FiberMASTER

FUSION SPLICER

S40 USER GUIDE

TREND NETWORKS

Depend On Us

Table of Contents

Table of Contents

Chapter 1: Using this Guide

This Manual contains information for the FiberMASTER S40 fusion splicer.

There are warnings, cautions and notes as described below displayed throughout this manual. Please follow all warnings and cautions for your safety and the protection of the equipment.

Warning

A warning alerts to situations that could cause personal injury.

Caution

A caution alerts to situations that may cause damage to the equipment or produce poor operation conditions resulting in poor results.

Note

A special annotation that will assist the user with operational features.

Copyright Notice

Publication ref: 301814
Rev 1 - 02/25

Other Languages

To view user manual in other languages please visit and use following procedures.

1. Select your desired language by hoovering the flag icon in the top right if the website does not load in your desired language.
2. Go to top menu bar and hover over "**SUPPORT**" and then select "**MANUALS, SOFTWARE AND BROCHURES**".
3.Once "**DOWNLOADS**" page has loaded select the product filter and tick "**FiberMASTER Fusion Splicers"**.
4. This will load all documents related to the Fusion Splicers.

Chapter 2: General Safety and Equipment Care

Warning

To prevent fire or shock hazard:

* Do not install battery types other than those supplied by the manufacturer.
* Do not use the charger without the proper batteries installed.
* Do not expose the battery charger to rain or excessive moisture.
* Do not place heavy objects on the power cord.
* Do not use the AC adapter when there are signs of damage to the enclosure or cable.
* Ensure that you are using the correct charger for the local line voltage.
* Do not puncture batteries.
* Do not incinerate batteries.
* All batteries should be disposed of in a proper manner.
* Do not use the FiberMASTER fusion splicer in high temperature, flammable or explosive environments (such as near fuel stations). In this environment, discharge from the fusion splicer can cause explosions or fires.

To prevent personal injury:

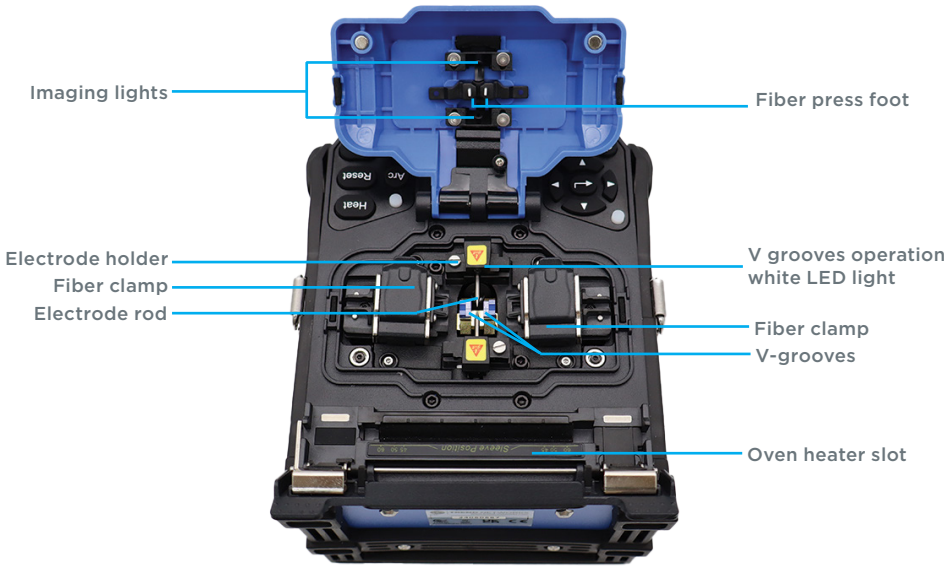
* ***Always wear protective glasses during operation to prevent fiber optic debris from entering the eyes.***
* Do not touch the electrode rod while in operation, it may cause injury. Turn off power before replacing electrodes.
* After the heating process, wait for the heat shrink to cool before touching it.
* If liquid or foreign objects enter the machine or there is smoke, odor, abnormal noise etc. Please turn off the device immediately and unplug the power supply.

Caution

* ***Clean the rubber pads of the cleaver before every use with a small amount of only ≥99% isopropyl alcohol.***
* ***Clean the surfaces of the V-grooves, LED lights and display screen with a small amount of only ≥99% isopropyl alcohol.***
* The fusion splicer has been precisely calibrated and adjusted during production. Please handle the fusion splicer carefully. Avoid any mechanical shock or strong vibrations. Use the supplied carrying case for transportation and storage,
* Do not disassemble or try to repair the fusion splicer or its accessories without authorization. Only TREND Networks can repair the FiberMASTER Fusion Splicer series.
* Check the condition of the shoulder straps attached to the carrying case to prevent damage to the Fusion Splicer.

Chapter 3: Overview of the FiberMASTER

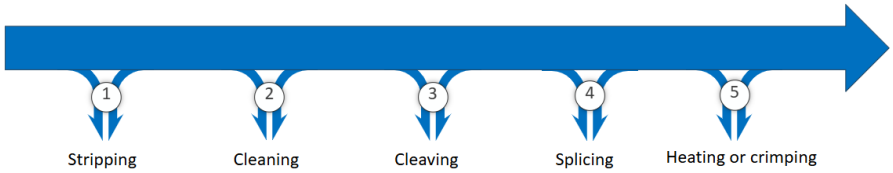
3.1 Splicer Components



Chapter 3: Overview of the FiberMASTER

3.2 Keypads

3.3 Fiber splice procedure



Stripping: Stripping a cable from jacket to the coating and then the cladding by using a strip tool.

Cleaning: By using only ≥99% isopropyl alcohol to clean the debris on bare fiber, cleaver and V-grooves ready for cleaving and splicing.

Cleaving: Cutting the fiber with cleaver to form a precise 90 degree smooth cut.

Splicing: Process of melting two fibers together by arc discharge.

Heating or Crimping: Splice protection achieved by using heat shrink sleeves or metal crimps.

Chapter 3: Overview of the FiberMASTER

3.4 Technical Parameters

Applicable fiber	G651/G652/G653 /G654/G655/G657 etc.
Cladding diameter	80-150μm
Coating diameter	160-3000μm
Cleaved length	5-16mm (coating diameter: <250μm) 16mm (coating diameter: 250-1000μm)
Typical splice loss	G651:0.01dB; G652:0.02dB; G653:0.04dB; G655:0.04dB; G657:0.02dB
Return loss	>60dB
Splicing program	100 modes
Operation mode	Manual/ Auto
Heating function	Auto/preheat
Splicing time	7-9 seconds (Typical)
Heating time	Approximately 13-23 seconds for 40 to 60 mm shrinkable sleeves
Fiber magnification	320x (X or Y view) 160x (X and Y view)
Viewing & display	Dual high sensitivity CMOS camera, 4.3"HD color LCD touch screen
Data storage	8,000 fusion records
Loss estimation	Available
Tension test	1.8 - 2.2N, On/Off
Interface	GUI menu interface along with keypad for easy operation
Battery capacity	Detachable 5200mAh Li-Ion battery, ≥ 250 cycles splicing and heating
Power supply	Power adapter input: AC 100-240V (50/60Hz) Power adapter output: DC 11-13.5V
Electrode life	≥ 4000 Arc discharges
Communication port	USB 2.0 port for software upgrade and record export
Operation condition	Altitude: 0-5000m; Humidity: 0-95%; Temperature: -10°C-+50°C; (operation), -20°C-+60°C (storage); Max wind: 15m/s
Dimension/Weight	160mm (L) × 140mm (W) × 135mm (H) IP52 compliance including rubber bumper 1.97kg with battery

Chapter 4: Preparing for the Splicing Operation

4.1 Powering on the Splicer

Install the battery or power adapter.

Splicer with battery

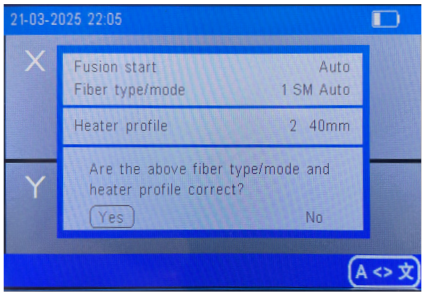
Connect power supply to battery charge port

- The S40 battery is charged by connecting the power supply to the integrated charge port in the main machine.
- The S40 must have a battery installed to operate. Additional batteries can be charged within the unit in advance where power is not available.
- Long press and hold the power button on the keyboard until the power indicator light turns on and beeps are heard.
- The LCD screen of the fusion splicer lights up and displays the startup screen.
- Each time when power on, the splicer prompts to confirm that the current fiber type and splice modes are correct.

Use the Left/Right buttons to select Yes or No then press Enter, or tap Yes/No on the screen to confirm.

Proceed to Chapter 6 “Splicing and heating programs” if the fiber type or splice modes need to be changed.

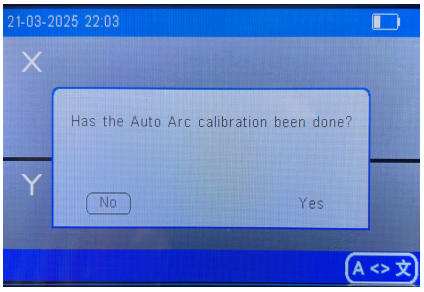
If the language is not you intend to use, tap bottom right A<->文 icon to change to the desired language.



Confirmation screen for fiber type and mode.

Next the splicer prompts to confirm that a Quick Optimization and Arc Calibration has been performed before splicing the fiber. This process should be performed once per day or when environmental conditions have changed or the type of any of two joint fibers changed.

Use the Left/Right buttons to select Yes or No then press Enter, or tap Yes/No on the screen to confirm.



Confirmation screen for Quick Optimization or Arc Calibration

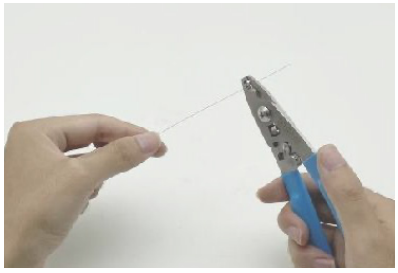
Chapter 4: Fiber Preparation

4.2 Fiber end face Preparation

Preparing drop cable (FTTH inside/outside cable)

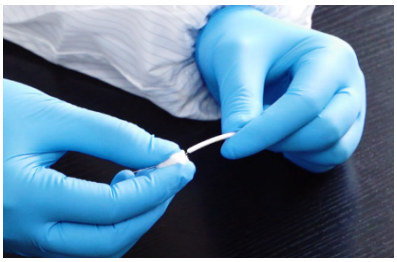
Strip 40mm (1.6”) of the protective tube from the rectangle (up to 3x4mm) fiber optic cable using the drop cable stripper. Next, strip the fiber coating using the small hole of the stripper. The bare fiber length should be 30 to 40mm.

Stripping protective layer from drop cable

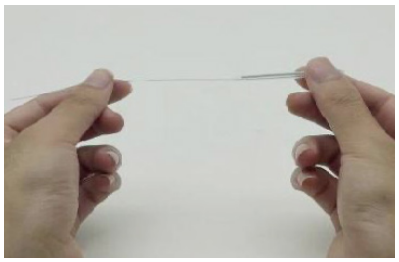


Removing fiber coating

Use a lint free tissue dipped in ≥99% isopropyl alcohol to wipe off any the remaining coating debris from the bare fiber. Place the heat shrink tube onto the fiber if applicable.



Wiping remaining coating from bare fiber



Heat shrink sleeve preparation

Preparing jacketed cable

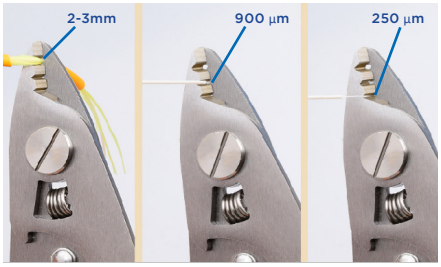
Cut and remove at least 50mm (2”) of the cable jacket using the large hole of fiber stripper.

Use the kevlar shears cut the strength fibers.

Strip the buffer jacket from the fiber using the medium hole of fiber stripper.

Strip the fiber coating using the small hole of fiber stripper.

Use a lint free tissue dipped in ≥99% isopropyl alcohol to wipe off any the remaining coating debris from the bare fiber.



Cut outer jacket Strip buffer Strip coating

Kevlar shears to cut strength fibers

Chapter 4: Fiber Preparation

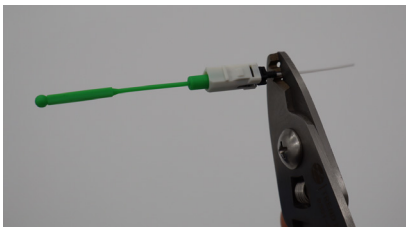
Preparing SoC connector pigtail

Please refer to SoC instruction to determine the length of coating stripping length.

Strip the 900μm buffer jacket (if present) from the fiber using the medium hole of fiber stripper.

Strip the fiber coating using the small hole of fiber stripper.

Use a lint free tissue dipped in ≥99% isopropyl alcohol to wipe off any the remaining coating debris from the bare fiber.



Stripping SoC pigtail by using meduim hole on fiber stripper

Caution

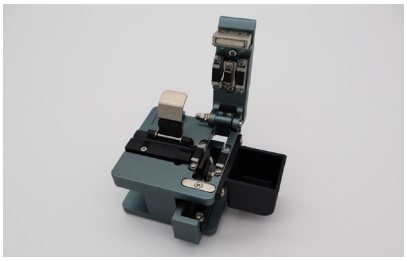
Take care when stripping the buffer jacket as they are fragile and can be easily snapped.

4.3 Cleaning the cleaver

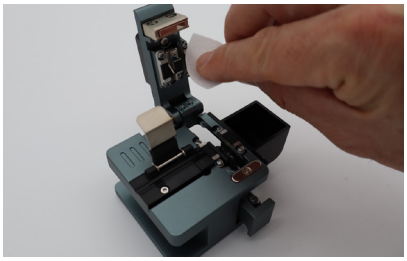
Before and after cleaving the fiber, the cleaver must be cleaned. Any remaining debris could cause poor cleaving of the fiber leading big fusion loss.

The up rubber pads and low rubber pads can easily hide residual debris without notice. This leads poor cleaving results. However they can be easily cleaned by using lint free tissue or swap with >99% alcohol.

Scrap fiber must be removed from rubber pads (up & down) to the waste bin and ensure the pad is completely free from debris.



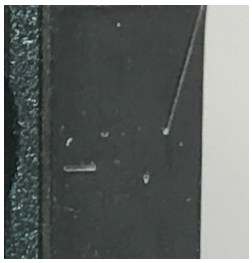
Opened cleaver



Cleaning cleaver pad

Clean cleaver pad

Cleaver pad with debris



Closeup of debris

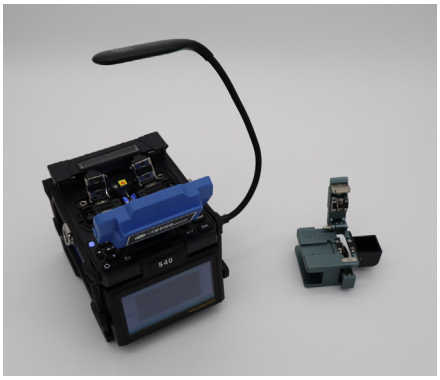
4.4 LED Support Lamp

Plug LED lamp into the USB port of the splicer to provide extra light if needed.

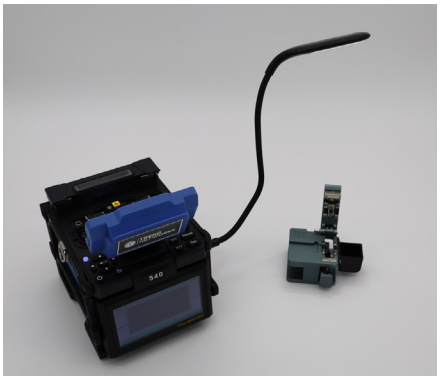
The LED lamp can be used in dark enviroments for both cleaver operation and placing fiber into the splicer V-grooves.

The semi rigid stem of the LED lamp can be easily shaped into desired position.

Touching the top of the lamp will activate the light with the option to cycle through three different levels of brightness.



LED lamp for fiber placement in V-grooves



LED lamp for cleaver operation

Warning

Always use both hands to adjust the position of the LED lamp before plugging into USB port.

If the LED lamp has been plugged into the USB port and user wants to finetune the position of the lamp end, please use one hand to support the lower stem USB. The other hand can adjust the lamp position.

This will avoid force being transfered to USB port causing damage of the USB port. See photos below.

Adjusting LED lamp with both hands

Adjusting LED lamp could cause usb port damage

4.5 Fiber Cleaving

With Fixed holder

Put the cleaned fiber into the cleaver using the alignment grooves. Align the edge of the fiber coating within the range of 10-16mm using the markings.

Close the small magnetic cover to clamp the fibers in place. The bare fiber must be aligned straight between the left and right rubber areas of the cutting block. Next, close the large magnetic cover and push the blade carrier forward to cleave the fiber.

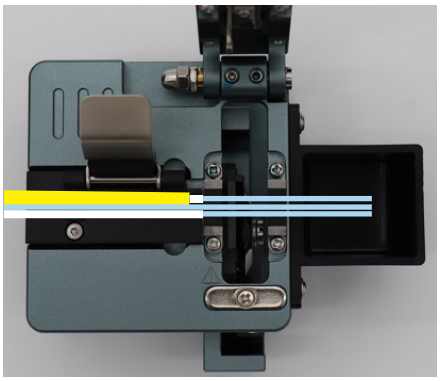
After cleaving, open the both magnetic covers and carefully place the fiber into the fusion splicer. Carefully discard the scrap fiber.

Caution

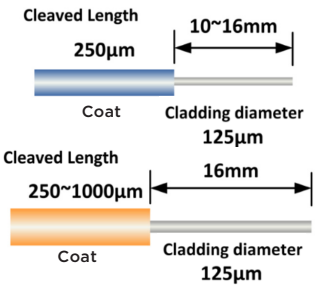
After cleaving the fiber don't let the optical fiber touch any other objects to avoid damage or contamination of the end face of the optical fiber.

Warning

The broken fiber scraps can be hazardous to health. Collect and dispose of the broken fibers responsibly.



Fiber cleaver
Top groove: 2-3mm jacketed cable
Middle groove: 250μm coated fiber
Bottom groove: 900μm buffered fiber

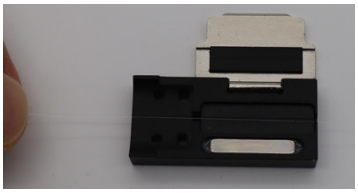


Chapter 4: Fiber Preparation

With Removable holder (Fiber)

(A) Remove the universal clamp from the cleaver by using supplied allen key. Removable holders are available to accommodate different fiber sizes (order separately) (250um, 900um, 2-3mm).

(B) Put the stripped fiber into the removable holder and close the cover.

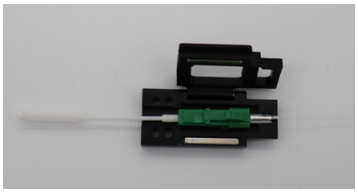


(C) After inserting metal clip, push the holder firmly into the slot of the cleaver. The bare fiber must be aligned straight between the left and right rubber pads of the cutting block. Next, close the large magnetic cover and push the blade carrier forward to cleave the fiber.

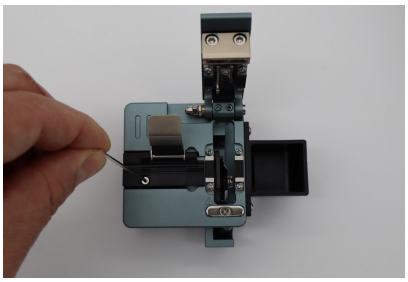
(D) After cleaving, carefully remove the holder from the cleaver and place into the fusion splicer.

With SoC holder

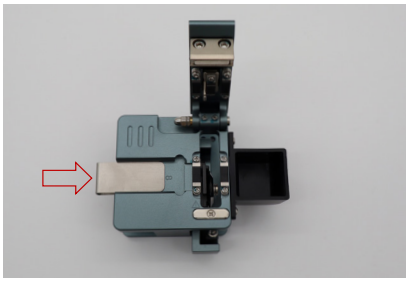
Remove the universal clamp from the cleaver by using supplied allen key. Put the stripped SoC pigtail connector into the SoC holder for the brand of connector. Then close the cover.



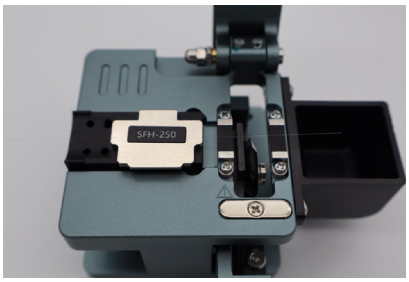
Follow **Removable holder, C** to **D** procedure to complete cleaving operation.



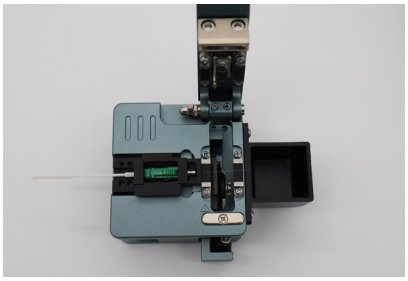
Removing universal holder from cleaver



Insert metal clip into the slot



Place removable holder in the cleaver



Place SoC holder in cleaver

Chapter 5: The Splicing Process

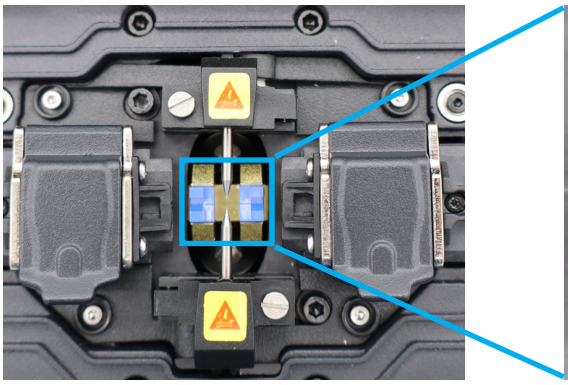
5.1 Placing Fibers in the Splicer

With Fixed holder

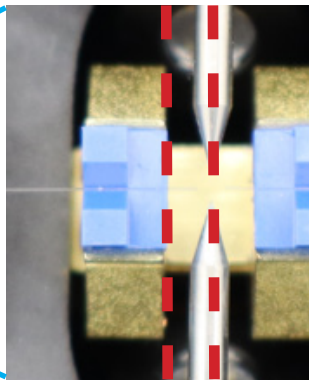
Open the windshield and the fiber holders. Place the prepared fiber into the V-groove through the locating slot. Make sure that the fiber end is positioned between the V-groove edge and the two electrodes. Don't let the fiber end face touch any other object to prevent failed splices.

Next, close the holder to secure the optical fiber. The fiber holder can be opened and the fiber repositioned if necessary to ensure proper placement.

Prepare and clamp the second optical fiber as first fiber. Then, close the windshield and observe the fiber images on the display. If the fiber end face is obviously uneven, tilted or damaged, remove the fiber and strip/cleave a new end.



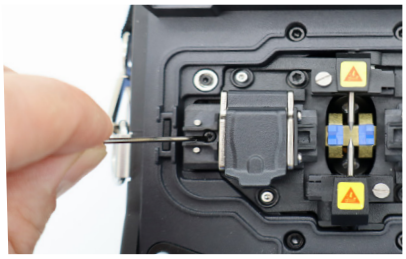
Placing fibers in the splicer



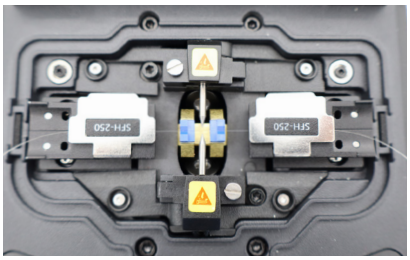
Position the fiber ends between the edge of the V-groove and the center of the electrodes

With Removable holder

Take out the removable holder from the cleaver and place into the splicer's holder position (make sure the fixed holders are removed from the splicer before.)



Removing fixed holder from machine with small allen key provided with cleaver

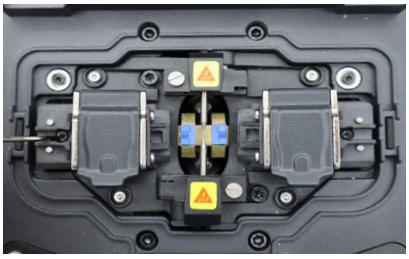


Placing removable holder with fiber in place

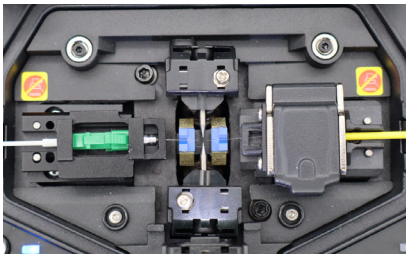
Chapter 5: The Splicing Process

With SoC holder

Take out the holder from the cleaver and place into the splicer's holder position (make sure the fixed holders are removed from the splicer before.)



Removing fixed holder from machine with small allen key provided with cleaver



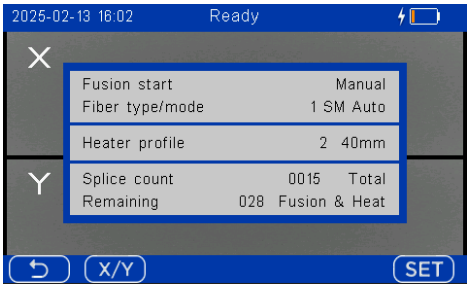
Place removable SoC holder with fiber in place

5.2 Splicing Operation

After clamping, the machine is ready to splice.

Close the windshield and splicing will start automatically if the pause settings for alignment and focus are disabled, which is the default setting.

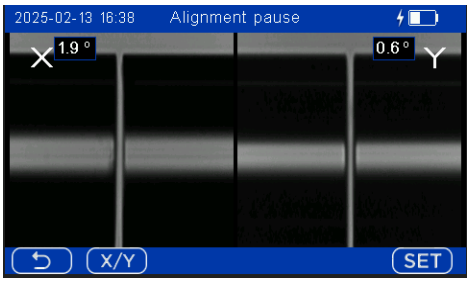
Otherwise, press the Set button or icon to start splicing.



Ready screen

Checking the fiber end faces

When the fusion splicer starts it first drives the motor, which will place both fiber ends to the middle of the screen to determine if the fiber end face meets the requirements.
The default end-face angle limit is 3.0°. Any angle greater than the limit will result in a failure. You will need to strip and cleave the fiber again.



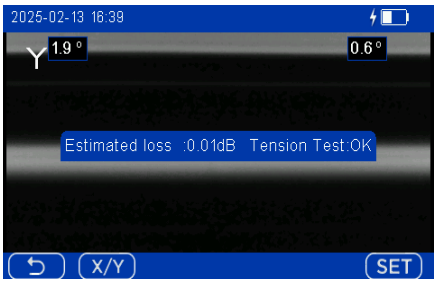
Check of fiber cleave angles

Chapter 5: The Splicing Process

Finished splice

After meeting the set end-face conditions the fibers are aligned and the arc discharges to splice the fiber.

The estimated loss is displayed and a tension test is performed on the completed splice.



Completed splice with estimated loss

5.3 Heat Shrink Protection

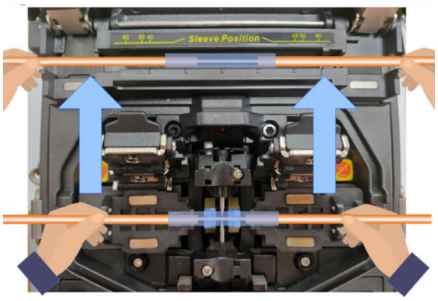
Open the heater cover.

Open the windshield and fiber holders then gently remove the fiber.

Do not bend the fiber to avoid the breaking the fusion point which is very fragile.

Center the heat shrink sleeve over the splice area.

Place the fiber into the heater, positioning the heat shrink sleeve in the center. Push both, right and left sides of the fiber downwards onto the right lever that will close the cover and activate the heater.

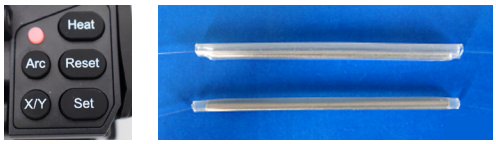


Center heat shrink over the completed splice and place in the heater. Push both, right and left sides of the fiber downwards onto the right lever that will close the cover and activate the heater.

Splice heat shrink protectors

Close the heater's cover and the light turns on indicating the heating process has started. The light will turn off when the heat shrinking is completed.

The temperature and duration of the heating process is determined by the heater profile that is selected. The appropriate profile should be selected to match the length and type of the heat shrink protector being used. Please refer to the Heater profile section to set up a heater profile appropriately by changing time and temperature.



Heater indicator and Heat shrink sleeves before (top) and after (bottom) heating


The SoC flap pushes outward to accommodate SoC connector

Chapter 5: The Splicing Process

Splice heat shrink protectors for SoC

Slide the SoC flap at the left hand end of the heater outwards to accommodate SoC connector. Then follow normal heat shrink operation. See photos.

Heat shrink sleeve with SoC

Cooling

Remove the optical fiber from the heater with both hands and place it into the cooling tray. Wait until the sleeve cools to a safe temperature before handling.

Heat shrink sleeve inside cooling tray

Warning

The heat shrink sleeve is very hot after the heat shrink process.

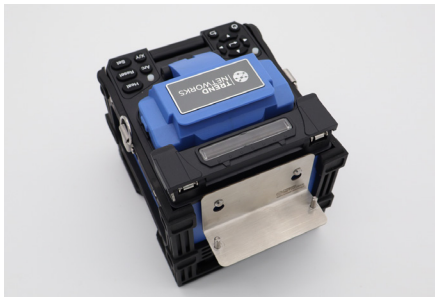
5.4 Metal Crimp Protection

Metal crimp protectors are quicker to fit than heat shrink protectors. It is suitable for high density enclosures and time sensitive fusion tasks.

Put V shape crimp into the crimp tool (order separately R301-CRIMP-30MM) and R301-CRIMP-KIT) with open end upright, place the spliced area of the fiber into the centre of the V shape crimp in the press tool keeping the fiber straight.

Press both side top of the crimp tool to compress the crimp and then release.

Remove the metal crimp protector and ensure the crimp covers the whole splice area.

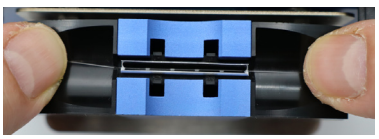


Crimp tool bracket against splicer

Metal protection crimp

Crimp tool on bracket

Grey area (crimp) should cover spliced fiber



Crimpping the spliced fiber

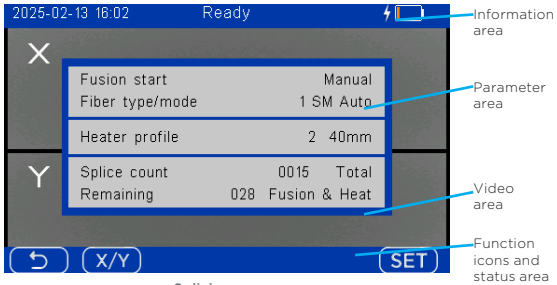
Chapter 6: Splicing and Heating Profiles

6.1 Splicing Screen

The splicing screen displays the current status and parameter information.

This interface is divided into four parts:

- Information area
- Parameter area
- Video area
- Function icon area and status



Splicing screen

Information area

The information area displays information such as the time, battery capacity, fiber end angle, and loss evaluation.

Video area

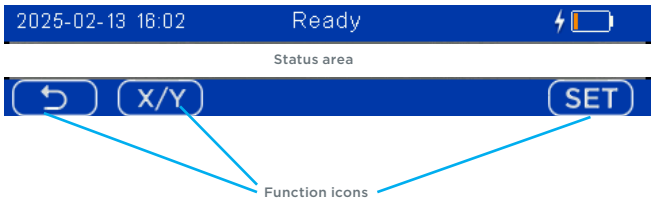
The magnified image of the optical fibers, the optical fiber condition, splicing process and the result of the splicing operation are displayed.

Parameter area

The parameter area displays the current fusion mode, fiber type, heater profile, and splice count.

Function icon and status area

The function icon area provides touch function button icons that duplicate keypad buttons. The status area showing the splicing status at different stages.



6.2 Main Menu

Main menu options:

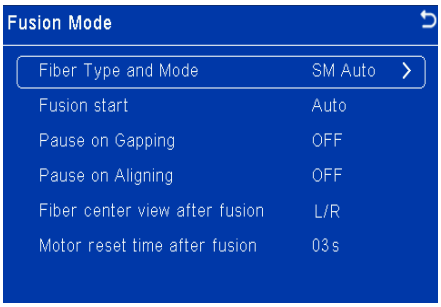
- Fusion mode
- Heater options
- Splicing
- Maintenance
- Settings
- Help

Main menu

Chapter 6: Splicing and Heating Profiles

6.3 Fusion Mode

Change a setting by either using the Up/Down buttons to move the selection box followed by Enter, or tap the option on the touchscreen.



Fusion Mode

Fiber Type and Mode

Set the type of fiber being spliced, or select Auto MM, Auto SM or choose a manual program.

Fusion start

Splicing can be initiated automatically or manually. In automatic mode, the fusion splicer starts to run the selected fiber splicing program when the windshield is closed. In manual mode press the “SET” button or touch the Set icon to run the selected fiber splicing program.

Press the Enter button or touch the parameter on the screen and the value will toggle between “Auto” and “Manual”.

Pause on Gapping

The motor will push the optical fibers to the set gap position. The program then pauses operation and waits for the user to continue. Press the Set button / screen icon at the bottom of the screen to continue.

Pause on Aligning

Pause the program after aligning the core of the optical fibers. Press the Set button / screen icon to proceed with the next fusion operation.

Fiber center view after fusion

Select to display the fiber after completing the fusion splice.

Motor reset time after fusion

Time the splicer waits to reset the motors after the windshield is opened. User can change the value via left/right arrow keys or touch screen to change.

Chapter 6: Splicing and Heating Profiles

6.4 Fiber Type and Mode

Select the type of fiber being spliced and operating mode of the splicer. The (ON) indicator shows the active program.

(**SM AUTO** and **MM AUTO**) will splice any type of single-mode or multimode fiber.

With any Auto mode selected, the real time arc calibration will be enabled and constantly running in the background to get optimized splice results.

Tap a program or press Enter to open and view the parameters.

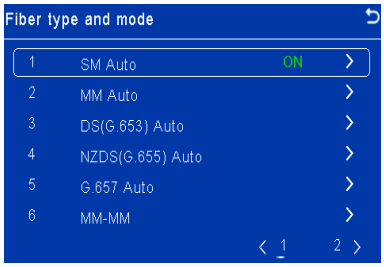
The settings for Program 01, SM Auto is entered as right screen shot shown.

Scroll to the Select line or tap on the line to activate the program.

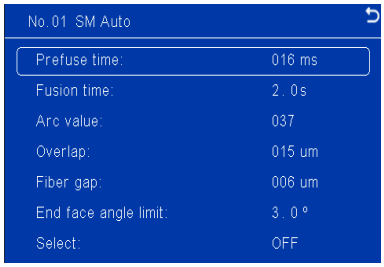
The (ON) icon indicates the program is active. Press the Back button to return to the previous screen.

The detailed settings are described later in the manual.

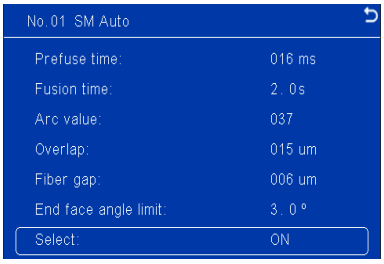
Custom profiles can be configured in profiles 50 to 100 with profile name change.



Fiber type and mode list



No. 002 AUTO SM - Not activated



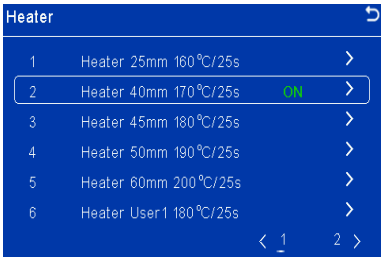
No. 002 AUTO SM - Activated

6.5 Heating Mode

Press Heater from the Main Menu to open the list of heating profiles.

Select from one of the preset heater profiles by choosing the length of the shrink sleeve or create a manual profile for custom results.

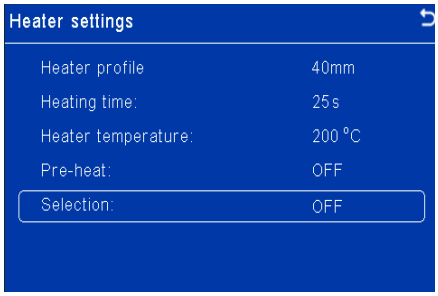
Tap a profile or press Enter to select.



Heater program list

Heater profile number 2 for 40mm sleeves is entered like right screen shot.

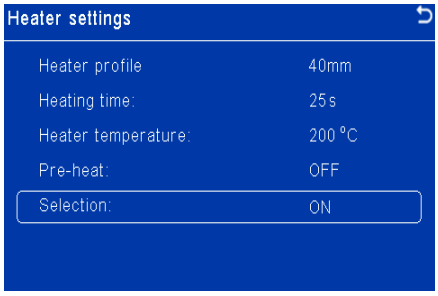
Each parameter can be adjusted by pressing the Left/Right buttons on the corresponding line.



Program 2, 40mm - Not activated

Scroll to the Selection Status line or tap on the line to activate the profile indicated by the (ON) icon.

Press the Back button to exit the heater settings.



Program 2, 40mm - Activated

Heating time

This option can set the heater duration. The heating time range is between 15-90 seconds, with a default value of 20 seconds. The time can be increased or decreased to optimize shrinking of the sleeve depending on the fiber/cable type used.

Heater temperature

This option sets the temperature of the heater, within a temperature range of 150-220°C (302-428°F) and a default temperature of 180°C (356°F). The temperature can be increased or decreased to optimize shrinking of the sleeve depending on the fiber/cable.

Pre-heat

After this function is turned on, the heater warms up to 100°C (212°F) before operation, reducing the overall heating time. Enabling Pre-heat will reduce operating time on battery.

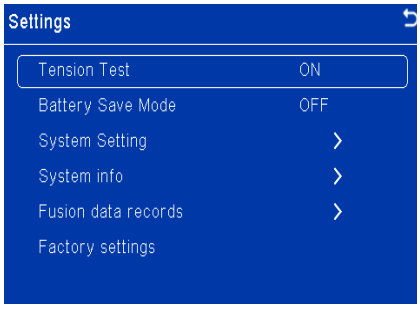
Selection Status

This shows the current heater profile is selected or not. By touching or using keypad to select.

Chapter 7: Settings

7.1 Settings Menu

Press Settings from the Main Menu to access a list of the splicer settings.



Settings list

Tension test

Enables a test of the splice strength by pulling on the fibers with approximately 2.2N/0.2kg/0.5lbs of force after splicing.

Display screen flip

Inverts the screen so that the splicer can be operated from the rear with the screen in the vertical position.

Battery save mode

Turns the splicer off after 5 minutes if no buttons are pressed.

System settings

Set the language, date, time and other settings.

System info

Check the battery capacity, software version, serial number and maintenance dates.

Fusion data records

View the splice records and export to a USB drive.

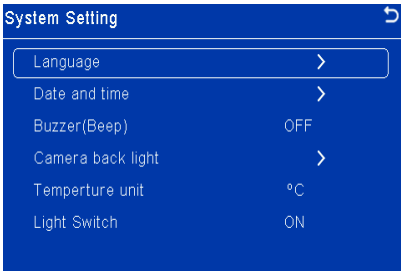
Factory reset

Restore the settings to factory defaults.

Chapter 7: Settings

7.2 System Settings

The language setting shows the currently selected language and additional language options.



System Settings

Language

Set the display language preference.

Date and time

Set the system date and time including date format that is recorded on the splice records.

Buzzer (Beep)

Toggles the beep sound for key presses and system alerts on or off.

Temperature unit

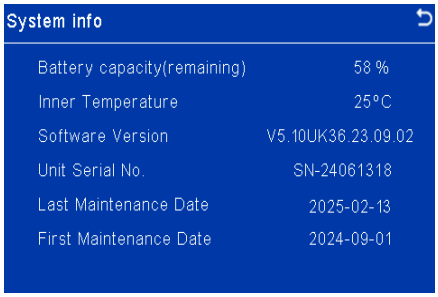
Toggle between °C and °F for the heater temperature display.

Light switch

Enables or disables the LED work lights in the electrode splicing area.

7.3 System Info

Displays information that may be required for service and support.



System Info

7.4 Fusion Data Records

Current discharge number

The number of arc discharges on the current set of electrodes. This is reset with the electrodes are changed.

Total discharge number

The total number of arc discharges on the splicer since new.

Fusion Data Record List

Displays the details of each fusion splice. Press the Left/Right buttons to change the record number.

Fusion Data Record (details)

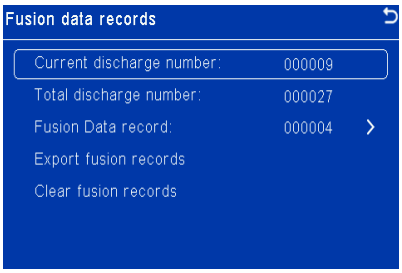
Displays the details of each fusion splice. Press the Left/Right buttons to change the record number.

Export fusion records

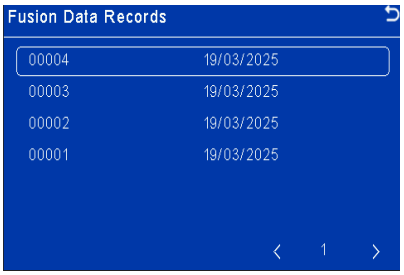
Export the stored splice records to a USB drive.

Clear fusion records

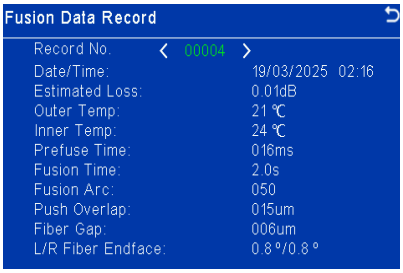
Deletes the stored splice records from the splicer.



Fusion data records



Fusion data - record list

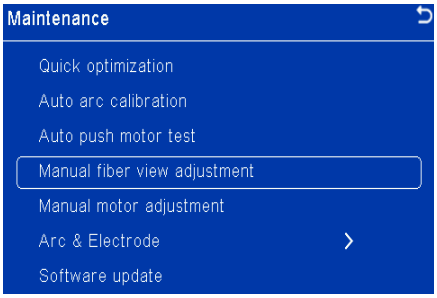


Fusion data - single record details

Chapter 8: Maintenance

8.1 Maintenance Menu

The maintenance menu contains tools to optimize performance, diagnose faults and electrode arc replacement.

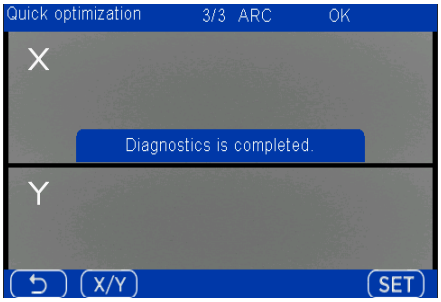


Maintenance menu

Quick optimization

Quick Optimization is used to check whether the image, LED brightness, ARC and other functions of the fusion splicer are normal.

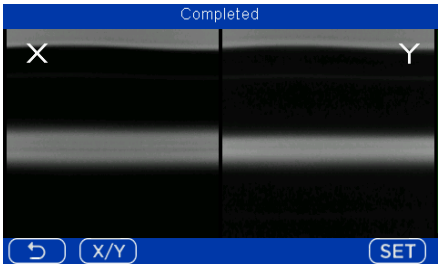
Press the Enter button or click the option. The fusion splicer will adjust the brightness of the imaging lamp, the exposure value of the Camera image, gapping, alignment and the arc discharge one by one, gapping, alignment.



Quick Optimization complete

Auto arc calibration

While the fusion splicer can dynamically adjust the power of the arc based on the light intensity during fusion.
This adjustment is based on statistical results and cannot quickly respond to sudden changes in the external environment.



Auto Arc Calibration complete

In addition, changes in discharge intensity caused by electrode wear and fiber debris adhesion cannot be automatically corrected and the arc center position sometimes moves left or right. In this case the discharge center of the electrode will shift relative to the position of the fiber and discharge correction is needed to solve these problems.

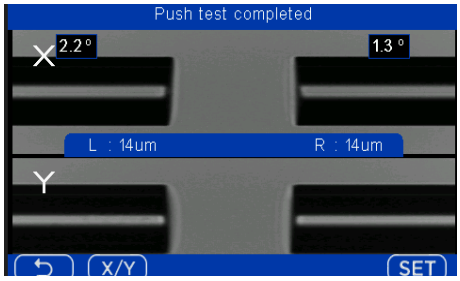
The principle of arc calibration is to use the current fusion program to fuse the optical fiber after it is aligned, determine the power of the arc based on environmental conditions the characteristics of the optical fiber, and change the arc discharge current until the test results are optimized. The final arc value is shown when the calibration is complete. One of the important operation to be aware is the arc calibration must be done again when two fibers are coming from different manufactures and batches or different types of fiber. Otherwise this will not gives an optimized fusion result (big fusion loss).

Chapter 8: Maintenance

Auto push motor test

The motor push test is used to measure the fiber optic propulsion distance during splicing in order to verify whether the motor and propulsion structure are working properly.

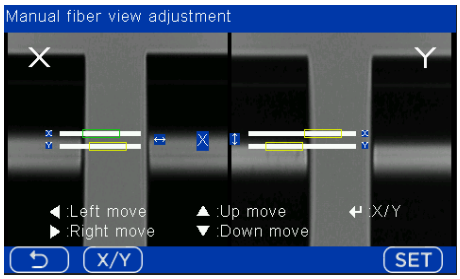
Press the Enter button or click the option to Enter the test interface, insert two prepared fibers and press the Enter button to start the test.



Auto push motor test

Manual fiber view adjustment

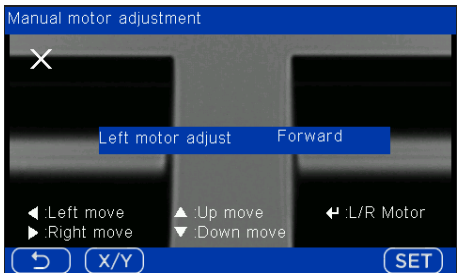
The position of the optical fiber can be adjusted in the screen.
Press the direction arrow keys to adjust the position of the optical fiber displayed on the screen, press the Enter key or press X/Y to select the X or Y field of view.



Manual fiber view adjustment

Manual motor adjustment

The position of the optical fiber can be adjusted by making small movements to the motors.
Press the direction keys to adjust the position of the optical fiber displayed on the screen, press the Enter key or press X/Y to select the X or Y field of view.



Manual motor adjustment

Software update

Allow users to update the software via USB memory stick. The system software can be updated to add new functions and performance enhancements.

1. Download the software from and save the file to a USB disk.
2. Connect the power supply to the splicer.
3. Connect the USB drive to the splicer and press Enter on the Software update option.
4. The update will start and the splicer will turn off when the update is complete.

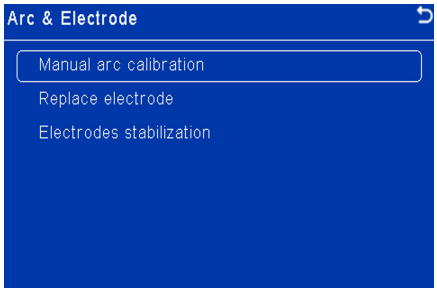
Warning

The USB memory stick must be FAT format other wise the upgrade won't work.

Chapter 8: Maintenance

8.2 Arc and Electrode

The Arc and Electrode page allows manual calibration of the electrodes, replacement of electrodes and electrode stabilization.



Arc & Electrode menu

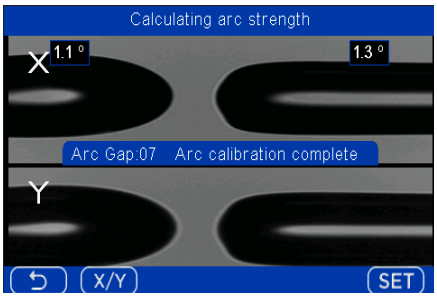
Manual arc calibration

Cleave and clamp the fiber according to the steps of splicing fiber, press the Enter key or click the start option, the calibration program starts to run and the test result is given.

The arc calibration will automatically change the discharge current in the parameters according to the test results.

If it shows “Arc calibration complete”, the current value is an appropriate current value.

If it displays “Arc is too large or arc is too small”, then repeat the process by replacing the fibers and running the calibration again until result shows “Are Calibration Complete”.

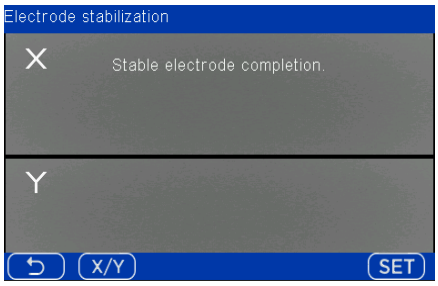


Manual arc calibration

Electrode stabilization

The electrodes arc becomes unstable when there is a change in the external environment, such as a change in temperature or pressure, especially when moving the machine from low altitude to high altitude.

In this situation, users must stabilize the circuit operating parameters by performing several discharges. Select ‘’Electrode stabilization” in the Arc and Electrode menu, and the fusion splicer will perform 5 arc discharges.



Electrode stabilization

Chapter 8: Maintenance

8.3 Electrode Replacement

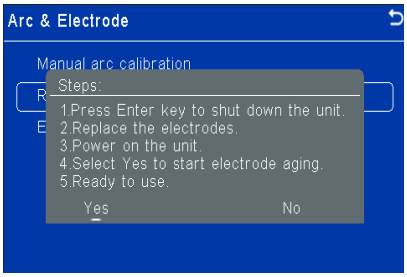
Note:

Be careful when changing electrodes to avoid damaging the splicer or injuring yourself. When replacing the electrode, be sure to hold with tweezers or your fingers to prevent it from falling into the machine. Consider turning the splicer onto its side so a dropped electrode or screw does not fall inside the machine.

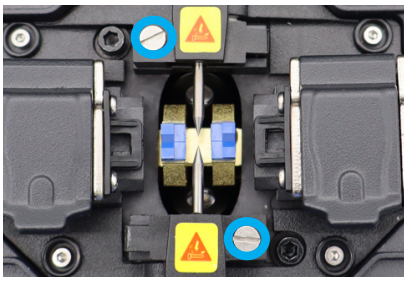
When the arc produces high temperature to melt the optical fiber, silicon oxide vapor will be generated, which will partially deposit on the electrode and increase the surface resistance of the electrode. This will cause the electrode to discharge poorly and the arc to be unstable. Therefore, the electrode should be replaced after 5,000 discharges.

Please replace the electrodes according to the following steps:

1. Enter the “Maintenance” menu, select “Arc and Electrode”, then select “Replace electrodes” and press Enter key along with long beep sound, the fusion splicer will shut down.
2. Loosen the two screws of the electrode covers and remove.
3. Loosen the two screws for the holder.
4. Remove the old electrode from the electrode holder.



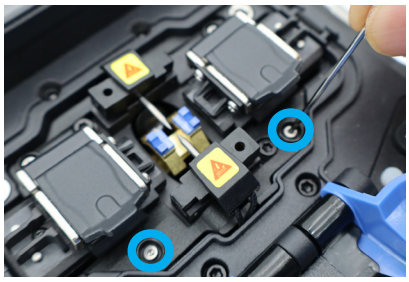
Electrode replacement start page



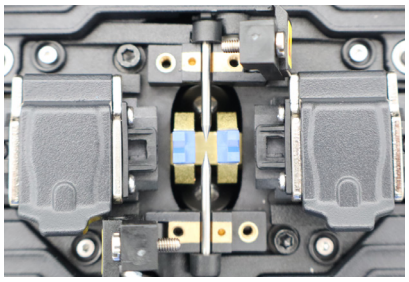
Remove indicated screws and remove cover

Caution

Be careful of the exposed wires for the electrode light while lifting the electrode holder. Two extra screws must be loosed before taking out electrodes.

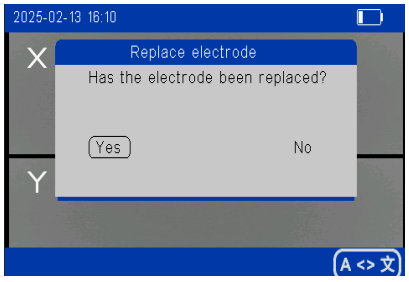


Loosen plate screw

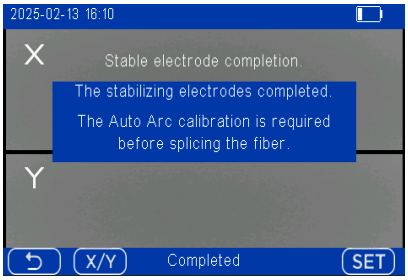


Loosen the screw of underneath holder

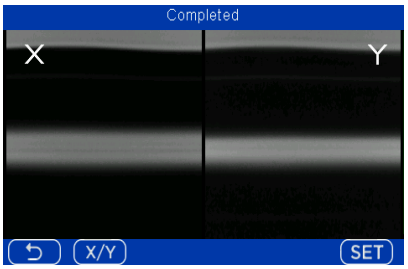
4. Install the new electrodes, close the electrode covers and tighten the screws.
5. Power on the unit and message will pop up “Have you been replaced electrodes”.
6. Select Yes to start electrodes stabilization or No to continue change the electrode.
7. The machine is under electrode stabilization.
8. After electrodes sterilization, the machine is now under auto arc calibration process. Following the screen guidance to perform arc calibration.
9. After completion of the auto arc calibration, the machine is ready to use.



Electrode replacement done power on page



Electrode stablization complete



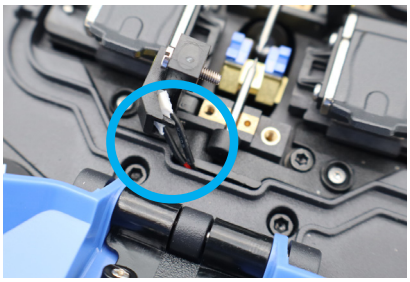
Arc calibration complete

Caution

Once plates are removed be careful of exposed wiring underneath flap

Warning

Never remove the electrodes with the fusion splicer powered on.



Chapter 8: Maintenance

8.4 Cleaning

Fiber clamp cleaning

Debris on the fiber clamps will cause unstable fiber clamping and affect the quality of the splice. The pads on the fiber clamps should be cleaned regularly.

To clean the fiber clamp chips:

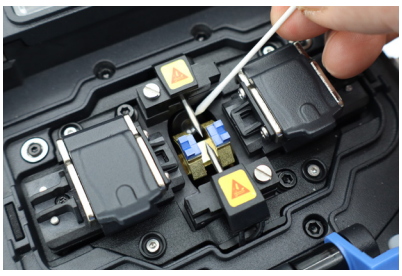
1. Open the windshield.
2. Use lint free tissue moistened in ≥99% isopropyl alcohol to clean the pads of the fiber clamps. When cleaning, do not repeatedly wipe back and forth, wipe in one direction only.
3. Wipe with a dry lint free tissue and wait for the alcohol to evaporate.

Camera lens cleaning

The microscope is the core component of the optical system in the fusion splicer. Its optical surface must be kept clean, and the objective lens should be cleaned regularly.

To clean the lenses:

1. Wipe the objective lens with a **dry** cotton swab.
2. Rotate or twirl the cotton swab from the center of the lens all the way to the edge.



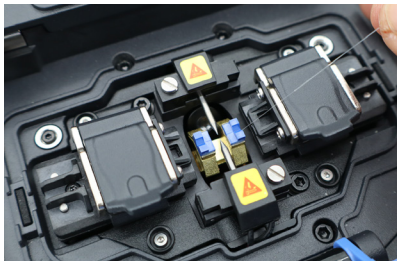
Remove debris from camera lenses

V-groove cleaning

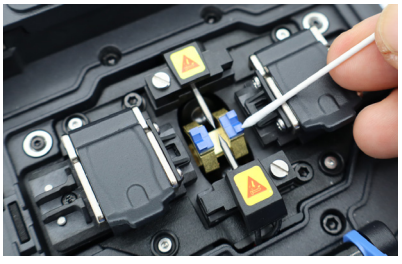
The V-grooves are a V-shaped notches on each side of the electrodes. Debris can collect in the grooves leading to poor fiber alignment and high splice loss. Clean the grooves regularly to prevent poor performance.

To clean the V-grooves:

1. Use a prepared fiber or a fine pick to remove and loose debris from the grooves.
2. Use a cotton swab or lint-free tissue soaked in ≥99% isopropyl alcohol to clean both V-grooves.
3. Finally wipe both V-grooves with a dry cotton swab or lint-free tissue. Be careful not to leave lint or cotton fibers in the grooves.



Remove debris from V-grooves



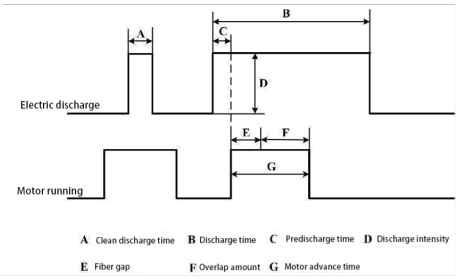
Clean the surface of the V-grooves

Chapter 9: Configuring Manual Splice Programs

9.1 Splice Program Cycles and Parameters

Splice program cycle

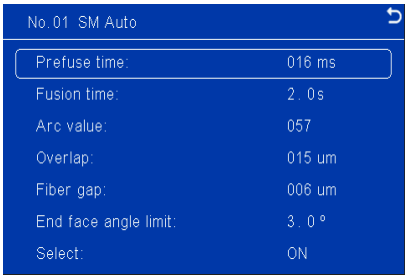
The fusion process requires various parameters to control the power of the arc, discharge time, motor propulsion distance, etc. This diagram describes the cycle of a splice program.



Splice program cycle

Splice program parameters

To change the current fusion parameter group, press the direction key to select the parameter group to be modified, and press the Enter key to enter the parameter setting menu, or directly click the option to set the parameter group to enter the parameter setting menu.



Splice program parameters

9.2 Functions of Each Splice Parameter

Prefuse time

After the fiber is forwarded to the fusion splicing position and aligned, the fiber is preheated by short discharge. This is Prefuse time. The single-mode time is 16ms, and the multimode time is 20ms. It is not recommended for new users to modify this parameter value. Use the left and right direction keys to adjust the value. Alternatively use the touchscreen to select the item and adjust the value.

Fuse time

After the pre-discharge, the fusion splicer starts the fusion discharge. It is called Fusion time. The length of this period is 2.0 seconds for both single-mode fiber and multimode fiber. It is not recommended for new users to modify this parameter value.

Arc value

Arc value is the power of the fusion arc. A value that is too low will lead to incomplete splices and a value that is too high can burn through the fibers. This value is adjusted during the Automatic arc calibration process and should not be adjusted by new users.

Overlap

When the optical fiber is spliced, the high temperature generated by the arc melts the optical fiber, and the optical fiber needs to be pushed forward to make contact between the two fibers. Overlap is the forward advance distance of the optical fibers.

Fiber gap

The initial distance between the fibers prior to splicing.

End face angle limit

The maximum cleave angle allowed to initiate a splice. Cleave angles greater than this setting will generate a warning.

Rename

The fiber mode and profile name can be changed from 50 to 100 by user via touching the top red text on the screen.

Select

Touching the O position will enable this specific profile mode.

Chapter 10: Common Issues and Solutions

Error Message	Reason	Solution
Check fiber!	The fiber is not fully inserted.	Ensure the fibers are inserted completely. The ends should be placed midway between the blue v-groove and electrode.
Reload fiber.	The fiber is inserted too far, past the center-line of the electrodes.	Reload the fiber(s). The ends should be placed midway between the blue v-groove and electrode.
Fusion failed.	The fusion point of the fiber appears faulty, i.e., disconnection, black spot, fiber sag, burn-through, etc.	Check: fibers are the same type, alignment in fiber clamps, cleave angle, fusion parameters.
Close cover.	The cover is not closed or the magnetic sensor on the cover is faulty.	Check that nothing is blocking the cover from closing completely.
Bad L/R end face.	The fiber end face angle exceeds the limit for splicing.	Re-cleave the fiber(s).
X/Y Image Light Error.	The camera is obscured or the internal LED is malfunctioning.	Clean the camera lenses or check the internal LED.

Appendix A: Warranty and service information

Warranty Terms and Conditions

If the fusion splicer fails within three years from the date of shipment, it will be repaired free of charge.

However, the following situations are not covered by the warranty:

- Failure or damage caused by natural disasters.
- Failure or damage caused by abnormal voltage supply.
- Malfunction or damage caused by wrong operation.
- Failure or damage caused by not following the operation steps in the manual.
- Consumable parts (such as electrodes, etc.).
- Warranty does not cover: accidental damagem malicious damage.

Request an RMA for service or repair

Visit and click on Contact to locate the email address and phone number of your nearest TREND Networks office and request an RMA.