

AI-9

# USER'S MANUAL

Automatic intelligent optical fiber fusion splicer

2020.01

## CATALOGUE

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## SAFETY REQUIREMENTS

At any stage of operation on the optical fiber fusion splicer, you must take the following general safety precautions. Not take these warnings and precautions or not comply with the warnings which described in this manual, would violate the fusion splicer design, manufacture and use of safety standards. My company does not assume any responsibility for the consequences of breaching these requirements for users caused!

### ● Operation environment and Power

#### 🔍 Fusion splicer operation, storage environment and working power requirements

Operating temperature: 0~+40°C      Limit temperature: -10°C~+50°C  
 Operating humidity: 95%RH or less (no condensation)      Maximum wind speed: 15m/s  
 Storage conditions:-20°C~+60°C( no condensation)

Before turning on the power, please make sure that the power supply can match its voltage, and that all safety measures are taken.

- Do not use the fusion splicer in explosive environments
- Do not use the fusion splicer in the presence of flammable gases or fumes
- Do not attempt to disassemble any of the components of fusion splicer

In addition to the statements in this manual to allow user-replaceable parts, please do not attempt to disassemble any of the components of fusion splicer. Replacement parts and internal adjustments can only be commissioned by authorized service personnel.

## WARNINGS/PRECAUTIONS

### ● AC/DC Adapter

The Output Characteristics Of The Power Adapter Must Meet The Following Requirements.

Voltage: 12V-14V; Current:  $\geq 2A$  (output voltage of original adapter: 13.5v, output current 4.8A)

Polarity: Center Is Positive; The fiber fusion splicer will be damaged or unable to charge if uses inappropriate adapter to output voltage and current. Using Higher Voltage Will Cause Damage To The Fusion Splicer. AC /DC Power Adapter Input AC Voltage Of 100-240v, 50/60hz, If Input Voltage Exceeds This Range May Cause Permanent Damage To The Adapter!

### ● Internal Lithium Battery

There Is A Lithium-ion Battery Cells In The Fusion Splicer, The Use Of Other Batteries May Damage The Fusion Splicer And Jeopardize Personal Safety.

For Safety Sake, Lithium Battery Pack Can Not Be Disassembled To Prevent Short Circuits; Do Not Crash Battery, Do Not Let The Battery Close To A Fire Or An Excessive Heat To Prevent Lithium Battery Explosion. Violation of the above operation may cause lithium battery explosion, endangering the personal safety of users.

### ▲ Notice:

1. When the battery is placed for a long time, it is easy to enter into the dormancy state. At this time, the capacity is lower than the normal value, and the service time is also shortened. However, the battery can be activated and its normal capacity can be restored after only 2-3 normal charging and discharging cycles. Lithium batteries have little memory effect and can be recharged at any time.
2. Lithium batteries exist self-discharge phenomenon, a long time of unused batteries will be in the state of low voltage because of self-discharge. A long period of low voltage will damage the internal structure of the battery and shorten the battery life. Therefore, unused batteries should be charged at least once a month, pay attention to the display of 2 or 3 bars of electricity can be charged, should not be full; In daily use, try to charge in the battery display more than one grid, do not run out of power to charge
3. Do not use the machine for a long time, please take out the battery and store it separately. The temperature range of long-term storage (storage time over 6 months) of the battery is 0°C~40°C. The temperature range of short-term battery

## ▼ WARNINGS/PRECAUTIONS

storage (storage time less than or equal to 6 months) is: -20°C~60°C.

4. In order to ensure the safety of charging, the charging temperature range of lithium battery inside the welding machine is 0°C~ 40°C.

5. If the battery charging is abnormal or the battery display is abnormal, you can try to activate the battery manually. For specific operation, please see: button combination function -- three to activate the battery

### ● Operation On Optical Fiber Fusion Splicer

When Below Situation Happens On Fusion Splicer, Please Turn Off The Fusion Splicer Immediately And Unplug The Power Adapter From The Power Input, Otherwise It Will Cause The Fusion Splicer May Not Work Properly Or Can Not Be Repaired And Other Serious Consequences.

- 》 **Liquid, foreign matter into the inside of the fiber fusion splicer. There is a protective structure inside the machine. A small amount of fiber debris will not affect the use, but please try to be careful not to fall in.**
- 》 **fiber fusion splicer is subjected to strong vibration and impact**

There is no need to maintain the fiber fusion splicer internal parts, do not remove the fiber fusion splicer. In the electrode discharge process of fiber fusion splicer, the voltage between the two electrode rod is up to several dry volts, do not touch the electrode, otherwise will cause the fiber fusion splicer damage or personal injury and other serious consequences.

### ▲ Notice:

1. Optical fiber fusion splicer is used for welding quartz glass fiber, please do not use this instrument for other purposes. Please read this manual carefully before use.
2. Pay attention to clean the V groove and lens in the process of use (to clean V groove, you can use an art knife to draw back and forth along the fiber groove, and then brush with a brush); Clean dust after use.
3. When the optical fiber fusion splicer moves from the low temperature environment to the high temperature environment, try to take the gradual heating mode, otherwise the instrument will produce condensation, which has an adverse impact on the instrument.
4. optical fiber fusion splicer is a calibrated precision instrument, please try to avoid strong vibration and impact. Special

## ▼ WARNINGS/PRECAUTIONS

carry case should be used for storage, and suitable cushioning case should be added outside the carry case for long-distance transportation.

### ● LCD display screen

1. The LCD screen of fiber fusion splicer is not touch screen. Do not use sharp objects to click on the LCD, do not force the LCD.
2. Do not drop organic solvents or dirty sundries on the LCD screen, such as acetone, oil, antifreeze, ointment, etc., otherwise it may lead to abnormal LCD display.
3. Can use silken cloth or soft fabric to wipe clean liquid crystal screen.
4. There may be noise on the screen when the fusing machine windproof cover is opened or not put in the optical fiber. These are not LCD fault, is a normal phenomenon

## CHAPTER I OPERATION KEY COMBINATION FUNCTION

### ● Introduction of operation keys and parts

The fusion splicer machine is mainly used for permanent splicing fiber, the machine can continue to splice ordinary rubber insulated fiber cable, jumper wire and a cladding diameter of 80um-150um, single mode, multimode and other quartz-based dispersion shifted fiber. The operation process should be taken to keep clean free subjected to strong vibration or shock



#### ○ RESET

Press the reset key to reset the propulsion motor, adjustable motor, and focusing motor to their original. When the Reset button light is on, it indicates the reset is in process. If it turns off within 5 seconds automatically that means the reset is successful, otherwise the reset is failed.

#### ▶ CONTINUE KEY: This key has three application scenarios

- 1 Forced splicing: The machine will not automatically splice in the case of poor fiber cut plane error or fiber identification error. Press this key to ignore the error and force welding.
- 2 Secondary welding: Within 15 seconds after the welding is completed (without opening the wind shield), press this key once to discharge the welding machine again for additional welding. This feature can be improved Defects at the welding point after the first welding, such as welding defects caused by insufficient firepower and insufficiently cleaned cut surfaces.  
 Note: This function is only for auxiliary welding. If welding defects often occur, you should check the cutter or perform discharge correction again.
- 3 Step-by-step splicing function: you need to first recognize the Zhuoshizhangzhongbao + on the mobile phone side, and turn on the "splice process pause" function (splice setting-function setting).  
 After the right fiber advances the screen alignment, it will not be spliced automatically. You need to press this key to complete the splicing process.

#### 🔍 MAGNIFICATION KEY

image magnification between 200 and 300 times display switch

#### ○ COPOWER

long press to turn on or off.

#### UNIT Switch test unit

dBm/db/uw Switch between three units, power display range:-70-450dBm. Error display Error

#### λ Switch wavelength

85nm/1300nm/1310nm/1490nm/1550nm/1625nm switching between six states

#### 650 Visual fault locator

Constantly lit/Flashing/Off/switching between three states

#### ⊖ power meter and optical modules switch

Turn on/off power meter and optical modules

## OPERATION KEY COMBINATION FUNCTION

The four function keys at the bottom of the screen, in addition to the basic functions (the first chapter introduces the operation keys and parts), there are also some combined functions for daily maintenance of the machine.

**1.Mandatory upgrade mode:** in the shutdown state, press and hold the reset key and the power button, and the machine enters the mandatory upgrade mode.

Usage :In this mode, connect the phone again-zhuoshizhangzhongbao+,firmware updates are more stable, faster, and can force a firmware refresh.When normal upgrades fail, it's easier to succeed with this feature.

**2.Self-check of optical fiber fusion splicer:** in the shutdown state, press and hold the continue button and the power button at the same time, and the machine enters the self-check mode.

Usage: When the welding machine is not working normally and the hardware is suspected to be out of order, it can be confirmed by self-inspection. For example, adjusting fiber is normal, but there is no welding fire, you can check whether the FBT is out of order.

After entering the self-check, the test countdown will be displayed at the bottom of the screen. After all the 12 items are self-checked, the red font will be displayed, and the status of error after the project means that the hardware has faults.At this point, the firmware can be upgraded first (please refer to 1 mandatory upgrade mode for specific operation). If the fault is still there, please contact the after-sales service to deal with it.

### The meaning of the 12 self-checking items as following

|                        |  |  |
|------------------------|--|--|
| 01 Image processing    | Image processing   | Report an error,please check again. If the error is still reported, please contact after-sales service                       |
| 02 Data Rom            | Data Rom   |  |
| 03 Data Ram            | Data Ram   |  |
| 04 Controller          | Controller   | report an error,Please contact the after-sales service   |
| 05 Motor: PL PR AL AR  | Core regulating motor and propulsion motor, each one has 2 |  |
| 06 Focusing Motor: X Y | Focusing motors :2   | report an error, first clean up the lens, upgrade the firmware.If the fault persists,Please contact the after-sales service. |
| 07 Camera: X Y         | Camera :2  |  |

## OPERATION KEY COMBINATION FUNCTION

|                    |                |  |
|--------------------|----------------|--|
| 08 Camera LED: X Y | Camera LED:two | report an error,Please check whether the red light above the electrode is bright and dim(see electrode replacement for specific operations)If the fault persists,Please contact the after-sales service.   |
| 09 RTC             | RTC            | Report an error,please check again. If the error is still reported, please contact after-sales service.  |
| 10 Battery         | battery        | Replug and insert, check whether the battery contact is corroded, and eliminate the bad contact;Try to activate the battery (see 3 activate the battery for instructions) or replace the battery.If the error is still reported, please contact after-sales service. |
| 11 HV-Discharge    | HV-Discharge   | Check whether the electrode is installed incorrectly and whether there is any debris affecting the discharge.Poor contact of electrode wiring.If the error is still reported, please contact after-sales service.  |
| 12 Bluetooth       | Bluetooth      | If error reported, please contact after-sales service.   |

### 3. There are two different ways to activate the battery.

① The battery can be normally started up: after starting up, long press the Magnifier button, after about 8 seconds, the welding machine automatically shut down, and then plug in the adapter in the state of power off, and wait for 2 hours before starting up to check.

② Battery cannot be normally started, can only plug the adapter to start up: after starting up, long press the Magnifier button, about 8 seconds after the buzzer will "tick" prompt, and then manually shut down, plug in the adapter in the state of power off, wait 2 hours before starting the machine.

Usage: The welding machine has abnormal charging (not charging into the electricity, charging not enough electricity, etc.); If the battery power is abnormal (the display is not accurate, the battery is not durable, the virtual power, etc.), you can use this function to make the battery return to normal.

Note: it is better to remove and insert the battery before operation to check whether the battery contact is corroded and eliminate the bad contact of the battery.







## OPERATION KEY COMBINATION FUNCTION



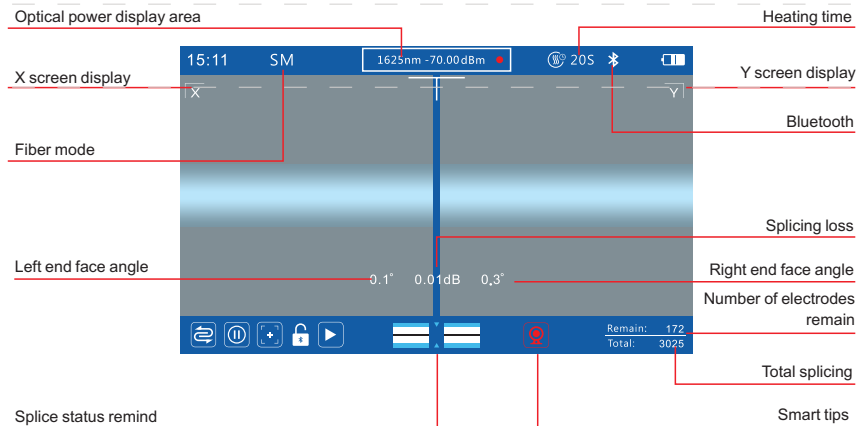
Function Description table

| Serial numbe | Name                  | Function Description  |
|--------------|-----------------------|---|
| 1            | Power socket          | Input voltage:13.5+0.5v; input current:4.8A                                 |
| 2            | Battery pop-up button | Press to remove the battery   |
| 3            | Heating indicator     | The Heat Shrinkable Tube Is Finished Heating When The Indicato Light Is Off |
| 4            | Heating oven          | Put in the heat shrinkable tube close the cover and heat automatically      |
| 5            | Fiber optic connector | Optical power input and VFL output interface                                |

## DISPLAY MENU INTRODUCTION

| ICON  | NAME                   | FUNCTION   |
|---|------------------------|--|
|  | Normal mode            | Normal Splicing Mode For The Machine   |
|  | Splicing process pause | When the function is on, the splicing machine will stop the final splicing process after in the completion of the fiber focus, end face detection and fiber alignment. Please then press the "Continue ▶" button to perform the arc discharge and the subsequent splicing process. If the cleave face detection is not passed, it will pause and report the error, then please press the "continue ▶" key to ignore the error and continue the follow-up process |
|  | Auto focus             | When the function is turned on, for each time splicing it will adjust the camera focal length to the set target value automatically (target value in the "Splicing settings" menu set "focus target value")  |
|  | ARC calibration        | According to the altitude, temperature, humidity and other conditions of the user, match the most suitable arc discharge value to minimize the splicing IOSS. (See chapter 4, discharge correction)  |
|  | Smart lock purpose     | To Facilitate Management Or Owner's Effective Management Of The Splicer Machine's Use Period Or The Number Of Splicing. Typical Applications Such As Rental Business   |
|  | Continue               | Press "continue" To Continue The Splicing Process  |

## INTRODUCTION TO SPLICE INTERFACE



Camera failure



Core align failed



Focus failed



ARC calibration failed



Left and right fiber does not match



The lens is foggy or foreign body interference

## INTRODUCTION TO SPLICE INTERFACE

### Intelligent prompt and fiber state prompt solution

#### I Intelligent prompt

The red symbol displayed at the bottom left of the LCD.

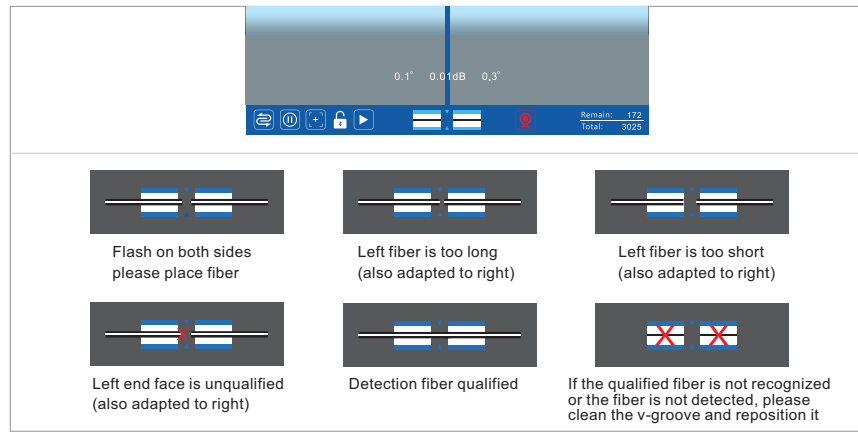
- **Camera fault:** first clean the objective lens, and then upgrade the welding machine firmware to the latest version. If the fault still exists, please conduct self-inspection of the welding machine to confirm whether the camera fails (please refer to daily maintenance for specific operation).
- **Core failure:** first exclude the fiber treatment unqualified factors, such as the coating layer is not clean, too bad cutting surface, too many burrs; Then clean up the V slot and objective lens and press the reset key.  
 Note: dust in the lens may also cause failure of core alignment, so dust should be cleaned (please refer to daily maintenance for specific operation).
- **Focus failure:** this tip only appears when autofocus is turned on, usually because the fiber image is too blurry for the range of autofocus. Solution: first eliminate the fiber treatment unqualified factors, such as the coating layer is not clean, too bad cutting surface, too many burrs; Then clean the V slot and objective lens, press the reset key; Autofocus can also be turned off and adjusted manually (see daily maintenance for details). If the fault continues, enter the welding machine self-check mode to check whether items 5 and 6 are wrong.  
 Note: dust in the lens may also cause failure of core alignment, so dust should be cleaned (please refer to daily maintenance for specific operation).
- **Discharge correction failure:** First clean the tip of the electrode and remove debris; Restore the factory Settings in the device's fusion setting. Restart welding machine and zhuoshizhangzhongbao +, re-discharge correction. If the fault continues, enter the welding machine self-check mode to check whether item 11 is wrong.
- **The left and right optical fibers do not match:** the specifications or types of optical fibers on both sides are

## INTRODUCTION TO SPLICE INTERFACE

different, and they need to be replaced with the same specifications or types. This error, can press continue to ignore the key error, mandatory welding.

Note: according to the construction specifications of welding machine, different specifications and types of fiber cannot be fused, if forced welding, welding quality may be affected.

- **Fog or foreign matter interference in the lens:** firstly exclude the unqualified factors of the optical fiber treatment, such as not scraping the coating layer, too bad cutting surface, too many burrs, and so on, and then clean the objective lens; In addition, if the red light on the electrode fails, it may report an error. Please check it (Open the electrode cover, and the indicator is on all the time. If not, it is broken and needs to be replaced.).



Fiber status prompt description



## INTRODUCTION TO SPLICE INTERFACE

### II fiber state prompt

The optical fiber symbol in the middle below the LCD, two blue and white bars represent V groove, the small triangle in the middle represents electrode tip, and the black bar flashing on the blue and white bars represents optical fiber. The distance from the optical fiber mark to the middle small triangle (electrode tip) is different, representing different states of optical fiber. The length of bare optical fiber placement should be as close as possible to the electrode tip, but it should not exceed the tip, and the shortest length should be more than 1mm beyond the V groove. The distance between the end faces of both sides of optical fiber should be between 2-4mm, and it should be placed flat in the groove.

#### ● Placing optical fiber

The front end of the optical fiber identification is located in the middle of the v-groove identification and the electrode tip identification, indicating that the machine is ready and waiting for the optical fiber to be put in. If the optical fiber is normally placed and there is no response after the switch of the cover, please restart the machine, and repeatedly switch the cover on and off several times (without pressing any keys and connecting the phone) in the QR code interface of the machine. If the QR code interface cannot automatically skip, then there may be something wrong with the cover closing induction. Check whether the magnet on the left side of the windproof cover falls off or has debris attached, and whether the inner hexangular screw corresponding to the lower bottom cover is installed correctly.

#### ● Fiber is too long

The front end of the optical fiber marker is close to the electrode tip marker in the middle, indicating that the optical fiber is placed too long. If the optical fiber exceeds the electrode tip, it needs to be placed again. If the optical fiber is placed normally and this tip appears without placing fiber, this may be caused by debris or fog in the objective lens. Clean the objective lens, wipe the objective lens with a clean cotton swab, and the fog can be eliminated with a hair dryer. After cleaning, debris image if there is no change, it may be in the lens inside, you can pick up the welding machine to pat a few times, see whether the debris out of the screen.

## INTRODUCTION TO SPLICE INTERFACE

#### ● Fiber is too short

The front end of the optical fiber identification is returned to the v-groove identification, indicating that the optical fiber is placed too short and should be placed beyond the v-groove. The closer it is to the electrode tip, the better.

Placed the tail fiber, attention should be paid to this error, because the tail fibers stretch the core when the cladding is removed, inner core on fixture may occur retraction, the solution is: inner core can be slightly longer, stretch the whole fibre first before you placed it on fixture, fixture linking piece on the front end of pressure hammer to pin the white rubber inner core.

Note: When tail fiber welding with the leather fiber, as the inner core of tail fiber is too long, the heat-shrinkable tube cannot be wrapped to the outer rubber, so it is recommended that the white rubber is 2-3mm longer than the outer film. However, the white inner core should be retained longer to facilitate the dishing of fibers when splicing tail fiber and bare fiber.

#### ● The end face is not acceptable

There is a red fork in the front end of the optical fiber identification, which indicates that the end face of the optical fiber is unqualified, which affects the welding quality, so it is necessary to cut the fiber again. There are two standards for end face detection, cutting Angle (the degree displayed at both ends of the screen divider line, qualified within 3° by default) and end face quality (not shown on the screen). The test standard can be customized by zhuoshizhangzhongbao+user-defined

If the fiber is repeatedly cut, and the image of the fiber is indeed uneven or defective, the cleaver may need to be adjusted (please refer to the cleaver adjustment for specific operation).

If the cut surface is flat, but errors are frequently reported, please pay attention to whether the Angle of the cut surface becomes round when dusting, which may be because the dust removal voltage is too high. You can dust reduction voltage value in zhuoshizhangzhongbao + by welding setting and parameter settings, it is best to do a new discharge correction.

Blurry fiber images can also cause errors, clear V slot and objective lens, press reset key; In addition, the reasons for the unclear fiber image include wrong focal length and lighting problems. Please refer to daily maintenance for details.

## INTRODUCTION TO SPLICE INTERFACE

- **The test is fiber passing**

Fiber passing means screen display is a complete fiber, take out fiber can be normal. Sometimes errors may be reported due to dirty lens or fog, and the lens can be restored after cleaning (see daily maintenance for specific operations).

- **Failed to identify qualified optical fiber or no optical fiber detected**

A Red Cross is displayed on the v-slot mark to indicate that no fiber has been identified or no fiber has been laid.

If the optical fiber has been placed, and the error is still reported, firstly exclude the unqualified factors of the optical fiber treatment, such as the coating layer is not clean, the cutting surface is too bad, too many burrs, etc.; Then clean up the V groove and objective lens, and press the reset key (see daily maintenance for specific operations).

Blurry fiber images can also cause errors, clear V slot and objective lens, press reset key; In addition, the reasons for the unclear fiber image include wrong focal length and lighting problems. (Please refer to daily maintenance for details.)

In rare cases, there is a signal or light source in the fiber optic line, which may affect the image detection of welding machine and cause error reporting. Turn off the signal or light source in the circuit.

## CHAPTER II SOFTWARE DOWNLOAD

### Software download

**China:** scan QR code to download APP

**Outside China:** Go to Google Play or App Store and search for "SignalFire2" download Phone App.



Google play



App store



Scan QR code

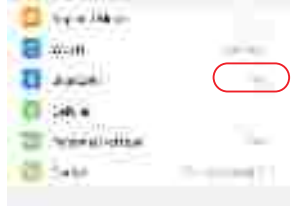
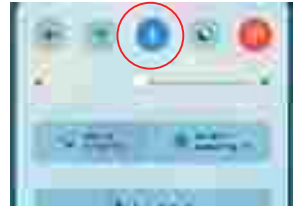
## SOFTWARE BLUETOOTH CONNECTION

The mobile phone is not needed when splicing, The mobile APP can be used to turn on off the machine menu, arc calibration remote control smart lock. etc

You can also learn various operations in the app, as well as contact after-sales support, or you can update the mobile app and connect to the machine to synchronize updates

### Phone settings

1. Apple phone(IoS system) to turn on bluetooth permissions.

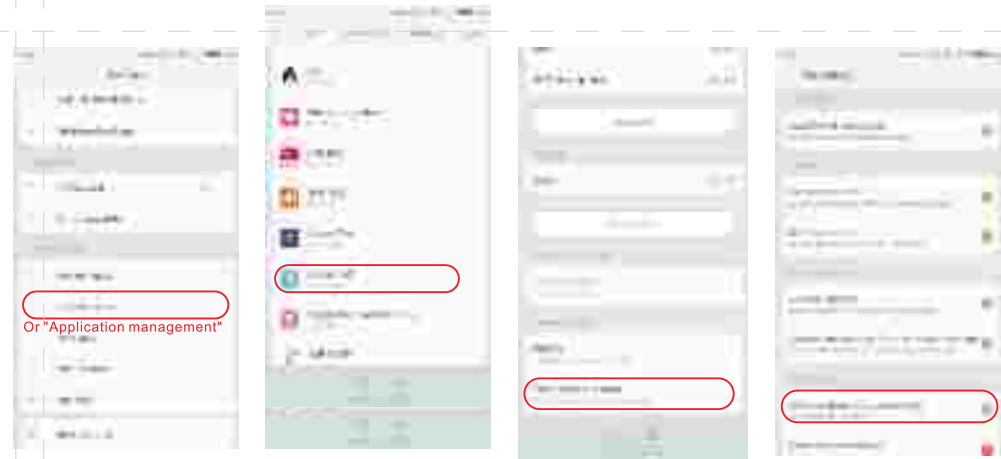


2. Android phone to open the bluetooth permission function is as follows



① Turn on phone setting then turn on bluetooth

## SOFTWARE BLUETOOTH CONNECTION



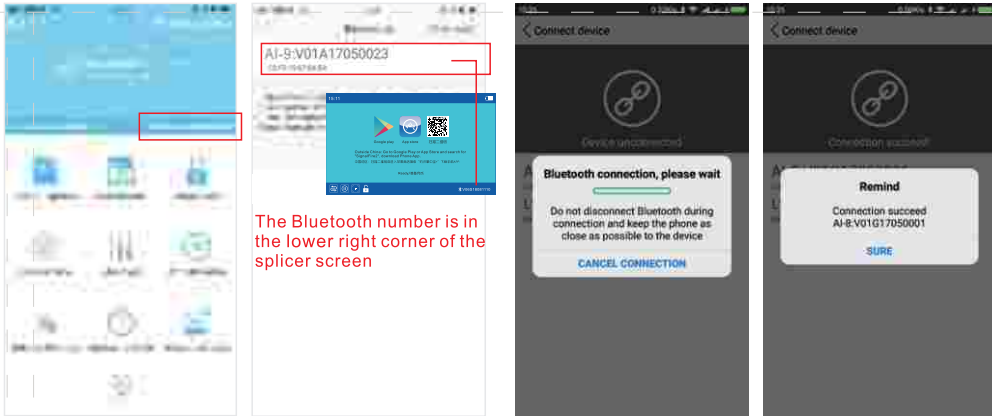
② Return to the settings interface, choose "more applications or application management"

③ Select "signalfire2" in the list

④ select rights management

⑤ select to turn on bluetooth, turn on bluetooth permissions

## SOFTWARE BLUETOOTH CONNECTION



The Bluetooth number is in the lower right corner of the splicer screen

⑥ login app account and connect bluetooth on splice, click "Device unconnected".

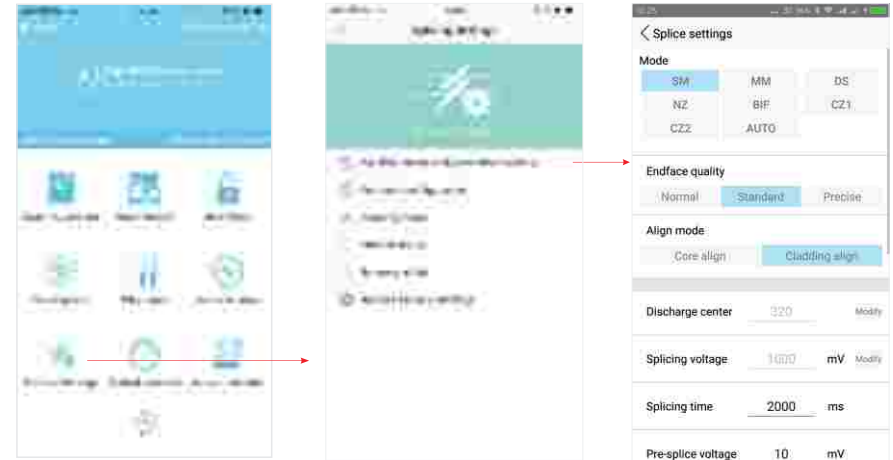
⑦ Please select the corresponding splicer serial number and click on ,if you can not find the splicer serial number, please check whether the Bluetooth or gps is turned on.

⑧ Connecting...

⑨ Connect successfully

## SCREEN MENU FUNCTION ON/OFF

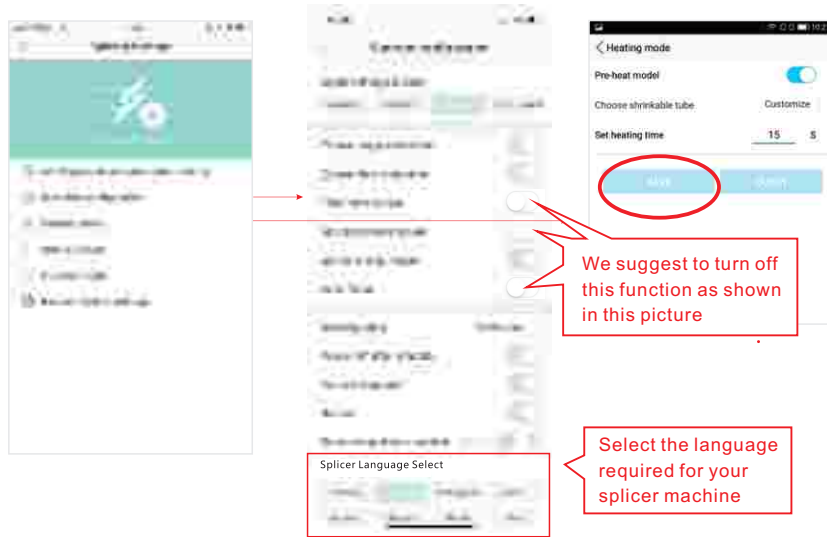
Turn on the phone bluetooth, open the phone app, set the machine panel menu after establishing the connection, and machine will update at the same time. **The splicing operation does not require phones**, the phone App is only for machine menu settings, and splicer machine to store data.when the data is exported to phone App, the users can also get support through the APP and after-sales service.



select and click save

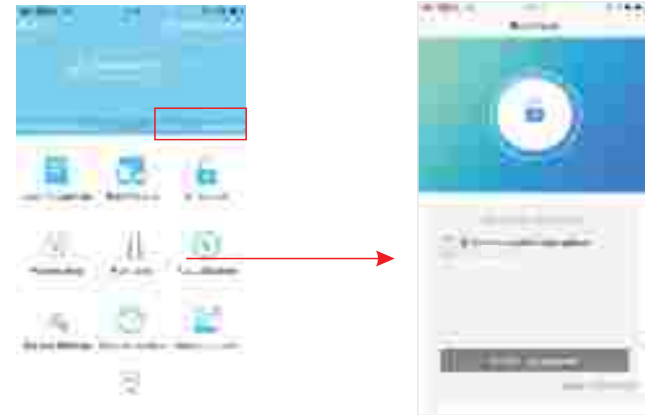
## SCREEN MENU FUNCTION ON/OFF

When the settings are saved, the display icon will be highlighted darkened accordingly. otherwise please check whether the bluetooth is properly connected.c



## CHAPTER III SMART LOCK

Smart Lock Purpose: to facilitate management or owner's effective management of the splicer machine's use period or the number of splicing.  
 Typical applications such as rental business.



1. After The Bluetooth Connection Between The Mobile Phone And The Fusion Splicer Is Successful, Click On The Smart Lock To Enter

2. After Binding Is Clicked, this Mobile Phone Account Has Unique Control Over This Splicer.

## SMART LOCK

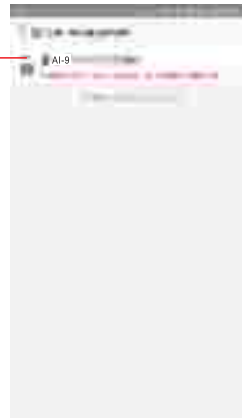
A Device Can Only Be Bound To One Mobile Account At The Same Time. To Bind Other Mobile Phones, You Need To Unbind Current Account First.



3. Click on the settings icon to enter.



4. Save after personalization settings.



5. Click on the "Smart lock management" button to see all the splicing machines controlled by this mobile phone account.

## CHAPTER IV TOOLBOX INTRODUCTION



Lock catch

Platform for fiber cleaving



Tool layer

Accessory layer

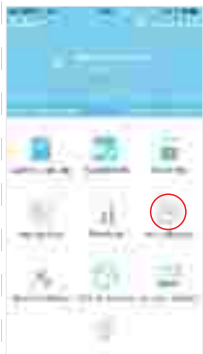


Stool

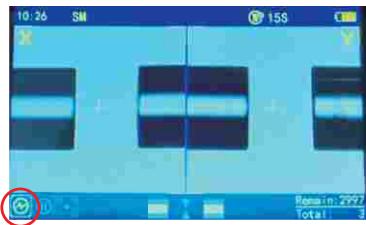
## CHAPTER V ARC CALIBRATION

**ARC Calibration:** According to the local ground elevation, temperature, moderate and other environmental factors to match the most suitable discharge ARC, in order to obtain the best splicing effect, we strongly recommend you to do arc calibration when it is the first time to use the new machine, the seasonal changes, the use place changes, or you replaced the electrodes; discharge correction should be done after changing the type of fiber (such as single mode and multi-mode switching)

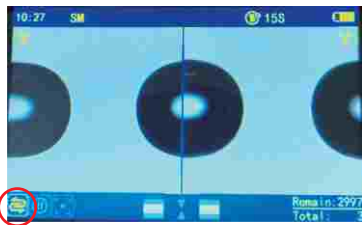
The procedure for ARC Calibration is as follows:



Step 1: Please turn on the splicer machine, then login Signalfire 2 on your phone, connect the Bluetooth, open the Arc Calibration (See picture)



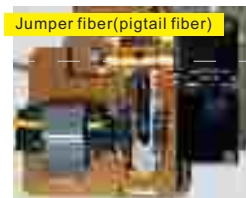
Step 2: After open the ARC Calibration, the icon of Normal Mode (☰) "will change to the icon for" ARC fiber, place the fiber to fiber holder and close the windshield cover, the splicer machine will perform the ARC calibration automatically. (See picture)



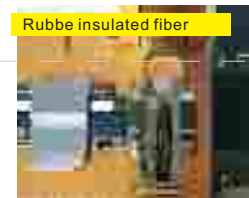
Step 3: There is flash on the display screen and slight burst from the ARC, the fiber head is burning into a spherical shape the action stops after the screen icon "change back to" ☰ "icon", it shows the ARC calibration is successful. If the icon does not change back to the Normal mode "☰" icon the screen fiber still flashes, please re-cleave the fiber and repeat the above steps until the Arc calibration is successful.

## CHAPTER VI FIBER STRIPPING AND PUT INTO HOLDER

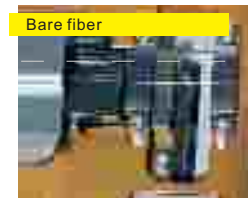
**Cleave fiber instructions:**



With the yellow plastic layer as the boundary, the scale is between 13 to 18. the white skin layer should be longer than the yellow layer of 5mm, placed it in the scale 10-12 or so (near the ubber pad about 2mm or less)



Scale is between 13 to 18

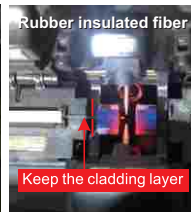


To the cladding layer, the scale is between 10 to 12

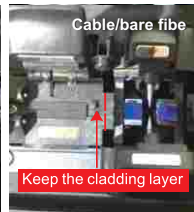
**Instructions for put fiber into holder:**



Keep the white layer



Keep the cladding layer



Keep the cladding layer



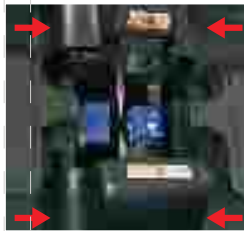
**Remark**

1. Please make sure you place the fiber into the blue V-groove, the tip of the fiber is close to the center of the electrode. If the fiber is too far from the electrode center, it will remind you to re-place it. The recommended distance between the left and right ends of the optical fiber is between 2 and 4mm.
2. The tip of the fiber must not exceed the center of electrode.

## CHAPTER VII REPLACE ELECTRODE

Electrode replacement must use the genuine original electrode designed for this machine from factory. When the number of electrode is used close to 3000 times, the machine will remind you to replace it. When it reaches to 3000 times, it is necessary to replace the electrode and activate it then you can use again(see page 29 ACTIVATE ELECTRODE). Otherwise it may affect the splicing quality, or even shut down the program automatically, and could not splice.

The electrode replacement procedure is as follows:



1. Please pinch the electrode cover on both sides slightly, see the location in picture then remove up the electrode cover.



2. The cap size of two electrodes is different, wider head is for the electrode which is close to screen direction.

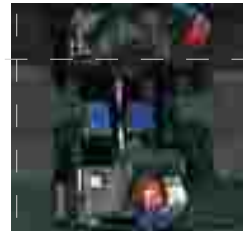


3. Take away the cover as shown in picture.

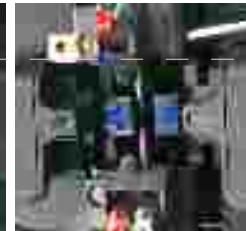


4. Remove the lamp cap on both sides with tweezers.

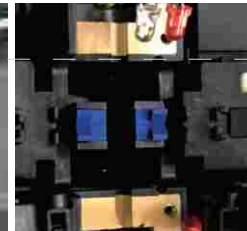
## REPLACE ELECTRODE



5. Screw out the screws with a screwdriver.



6. use a screwdriver to push out the latch and remove the electrode. remove the another electrode by the same way



7. Two old electrodes are removed



8. Replace the new electrodes and put the latch, the wider part of the latch is toward to electrode needle



9. push the latch and install the screw



10. Use tweezers to put the lamp into the original hole.



11. Close the electrode cap Replace the other electrode by the same way

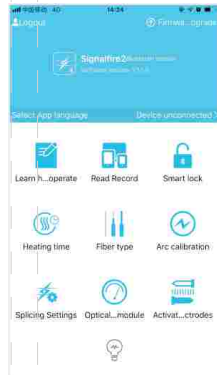


12. Close the electrode cap electrode replacement is complete



## CHAPTER VIII ACTIVATE ELECTRODE

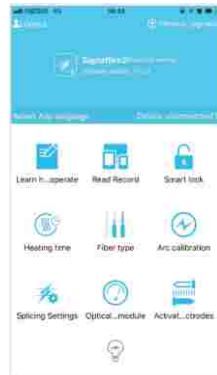
PS. The electrodes on the new machine do not need to activate we have activated before ex-factory. Only when the electrodes life on the machine is expired in the future and then you need to replace and activate the electrode when the electrode is used up to 3000 times, you need to replace the electrode and activate it. You need to use APP software "Signalfire2" install in your phone and activate the electrodes. Please scan the two-dimensional code on the machine screen to download the app software.



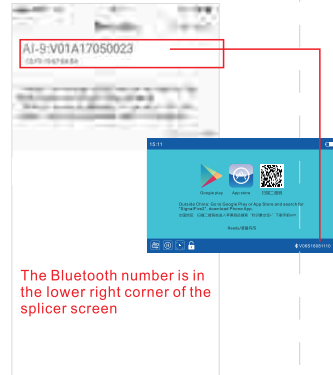
1. Open the "signalfire2" APP software, click on login.



2. Please log in directly if you have an account otherwise please register first.

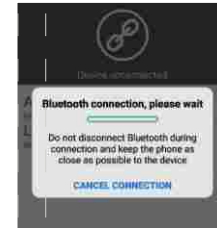


3. Click "Device unconnected" after login is successful.

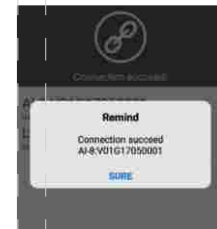


The Bluetooth number is in the lower right corner of the splicer screen

## ACTIVATE ELECTRODE



5. Connecting



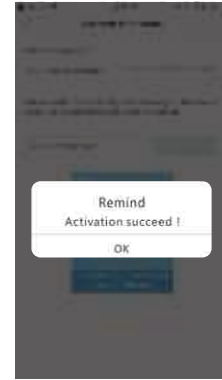
6. Connected successfully



7. Back to the home page, click on "Activate Electrode"



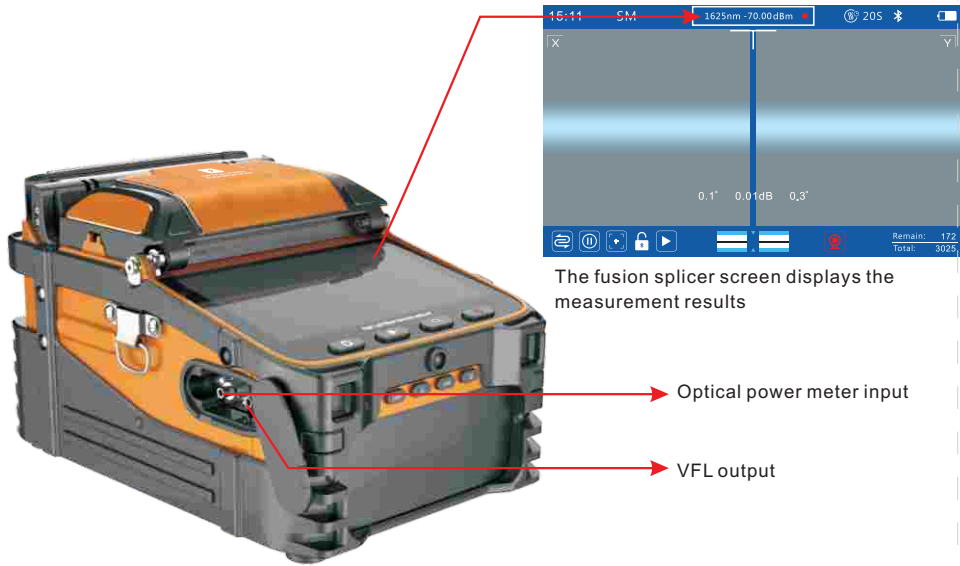
8. Enter the number of the dimensional code on the electrode box (please distinguish between numbers and letters) or scan the two-dimensional code on the electrode box



9. Activation is successful, please restart the machine

## CHAPTER IX POWER METER AND OPTICAL MODULES

Effect easure connection loss, verify continuity, and help evaluate fiber link transmission quality



The fusion splicer screen displays the measurement results

Optical power meter input

VFL output

## POWER METER AND OPTICAL MODULES

Optical power meter and VFL parameter settings



1. The user logs in to the "signalfire2" app and connects to the machine Bluetooth.

2. Turn on the power meter and light module, set and return.

## CHAPTER X DAILY MAINTENANCE

### I .Pay attention to dustproof and remove dust

Bare fiber positioning groove, electrodes and microscopes must be kept clean and windshield cover should be closed when not in operation

#### 1. V-groove Cleaning

If the V-groove has dirty and can not hold the fiber properly, which will cause very high splicing loss. Thus in the daily work, you should always check the V-groove and regular cleaning V-groove. Follow the steps below to clean the V-groove.

- (1) Open the windshield cover;
- (2) Use a cleaved fiber tail in one direction push the pollutants and remove from the V-groove;
- (3) If the fiber can not clear the V-groove pollutants, then moistened with alcohol cotton swab to clean the bottom of the V-groove, and use a dry cotton swab to wipe off the extra alcohol in the V-groove.

#### 2. Cleaning and replacing the electrode

If the electrode is dirty, you can clean electrode by using the cleaning electrode function in main menu in the equipment maintenance, and then use a cotton swab dipped in alcohol to gently wipe the electrode tip, or use 3mm wide, 50mm long metallographic sandpaper to gently rub the electrode tip. Note To protect the electrode tip from damage.

**3. If the objective lens is dirty**, the normal position of the observation optical fiber core may be affected, which leads to a higher splice loss or poor fusion. So you should regularly clean two objective lenses, otherwise it will continue to accumulate dust and ultimately can not be removed.

#### Follow the steps below to clean the objective lens :

- ( 1 ) Before cleaning the objective lens, please must turn off the power.
- ( 2 ) Use cotton swab moistened with alcohol to gently wipe the objective lens. Beginning with a cotton swab to wipe from the middle of the lens, do a circular motion, until the edges of the lens spin out. Then wipe with a clean, dry cotton swab to remove extra alcohol.
- ( 3 ) Turn on the power, make sure that the display is not visible dust and stripes.

## DAILY MAINTENANCE

### II .Prevent Strong Shock or Vibration

When you need to move or transport the fusion splicer, you should handle with care and gently. In addition, do not forget to put the machine into a carrying case and shipping box during long-distance transportation.

### III. Storage

When you do not use the machine for a long time, please must turn on the machine once half a year. Especially in high moisture season, should always be turned on, and the desiccant should be placed inside the carry case to prevent mildew microscope head.

### IV.Precautions

- (1)When the fusion splicer is using AC power , please take attention to protect the adapter , and the power supply is properly grounded.
- (2)When the fusion splicer is in the ARC discharge process, there are several kilovolt high voltage between the electrodes, please do not touch the electrode rod at this time!
- (3)Please be sure that there is no gasoline, mashgas, freon gas and other flammable gas in the environment and, so as not to lead to poor fusion or accident.
- (4)When you wipe to clean the fiber holder and microscope head, please must us absolute ethanol, cotton swab to wipe the direction should be one-way, two-way wipe is forbidden.
- (5)There are many mechanical components in the fusion splicer with structural precision, in addition to the electrodes, the other part is prohibited for user disassemble and change. Because these mechanical parts are precision-machining and calibration, once there is any changes, it is difficult to return to its original position. You can replace only the electrode-yourself The objective lens, V-groove, display screen, etc should be kept clean. Clean only with absolute ethanol, you can not use other chemicals.

## DAILY MAINTENANCE

V. Troubleshooting and solutions The table lists a general troubleshooting method for the user reference. When the user can not solve the situation, please contact with the suppliers directly.

| Troubleshooting  | Reason  | Solutions   |
|--|---|---|
| No image after placing fiber   | 1. Not power on<br>2. Fiber does not enter V-groove or v-groove has dirty<br>3. The length of the fiber is too short or broken<br>4. The align mechanism is not initialized<br>5. No signal detected for close windshield cover | 1. Press the power key<br>2. Re-place the fiber or brush the V-groove with alcohol<br>3. Re-cleave the fiber<br>4. Press RESET key<br>5. Check if the magnetic screw is loose or the magnet on windshield cover is fall off |
| splicing loss is too high  | 1. The cleaving quality of the fiber is poor<br>2. Splice parameters unreasonable<br>3. Arc center offset (rarely occurs)   | 1. Re-cleave the fiber<br>2. Repeat the ARC calibration<br>3. Repeat the ARC calibration  |
| The ARC does not discharge or has scars                                | 1. The cleaving quality of the fiber is poor<br>2. The splice parameter is too small<br>3. The electrodes has adsorbed dust<br>4. Running data error  | 1. Re-cleave the fiber face<br>2. increase the cleaning voltage; do ARC calibration again<br>3. Clean the electrode with a brush<br>4. Turn off and restart.  |
| The spliced area becomes thinner                                       | 1. Splicing parameters unreasonable, splice voltage is too high<br>2. Splicing overlap is too small   | 1. ARC calibration<br>2. Increase the amount of splicing overlap  |
| splicing zone is thicker   | 1. Splice parameters unreasonable, splice voltage is too small<br>2. Splicing overlap is too big  | 1. ARC calibration<br>2. Reduce the amount of splicing overlap  |
| Splicing has bubbles (usually occurred in the multi-mode fiber splice) | 1. Fiber end with burr, not flat<br>2. Fiber quality is not good  | 1. Increase the cleaning voltage<br>2. Re-cleave fiber<br>3. Replace to qualified fiber or cut off a part of the existing fiber and try again.  |

## DAILY MAINTENANCE

| Troubleshooting                                  | Reason   | Solutions   |
|--|--|---|
| Splicing points have lateral shadows             | 1. Fiber core does not match (type or core diameter is different)<br>2. Multimode fiber appear very light shadows after splicing   | 1. Re-match the fiber to make the same type of fiber on both sides<br>2. It is normal, does not affect splice strength and signal transmission quality  |
| Image is tilted                                  | 1. Fiber not enter the V-groove completely<br>2. V-groove is dirt  | 1. Re-place the fiber<br>2. Clean the V-groove with alcohol and brushes   |
| The image is on the top or bottom of the display | 1. V-groove is dirt<br>2. Fiber not enter the V-groove   | 1. Clean the V-groove with alcohol and brushes<br>2. Re-place the fiber   |
| The image is blurred                             | 1. Fiber not enter the V-groove<br>2. V-groove is dirt   | 1. Re-place the fiber<br>2. Clean the V-groove  |
| Cleave can not cut off the fiber                 | 1. Cladding layer is not stripped<br>2. Cladding layer stripped too short and the rubber pressure on both sides of the blade did not compress the fiber<br>3. The cutting point of the blade becomes blunt or broken | 1. Use a Miller clamp to peel off the cladding<br>2. The length of the stripped cladding should be longer than 30 mm<br>3. Loosen the retaining screw in the middle of the blade and turn the blade at an angle |

### VI. Common faults during the use of the machine

Optical fiber fusion splicer is a precision instrument, usually in the use of the process should be strict attention to avoid the invasion of dust into the inside of the machine and often clean. In the usual cleaning maintenance is mainly clean V groove, lens. The v-groove is mainly scraped back and forth along the bottom of the slit with a cutter, and then brushed clean with a brush. Clean the lens mainly with a clean cotton swab, if necessary can dip a little alcohol to wipe (note that alcohol is just wet cotton ball not too much, to avoid running into the lens).

## ☐ DAILY MAINTENANCE

1. The optical fiber has been placed, but the machine indicates that the optical fiber is not in the slot --- one case is that the fixture is not reset, press the reset key on the left side of the machine and then reset the optical fiber. The other is that when the tail fiber is placed, the inner white coat of the tail fiber without fixture, which causes the fiber to shrink back. On this occasion, you need reset the fiber and press it on the front end of the white rubber.



2. After putting the optical fiber in the normal position, the machine suggests that the optical fiber is placed too long --- the first situation is that the machine changes from a colder environment to a warmer environment, the surface of the glass lens is prone to a layer of water mist, which leads to the camera can not normally identify the optical fiber and error. All you need to do is wipe the lens with a clean cotton swab or blow the cool air from a hair dryer into the lens. There is also a case where the lens is dusty and you can see black spots on the screen, so you need to wipe the lens with a cotton swab (the X lens is near the heating tank, and the Y lens is near the display).

3. After fiber is aligned, do not fuse automatically, need to press the triangle button to fuse on -- the machine also did not indicate that the cutting surface does not meet the requirements, which means the welding suspend have been opened in the mobile phone software. If you don't need this function, connect to the mobile APP (zhuoshizhangzhongbao +), and in the function settings of welding setting, close the welding suspend and then save.

## ☐ DAILY MAINTENANCE

4. The bottom left corner of the machine shows a red box with a red dot in the middle -- this is a focus failure. Wipe the lens with a cotton swab, clean the V slot, press the reset key on the far left of the machine and replace the fiber.

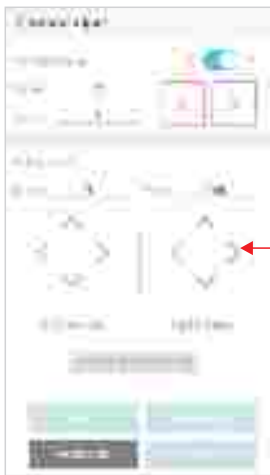
5. L≠R is shown in the lower left corner of the machine. --- this is the difference in the models of optical fiber on both sides. The same type of optical fiber needs to be replaced.

6. A screen image clearly and another plane image fuzzy, and through the reset and auto focus can't recover, you need to manually adjust--open the phone APP and connected to the machine, then choose weld Settings, operating mode, the factory core adjustment, return to select manual regulation, then choose fuzzy lens in the top right, click the triangle to the left or right, manually adjust the focal length, return to run mode until it clear, select normal mode. If you do not change back to normal mode, the fiber will not fuse after the promotion.



## ☐ DAILY MAINTENANCE

7. One side of the optical fiber is up or down and cannot be restored by cleaning the V slot and resetting -- open the mobile phone APP and connect it to the machine, then select the welding setting -- operation mode -- factory core adjustment, and select manual adjustment when returning. If it is on the left, adjust it to the center of the screen by pressing the up and down triangle button on the left, and vice versa.



If the left side is not right, click on the left side of the upper down adjustment, otherwise adjust the right side

## ☐ DAILY MAINTENANCE

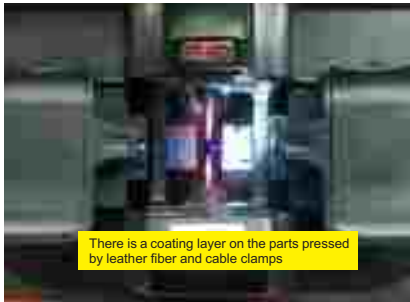
8. High welding loss or no connection--the loss of welding is determined by many reasons: the quality of the machine, the current intensity of the machine, the flatness of the cutting surface, the cleanliness of the optical fiber, whether the type of optical fiber matches, the quality of optical fiber and even whether the optical fiber is tight will affect the welding effect. Then we need to pay attention to the following aspects:

**Please first confirm whether the light loss caused by welding is too large, for example, make a single point of welding with jumper wire to measure the loss, try another welding machine. Confirm the welding problem, and then carry out the later debugging.**

- ① First, best to do a discharge calibration before use to ensure the effect if the use environment of the machine be changed or placed for a long time.
- ② Second, after stripping off the coating, the optical fiber needs to be wiped clean with alcohol cotton before cutting. (alcohol should be 95% or more).
- ③ Third, check whether the left and right optical fibers are the same type. Single mode and multi-mode fiber cannot be fused together, and there are many types of single mode and multi-mode, and the same type of single mode or multi-mode fiber should be fused together as far as possible, so as to minimize the loss.
- ④ Fourth, adjust the cutting knife to get better cutting effect and reduce the loss. (especially multi-mode fiber, if the cutting surface is not good, it will lead to bubbles and bulges during welding, which is caused by the bad cutting surface)
- ⑤ The fifth, welding can still be good, set on the heat shrinkable tube is not good, or put a few days is not good. If it is cable docking is mainly heating slot time is not enough. In the case of leather-fiber docking or leather-cable and tail-fiber docking, this will also happen without the use of double-wire heat-shrinkable tubes and protective tubes, except for insufficient heating time. Extending the heating time by 3 to 5 seconds, as well as changing to double-wire heat-shrinkable tube and adding protective tube can be solved.

## ☐ DAILY MAINTENANCE

9. Easily broken fiber -- if it is broken from the welding point, generally is the current is not appropriate, redo the discharge calibration on the line. If it is from the position of the fixture fracture is caused by the quality of optical fiber, this case leather fiber and fiber optic cable will need to put the fiber rubber coating layer left two to three millimeters not peeling, clamping device pressure down, pressure on the coating layer can be. The tail fiber needs to press the front end of the clamp onto the white rubber skin of the inner layer.



## ☐ DAILY MAINTENANCE

10. Always suggest that the cutting surface does not meet the requirements, resulting in no welding. This is mainly the following two cases, one is V groove dirty, optical fiber did not enter the groove (as shown in the figure on the left), in this case, take out the optical fiber with the artist's knife along the bottom of the slot V groove back and forth after scraping a few times, and then brush clean V groove with wool brush, finally press the reset key on the line. The other is that the lens fogs up, causing the optical fiber to be unable to be identified effectively (see the image on the right). In this case, wipe the lens with a clean cotton swab. If that still doesn't work, just blow the dryer against the cold air.



## CHAPTER XI LIGHTING AND POWER SUPPLY

Lighting: night lighting is convenient for construction work  
Mobile phone charging: the device can reverse the power supply to the mobile phone



Mobile phone charging diagram



Lighting use diagram