SFS-3000 Series Optical Fiber Fusion Splicer

Maintenance Manual

July, 2020

Saluki Technology Inc.

Preface

Thank you very much for choosing the SFS-3000 Series Optical Fiber Fusion Splicer produced by Saluki. The following manual will mainly introduce the maintenance instructions of fusion splicer.

Location: No.367 Fuxing N Road, Taipei 105, Taiwan

+886. 909 602 109

sales@salukitec.com

www.salukitec.com

CONTENTS

Chapter 1 System Maintenance.....4
1.1 Dust checking..... 4
1.2 ARC calibration..... 5
1.3 Electrode stabilize.....6
1.4 Electrode setting..... 7
Chapter 2 Operation Faults and Solutions.....9
Chapter 3 Common Errors and Solutions.....12
Chapter 4 Common Faults and Solutions..... 14

Chapter 1 System Maintenance

1.1 Dust checking

The fusion splicer detects the dust on fiber, camera or objective by imaging, which can influence the splicing result. This function can detect the dust on the optical channel and judge whether it will influence splicing quality or not.

Operations

- Choose [dust checking] in [system maintenance].
- If fiber already set in the fusion splicer, take out the fiber and press [set] to start dust checking.
- If dust is found while checking, [executive failure] will be noted on monitor. Clean the objective and perform dust checking again, until it shows [executive completed].

Attention: if the dust still remains after cleaning, please contact the agent or manufacture.

1.2 ARC calibration

Motors are adjusted before exit-factory. Certainly, these settings may change for a variety of reasons. This function automatically calibrates the speed of 4 motors.

Operations

- Choose [ARC calibration] in [system maintenance].
- Prepare for the fiber and put into fusion splicer, press [set] to start .
- Speed of all motors will be automatically calibrated, and will hint for completion.

Atmosphere like temperature, humidity, air pressure are always changing. This makes the discharging temperature change as well. The machine is equipped with temperature and air pressure sensor which can give feedback to the control system to adjust the discharge intensity to maintain a steady state. Automatic calibration is not suitable for changes caused by the wear of motors and fiber trash adhesion, and the center position of discharging sometimes moves to the left or right. In this condition,

the fiber will be shifted relative to the discharge center, ARC calibration will be needed.

1.3 Electrode stabilize

When the environment changes dramatically, the discharge strength will become unstable which will increase the splicing loss, especially when it changes from low altitude to high altitude, it needs some time to stabilize the discharge strength. Under this condition, electrode stabilize would need to be performed for several times until it shows [stabilize finished].

Operations

- Choose [electrode stabilize] in [system maintenance].
- Put the prepared fiber into fusion splicer.
- Press [set], it will starts to stabilize electrode automatically according to following procedures.
  a. Discharge repeated for 5 times to ensure the place of electrode.

b. Splicing the fiber quickly.

c. The electrode position is accurately measured 16 times of electrode stabilize.

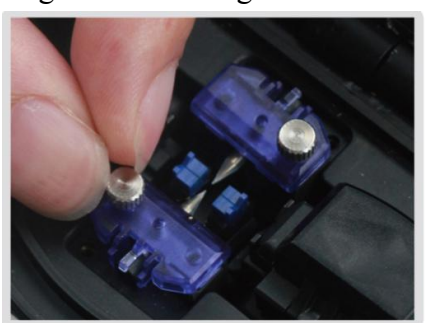
1.4 Electrode setting

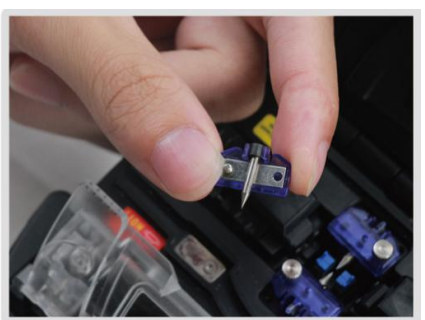
The splicing loss will be enlarged and splicing strength will be reduced when the discharging times exceed the electrode life. The electrode is worn by use and must be regularly cleared according to the concentration of the oxide. Set a reminder when the electrode was used for 2000 times, and it is recommended to update new electrode bar when splicing over 2000 times.

When over 3000 times, there will be [please change the electrode bar] reminder when turning on.

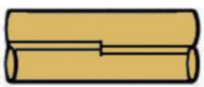
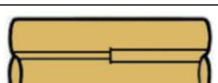
- When change the electrode bar, please press [replace electrode] in [electrode setting] or turn off the power and change.
- Lose the screw on the electrode, take off the old electrode bars.

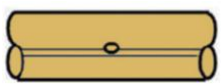
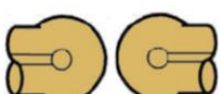
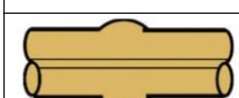
- Be careful not to pull the wiring out when replacing the electrode bars.
- Clean the new electrode bar with a clean swab or dust-free cloth soaked in alcohol, then install to the fusion splicer, place the electrode cover and tighten screws.
- It is strongly recommended that after replacing the electrode, electrode stabilize and ARC calibration should be done (operations are described below), or else splicing loss and strength cannot be assured.

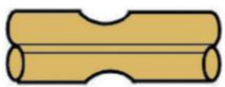
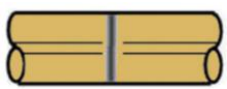




Chapter 2 Operation Faults and Solutions

Image	Definition	Reason	Solution
	Fiber core axial deviation	There is dust on the V-groove or fiber clamp.	Clean V-groove and fiber clamp.
	Fiber core angle error	1) There is dust on V-groove or fiber clamp. 2) Poor quality of fiber end face.	1) Clean V-groove and fiber clamp. 2) Check the fiber cleaver working state.
	Fiber core bending	1) Poor quality of fiber end face. 2) Low discharging strength or short discharging time.	1) Check the fiber cleaver working state. 2) Enlarge [discharging strength] and/or [discharging time].
	Fiber diameter mismatch	Discharging strength too low.	Enlarge [discharging strength] and/or [discharging time].

	Dust combustion	1) Poor quality of fiber end face. 2) Dust is not cleaned or cleared when cleaning the fiber or discharging.	1) Check the fiber cleaver working state. 2) Clear the fiber or increase the [cleaning discharging time].
	Bubble	1) Poor quality of fiber end face. 2) Low discharging strength or short discharging time.	1) Check the fiber cleaver working state. 2) Enlarge [discharging strength] and/or [discharging time].
	Fiber separation	1) Fiber pushing is too small. 2) High discharging strength or long discharging time.	1) Perform [ARC calibration] maintenance. 2) Reduce [discharging strength] and/or [discharging time].
	Too thick	Fiber pushing is too big.	Reduce [overlap amount] and execute [ARC calibration].

	Too thin	1) Discharging strength not suitable. 2) Some discharge parameters are not suitable.	Adjust [splicing discharging strength] [discharging time] or increase [overlap amount].
	Splicing line	Some discharge parameters are not suitable.	Adjust [splicing discharging strength] [discharging time] or increase [overlap amount].

Attention: when splice different types of fibers (different diameter) or multimode fiber, sometimes there will be an upright line on the splicing point, we call it [splicing line], this doesn't influence the splicing quality (splicing loss and splicing strength).

Chapter 3 Common Errors and Solutions

When using fusion splicer, if there is error reminder, please refer to the following solution. If problems still cannot be solved, then please contact the distributor for help.

Error message	Reason	Solution
Left/right fiber place error	The fiber end-face is placed on the electrode centerline or beyond it.	Press RESET, and set the fiber and end-face between the electrode centerline and the V-groove edge.
Pushing motor surpass limit	The fiber is not correctly placed at the bottom of the V-groove.	Press RESET, and put the fiber correctly.
Fiber end face in touch	1) The value of overlap is set too low. 2) Motor is not calibrated.	1) Adjust [overlap] parameter. 2) [Motor calibration] maintenance.
Fiber tracking failed	1) The fiber is not put correctly at the bottom of the V-groove.	1) Press RESET and replace the fiber correctly at the bottom of the V-groove. 2) Check the position of stripped fiber on

	2) The fiber is not located in the camera's field of view. 3) The cleaved length (bare fiber part) is too short.	the fiber cleaver. 3) Check the cleaved length.
Cleave angle abnormal	1) Bad quality of fiber end-face. 2) [Clean angle limit] is set too low.	1) Prepare fiber again. If problem remains, check the condition of the blade. If the blade is worn, rotate the blade. 2) Set the [Clean angle limit] to a proper value. (standard 3.0°)
Core angle abnormal	1) [Clean angle limit] is set too low. 2) There is dust on V-groove or fiber clamp.	1) Set the [Clean angle limit] to a proper value. (standard 1.0°) 2) Clean the V-groove and fiber clamp, and prepare the fiber and put it again.
Fiber is dirty	1) Dust or dirt is on the fiber surface. 2) Dust or dirt is on the objective lens. 3) [Clean ARC] time is too short.	1) Completely prepare the fiber again. 2) Clean the lens and execute [dust checking], clean the lens if dust or dirt exists. 3) Set the [Clean ARC] time to 180ms.

Chapter 4 Common Faults and Solutions

Fault	Solution
Press ON/OFF key, cannot turn on/off the machine	Press the ON/OFF key for long time till the LED lights flickers, release the key, fusion splicer shut off.
Full battery but can only do several splices	1) When the memory effect occurs when the battery is reduced or after a long period of storage, the battery should be completely let go, and then recharge the battery. 2) Battery worn, change the battery. 3) Use the machine under too low temperature.
Splicing loss is big	1) Clean the V-groove and fiber clamp. 2) Replace the electrode bar, ARC calibration and electrode stabilize. 3) Cleaving angle of the fiber, discharging condition

	and cleaving state will influence the splicing loss.
The monitor is suddenly turned off	If without any operations, monitor will be turned off automatically within 180s to avoid loss of electricity. When display screen turns off, LED lights next to the “turn on/off” key will flicker, and screen can be opened again by pressing any buttons.
The splicer suddenly shut down	The splicer turned off automatically when the machine is set for automatic machine shutdown (default 30 minutes) without any operations.
Fiber identification errors under AUTO mode	AUTO mode only for standard SM, MM, NZ optical fibers. When splice special fibers, AUTO mode may not recognize correctly.
The estimated loss is different from the real loss	1) The estimated loss is evaluated just for reference. 2) The optical components needed to be cleaned.
Heat shrinkable tube doesn’t shrink completely	Extend the heating time.

How to cancel heating	If user want to terminate the heating, press HEAT button, then the LED light will turn off.
The heat shrink tubing is stuck in the heating tank after heating	Remove the heat shrink tubing with a thin cotton swab or soft bar.
After discharge calibration, the discharge intensity did not change	The discharge calibration changes the internal condition parameters, not the discharging strength.
Forget to put fiber when fiber is needed to be put in the maintenance	Pressing RESET button is useless under this circumstance. Please open the shield cover, put the cleaved fiber into V-groove and press Set to execute.