation for splicing.
2. Strip the coating of the fibre to reveal approximately 30 mm (1¼ inch) of bare cladding.



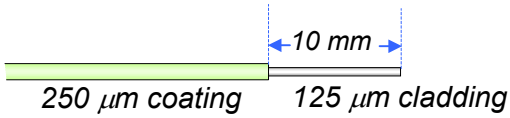
3. Clean the bare fibre cladding with an alcohol (IPA) wetted lint free wipe (tissue or cloth). This is best achieved by positioning the fibre in a folded wipe and pulling the cladding through the wipe. The fibre should then be rotated by 90˚ and wiped a second time.



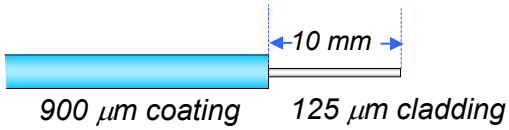


4. The cleave length, e.g. the length of the bare fibre end, should be as follows:

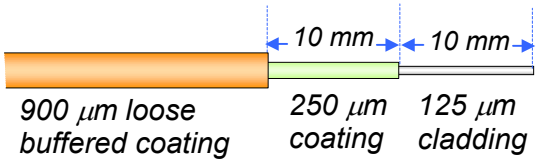
a. 250 μm primary coated fibre:



b. 900 μm secondary coated, tight buffered fibre:

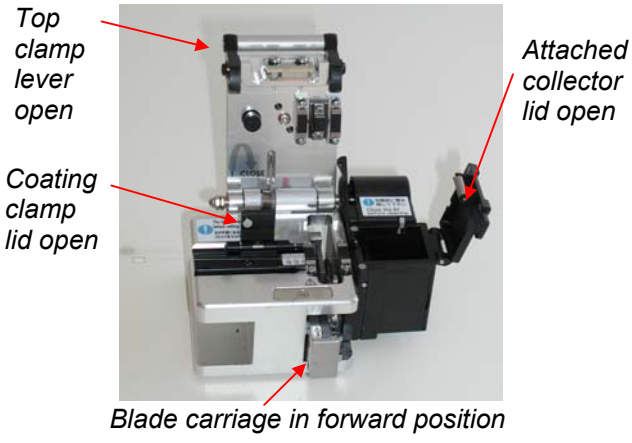


c. 900 μm secondary coated, loose buffered fibre:

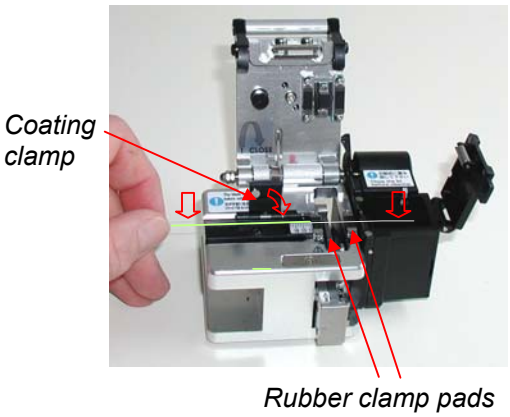


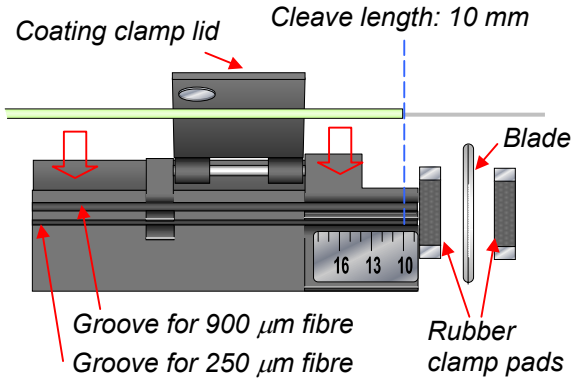
CLEAVING THE FIBRE WITH THE FC-6S

1. Ensure the fibre cleaver has
   a. the top clamp lever open
   b. the coating clamp lid open
   c. the off-cut collector lid open
   d. the blade in the forward position.

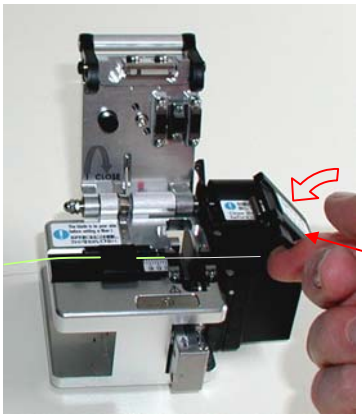


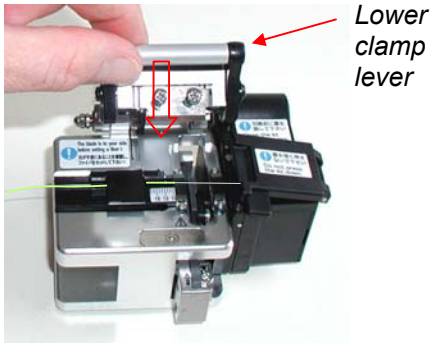
2. The coating clamp on the FC-6S has two grooves, one for 250 μm primary coated fibre, and one for 900 μm secondary coated/tight buffered fibre. Lower the fibre into the correct groove without touching the exposed cladding, with the end of the fibre coating at the 10 mm mark on the ruler. Ensure also that the fibre is lying straight across the lower rubber clamp pads. Carefully close the magnetic coating clamp lid to hold the fibre in place



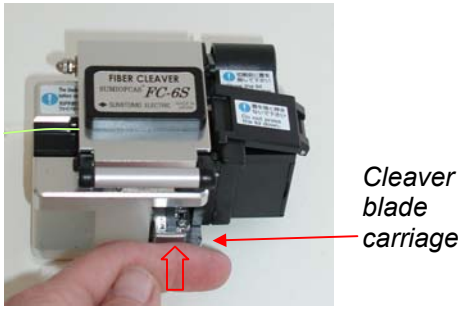


3. Gently lower the off-cut collector lid (note: the off-cut lid does not close fully or 'sit flush' at this stage) and then lower the clamp lever.





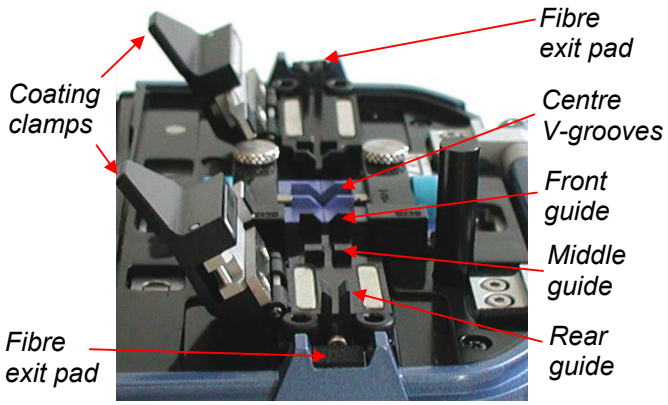
4. Slide the cleaver blade firmly to the rear of the cleaver.

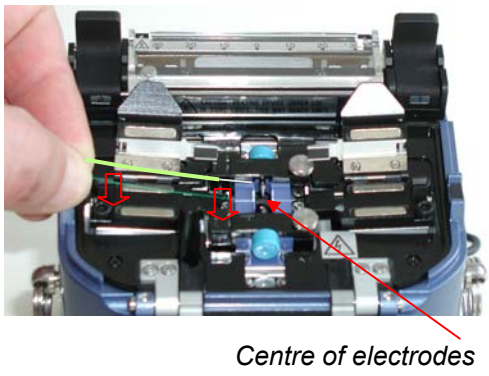


5. Open the clamp lever and the coating clamp, and lift the fibre from the cleaver. **Important**: ensure the newly cleaved fibre end does not touch anything.

SPLICING THE FIBRES

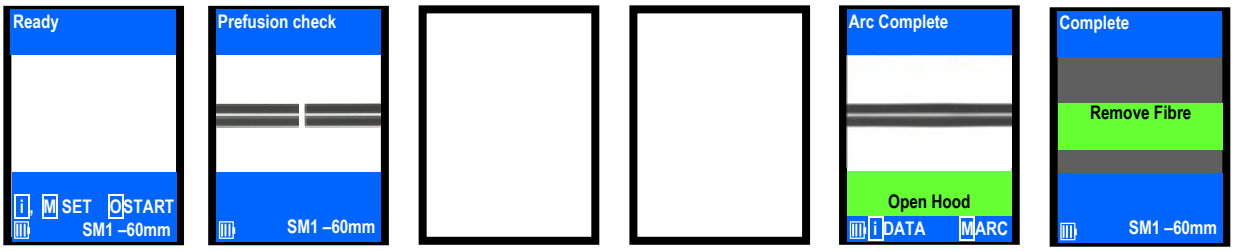
The fibres are lowered into the splicer as illustrated below:



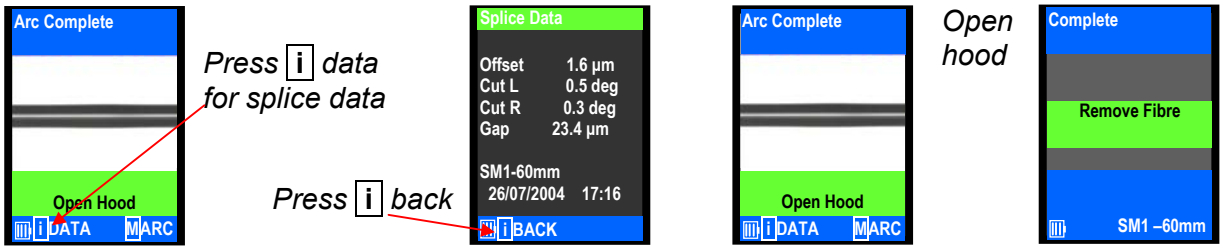


1. Check the bare fibre length against the ruler on the coating clamp lid, ensuring the bare fibre end does not touch the splicer, and then open the coating clamp lid.
2. Carefully lower the fibre into the fibre guides, with the fibre end as close to the centre of the electrodes as possible. On 900 μm loose-buffered fibre, the end of the 900 μm coating should be just at the front of the middle fibre guide.
   Important: ensure the fibre end-face does not touch any part of the splicer or the other fibre end.
3. Close the magnetic coating clamp lid and repeat step 1 to 3 for the second fibre.
4. Check that the fibre claddings are sitting in the splicer V-grooves and the outer parts of the fibres pass through the padded slots at the side of the splicer.
5. Splicing with the T-25 is extremely simple once the fibres have been prepared and inserted as above. Lower the lid of the splicer. If the splicer is set to automatic, this will start the fully automatic splicing process; otherwise, follow the instructions on the screen and press the O button on the keypad to start the splicing process.
6. During the splicing process, the LCD screen will display a magnified view of the fibre ends.
7. The T-25 will check the fibre ends, perform a pre-splice cleaning arc, and complete the splice if all is well.

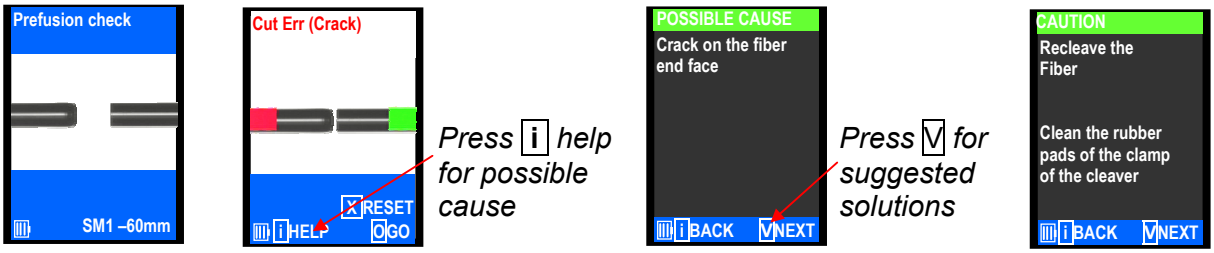
8. The screen displays the following information during the splicing process:



9. Upon successful completion of the splice the screen displays “Arc complete: open hood”. In addition, the T25-S (but not the T25-U) can also display a splice loss estimate. Press the i data button before opening the hood for further information about the splice..
   If the splice is unsatisfactory, another arc can be executed by pressing the M arc button



10. Alternatively, if the T-25 detects a problem with either fibre end, the screen will show the problem fibre marked in red. Press the i button for a possible cause and solution.

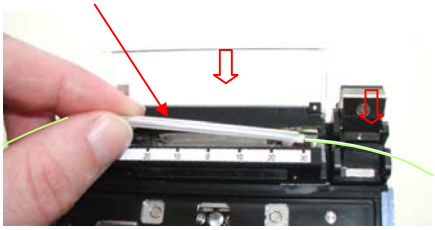


USING THE T25 HEAT-SHRINK OVEN

The standard splice protection technique for the T-25 utilises the built-in heat-shrink oven together with either 40 mm or 60 mm splice protection sleeves.

1. Check that the T-25 is set to the correct size of heat-shrink sleeve; if necessary, change the setting as described in the “Adjusting splicer settings” section.
2. Place a heat-shrink splice protection sleeve on one of the fibres prior to preparing the fibre for splicing.
3. After splicing the fibres, open the magnetic clamps and remove the spliced fibre, handling only by the coating and taking care that nothing touches the exposed glass.
4. Slide the splice protection sleeve over the splice taking care that there is an even length of coating within either end of the sleeve.
5. Place the fibre and sleeve into the heat-shrink oven. Close the right clamp, pull the fibre straight, then close the left clamp. Springs hold the fibre straight during this process.

Heat-shrink splice protection sleeve



Start button for heatshrink oven

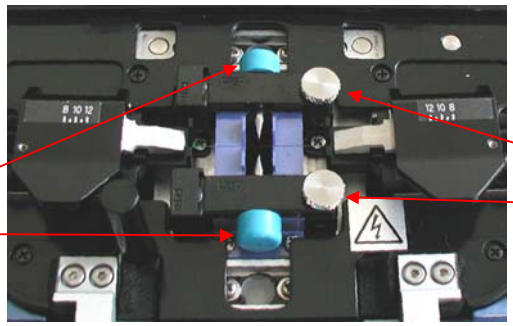
6. Press the heat button on the bottom right of the T25 keypad.

MAINTENANCE

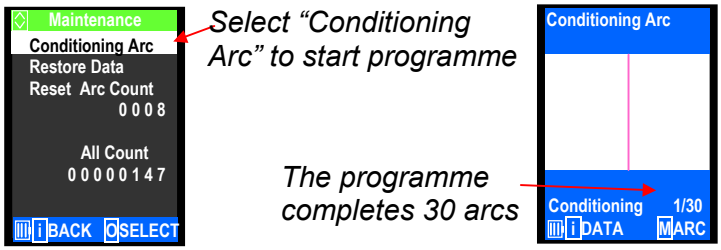
The majority of splicing problems are caused by dust or debris contaminating the fibre, cleaver or splicer. Care should be taken to maintain all parts of the splicing system in a clean condition to ensure reliable service and a long life.

Changing electrodes

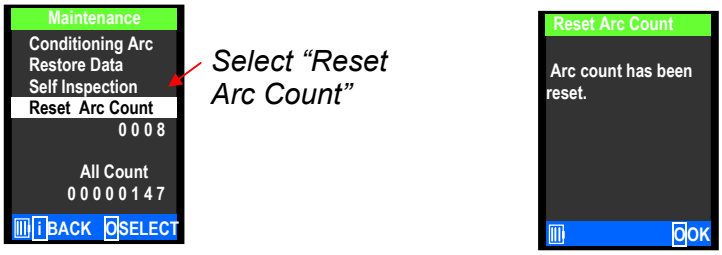
Before changing electrodes disconnect the T-25 from any external power supply and remove the battery. The electrodes may be easily changed by undoing the thumb-screws indicated on the electrode clamps. Do not touch the metal part of the electrodes, and ensure the new electrode is fully inserted with the blue plastic against the electrode clamp when the thumb-screw is tightened.



To execute the arc conditioning programme, select "Maintenance" on the main menu (navigate the menu as described in the "Splicer Settings" chapter) followed by "Conditioning Arc".



When the Arc conditioning is complete, select "Reset arc count". The new electrodes are now ready for use.

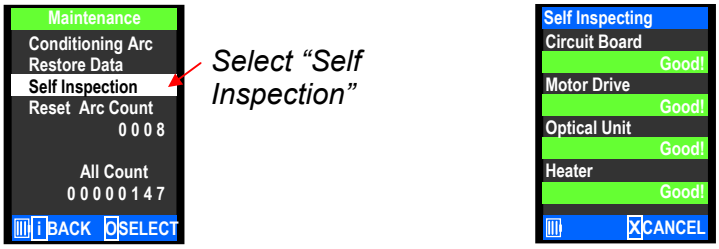


Restore data

The "Restore Data" function on the "Maintenance" submenu allows the splicer settings to be restored, either to the factory defaults or a previously saved set of values.

Self inspection

When selected, the splicer automatically runs through a series of tests on the main components, e.g. the circuit board, the motor drive, the optical unit and the heater.



Disposal of fibre off-cuts (Sharps)
Fibre off-cuts or sharps must be disposed of properly and according to health and safety regulations. Remove the off-cuts collection box and carefully empty into a suitable safety bin. Do not attempt to remove any remaining off-cuts from the box with your fingers.

Cleaning splicer v-grooves, fibre guides and coating clamps
These can be cleaned with cotton buds and IPA. On no account should anything harder than a sharp wooden stick be used to clean the fibre V-grooves in the coating clamps.

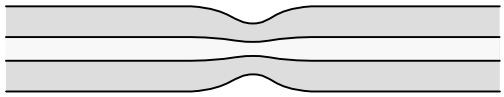
Cleaning cleaver blade and coating clamp
The cleaver blade, coating clamp grooves and fibre clamp pads can be cleaned with either cotton buds or lint-free wipes and IPA.

Cleaning optics
The prisms in the wind hood can be cleaned with IPA and cotton buds/lint free wipes. The microscope lens is situated beneath the electrodes. Always clean this when changing electrodes. If more frequent cleaning is required, the electrodes can be removed and reinstalled as described above. Perform the conditioning arc programme after reinserting the electrodes, but do not reset the arc counter unless a new set of electrodes has been installed

Cleaver Blade Setting/Adjustment
The cleaver blade has 12 numbered settings, each of which will last for approximately 1000 cleaves. To move the blade to a new position loosen the blade securing screw, rotate the blade to the next numerical position and tighten the blade securing screw.
Once all blade positions have been used a new blade must be fitted; please refer to the instruction sheet supplied with the cleaver for advice on this procedure.

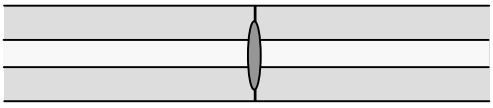
TROUBLESHOOTING

- Necked fibre splice: bad cleave or fibre slipping in coating clamp. Clean coating clamps, re-cleave fibres and ensure fibres are inserted correctly in splicer.



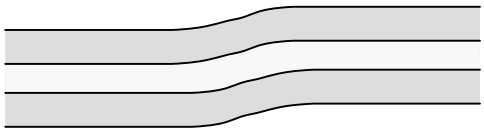
Necked fibre

- Bubble or black line: For multimode fibres increase the pre-fusion time and do an arc test. For single-mode fibres this may indicate non-identical fibres .



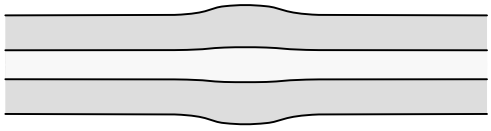
Bubble in splice

- Kink or offset after splicing – probably caused by an offset prior to splicing, perhaps due to dirt in the splicer V-grooves or coating clamps. Clean V-grooves and coating clamps, re-cleave and ensure fibres are inserted correctly in splicer.



Kinked fibre

- Bump in fibre – overlap too big. Use the “Restore Settings” option to reset an incorrect splice programme setting to the factory default. Otherwise contact the technical helpline.



Bump in fibre

SUPPORT CONTACT DETAILS

For product support, spares and servicing contact:

Technical helpline: +44 (0)208 953 1608
Email support: seel@sumielectric.com

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