

Pro'sKit®

TE-8202A-W

Fiber Optic Fusion Splicing Machine Kit



User's Manual
1st Edition, 2016

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Please read this Operation Manual carefully before operating the equipment.
Comply with all safety procedures and warnings in this manual.
Keep this manual properly in a safe place.

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The Optical Fiber Fusion Splicer is designed for the optical quartz glass Fiber used in the communications, except which it cannot be used to splice any other substances and for other applications.

Considering the user's personal safety, here we provide the user with a lot of safety cautions, because it is possible to result in electric shock, fire and personal injury if the user improperly uses the Optical Fiber Fusion Splicer.

Please read seriously, by all means, this Operation Manual before operating the equipment.

Comply with all safety requirements and warnings in this manual.

Keep this manual properly in a safe place.

In case of meeting a failure, please stop using the equipment, and contact us as soon as possible

Keep this manual properly in a safe place, so as to refer to it in the future.



WARNINGS AND CAUTIONS FOR SAFE OPERATION

It is necessary to immediately turn off the power switch of the Optical Fiber Fusion Splicer ; pull the AC power cord out of the AC power outlet; and take out the storage battery from the Optical Fiber Fusion Splicer, in case of meeting the following failures:

- Smoke, peculiar smell, abnormal sound or heating abnormalities;
- Liquid or foreign objects into the equipment;
- The Optical Fiber Fusion Splicer has been damaged or broken.

If the user has not timely adopted measures to solve failures of the Optical Fiber Fusion Splicer in case of meeting these failures, it may cause the equipment scrap, electric shock, fire or personal injury or even death.

The AC adapter and battery charger of the Optical Fiber Fusion Splicer can only use an AC power source (100V-240V AC, 50hz-60hz). If the user uses the improper AC power source, it may possibly lead to smoke, electric shock, equipment damage, and even cause the fire or personal injury or death. (Note: Usually, AC generators output abnormal high pressure and irregular frequency, so that it is necessary to measure generator's output voltage value with the ammeter before connecting the AC power cord. Abnormal high pressure or frequency can lead to smoke, electric shock, equipment damage, and can even cause fire or personal injury or death. Make sure the generator's regular check and maintenance.

Please use the specific AC adapter. If you use the inadequate AC adapter, it may possibly lead to smoke, electric shock, equipment damage, and cause the fire or personal injury or even death.

Please use the specific batteries. Only the batteries supplied by the manufacturer are allowed to be used for the equipment. Please use the specific battery charger to charge the batteries. If you use other batteries or battery chargers, it may possibly lead to smoke, electric shock, equipment damage, and cause the fire or personal injury or even death.

Don't make bold to disassembly or modify the Optical Fiber Fusion Splicer, the specific AC adapter, or the batteries, esp., any electronic and mechanical devices (fuses or safety switches) inside the equipment can not be removed or bridged. Any improper maintenance may possibly lead to the damage of the Optical Fiber Fusion Splicer, and even cause electric shock, the fire or personal injury or death

It is prohibited to use the Optical Fiber Fusion Splicer in the flammable liquid or gas environments, where the discharge of the Optical Fiber Fusion Splicer may cause the fire or explosion.
Do not use the compressed or canned air cleaner to clean the Optical Fiber Fusion Splicer. Otherwise the arcing generated by splicing will ignite the residual flammable matter.
Don't use the Optical Fiber Fusion Splicer in the environment of high temperature or nearby the high temperature object, and also in the place where there are too much dusts or higher humidity, otherwise it may possibly lead to equipment damage, cause the fire, get an electric shock, degrade the equipment performance, and cause the worse splicing loss.
Please don't use the wet hand to contact the Optical Fiber Fusion Splicer, the AC power cord and AC power plug, otherwise it may possibly cause the risk of getting an electric shock.
When the surface of the Optical Fiber Fusion Splicer is vapor-condensed, please don't operate the Optical Fiber Fusion Splicer, otherwise it may lead to electric shock or equipment damage.
When the Optical Fiber Fusion Splicer is operating, please don't touch the electrode, otherwise the high pressure and high temperature generated by electrode discharge may cause severe electric shocks and burns (Before changing the electrode, you must firstly turn off the power supply of the Optical Fiber Fusion Splicer, remove the batteries, and pull out the AC power cord.)
Do not let the DC input ports of the Optical Fiber Fusion Splicer be short-circuited. the excessive current may lead to personal injury, smoke, electric shock or equipment damage.
Do not use any chemical substances other than alcohol to clean such devices as the objective lens, the V-shaped groove, reflecting mirror, LCD screen, etc., of the Optical Fiber Fusion Splicer. Otherwise it will cause the imaging to be unclear, with stains, corrosion and damage.
The Optical Fiber Fusion Splicer does not need any lubricant, lubricating oil or grease, which will reduce the performance of the Optical Fiber Fusion Splicer and possibly damage the Optical Fiber Fusion Splicer.
For the Optical Fiber Fusion Splicer having passed through the accurate adjustment and calibration, don't subject it to strong shock or collision, otherwise this may possibly cause damage to the equipment. Please use the provided case to transport and store the Optical Fiber Fusion Splicer, so as to effectively protect it from strong vibration or collision.
Don't let the Optical Fiber Fusion Splicer be positioned at an unstable or uneven place, otherwise it may possibly move and lose its balance and fall over, causing the equipment damage and the personal injury.
For the heat-shrinkable sleeve during heating or just at the end of being heated, please don't touch it, because at this time, the temperature of its surface is very high, if you touch it, this may possibly cause burns to you.
When you need to bring the portable Optical Fiber Fusion Splicer with shoulder-strap carrying case, please check whether the shoulder strap and hook are intact to you or not. If you use a damaged shoulder strap, it may possibly cause the shoulder strap to be ruptured or escape from the hook, resulting in the personal injury or the equipment damage.
The Optical Fiber Fusion Splicer must be maintained and debugged by a professional technician or an engineer. The incorrect maintenance for it may possibly cause the fire and the electric shock. If the Optical Fiber Fusion Splicer fails, please contact a service center.
Please use the storage batteries strictly according to the Operation Manual. The wrong use may

cause the battery explosion and the personal injury.

- Do not use certain methods other than those mentioned in the Operation Manual for battery charging;
- Do not dispose of batteries in fire or incinerator;
- Do not charge and discharge the storage batteries at the place being close to the fire or under the direct sunlight;
- Do not let the batteries be subjected to the severe shock;
- If the battery leaks, you must handle it with caution, and pay attention to preventing the battery leaking liquid from touching your skin or eyes. In case that you have accidentally touched the battery leaking liquid, you must immediately and thoroughly clean the touched parts, and seek medical care immediately. At the same time, please properly handle the leaking battery and notify the maintenance service center for solving the related issues.
- In case of charging the batteries, it is not allowed that the batteries will be stacked up on top of the AC adapter or charger.

Please correctly use the electrodes according to the Operation Manual.

- Use only the specific electrodes;
- Correctly replace the electrodes;
- The electrodes must be replaced in pairs;

If the above instructions are ignored, it may cause the abnormal discharge of the Optical Fiber Fusion Splicer, the splicing performance degradation or even damage to the equipment.

The manufacturer or Seller will not assume the responsibility for the Buyer's or user's personal injury and losses of the articles or equipment caused by that the user ignores the warning and uses or repairs the Optical Fiber Fusion Splicer incorrectly .

Recycling and Disposal

EU countries:

According to the EU's European Parliament's implementation standard:2012/19/EU, in order to use the new resources and make the number of buried waste to be minimized, the reusable and / or recycling electronic components and materials have been identified and recognized. If you are in the EU countries, please do not use this product as unsorted municipal living solid waste to be discarded. Please contact your local relevant agencies.

Other countries:

For recycling this product, please firstly disassemble it, and then classify each part according to different materials, and keep to the relevant local regulations related to the recycling.

1. Specifications:

Model no.	TE-8202A-W
Applicable fiber	SM, MM, NZDS, EDF
Average splice loss	0.02dB(SM), 0.01dB(MM), 0.04dB(NZDS), 0.04dB(ED)
splice time	10s (SM)

Suitable for cutting optical fiber length	10~16mm
Suitable for optical fiber core	Cladding diameter:80-150μm, Coating diameter:100-1000μm
Return lose	≥ 60dB
Fiber image magnification	Simultaneous X and Y views with 300 times magnification
Tension test	2.0N(200gf)(standard)
Splice program	50 groups
Electrode life	5000 times
Protection sleeve length	20mm~60mm
Storage of splice result	6000 groups of splice results
Monitor	5 "high resolution colorful LCD
Communication port	USB (B type)
working lighting	1 LED light
power indication	4 led indication
Operation condition	Temperature: -10~+50℃
	Humidity: 0~95%RH
	altitude: 0~5000m
Power supply	Lithium battery: 12V/5.2A
	adapter: INPUT AC 100~240 50/60Hz; OUTPUT: DC15V/4A
Dimension(W x D x H)	130 x 135x 130mm
weight	2.48Kgs (include battery)
	2.1Kgs(not include battery)



2. Package :

1. Machine x 1pc
2. AC Adaptor x1pc
3. Optical fiber splicing fixture (3-in-1)x1set
4. Battery x1pc
5. Spare Electrodes x 1set
6. Protection sleeve(60mm) x 25pcs
7. Cooling Tray x 1pc
8. Operation Manual x 1pc
9. Carrying Belt x 1pc
10. Carrying Case with Carrying Strap x 1pc
11. Communication soft and operation manual

3. OTHER NECESSARY ACCESSORIES FOR SPLICING OPERATION

- 1) Optical Fiber heat-shrinkable sleeve (20~60mm , not include)
- 2) Alcohol Without Water (Purity: >99%) (not include)
- 3) Tissue, Gauze or Skim Cotton Cloth (not include)

4. DESIGNATION OF COMPONENTS OF OPTICAL FIBER FUSION SPLICER



1. How to Get Small Splicing Loss

1-1. Necessary Regular Cleaning Jobs

- To Clean V-Shaped Groove
- To Clean Reflecting Mirror
- To Clean Optical Fiber Pressure Head
- To Clean Objective Lense.

In case of cleaning Objective Lens , it is unnecessary to remove needle electrodes

1-2. Selection/Usage of Appropriate Splicing Modes

Please select the appropriate splicing modes according to different sorts of the Optical Fibers.

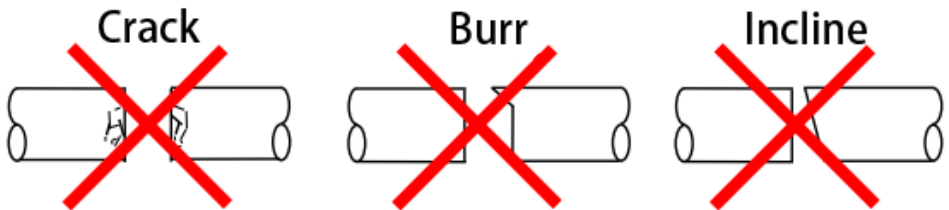
1-3 Equipment Clean-up before Each Fusion Splicing Operation

- To Clean the blades of Optical Fiber Stripper.
- To Clean the rubber pad and blades of the Optical Fiber Cleaver.

1-4. FUSION SPLICING PROCEDURES

- Make sure that the coating residue and other contaminants on the optical fiber will have been removed after stripping the optical fiber.

- Please use the pure alcohol with a concentration of more than 99% .
 - Do not let the well-cut end of the optical Fiber touch any object or be contaminated.
 - Please put the end of the optical Fiber at the place between the edge of the V-shaped groove and the center of electrode.
 - Please put the optical Fiber rightly on the bottom of the V-shaped groove.
- Make sure the correct cut length. If the cut length is too short, the optical Fiber's coating edge may possibly encounter the V-shaped groove, so that two optical fibers can not be, in the discharge process, fully close to each other, resulting in undesirable loss of fusion splicing.
- Do not tight the optical fibers, otherwise, two optical fibers can not be, in the discharge process, fully close to each other, resulting in undesirable loss of fusion splicing.
 - Please check the cutting angle and shape of the optical fiber's end face. The optical Fiber's cutting angle will affect the fusion-splicing quality, and a large cutting angle will increase the loss of fusion splicing.



- It is possible to observe the discharge from the display screen. If the discharge "vibration" or "flickering light" are being observed, the discharge may be unstable at this time and will result in adverse loss.
- In case of heating, the Optical Fiber heat-shrinkable sleeve shall be placed in the centre of the heater, so as to avoid uneven heating and lead to additional losses.

2. Power Supply

Please only use the AC Adaptor provided by the manufacturer.

Please only use the Storage Battery and Battery Charger provided by the manufacturer.

2-1. Avoidance of Damage to AC Adapter

- The AC generators may possibly produce abnormal output of AC high voltage or irregular frequency.
- The abnormal high voltage and frequency output from the generator may possibly lead to smoke, electric shocks and damage to the equipment, and even cause the fire, the personal injury or death. So, before connecting the AC power supply, you must use a multimeter to measure the generator output voltage.

2-2. Storage Battery

- Even if the storage battery is not used, its capacity will also gradually go down along with the time goes, and if it is fully discharged, it would never be able to charge into the electricity. So, if it will be stored for a long time or it has been used, please charge it in time.

- if it is necessary to store a pack of storage battery for a long time, and no matter how much electricity quantity it has been charged before , you should charge it every six months.
- For operating/charging/longtime storing the storage battery, please refer to the conditions as below:
Operating: -10 °C ~ +50 °C
Charging: 0 °C ~ +40 °C
Longtime Storing: +20 °C ~ +30 °C-

MAIN POINTS OF FUSION SPLICING PROCEDURES

1. POWER CONNECTION

OPTICAL FIBER FUSION SPLICER provide two power-supply modes: ① Storage Battery; ② AC Adapter. Please make sure that OPTICAL FIBER FUSION SPLICER shall be turned off .in case of operating it.

1-1. Insertion of the Storage Battery.

Insert the storage battery into the battery slot until it is properly in place.

1-2. Removal of the Storage Battery

Using one hand to press and hold the release button and also support the edge of OPTICAL FIBER FUSION SPLICER, and the other hand to push the storage battery out.

1-3. Connection of the AC Adapter

Put the plug into socket on the back of device.

1-4. Disconnection of the AC Adapter

Pull out the plug.

2. TURNING ON POWER OF OPTICAL FIBER FUSION SPLICER


Press power button  to switch ON/OFF device.

3. LAYING OPTICAL FIBER

- 1) To open the wind-protector cover and the optical Fiber clamp cover;
- 2) To get the ready optical Fiber to be placed in the V-shaped groove, and make the end of optical fiber be placed at the position between the edge of the V-shaped groove and the electrode tip;
- 3) To use fingers to nip the optical Fiber, then to close the optical Fiber clamp cover so as to ensure that the optical Fiber will not move, and make sure that the optical Fiber will be placed at the bottom of the V-shaped groove. If the optical Fiber is placed incorrectly, please place the optical Fiber over again;
- 4) To place another optical Fiber according to the above step;
- 5) To close the windproof cover.

4. SPLICING OPERATION

4-1.Optional Operation Modes: AUTO/FULL-AUTO/MANUAL

AUTO: press the  button, it will automatically core to core alignment and fusion splicing.
 Full-auto: automatically operation after closed the windproof cover
 MANUAL: For the Manual operation, please refer to the details on P15.

4-2.Optional Types of Optical Fibers: Single Mode (SM) / Multi Mode (MM) /Non-Zero Dispersion-Shifted (NZDS) / Erbium-Doped (ED) Optical Fiber

4-3.Pause Functions: Open/Close


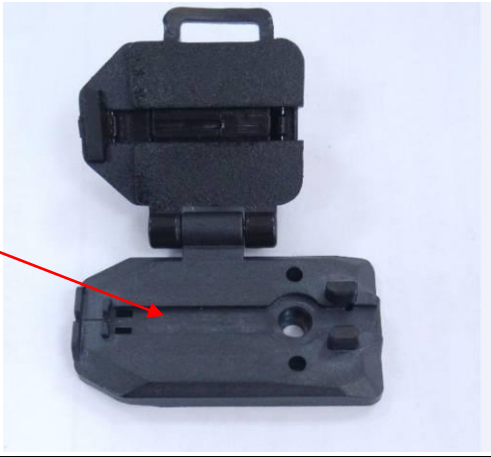
Open: After the completion of the core-to-core, press the AUTO key to perform the fusion splicing.
 Close: After the completion of the core-to-core, automatically perform the fusion splicing.

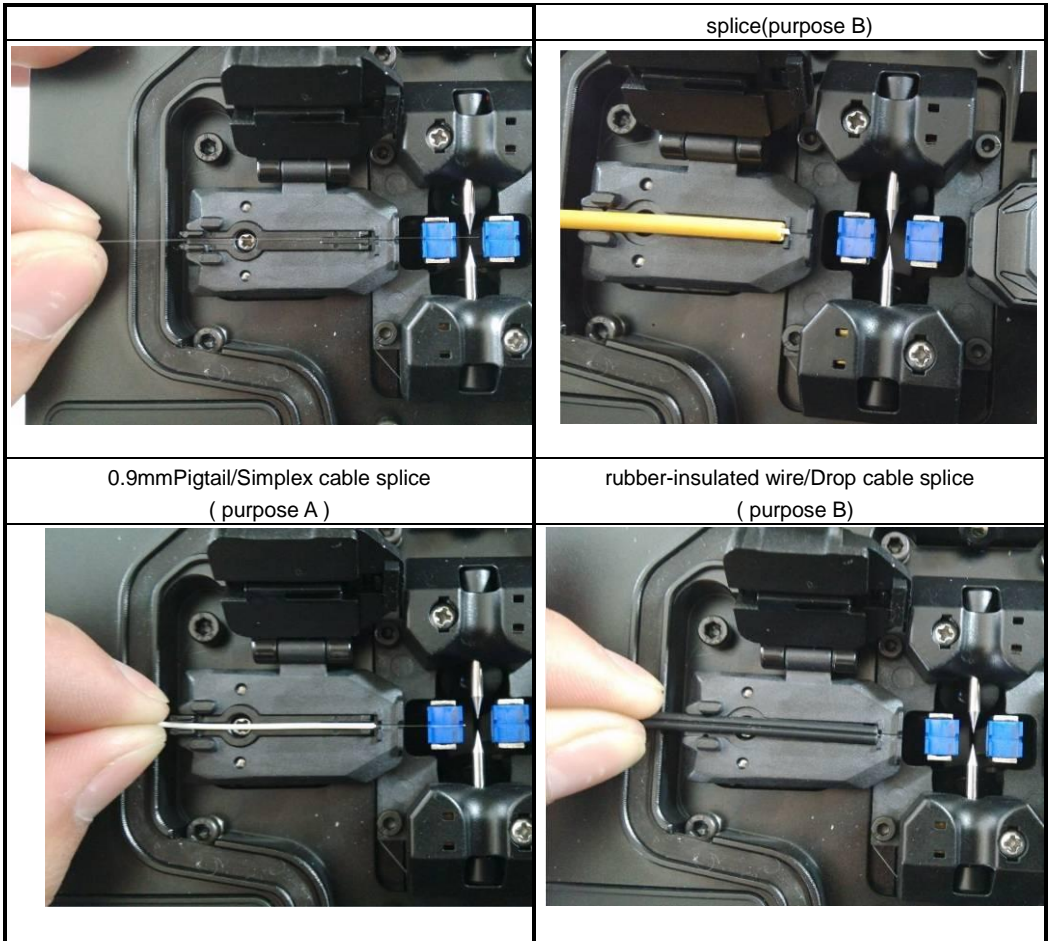
5. TAKING OUT OPTICAL FIBER AND HEAT IT UP

- 1) Open the heater lid;
- 2) Open the windproof cover;
- 3) Open the optical Fiber clamp covers at the left and right;
- 4) Take out the optical fiber and move Optical Fiber heat-shrinkable sleeve to the splicing point;
- 5) Place the Optical Fiber heat-shrinkable sleeve in the centre of the heater and cover the heater lid;
- 6) Press the HEAT key to heat, the heat indicator will also light up;
- 7) When the heat indicator goes out and a hint sound appears, the heating is completed;
- 8) Turn on the heater lid, and take out the optical Fiber to check and see if the optical Fiber contains air bubbles or not;
- 9) After completing the checks, place the optical Fiber in the Cooling Salver to cool it.

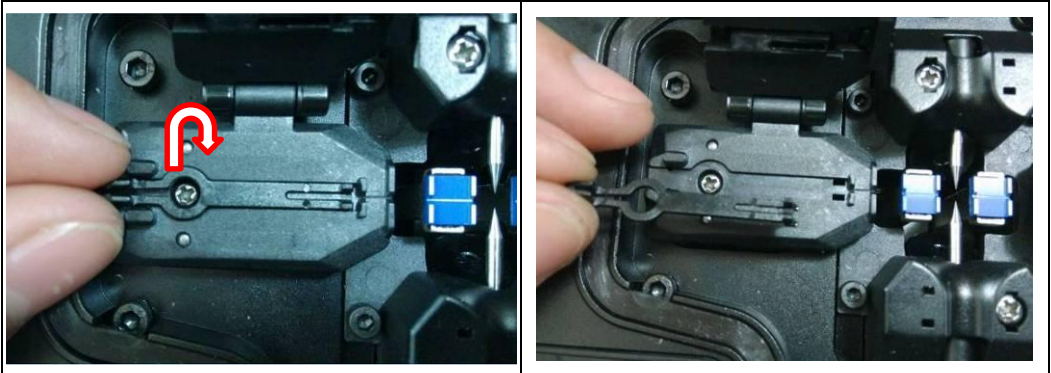
6.How to use fixture

The fixture has purpose A and purpose B to achieve variety of optical cable optimum allocation, details as follows:

Purpose A (Assemble "removable guiding groove")	Purpose B (Remove "removable guiding groove")
	
Bare fiber splice(purpose A)	[2mm/3mm]Pigtail/simplex optic cable



2. Steps of Assembling and removing "removable guiding groove": Holding the tail of "removable guiding groove", lift it up and forward, and take out. As below pictures:



MAINTENANCE OF FUSION SPLICING QUALITY

1. CLEANING AND CHECKING BEFORE FUSION SPLICING

The following describes the maintenance checks for the key cleaning points and the important parts.

1-1. Cleaning the V-Shaped Groove

If there are dusts or contaminations in the V-shaped groove, the optical Fiber Pressure Head can not suppress the Optical Fiber correctly, resulting in that the loss of fusion splicing is larger. So, in regular operation, it is necessary to check more often and clean regularly the V-shaped groove.

- To open the windproof cover.
- To clean the bottom of the V-shaped groove with a cotton swab just having had a dip in alcohol (above 99% alcohol), and remove the excess alcohol in the V-shaped groove with a dry cotton swab.
- If contaminations in the V-shaped groove can not be removed with a cotton swab just having had a dip in alcohol, you can use the well-cut end face of the optical Fiber to clean the bottom of the V-shaped groove, and then repeat the previous step.
- In case of cleaning the V-shaped groove, be careful and don't exert an excessive force, so as to avoid damage to the V-shaped groove.
- Be careful and don't touch the tip of the needle electrode.

1-2. Cleaning Up the Optical Fiber Pressure Head

If there are contaminations on the Optical Fiber Pressure Head, the optical Fiber Pressure Head can not suppress the Optical Fiber normally, resulting in degrading the quality of fusion splicing.

- To open the windproof cover.
- To clean the surface of the Optical Fiber Pressure Head with a cotton swab just having had a dip in alcohol (above 99% alcohol), and remove the excess alcohol on the surface of the Optical Fiber Pressure Head with a dry cotton swab.

1-3. Cleaning the Windproof Cover and Reflecting Mirror

If there are contaminations on the surface of the Reflecting Mirror, the definition of the light pathways will drop, to cause the position of the optical Fiber's core to be inaccurate, and to lead to the increase of the loss of fusion splicing.

- To clean the Windproof Cover and Reflecting Mirror with a cotton swab just having had a dip in alcohol (above 99% alcohol), and remove the excess alcohol on the surfaces of the Windproof Cover and Reflecting Mirror with a dry cotton swab.
- There should be no Stripes and stains on the surfaces of the Windproof Cover and Reflecting Mirror.

1-4. Cleaning the Optical Fiber Cleaver

If there are contaminations on the blades of the Optical Fiber Cleaver. or the rubber pad, the cleaving quality will be degraded, and lead to dusts on the surface of the optical Fiber, resulting in the increase of the loss of the fusion splicing. It is necessary to clean the blades of the Optical Fiber Cleaver. or the rubber pad with a cotton swab just having had a dip in alcohol (above 99% alcohol)

1-5. Discharge Tests

Atmospheric environment, such as: temperature, humidity, air pressure, is constantly changing, so that the discharge temperature is also changing. Due to the electrode wear, it is unable to automatically correct the discharge strength caused by the bonding of the optical Fiber debris. The center of the discharge sometimes will move to the left or to the right. At this time, it is necessary to make the discharge tests to solve these problems.

It is also necessary to do discharge tests in case of using the Optical Fiber Fusion Splicer under the following conditions: such as ultra-high temperature, ultra-low temperature, very dry, very wet, electrode degradation, fusion splicing of the heterogeneous optical Fibers, cleanness, after replacing the electrode, or in the case that above conditions exist simultaneously.

2 . REGULAR CHECKING AND CLEANING

In order to ensure the better splicing quality, it is suggested to check and clean the Optical Fiber Fusion Splicer regularly.

2-1. Cleaning the Objective Lens

If there are contaminations on the surface of the Objective Lens, the normal location of the observed optical Fiber core may be affected, resulting in the increase of the fusion splicing loss or poor fusing splicing, so, it is necessary to regularly clean two objective lenses, otherwise, the cumulative contaminations are difficult to remove.

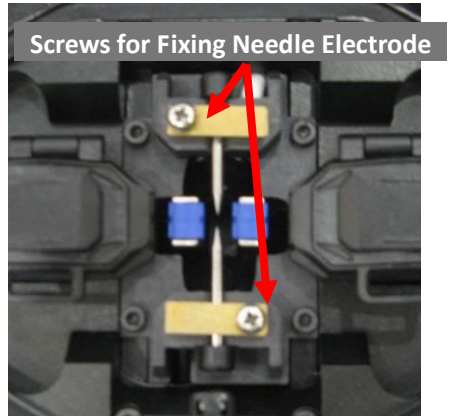
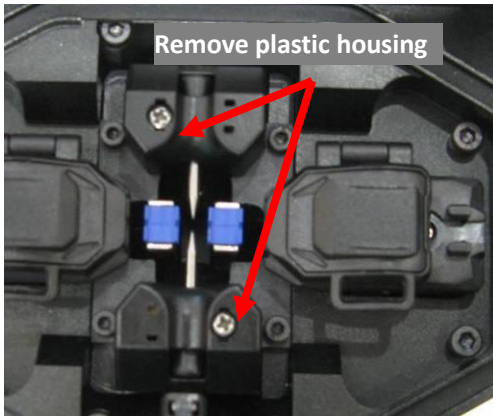
- Before cleaning, please firstly turn off the power supply.
- Using a cotton swab just having had a dip in alcohol (above 99% alcohol), to gently wipe the surface of the objective lens, starting the wipe from the middle of the lens to do a circular movement until the edge of the lens, and repeating several times until there are no contaminations or stains or stripes. Finally, use a clean and dry cotton swab to wipe out the residual alcohol on the surface of the objective lens.
- Be careful and don't touch the electrode tip in case of cleaning.
- It is recommended to clean the lens in case of replacing the needle electrode.

2-2.Replacing the Electrode

The electrode will wear in use, and the electrode tip will be aggregated with silicon oxide, so, to regularly clean the oxide can effectively extend the life of the needle electrode. It is recommended to replace the electrode after Optical Fiber Fusion Splicer has discharged 3000 times. If you continue to use the electrode, it may most probably lead to have a very large fusion-splicing loss and reduce the strength of the fusion-splicing points.


Steps of replacement of the needle electrode:

- To turn off the power supply of the Optical Fiber Fusion Splicer.
- To screw out fixing screws, and remove the old needle electrode suffered from electric shock.
- To use a tissue just having had a dip in alcohol to clean the new needle electrode, and then install correctly the needle electrode on the Optical Fiber Fusion Splicer and tighten the fixing screws.
- To turn on the power, and put the prepared fiber into the Optical Fiber Fusion Splicer to do the discharge tests.



MENU

1. How to Enter and Select the Menu

Once the system is "ready", press  to enter the menu, and press the keys "◀", "▶" to select Menu 1 to Menu 5.

Menu 1 for "System Settings"

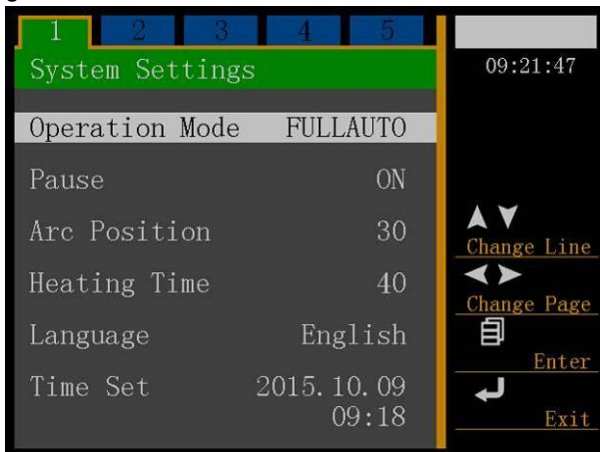
Menu 2 for "Fusion Splicing Mode"


Menu 3 for "Fusion Splicing Record"


Menu 4 for "Maintenance Menu 1"

Menu 5 for "Maintenance Menu 2"




2. "System Settings" Menu





Press the keys "▲", "▼" to move the cursor; press the key  to enter the program that you want to get into; press again the keys "▲""▼" to modify the parameter values (via moving the cursor

in the small pane) ; and press the key  to confirm, so that the modification has completed.


2-1. "Operation Mode" Menu

Press the key  to enter the "Operation Mode" Menu; press the keys "▲", "▼" to move the cursor, so as to select one of the two operation modes, "AUTO" mode or "MANUAL" mode. After completing the selection, press  to confirm and save it. After completing the modification, press  to exit.

- "AUTO" Operation Mode

After the normal optical fibers have been cleaned and cleaved off, press , then the program for fusion splicing will automatically execute the optical fiber core-to-core fusion splicing. In case of normal fusion-splicing operation, generally select the  operation mode.


- "Full-Auto" Operation Mode


Automatically operation execute optical fiber core-to-core fusion splicing after closed the windproof cover, no need to press  button.

- "MANUAL" Operation Mode

In case of the "MANUAL" Operation Mode, each step of the optical fiber core-to-core, the discharge and the fusion splicing is controlled by the operator via the keypad.

Keypad Functions in the "MANUAL" Operation Mode are as below:

 as a "Select" key: It is able to select the operation modes of such four motors as the Left, Right, X, and Y motors.



 as a "Shift" key: It is able to move the cursor up or down, so as to select the operation commands.

as an "Optical Fiber Forward" key: It is able to get the Optical Fiber to advance.

"◀" and "▶" separately as the "Forward" key and "Back" key of the left and right motors: Being able to separately control the left and right motors to go forward or to back off".




"▲" and "▼" separately as the "Upward" key and "Downward" key for tuning the cores of the X and Y motors: Being able to separately control the X and Y motors to go upward or downward.

2-2. "Pause" Function

Press  to enter "Pause" function menu, press "▲" or "▼" to select the pause function to be "on" or "off". After completing the selection, press  to confirm and save it.

In normal fusion-splicing operation, generally the "Pause" function is "off".




2-3. "Arc Position" Function

Press  to enter the "Gap Position" function menu, press "▲" "▼" to modify the parameter values. After completing the modification, press  to confirm and save it. Then, press  to exit.

"Gap Position" means the central position between two optical fibers and the electrode, after tuning the optical fiber core and before the fusion splicing. Range is taken as 00-60. For the normal discharge position, the gap position value is 30. In doing discharge tests, if the discharge position shift occurs, and the discharge tests have resulted in that the ball on the left is big, the gap position value has to be less than 30. If the discharge tests have resulted in that the ball on the right is big, the gap




position value has to be greater than 30.

2-4. "Heating Time" Function




Press  to enter the "Heating Time" function menu, and press "▲" "▼" to modify parameter values. After completing the modification, press  to confirm and save it. Then, press  to exit.

Range: 20-90 Default: 40

2-5. "Language" Function

Press  to enter the "Language" function menu, and press "▲" "▼" to select language that need. After completing the modification, press  to confirm and save it. Then, press  to exit.

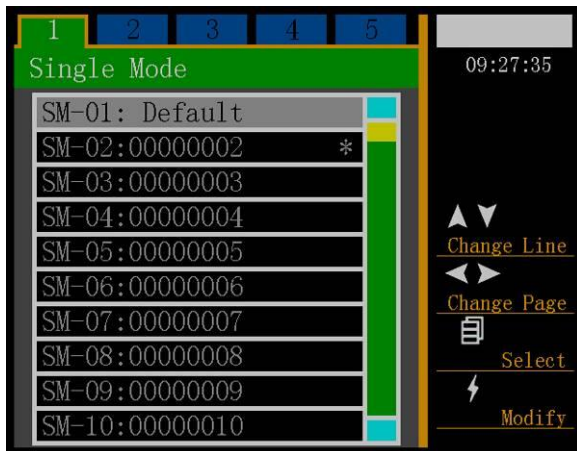
2-6. "Time Set" Function

Press  to enter the "Time Set" function menu, press "▲" "▼" to select "year, month, day, hour, minute", and press "◀", "▶" to modify the parameters. After completing the modification, press  to confirm and save it. Then, press  to exit.

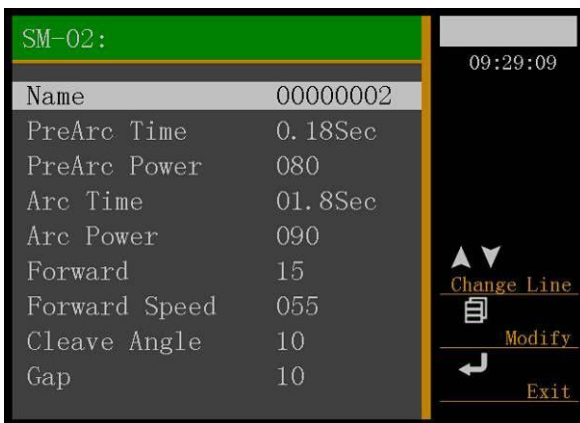
3. "Parameter Set" Menu



Press "▲" "▼" to move the cursor, and press  to enter the "Fusion Splicing Mode" program that you want to get into.



Press “▲” “▼” over again to select the program number that you want to execute and modify; press to select the program (If it is marked with the sign “*”, it is the current executive program.) that you desire to use. If you need to modify the parameters in the program, press to enter the program so as to modify the definite parameter values. (The default is set in the factory and unable to be modified.)




Press “▲” “▼” to move the cursor; press to enter the menu which needs to be modified; press “▲” “▼” to modify the parameters; Press over again to confirm and save it. After completing the modification, press to exit.

Items of Function	Description of Functions	Range
PreArc Time	Pre-Discharge Time	0-1.0
PreArc Power	Pre-Discharge Strength	0-200
Arc Time	Fusion-Splicing Discharge Time	0-10.0
ARC Power	Fusion-Splicing Discharge Strength	0-200
Forward	The QTY that the motor goes forward in case of	0-60

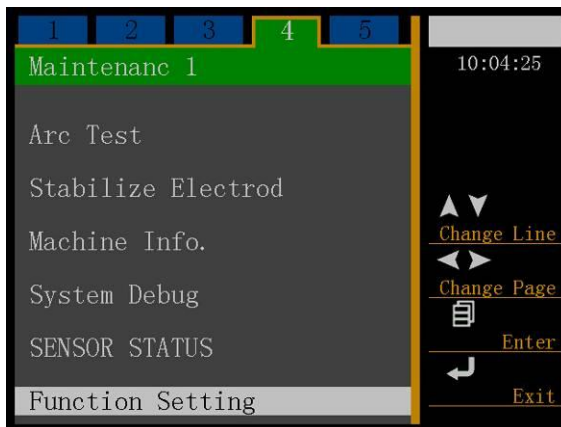
	fusion-splicing	
Forward Speed	The speed that the motor goes forward in case of fusion-splicing	0-60
Cleave Angle	The angle of the end-face of the cleaved optical fiber	0-15
Gap	The gap between the left and right optical fibers after completing the core-to-core	0-50


4. "Record Menu" Menu





Press  to enter "View Record" Menu, and press "◀", "▶" to select and view the Fusion-Splicing Records.
Under this menu, it is possible to view the Fusion-Splicing Records for operating 6000-times.

5. "Maintenance Menu 1" Menu




Press "▲" "▼" to move the cursor, press  to enter the program that you desire to get into, press "▲" "▼" over again to modify the parameter values(via moving the cursor in the small pane);

and press the key  to confirm, so that the modification has completed. Then, press  to quit.

5-1. “Arc Test” Function

In order to ensure the stable fusion-splicing quality, the user should regularly operate. It is necessary to do discharge tests in case of using the Optical Fiber Fusion Splicer under the following conditions: such as ultra-high temperature, ultra-low temperature, very dry, very wet, electrode degradation, fusion splicing of the heterogeneous optical fibers, cleanness, or after replacing the electrode.

The discharge tests need to use two optical fibers being ready to be fusion-spliced, and according to the general method of fusion splicing, these optical fibers should be stripped, cleaved off, and placed. Press  to enter discharge tests program.

- After the discharge, a numeric value will be displayed on the screen. If the value is within the range of 20-40, it means that the discharge strength is normal. If the value is less than 20, it means that the discharge strength is weak, and it is necessary to increase the discharge strength corresponding to the executive program. If the value is greater than 40, it means that the discharge strength is too strong, and it is necessary to reduce the discharge strength corresponding to the executive program.
- After the discharge, if the Optical Fibers at both sides are different in the fusion degrees, it is necessary to increase the “Gap Position” value in the “System Setting” Menu in case that the fusion degree of the optical fiber at the right is high; and it is necessary to reduce the “Gap Position” value in the “System Setting” Menu in case that the fusion degree of the optical fiber at the left is high.

5-2. “Stabilize Electrode” Function

When a sudden change occurs in the external environment, the discharge strength may sometimes be unstable, resulting in larger fusion-splicing loss, especially, when the optical fiber fusion splicer moves from a low-altitude area to a high-altitude area, it is necessary to take a certain time to stabilize the discharge strength. In this case, the stable electrodes can accelerate the process of discharge strength’s stability, but it is necessary to do discharge trials many times so as to stabilize the electrode.

5-3. Machine Info

Upon entering the menu, it is able to see the factory serial number, software version number, firmware version number and the total discharge times of the optical fiber fusion splicer.

5-4. System Debug

Enter the menu, the equipment will automatically detects the state of work, display the state parameters, only for maintenance use

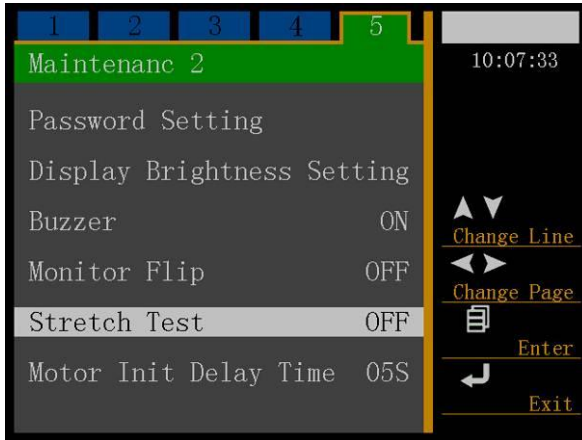
5-5. Sensor status

Enter the menu, display the state parameters of the sensors built in. only for maintenance use

5-6. Aligning Switch

Core to core aligning mode selection, the state ON/OFF refer to different performs arithmetic, only for maintenance use.

6. "Maintenance Menu 2" Menu



6-1. "Password Setting" Function




Press to enter the "password setting" function menu, and press "▲" "▼" to select the character. After completing the modification, press to confirm and save it. Press to exit the menu.






6-2. "Display Brightness Setting" Function

Press to enter the "Display-Brightness Adjustment" function menu, and press "▲" "▼" to adjust the display brightness. The adjustment range is within 0-3. After completing the modification, press to confirm and save it. Press to exit the menu.

6-3. "Buzzer" Function




Press  to enter the "Key Sound" function menu, and press "▲" "▼" to select to close or open the Key Sound. After completing the modification, press  to confirm and save it. Press  to exit the menu.

6-4. "Monitor Flip" Function

Press  to enter "Image Flip" function menu, and press "▲" "▼" to select to close or open the image flip. After completing the modification, press  to confirm and save it. Press  to exit the menu.

Front-view image on the display screen or the displayed image having been flipped 180 degrees..

6-5. "Stretch Test" Function

Press  to enter the "Stretch Test" function menu, and press "▲" "▼" to select to close or open the Stretch Test . After completing the modification, press  to confirm and save it. Press  to exit the menu.

QUESTIONS AND TROUBLE SHOOTING

1. TURNING ON POWER OF OPTICAL FIBER FUSION SPLICER AND POWER SUPPLY

- Turn on the power switch, but the power supply does not respond.

Reason:

- a. Power outlet is not plugged in.
- b. The contact of the power switch is bad.
- c. The storage battery is not properly inserted in.

Solution: Check to see if the power plug or the storage battery is plugged/inserted in well or not, and is connected to the optical Fiber fusion splicer well or not. Then, check to see if the power switch is good or not.

- In case of turning on the optical Fiber fusion splicer, it has no reaction. (The screen does not brighten.)

Reason:

- a. The power supply fuse disconnects.
- b. There is the short-circuit or the failure occurs inside the optical Fiber fusion splicer .
- c. The electricity capacity of the storage battery is not large enough or the polarity is connected in reverse direction.
- d. The AC adapter is bad, the voltage output is not correct.
- e. The display screen is bad.

Solution:

Check to see if the power supply fuse disconnects or not, and to see if there is the short-circuit or other failure occurs inside the optical Fiber fusion splicer. Replace the power supply fuse on the main board. If there is the short-circuit or other failure inside the optical Fiber fusion splicer, please contact your dealer to repair/maintain it or send it back to the factory for repair/maintenance.

Check to see if the electricity capacity of the storage battery is large enough or not. If it is not large enough, it is necessary to discharge the storage battery. Check to see if the battery polarity is connected in correct direction or not. If it is connected in reverse direction, it is necessary to correct it.

Check to see if the voltage output of the AC adaptor is normal or not. (The output voltage should be 12V.).If it is not normal, it is necessary to replace the former AC adaptor by a new one. Please contact your dealer to replace the former AC adaptor by the special AC adapter.

The brightness of the display screen has been well adjusted at the factory, if the display screen can not properly show, it indicates that the display screen is faulty, please contact your dealer to repair/maintain it or send it back to the factory for repair/maintenance.

- After turning on the optical Fiber fusion splicer, it always shows "system reset" and the equipment is at all times in the "Reset" status.

Reason:

- a. The photoelectric switch of the optical Fiber fusion splicer is faulty.
- b. The motor or the motor drive is faulty.

Solution: please contact your dealer to repair/maintain it or send it back to the factory for repair/maintenance.

2. FUSION SPLICING OPERATIONS

- After having placed the optical Fiber, there appears a very dark image or a dim image on the half of the display screen.

Reason:

- a. The windproof cover is not correctly put in its position
- b. The reflecting mirror in the windproof cover is positioned with a deviation angle.
- c. The corresponding light does not shine.
- d. The corresponding CCD signal control lines fall off or the CCD is faulty.

Solution: Check to see if the windproof cover is covered or not, with or without foreign body sticking the windproof cover. Adjust the angle of the reflecting mirror to the right position. Check to see if the corresponding light does shine or does not. If it does not shine, please contact your dealer to repair/maintain it or send it back to the factory for repair/maintenance.

- Press the "AUTO" key, but the optical Fiber stops moving; press the "RESET" key, and it is able to normally reset the system, but the optical fiber still does not move.

Reason:

- a. The optical fiber is broken off.
- b. The press board of the optical fiber did not pin the optical Fiber.

Solution: Produce the optical fiber again. Lay the optical fiber again. Shut the press board, and gently pull the optical fiber back by hand. If the optical Fiber can be easily pulled to move, it indicates the press board did not pin the optical fiber. Check to see if the compaction bar of the optical fiber is able to bounce or not. If the compaction bar is not able to bounce, it needs to be repaired.

- Press the "AUTO" key, and the optical Fiber moves forward to a certain position, and then moves forward again, and finally there will be shown " Lay Optical Fiber Again" .

Reason:

- a. The length of the cleaved optical Fiber is unable to meet the requirements.
- b. There is an obstacle for the press board of the optical fiber to move forward.

Solution: The length of the cleaved optical Fiber should be about 16mm. If it does not meet the

requirements, it is necessary to produce the optical Fiber again. In the advancing direction of the press board of the optical Fiber, gently push by hand the press board of the optical Fiber, and to check to see if it has an obstacle or not. If it has an obstacle, it is necessary to find its location, and handle it.

- Press the "AUTO" key, and in the course of the core-to-core of the optical Fibers, the image of the optical Fiber at one side is moving up and down in the vertical direction, and the end-faces of the optical Fiber at two sides are not core-to-core, so that it is unable to do the fusion splicing.

Reason:

- a. There is the dust on the precision V-shaped groove, so that the position of the optical Fiber at one side is somewhat higher, the data of which is greater than the max. position value of the optical Fiber at the other side moving up and down.

- b. There are the dust and dark spots on the objective lens' surface, the lights, the reflecting mirrors, and the CCD has dust or dark spots.

Solution: Clean the bottom of the V-shaped groove with a cotton swab just having had a dip in alcohol (above 99% alcohol), and remove the excess alcohol in the V-shaped groove with a dry cotton swab. If contaminations in the V-shaped groove can not be removed with a cotton swab just having had a dip in alcohol, you can use the well-cut end-face of the optical Fiber to clean the bottom of the V-shaped groove, and then repeat the previous step. Also, clean the objective lens' surface, the lights, and the reflecting mirrors with a cotton swab just having had a dip in alcohol (above 99% alcohol), and remove the excess alcohol on the objective lens' surface, the lights, the reflecting mirrors with a dry cotton swab. If it is still impossible to solve these issues, please contact your dealer to repair/maintain it or send it back to the factory for repair/maintenance.

- There often occurs that the fusion splicing is done despite of optical Fibers being not core-to-core, so that after completing the fusion splicing, there will be shown a large loss or a failure in the fusion splicing.

Reason:

- a. An optical Fiber is dirty, and its end-face is bad.

- b. There are the dust and the dark spots on the objective lens' surface, the lights, the reflecting mirrors.

Solution: Produce the qualified optical Fiber again. Clean in the same way, the objective lens' surface, the lights, and the reflecting mirrors with a cotton swab just having had a dip in alcohol (above 99% alcohol), and remove the excess alcohol on the objective lens' surface, the lights, the reflecting mirrors with a dry cotton swab. If it is still impossible to solve these issues, please contact your dealer to repair/maintain it or send it back to the factory for repair/maintenance.

- There always occurs that the end-face of the optical Fiber at one side is not good.

Reason:

- a. In the Menu, the value of "End-Face Setup" is somewhat small.

- b. There are the dust and dark spots on the objective lens' surface, the lights, and the reflecting mirrors' lens.

- c. The corresponding light does not shine.

- d. There is the dust in the V-shaped groove, or the optical Fiber had not properly been laid into the V-shaped groove.

Solution: Enter the Menu, and increase the value of "End-Face Setup ". Clean in the same way, the V-shaped groove, the objective lens' surface, the lights, and the reflecting mirrors with a cotton swab just having had a dip in alcohol (above 99% alcohol), and remove the excess alcohol on the V-shaped groove, the objective lens' surface, the lights, and the reflecting mirrors with a dry cotton swab. Check to see if the corresponding lights are normal or not, and to see if the optical Fiber had properly been laid into the V-shaped Groove or not. If it is still impossible to solve these issues, please contact your dealer to repair/maintain it or send it back to the factory for repair/maintenance.

- The electrode does not discharge in the course of the fusion splicing.

Reason:

- a. The program without the set parameters had been selected or in the program the discharge strength is set to 0.
- b. The high-voltage power supply is damaged or the electrode connecting cable falls off.

Solution: Check to see if the selected program is correct or not, or to see if the set discharge strength in the program are proper or not. If it is still impossible to discharge normally, please contact your dealer to repair/maintain it or send it back to the factory for repair/maintenance.

- The fusion splicing phenomenon is normal, but the loss of the fusion splicing has been somewhat large at all times or there occurs the failure in the fusion splicing.

Reason:

- a. There occurs the failure in the detection system or there is the dust on the objective lens and the reflecting mirrors' lens.
- b. In the parameters, the value of "End-Face Setup" of the optical Fiber is larger.
- c. After the operations of the electrode discharge and the fusion splicing, the windproof cover is opened before the equipment has completed its detection.

Solution: Clean in the same way, the objective lens' surface, the lights, and the reflecting mirrors with a cotton swab just having had a dip in alcohol (above 99% alcohol), and remove the excess alcohol on the objective lens' surface, the lights, the reflecting mirrors with a dry cotton swab. Check to see if the value of "End-Face Setup" of the optical Fiber is larger in the parameters or not. Then operate the electrode discharge tests again, until the discharge current is moderate. If it is still impossible to solve these issues, please contact your dealer to repair/maintain it or send it back to the factory for repair/maintenance.

- Press the "AUTO" key, and the gap setting and the core-to-core adjustment are normal, but it fails in completing the fusion splicing, resulting in always two balls.

Reason:

- a. The fusion-splicing current is too large, and the environmental humidity is too high.
- b. The advancing amount is somewhat small or is 0; the advancing speed value is somewhat large.
- c. The optical Fiber's press board did not pin the optical Fiber.
- d. The quality of the optical Fiber itself is poor, being disengaged from its cladding.

Solution: Change the fusion-splicing environment to a dry one, to see if there is that issue. Confirm that for the fusion-spliced optical Fiber, there is no phenomenon that it is disengaged from its cladding. Enter the "Applications Program" menu; check the parameter setting and set the correct parameters;

and then do the electrode discharge tests again, until the discharge current is moderate. If it is still impossible to solve these issues, please contact your dealer to repair/maintain it or send it back to the factory for repair/maintenance.

- The multi-mode optical Fiber is blistered, becoming thicker or thinner after its fusion splicing.

Reason:

- a. The end-face of the optical Fiber is unqualified or the surface of the optical Fiber is dirty.
- b. There is an issue about the parameter setting in the program.

Solution: Ensure that the end-face of the optical Fiber is good, do the electrode discharge tests until the discharge current is moderate. If the optical Fiber is still becoming thicker or is blistered, it is necessary to increase the values of the “Pre-Fusion Current” and “Pre-Fusion Time” in the program. In reverse, if the optical Fiber is still becoming thinner or is blistered, it is necessary to decrease the values of the “Pre-Fusion Current” and “Pre-Fusion Time” in the program, and increase the quantity of the “Fusion-Splicing Boost”. If it is still impossible to solve these issues, please contact your dealer to repair/maintain it or send it back to the factory for repair/maintenance.

- The fusion splicing loss index has been somewhat large at all times.

Reason:

- a. There is the dust on the optical fiber, and in the V-shaped groove of the Fusion Splicer.
- b. The discharge current is not moderate.
- c. Do the optical Fiber fusion splicing without having made the optical Fibers being core-to-core.
- d. The electrode aging.
- e. The parameters set in the program are not proper.
- f. The end-face of the optical Fiber is not good, and there is an issue about the optical Fiber cleaver.
- g. The operating environment is rather poor, such as: the gale or wet, etc.
- h. The optical Fiber is more special.

Solution: First of all, it is required that the test method should be correct, then do all kinds of cleaning (for the V-shaped groove, the objective lens, the lights, the reflecting mirror, and the needle electrodes); select the appropriate procedures to do the discharge tests; adjust the optical fiber cleaver to ensure that the end-face of the optical Fiber is well-cleaved . If the fusion splicing loss index is still somewhat large, you may do the parameter setting many times so as to find the better parameters for the fusion splicing, by way of increasing or decreasing the values of the “Pre-Fusion Time, Pre-Fusion Strength, Pre-Fusion Boost Quantity, and Pre-Fusion Boost Speed”, or you may reset the parameters to be the default parameters set at the factory. If it is still impossible to solve these issues, please contact your dealer to repair/maintain it or send it back to the factory for repair/maintenance.

- It is sparking on the electrodes or the electrode is sparking to the metals nearby it.

Reasons:

- a. The electrode connecting cable is loose.
- b. The operating environment is humid.

Solution: Check to see if the electrode connecting cable is loose or not. Change the operating environment to be the dry one, to see if there is the said phenomenon or there is not . If it is still

impossible to solve these issues, please contact your dealer to repair/maintain it or send it back to the factory for repair/maintenance.

3. HEATING OPERATION

- The optical Fiber heat-shrinkable sleeve has not completely shrunked.

Reason:

a. The set heating time is too short.

b. As the outside temperature is too low so that the heating has not been fully and completely done.

Solution: Adjust the program to extend the heating time.

- The optical Fiber heat-shrinkable sleeve adheres in the heating tank.

Reason: Some optical Fiber heat-shrinkable sleeve may cause adhesions.

Solution: Take out the optical Fiber heat-shrinkable sleeve after it is completely cooled. Or use a cotton swab to lightly poke at its edges to break it away from the heating tank.

- The heating indicator light does not shine, but the normal heating can be done.

Reason:

a. The heater is faulty.

b. The heating indicator light is bad.

Solution: Please contact your dealer to repair/maintain it or send it back to the factory for repair/maintenance.

- The heating indicator light shines, but the heater does not heat. Or the heating indicator light does not shine; also the heater cannot heat.

Reason: The heater is faulty, or the heating control circuit is faulty.

Solution: Please contact your dealer to repair/maintain it or send it back to the factory for repair/maintenance.

GUARANTEE

1. GUARANTEE

1-1. Warranty Period and Conditions

If it occurs a failure in the optical fiber fusion splicer within one year starting from the date of goods delivery, we will provide a free repair/maintenance. However, we will not provide a free repair/maintenance within the Warranty Period, if it occurs the following events:

- (1) Failure or damage caused by natural disasters;
- (2) Failure or damage caused by the wrong operation;
- (3) Failure or damage caused by ignoring the operation instructions and procedures in this manual to make bold to operate;
- (4) The parts are easy to wear off or to be consumable. (For example, needle electrodes);
- (5) Failure or damage caused by the abnormal voltage power supply.

1-2. Before delivering the Optical Fiber Fusion Splicer, please contact its manufacturer's agent in advance.

1-3. Information required for repair/maintenance

Along with the Optical Fiber Fusion Splicer, please attach the following information:

(1) Your full name, industry, company, department, address, telephone number, fax number and e-mail box.

(2) The model and the serial number of the Optical Fiber Fusion Splicer.

(3) Problems about the Optical Fiber Fusion Splicer you have met:

When did the Optical Fiber Fusion Splicer have the problem? Which problem has happened? How about the present situation? and so on.

1-4. Transportation of the Optical Fiber Fusion Splicer.

As the Optical Fiber Fusion Splicer is a high precision instrument, you should by all means use the original carrying case to transport and store it, so as to protect it against the moisture and shock. If you need repair/maintain the Optical Fiber Fusion Splicer, please put the related fitting accessories in the carrying case before sending it.

1-5. Information recorded before the repair/maintenance

Please record in advance the stored info contents in the Optical Fiber Fusion Splicer, such as the fusion splicing results, fusion splicing modes, etc., because these information and data may be lost in case of the repair/maintenance.

2. CONTACT

Please contact the distributor nearest to your location or the following organization if the user needs supports or services.

Note: If the program has been updated and the structure been changed, resulting in errors and the unconformity to the manual, please take the actual product as the reference standard.

DESIGN AND CHANGE

In order to improve the product performance, product hardware and software technology upgrades will change without noted advance.

Pro'sKit®

TE-8202A

光纖熔接機操作手冊



操作前請仔細閱讀本手冊
請遵守本手冊中的所有安全規程和警告
請妥善保管本手冊

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本光纖熔接機是為通信用石英玻璃光纖設計的，除此外不能熔接其他任何物質和其他用途。

本公司考慮到使用者的人身安全，我們提供了很多的安全注意事項，如果使用不當可能會導致電擊、火災和人身傷害。

請在使用前一定要認真的閱讀本操作手冊

遵守本手冊中的所有安全要求和警告

遇到故障時停止使用，儘快聯繫我們

妥善保存本手冊，以便將來參考



警告與注意事項

當熔接機遇有下列故障時，應立即關閉熔接機的電源開關將交流線電源線從電源插座上拔下、將電池從熔接機取出。

- 冒煙、異味、異響或加熱異常；
- 液體或異物進入機器內；
- 熔接機損壞或摔壞；

如果遇到了這些故障未及時地對熔接機採取措施，可能會造成機器報廢、電擊、火災或人身傷害甚至死亡。

熔接機的交流適配器、電池充電器只能使用 100-240V 50-60Hz 的交流電源，如果使用不適當的交流電源可能會導致冒煙、電擊、機器損壞，甚至會造成火災或人身傷害或死亡。（注：交流發電機一般不正常的輸出高壓和不規則的頻率，連接交流電源線前要用電錶測量發電機的輸出電壓值。不正常的高壓或頻率會導致機器損壞、電擊、燃燒冒煙、甚至會造成火災或人身傷害或死亡。確保發電機定期檢查和維護。）

請使用專用的交流適配器。如果使用不適當的交流適配器可能會導致機器損壞、電擊、燃燒冒煙、火災或人身傷害甚至死亡。

請使用專用的電池，只有廠家提供的電池才是被允許使用的。使用專用的充電器為電池充電。使用其他的電池或電池充電器可能會導致機器損壞、電擊、燃燒冒煙、火災或人身傷害甚至死亡。

不要擅自拆卸或改動熔接機、交流適配器或電池，特別是不能拆除或橋接機器內部的任何電子和機械裝置（保險絲或安全開關）。任何錯誤的維修都可能導致熔接機的損壞，甚至造成電擊、火災或人身傷害或死亡。

禁止在易燃液體或氣體的環境下使用熔接機，在這種環境下熔接機的放電會導致火災或爆炸。

不要用壓縮或罐裝的氣體清潔劑清潔熔接機，否則熔接時產生的電弧會引燃殘留的可燃物。

不要在高溫的環境下或在高溫的物體旁使用熔接機，也不要灰塵過多或濕度較大的地方使用熔接機，否則可能會導致機器損壞、起火、觸電、熔接機的性能降低，造成較差的熔接損耗。

手濕的時候不要接觸熔接機、交流電源線和交流電源插頭，否則可能會造成觸電的危險。

當熔接機表面有水汽凝結時，不要操作熔接機，否則會導致電擊或機器損壞。

當熔接機工作時請不要觸摸電極，否則電極放電時所產生的高壓和高溫會造成嚴重的電擊和灼傷（更換電極前一定要先關閉熔接機電源，卸下電池、拔掉交流電源線）。

不要短路熔接機的 DC 輸入埠，過大的電流會導致燃燒冒煙、電擊、機器損壞或人身傷害。

不要用酒精以外的任何化學物質去清潔熔接機的物鏡鏡頭、V 型槽、反射鏡、LCD 螢幕等器件，否則會造成成像不清，污點，腐蝕和損壞。

熔接機不需要任何潤滑劑，潤滑油或油脂，會降低熔接機的性能並可能損壞熔接機。

熔接機經過了精確的調整和校準，不要使其受到強烈的震動或衝撞，否則可能會造成機器的損壞，請使用提供的攜帶箱來運輸和儲存熔接機，可有效的避免熔接機受到強烈的震動或衝撞。

不要將熔接機不穩定或不平衡的地方，否則熔接機可能會移動並失去平衡而摔落，導致機器的損壞和人身的傷害。

不要在加熱過程中或在加熱剛剛結束時接觸熱縮套管，此時的熱縮套管的表面溫度很高，接觸它可能會造成燙傷。

當需要使用肩帶來攜帶熔接機攜帶箱時，請檢查肩帶和掛鉤是否完好，如果使用損壞的肩帶可能會造成背帶斷裂或脫鉤從而導致人身傷害或設備的損壞。

熔接機必須由專業的技術人員或工程師進行維修與調試，不正確的維修可能會引起火災和電擊。如果熔接機出現故障，請與本公司銷售及經銷商聯繫。

請嚴格按照操作手冊使用蓄電池，錯誤的使用方法可能會造成電池爆炸和人身傷害。

- 不要用說明書所述以外的方法為蓄電池充電；

- 不要將蓄電池丟入焚化爐或火中；
- 不要在接近火源或陽光直射的地方為蓄電池充、放電；
- 不要讓蓄電池受到劇烈的震動；
- 如果電池漏液，一定要小心處理，並注意不要讓電池的漏液接觸到皮膚或眼睛。萬一不小心接觸到，必須馬上徹底清洗接觸部位，並立即就醫。同時妥善處理電池並通知維修中心聯繫相關事宜。
- 充電時不能將電池疊放在交流適配器或充電器的上面。

根據使用說明，正確使用電極。

- 只能使用專用電極；
- 正確的更換電極；
- 必須成對的更換；

忽視以上的說明會引起熔接機異常放電，熔接性能的降低，甚至損壞熔接機。

對於忽視警告不正確使用或修理而造成的人身、物品或設備的損失不負任何責任。

回收與處理

歐盟國家：

根據歐盟議會執行標準 2012/19/EU，為了令新資源的使用和廢物掩埋的數量能夠達到最小化，對於可再利用和/或回收的電子元器件與材料已進行了鑒明確認。如您在歐盟國家中，請不要將本產品當作未分類的城市生活垃圾丟棄。請聯繫您所在當地有關機構

其他國家：為回收本產品，請先將它拆卸，按照不同的材料對每一部分進行分類，遵循當地的有關回收處理的相關規定。

產品介紹

1. 規格表

介面語言	簡體中文
適用光纖	SM (單模), MM (多模), NZDS(非零色散), EDF(摻鉍光纖)
平均損耗	0.02dB(SM) · 0.01dB(MM), 0.04dB(NZDS), 0.04dB(EDF)
熔接時間	10 秒 (SM 光纖)
適合切割光纖長度	10~16mm
適合光纖線芯	包層直徑:80-150µm,塗層直徑:100-1000µm
回波損耗	≥ 60dB
放大倍數	300 倍獨立顯示(X 軸或 Y 軸), 180 倍雙顯(X 軸和 Y 軸)
張力測試	200gf (標準)
焊接程式	50 組可定義程式
電極壽命	5000 次
熱縮套管	20mm~60mm
資料存儲	6000 組
顯示器	5" 高解析度 LCD 彩色顯示器
通訊介面	USB (B 型)
施工照明	1 LED 照明
電量指示	4 段 LED 電量指示
工作環境	溫度: -10~+50°C, 濕度: 0~95%RH(不結露),海拔: 0~5000m
工作電源	鋰電池: 12V/5.2AH 交流適配器:輸入 100~240v 50/60Hz; 輸出 15V/4A
重量	2.48kgs (含電池); 2.1kgs(不含電池)
尺寸(長 x 寬 x 高)	130 x 135 x130 mm

2. 標準配置

1. 主機 x1 台
2. 三合一光纖熔接夾具 x1 付
3. 備用電極 x1 付
4. 熱縮套管(60mm) x 25 根
5. 電池 x1 塊
6. 交流適配器 x1 只
7. 冷卻託盤 x1 個
8. 說明書 x1 份
9. 提帶 x1 條
10. ABS 攜帶箱及背帶 x1 個

11. 光碟（附通訊程式,驅動及使用說明）

3、其他熔接操作必需品

- 1) 光纖熱縮管（20~60mm; 另購）.
- 2) 無水酒精(純度>99%, 另購).
- 3) 薄紙巾, 紗布或脫脂棉布. (另購)

4、熔接機部件名稱





熔接步驟要點

1、怎樣得到小的熔接損耗

1-1、必要的日常清潔工作

- 清潔 V 型槽
 - 清潔反光鏡
 - 清潔光纖壓頭
 - 清潔物鏡
- 清潔物鏡時不需要拆除電極針

1-2、選擇/使用合適的熔接模式

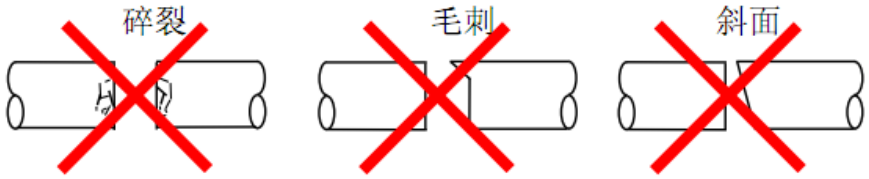
請根據不同的光纖種類選擇正確的熔接模式。

1-3、每次熔接前的設備清理

- 清潔開剝刀刀片
- 清潔切割刀橡膠墊、刀片

1-4、熔接步驟

- 請確保開剝後的光纖上塗覆層殘渣和其他汙物已被清除
- 請使用濃度為 99%以上的純酒精
- 不要讓已切割好的光纖末端觸碰到任何物體或受到污染
- 將光纖末端放置於 V 型槽邊緣與電極中心之間
- 將光纖正確放在 V 型槽的底部
- 確保正確的切割長度，如果切割長度過短則光纖的塗覆層邊緣可能會碰到 V 型槽，這樣在放電過程中兩根光纖就不能充分相互靠近從而導致不良的熔接損耗
- 不要緊繃光纖，否則在放電過程中兩根光纖就不能充分相互靠近從而導致不良的熔接損耗
- 檢查光纖端面切割角度和形狀。光纖切割角度會影響熔接品質，大的切割角度將會增大熔接損耗



- 可以從顯示幕上面觀察放電情況。如果觀察到放電“顫動”或“亮度忽明忽暗”，此時放電可能不穩定，將導致損耗不良
- 加熱時將熱縮管置於加熱器中部，避免受熱不均導致額外損耗

2、供電

請僅使用廠商提供的交流適配器

請僅使用廠商提供的蓄電池及電池充電器

2-1、避免交流適配器損壞

- 交流發電機可能會產生不正常的輸出交流高壓或不規則的頻率
- 發電機輸出的這種不正常的高壓和頻率可能會導致燃燒、電擊和設備損壞，甚至會造成火災、人身傷害或死亡。所以在連接交流電源之前要先用萬用表測量發電機的輸出電壓值

2-2、電池

- 即使不去使用電池，電池的容量也會隨著時間的推移而逐漸變小，而且如果電池被完全放電，那麼它將再也不能充進電了。所以，如果長期儲存電池或使用電池後，請及時為電池充電
- 如需長期儲存一塊電池，無論此電池之前已充進多少電，應每六個月對它進行充電
- 請參照以下條件來操作/充電/長時間儲存電池
 - 操作：-10°C ~ 50°C
 - 充電：0°C ~ 40°C
 - 長時間儲存：-20°C ~ 30°C

基本操作

1、電源連接

熔接機提供兩種供電方式：1.電池；2.交流適配器。

1-1 插入電池

將電池插入到電池插槽內直到它正確到位。

1-2 取出電池

一手按住釋放按鈕並扶持住熔接機邊緣，一手將電池推出。


1-3 連接適配器

將電源適配器插頭對準主機後端電源插口，確保有效插入。

1-4 斷開適配器

關機後，將電源適配器插頭拔出便可。

2、開機

安裝好電池，確保電池電力充沛，或接插好外部電源後，按下麵板開機按鈕，開啟機器。

3、放置光纖

3-1 打開防風罩和光纖夾蓋具；

3-2 依據使用的光纖類型選擇夾具方式；夾具使用請見—6.光纖夾具使用

3-3 把准备好的光纖放置在v型槽內，並使光纖末端處於v型槽邊緣和電極尖端之間；

3-4 用手指捏住光纖，然後合上光纖夾具蓋以保證光纖不會移動，並確保光纖放置在v型槽的底部。如果光纖放置不正確，請重新放置光纖；

3-5 按照上面的步驟放置另一根光纖；

3-6 關閉防風罩。

4、熔接操作

4-1、可選工作模式：自動，手動，全自動。

手動：操作依據螢幕右側功能表提示操作，手動完成對芯及熔接作業。

自動：關閉上防風罩，按下放電鍵開始對纖，完成後按下放電鍵開始熔接。

全自動：關閉上防風罩開始對纖芯並進行熔接。

4-2 可選擇光纖類型：單模（SM）/多模（MM）/非零色散位移（NZDS）/摻餌（ED）

4-3 暫停功能：開啟/關閉

开启：在自動及全自動模式下,對芯完成後會先暫停,須手動按放電鍵 \blacktriangleleft 才進行熔接。

关闭：不影響自動及手動模式下的作業方式。

5、取出光纖並加熱

5-1 打开加熱器上的加熱蓋；

5-2 打开防風罩；

5-3 打开左右兩側光纖夾蓋具；

5-4 將光纖取出並將熱縮管移至熔接點處,注意熔接點須位於套管中央；

5-5 將熱縮套管放置於加熱器中央,並蓋上加熱蓋；

5-6 按加熱鍵 \blacktriangleleft 進行加熱,加熱指示燈會同時亮起；

5-7 當加熱指示燈熄滅後加熱完成；

5-8 當打开加熱蓋,取出光纖檢查是否有氣泡；

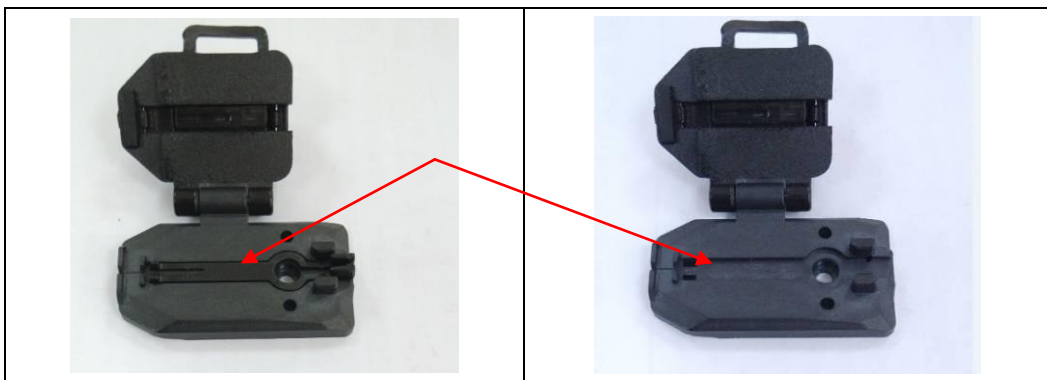
5-9 完成檢查後將光纖放置於散熱盤中待其冷卻。

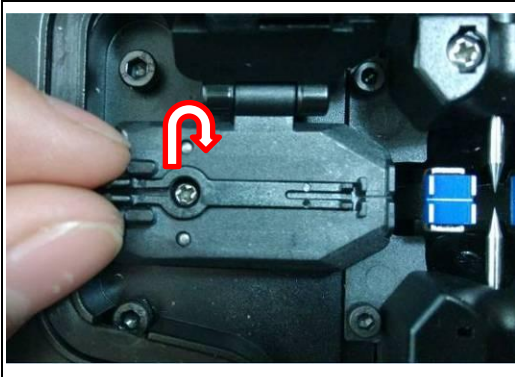
6、光纖夾具的使用

3合1夾具設計,適合跳線,皮線,裸線光纖使用,夾具由可拆卸導向槽及本體構成,導向槽如圖示意.不裝配到向槽時可使用於跳線及皮線類光纖,裝配上導向槽時可用於裸線類光纖.

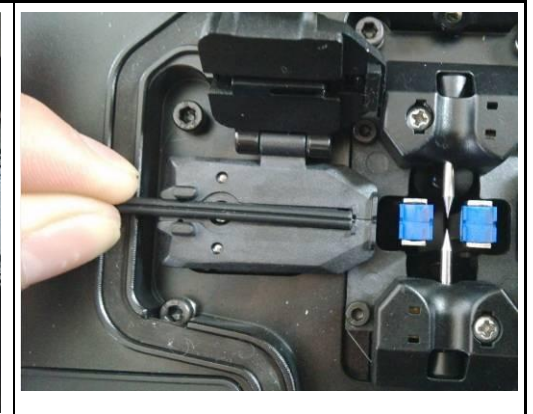
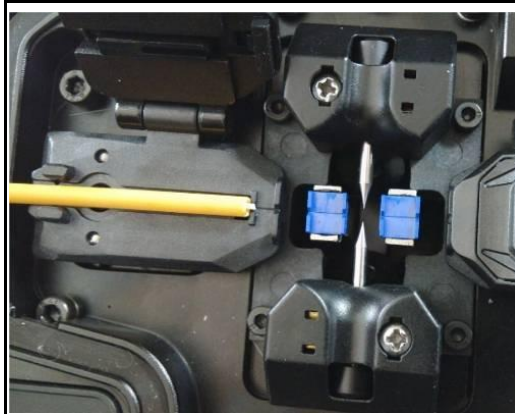
6-1 跳線或皮線光纖使用:

切割跳線或皮線時,取出導向槽使用,如圖示.





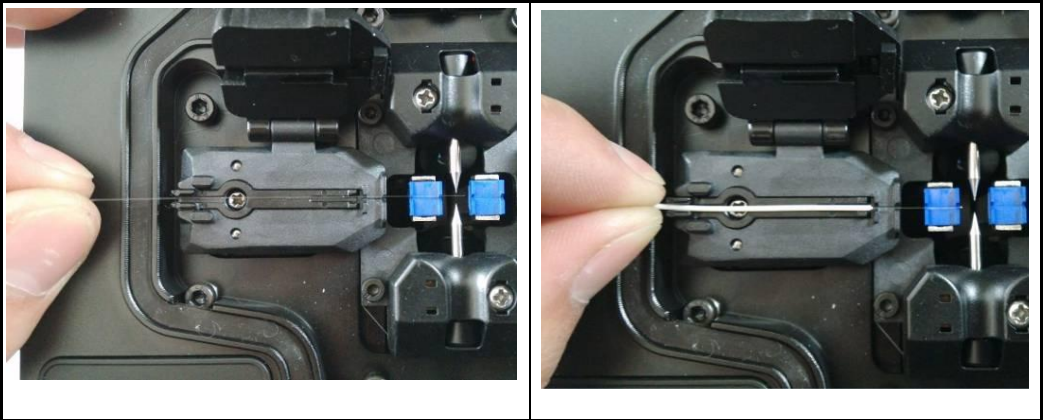
將切割好的光纖放入夾具內，定位好後蓋下壓板。



6-2 裸線光纖使用:

將導向槽定位卡榫放入夾具預留的槽位孔，注意用力適當，不可折斷卡榫。裝配後便可使用。

將切割好的光纖放入夾具，定位好後蓋下壓板



熔接品質維護

1、熔接前的清潔和檢查

以下描述的是關鍵的清潔點和重要部位的保養檢查

1-1、 清潔 V 型槽

如果 V 型槽中有灰塵或污染物，光纖壓頭就不能正確的壓住光纖，從而導致熔接損耗偏大，所以在平時的操作過程中應經常檢查和定期清潔 V 型槽。

- 打開防風蓋
- 用一根蘸有酒精（99%以上的酒精）的棉簽清潔 V 型槽的底部，並用幹棉簽清除 V 型槽內的多餘酒精。
- 如果 V 型槽內的臟物不能用蘸有酒精的棉簽清除，可用切割好的光纖端面去清理 V 型槽的底部，然後重複上一步驟。
- 清潔 V 型槽時小心不要用力過度，以免損壞 V 型槽。
- 小心不要碰到電極針尖

1-2、 清理光纖壓頭

如果光纖壓頭上有臟物，壓頭就不能正常壓住光纖，從而降低熔接品質。

- 打開防風蓋
- 用一根蘸有酒精（99%以上的酒精）的棉簽清潔壓頭的表面，並用幹棉簽清除壓頭表面的多餘酒精。

1-3、 清潔防風罩反光鏡

如果反光鏡表面有贓物，光通路清晰度下降，造成光纖纖芯的位置不準確，導致熔接損耗的增大。

- 用一根蘸有酒精（99%以上的酒精）的棉簽清潔防風罩反光鏡，並用幹棉簽清除多餘酒精。
- 防風罩反光鏡表面沒有條紋和汗跡。

1-4、清潔光纖切割刀

切割刀的刀片或是墊子有髒，切割品質會下降，導致光纖表面有灰塵，熔接損耗的增大。用一根蘸有酒精（99%以上的酒精）的棉簽清潔切割刀的刀片和橡膠壓墊。

1-5、放電測試

大氣環境如：溫度、濕度、氣壓，是在不斷變化的，使放電溫度也在變化。由於電極的磨損，光纖的碎屑粘接而造成的放電強度的是無法自動修正的。放電的中心位置有時會向左或向右移動。此時因該進行放電測試來解決這些問題。

在以下條件下使用熔接機時，也應該進行放電測試如：超高溫、超低溫、極乾燥、極潮濕、電極劣化、異類光纖接續、清潔、更換電極後，或上述條件同時存在的情況下。

2· 定期的檢查和清潔

為了保證較好的熔接品質，建議對熔接機做定期的檢查和清潔。

2-1、清潔物鏡鏡頭

如果物鏡鏡頭表面有贓物，正常的觀測到的光纖纖芯位置可能會被影響，導致熔接損耗的增大或不良的熔接，所以定期清潔二個物鏡鏡頭，否則贓物累積而難以清除。

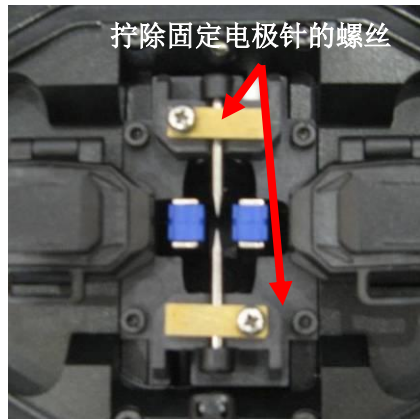
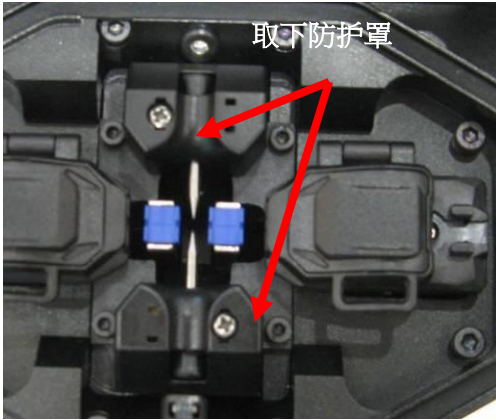
- 在清潔之前，首先關閉電源。
- 用蘸有酒精（99%以上的酒精）的棉簽輕輕擦拭物鏡鏡頭的表面，從鏡頭的中間開始做圓形運動開始擦，一直到鏡頭的邊緣，反復幾次，直到沒有贓物或汗跡、條紋。最後用一根乾淨的幹棉簽擦去表面殘留的酒精。
- 清潔的時候小心不要碰到電極的針尖。
- 建議在更換電極針的時清潔物鏡鏡頭。

2-2、更換電極

電極在使用中會磨損，電極針尖上還會有矽氧化物的聚集，要定期清潔氧化物可有效的延長電極針的使用壽命。建議在熔接機放電 3000 次後更換電極。如果繼續使用，很可能導致非常大的熔接損耗並降低熔接點的強度。

更換電極針的步驟：


- 關閉熔接機電源
- 打開防風罩，取下電極防護罩，擰除固定螺釘，拆下舊的電極針



- 用蘸有酒精的棉紙清潔新電極針，然後把電極針正確的安裝到熔接機上並擰緊固定螺絲。
- 打開電源，將製備好的光纖放入熔接機做放電測試

菜單

1、功能表的進入與選擇

在系統“準備就緒”下按“”進入功能表，按“◀”，“▶”選擇 1-5 號功能表




- 1 號“系統設置”功能表
- 2 號“熔接模式”功能表
- 3 號“熔接記錄”功能表
- 4 號“維護功能表 1”功能表
- 5 號“維護功能表 2”功能表

2、“系統設置”功能表




按“▲”“▼”移動游標，按“”進入你想進入的程式，再按“▲”“▼”修改參數值（移動小方框內的游標），按“”確認，修改完成。

2-1、“工作方式”功能表

按“”進入“工作方式”功能表，按“▲”“▼”移動游標有兩種工作方式可選擇“手動，自動或全自動”。選擇完成按“”確認保存。修改完成按“”退出。

● 自動工作方式

在常規的光纖經清潔和切斷後，把準備好的光纖放置在 v 型槽，按“”熔接程式自動對芯熔接。在正常的熔接操作時，一般選擇自動的工作方式。


● 全自動工作方式


在常規的光纖經清潔和切斷後，把準備好的光纖放置在 v 型槽，關閉上防風罩即開始對纖芯並進行熔接


● 手動工作方式

在手動工作方式下，光纖的對芯、放電、熔接的每一個步驟都由操作員利用鍵盤控制。

在手動工作方式下按鍵的功能

“”為選擇鍵：可選左、右、X、Y 四個電機的操作

“”為切換鍵，可上下移動游標，選擇操作命令。

“”為光纖推進鍵，可推進光纖。

“◀”和“▶”為左、右電機的推進、後退鍵，可控制左、右電機的推進、後退。




“▲”和“▼”為X、Y電機調芯的上行、下行鍵，可控制X、Y電機的上行、下行。

2-2、“暫停”功能

按“”進入“暫停”功能功能表，按“▲”“▼”可選擇暫停功能“開啟或關閉”。選擇完成按“”確認保存。




在正常的熔接操作時，一般暫停功能“關閉”。

2-3、“間隙位置”功能

按“”進入“間隙位置”功能功能表，按“▲”“▼”修改參數值。修改完成按“”確認保存。修改完成按“”退出。




“間隙位置”是指光纖調芯完熔接前，兩根光纖與電極之間的中心位置。取值範圍：**00-60** 在放電位置正常時，間隙位置取值為：**30**。在做放電測試時，放電位置發生偏移時，如果放電測試結果是左邊的球大，間隙位置取值為：小於**30**。如果放電測試結果是右邊的球大，間隙位置取值為：大於**30**。

2-4、“加熱時間”功能




按“”進入“加熱時間”功能功能表，按“▲”“▼”修改參數值。修改完成按“”確認保存。修改完成按“”退出。

取值範圍：**20-90** 預設值為：**40**

2-5、“語言”功能

按“”進入“語言”功能功能表，按“▲”“▼”可選擇功能“中文或英文或其他語言（若有）”。選擇完成按“”確認保存。按“”退出菜單。

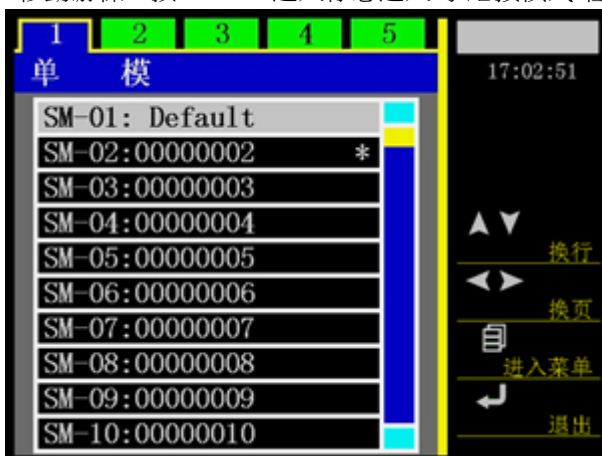
2-6、“時間設置”功能



按“”進入“時間設置”功能功能表，按“▲”“▼”可選擇“年、月、日、時、分”，按“◀”，“▶”對參數修改。修改完成按“”確認保存。修改完成按“”退出。

3、“熔接模式”功能表



按“▲”“▼”移動游標，按“”進入你想進入的“熔接模式”程式，



再按“▲”“▼”選擇你所需要執行或修改的程式號，按“”選擇你希望使用的程式（帶“*”號為目前執行程式）。若要修改程式參數，按“”進入該程式修改具體參數值（default 為出廠設置無法被修改）。




按“▲”“▼”移動游標，按“☰”進入需修改的菜單，按“▲”“▼”修改參數，再按“☰”確認保存。修改完成按“↵”退出。

功能項	功能說明	取值範圍
預熔時間	預放電時間	0-1.0
預熔強度	預放電強度	0-200
熔接時間	熔接放電時間	0-10.0
熔接強度	熔接放電強度	0-200
推進量	熔接時電機向前推進的量	0-60
推進速度	熔接時電機向前推進的速度	0-60
端面角度	光纖切割端面的角度	0-15
對心間隙	左右光纖對芯完成時之間間隙	0-50




4、“熔接記錄”功能表



按“”進入“熔接記錄”功能表，按“◀”，“▶”選擇查看熔接記錄。
在此功能表下可以看到 **6000** 次的熔接記錄

5、“維護功能表 1”功能表




按“▲” “▼” 移動游標，按“”進入你想進入的程式，再按“▲” “▼” 修改參數值（移動小方框內的游標），按“”確認，修改完成。按“”退出

5-1、“放電測試”功能

為確保穩定的熔接品質，使用者應定期操作。在以下條件下使用熔接機時，應進行放電試驗：超高溫、超低溫、極乾燥、極潮濕環境、電極惡化、異類光纖接續、清潔或更換電極後。

放電試驗需要使用 2 根準備接續的光纖，按照一般熔接的方法對光纖剝纖、切斷、

和放置。按“”進入放電測試程式。

- 放電後，螢幕上顯示一個數值，如果數值在 20-30 之間，說明放電強度正常。如果數值小於 20 說明放電強度弱，要增大相應執行程式的放電強度。如果數值大於 30 說明放電強度過強，要減小相應執行程式的放電強度。
- 放電後，如果兩側光纖融化程度不同，右側融化程度高則增大“系統設置”功能表中“間隙位置”的值，左側融化程度高則減小。

5-2、“穩定電極”功能

當外界環境突然發生變化時，放電強度有時會變的不穩定，從而導致熔接損耗變大，特別是熔接機從低海拔地區移至高海拔地區時，需要一定的時間來穩定放電強度，在這種情況下，穩定電極可以加快放電強度穩定的過程，需要做多次的放電試驗來穩定電極。

5-3、維護資訊

進入該功能表可看到本機的出廠序列號、軟體版本號、固件版本號和本機的總放電次數。

5-4、系統調試

進入該功能表設備自動檢測工作狀態，顯示狀態參數，僅供維修維護使用。




5-5、感測器狀態

進入該功能表顯示本機內置的各部分感測器工作狀態，僅供維修維護使用。

6、“維護功能表 2”功能表






6-1、“密碼設置”功能




按“”進入“密碼設定”功能功能表，按“▲”“▼”可選擇字元。修改完成按“”確認保存。按“”退出菜單。






6-2、“顯示器亮度調節”功能

按“”進入“顯示器亮度調節”功能功能表，按“▲”“▼”可調整顯示器的亮度。調整範圍 0-3。修改完成按“”確認保存。按“”退出菜單。




6-3.“按鍵聲音”功能

按“”進入“按鍵聲音”功能功能表，按“▲” “▼”可選擇按鍵聲音的關閉或開啟。修改完成按“”確認保存。按“”退出菜單。

6-4.“圖像翻轉”功能

按“”進入“圖像翻轉”功能功能表，按“▲” “▼”可選擇圖像翻轉的關閉或開啟。修改完成按“”確認保存。按“”退出菜單。
在顯示幕上正視圖像或翻轉 180 度顯示圖像。

6-5.“張力測試”功能

按“”進入“張力測試”功能功能表，按“▲” “▼”可選擇張力測試功能的關閉或開啟。修改完成按“”確認保存。按“”退出菜單。

簡易維修與故障排除

1、開機與供電

- 打開電源開關，電源沒有反應

原因：a 電源插座沒有插好

b 電源開關接觸不良

c 電池沒有正確插好

解決方法：檢查電源插頭或電池是否插好，以熔接機連接是否正確，後查看電源開關是否良好。

- 開啟熔接機，機器無任何反應（螢幕沒有亮光）

原因：a 電源保險絲斷開

b 機器內部發生短路或故障

c 電池電量不足或極性接反

d 交流適配器壞，電壓輸出不對

e 顯示幕壞

解決方法：檢查電源保險絲是否斷開，機器內部有無短路或其他故障。主板電源保險絲更換，機器內部短路或其他故障，請與經銷商聯繫維修或返廠維修。

檢查電池電量不足需要充電，檢查電池極性是否接反，若有則改之。

檢查交流適配器電壓輸出是否正常（輸出電壓為 12V），若不正常則需更換交流適配器。請與經銷商聯繫更換專用的交流適配器。

顯示幕的亮度出廠時已調好，若不能正常的顯示，說明顯示幕有故障，請與經銷商聯繫維修或返廠維修。

● 開機後中，總是顯示“系統重定”機器一直處於復位中

原因：a 熔接機光電開關有故障

b 電機或電機驅動有故障

解決方法：請與經銷商聯繫維修或返廠維修。

2、熔接操作

● 放置光纖後，顯示幕有半邊圖像很暗或不亮

原因：a 防風罩沒有放到位

b 防風罩內反光鏡位置角度偏移

c 對應的燈不亮

d 對應的攝像頭信號控制線脫落或攝像頭有故障

解決方法：檢查防風罩是否蓋好，有無異物卡住防風罩。調整反光鏡的角度到正確的位置。檢查對應的燈是否不亮，若不亮請與經銷商聯繫維修或返廠維修。

● 按“AUTO”鍵光纖停止不動，按“RESET”鍵系統能正常重定，但光纖仍不動

原因：a 光纖斷纖

b 光纖壓板沒有壓住光纖

解決方法：重新製作光纖。重放光纖，合上光纖壓板，用手向後輕拉光纖，能輕易拉動，說明光纖壓板沒有壓住光纖。檢查光纖壓條能否彈起，不能彈起的需要維修。

● 按“AUTO”鍵光纖向前運動一定位置後，又向前運動，最後顯示“重放光纖”

原因：a 光纖切割長度達不到要求

b 光纖壓板向前推進有障礙

解決方法：光纖切割長度約為 10~16mm，達不到要求的重新製作。在光纖壓板推進方向，用手輕推光纖壓板，檢查有無障礙，確定其位置，處理之。

● 按“AUTO”鍵，光纖在調芯過程中，一邊光纖圖像在垂直方向上下移動，兩端光纖端面對不齊。不能熔接。

原因：a 精密 V 型槽上有灰塵，導致一邊的光纖位置偏高，大於另一邊的光纖上下遠動的最大值。

b 物鏡表面、燈、反光鏡、CCD 上有灰塵或暗斑。

解決方法：用一根蘸有酒精（99%以上的酒精）的棉簽清潔 V 型槽的底部，並用

幹棉簽清除 V 型槽內的多餘酒精。如果 V 型槽內的臟物不能用蘸有酒精的棉簽清除，可用切割好的光纖端面去清理 V 型槽的底部，然後重複上一步驟。用一根蘸有酒精（99%以上的酒精）的棉簽同樣清潔物鏡表面、燈、反光鏡，並用幹棉簽清除多餘酒精。仍然不能解決，請與經銷商聯繫維修或返廠維修。

- 經常出現對不齊就熔接，結束後顯示損耗大，或熔接失敗

原因：a 光纖髒、光纖端面不良

- b 物鏡鏡頭上、燈、反光鏡片上有灰塵或暗斑

解決方法：重新製作合格的光纖，用一根蘸有酒精（99%以上的酒精）的棉簽同樣清潔物鏡表面、燈、反光鏡，並用幹棉簽清除多餘酒精。仍然不能解決，請與經銷商聯繫維修或返廠維修。

- 總是顯示一邊光纖端面不良

原因：a 菜單中“端面設置”值偏小

- b 物鏡鏡頭上、燈、反光鏡片上有灰塵或暗斑
- c 相對應的燈不亮
- d V 型槽內有灰塵，或光纖沒有正確放入 V 型槽內

解決方法：進入菜單增大“端面設置”值。用一根蘸有酒精（99%以上的酒精）的棉簽同樣清潔 V 型槽、物鏡表面、燈、反光鏡，並用幹棉簽清除多餘酒精。檢查相對應的燈是否正常，光纖有沒有正確放入 V 型槽內。仍然不能解決，請與經銷商聯繫維修或返廠維修。

- 熔接過程中電極不放電

原因：a 選擇了沒有設置參數的程式或程式中放電強度設置為 0

- b 高壓電源損壞或電極連接線脫落

解決方法：檢查選擇的程式是否正確或程式中放電強度設置是否正確。仍然不能正常放電，請與經銷商聯繫維修或返廠維修。

- 熔接現象正常，但熔接損耗一直偏大或熔接失敗

原因：a 檢測系統有故障或物鏡鏡頭和反光鏡片上有灰塵。

- b 參數中光纖“端面設置”的值較大
- c 放電熔接後機器檢測還沒有完成就打開了防風蓋。

解決方法：用一根蘸有酒精（99%以上的酒精）的棉簽同樣清潔物鏡表面、燈、反光鏡，並用幹棉簽清除多餘酒精。檢查參數中光纖“端面設置”的值是否較大。然後再重新做放電試驗直到電流適中。仍然不能解決，請與經銷商聯繫維修或返廠維修。

- 按“AUTO”鍵，間隙設置，調芯都正常，但熔接不上，總是燒成二個球。

原因：a 熔接電流太大，環境濕度太大

- b 推進量偏小或為 0，推進速度值偏大
- c 光纖壓板沒有壓住光纖
- d 光纖本身品質不好，包層脫離

解決方法：換乾燥的環境下看是否還有該問題，確認所熔接的光纖沒有包層脫落的現象，進入使用程式功能表，檢查參數設置並設置正確的參數，然後再重新做放電試驗直到電流適中。仍然不能解決，請與經銷商聯繫維修或返廠維修。

- 多模光纖熔接後起泡、變粗或變細

原因：a 光纖端面不合格或光纖表面髒

- b 程式參數設置有問題

解決方法：保證光纖端面良好，做放電試驗直到電流適中。仍然變粗或起泡則增大程式“預熔電流，預熔時間”的值。相反則減小程式“預熔電流，預熔時間”的值和增大“熔接推進”量，仍然不能解決，請與經銷商聯繫維修或返廠維修。

- 熔接損耗指標一直偏大

原因：a 光纖有灰塵，熔接機 V 型槽有灰塵

- b 放電電流不適中
- c 對不齊就熔接
- d 電極老化
- e 程式參數設置不當
- f 光纖端面不好，光纖切割刀有問題
- g 操作環境較惡劣如：大風或潮濕等
- h 較特殊光纖

解決方法：首先要求測試方法正確，然後做各類清潔（V 型槽、物鏡鏡頭、燈、反光鏡、電極針），選擇合適的程式進行放電測試，調整光纖切割刀保證切割光纖端面良好。如果仍然熔接損耗指標偏大，通過增大或減小“預熔時間、預熔強度、熔接推進量、熔接推進速度”的值，多次進行參數找到較好的熔接參數，或恢復出廠時的參數設置。仍然不能解決，請與經銷商聯繫維修或返廠維修。

- 電極上放火花或電極向附近金屬上放電

原因：a 電極連線鬆動

- b 操作環境潮濕

解決方法：檢查電極的連線是否鬆動。換乾燥的環境下看是否還有該現象。仍然不能解決，請與經銷商聯繫維修或返廠維修。

3、加熱操作

- 熱縮套管沒有完全收縮

原因：a 加熱時間設置過短

b 由於外界溫度太低使加熱沒有充分完全

解決方法：調整程式，延長加熱時間

- 熱縮管粘在加熱槽內

原因：部分熱縮管可能引起粘連

解決方法：待完全冷卻後再取出或用棉簽在其邊緣輕輕撥動，使其與加熱槽脫離。

- 加熱指示燈不亮，但能正常加熱

原因：a 加熱器有故障

b 加熱指示燈壞

解決方法：請與經銷商聯繫維修或返廠維修。

- 加熱指示燈亮，加熱器不加熱。或加熱指示燈不亮，加熱器也不能加熱

原因：加熱器有故障，或加熱控制電路故障

解決方法：請與經銷商聯繫維修或返廠維修。

保固卡和運輸方式

1、保固卡

1-1、保修期限及條件

如果熔接機在發貨之日起的一年之內發生故障，我們將為其免費維修。但如果在保修期內發生以下情況則不予免費保修：

- (1) 由自然災害造成的故障或損壞；
- (2) 由錯誤操作引起的故障或損壞；
- (3) 忽略本手冊中的操作說明和步驟擅自操作引起的故障或損壞；
- (4) 易損易耗件（如電極針）；
- (5) 由非正常電壓供電引起的故障或損壞；
- (6) 其他未盡事項請見保固卡內容；

1-2、維修所需的資訊

請隨熔接機附上以下資訊：

- (1) 您的全名、行業、公司、部門、位址、電話號碼、傳真號碼和電子郵箱
- (2) 熔接機的型號和序列號
- (3) 遇到的問題

熔接機在什麼時候發生了什麼問題；

現在的情況如何，等等。

1-3、維修前的資訊記錄

請事先記錄好熔接機裏的儲存內容，例如熔接結果、熔接模式等，因為在維修時這些資訊資料可能會丟失。

2. 熔接機的運輸

2-1、由於熔接機是高精密儀器，一定要用原裝攜帶箱來運輸和儲存，以防潮與防震，如果需要維修熔接機，發送前請在攜帶箱內一併放入相關配件，如電源適配器等。

2-2、在發送熔接機之前，請先與經銷商或代理商聯繫，以確認維修事宜。

設計與變更

為提升產品性能，產品軟體及硬體技術升級會有變動，恕不奉告。

Pro'sKit®

TE-8201G

光纤熔接机操作手册



操作前请仔细阅读本手册
请遵守本手册中的所有安全规程和警告
请妥善保管本手册

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本光纤熔接机是为通信用石英玻璃光纤设计的，除此外不能熔接其它任何物质和其他用途。

本公司考虑到使用者的人身安全，我们提供了很多的安全注意事项，如果使用不当可能会导致电击、火灾和人身伤害。

请在使用前一定要认真的阅读本操作手册

遵守本手册中的所有安全要求和警告

遇到故障时停止使用，尽快联系我们

妥善保存本手册，以便将来参考



警告与注意事项

当熔接机遇有下列故障时，应立即关闭熔接机的电源开关将交流线电源线从电源插座上拔下、将电池从熔接机取出。

- 冒烟、异味、异响或加热异常；
- 液体或异物进入机器内；
- 熔接机损坏或摔坏；

如果遇到了这些故障未及时地对熔接机采取措施，可能会造成机器报废、电击、火灾或人身伤害甚至死亡。

熔接机的交流适配器、电池充电器只能使用 **100-240V 50-60Hz** 的交流电源，如果使用不适当的交流电源可能会导致冒烟、电击、机器损坏，甚至会造成火灾或人身伤害或死亡。（注：交流发电机一般不正常的输出高压和不规则的频率，连接交流电源线前要用电表测量发电机的输出电压值。不正常的高压或频率会导致机器损坏、电击、燃烧冒烟、甚至会造成火灾或人身伤害或死亡。确保发电机定期检查和维护。）

请使用专用的交流适配器。如果使用不适当的交流适配器可能会导致机器损坏、电击、燃烧冒烟、火灾或人身伤害甚至死亡。

请使用专用的电池，只有厂家提供的电池才是被允许使用的。使用专用的充电器为电池充电。使用其它的电池或电池充电器可能会导致机器损坏、电击、燃烧冒烟、火灾或人身伤害甚至死亡。

不要擅自拆卸或改动熔接机、交流适配器或电池，特别是不能拆除或桥接机器内部的任何电子和机械装置（保险丝或安全开关）。任何错误的维修都可能导致熔接机的损坏，甚至造成电击、火灾或人身伤害或死亡。

禁止在易燃液体或气体的环境下使用熔接机，在这种环境下熔接机的放电会导致火灾或爆炸。

不要用压缩或罐装的气体清洁剂清洁熔接机，否则熔接时产生的电弧会引燃残留的可燃物。

不要在高温的环境下或在高温的物体旁使用熔接机，也不要不要在灰尘过多或湿度较大的地方使用熔接机，否则可能会导致机器损坏、起火、触电、熔接机的性能降低，造成较差的熔接损耗。

手湿的时候不要接触熔接机、交流电源线和交流电源插头，否则可能会造成触电的危险。

当熔接机表面有水汽凝结时，不要操作熔接机，否则会导致电击或机器损坏。

当熔接机工作时请不要触摸电极，否则电极放电时所产生的高压和高温会造成严重的电击和灼伤（更换电极前一定要先关闭熔接机电源，卸下电池、拔掉交流电源线）。

不要短路熔接机的 DC 输入端口，过大的电流会导致燃烧冒烟、电击、机器损坏或人身伤害。

不要用酒精以外的任何化学物质去清洁熔接机的物镜镜头、V 型槽、反射镜、LCD 屏幕等器件，否则会照成成像不清，污点，腐蚀和损坏。

熔接机不需要任何润滑剂，润滑油或油脂，会降低熔接机的性能并可能损坏熔接机。

熔接机经过了精确的调整和校准，不要使其受到强烈的震动或冲撞，否则可能会造成机器的损坏，请使用提供的携带箱来运输和储存熔接机，可有效的避免熔接机受到强烈的震动或冲撞。

不要将熔接机不稳定或不平衡的地方，否则熔接机可能会移动并失去平衡而摔落，导致机器的损坏和人身的伤害。

不要在加热过程中或在加热刚刚结束时接触热缩套管，此时的热缩套管的表面温度很高，接触它可能会造成烫伤。

当需要使用肩带来携带熔接机携带箱时，请检查肩带和挂钩是否完好我，如果使用损坏的肩带可能会造成背带断裂或脱钩从而导致人身伤害或设备的损坏。

熔接机必须由专业的技术人员或工程师进行维修与调试，不正确的维修可能会引起火灾和电击。如果熔接机出现故障，请与本公司销售及经销商联系。

请严格按照操作手册使用蓄电池，错误的使用方法可能会造成电池爆炸和人身伤害。

- 不要用说明书所述以外的方法为蓄电池充电；
- 不要将蓄电池丢入焚化炉或火中；
- 不要在接近火源或阳光直射的地方为蓄电池充、放电；
- 不要让蓄电池受到剧烈的震动；
- 如果电池漏液，一定要小心处理，并注意不要让电池的漏液接触到皮肤或眼睛。万一不小心接触到，必须马上彻底清洗接触部位，并立即就医。同时妥善处理电池并通知维修中心联系相关事宜。
- 充电时不能将电池叠放在交流适配器或充电器的上面。

根据使用说明，正确使用电极。

- 只能使用专用电极；
- 正确的更换电极；
- 必须成对的更换；

忽视以上的说明会引起熔接机异常放电，熔接性能的降低，甚至损坏熔接机。

对于忽视警告不正确使用或修理而造成的人身、物品或设备的损失不负任何责任。

回收与处理

欧盟国家：

根据欧盟议会执行标准 2012/19/EU，为了令新资源的使用和废物掩埋的数量能够达到最小化，对于可再利用和/或回收的电子元器件与材料已进行了鉴明确认。如您在欧盟国家中，请不要将本产品当作未分类的城市生活垃圾丢弃。请联系您所在当地有关机构

其它国家：为回收本产品，请先将它拆卸，按照不同的材料对每一部分进行分类，遵循当地的有关回收处理的相关规定。

产品介绍

1. 规格表

界面语言	简体中文
适用光纤	SM (单模), MM (多模), NZDS(非零色散), EDF(掺饵光纤)
平均损耗	0.02dB(SM), 0.01dB(MM), 0.04dB(NZDS), 0.04dB(EDF)
熔接时间	10 秒 (SM 光纤)
适合切割光纤长度	10~16mm
适合光纤线芯	包层直径:80-150 μ m,涂层直径:100-1000 μ m
回波损耗	\geq 60dB
放大倍数	300 倍独立显示(X 轴或 Y 轴), 180 倍双显(X 轴和 Y 轴)
张力测试	200gf (标准)
焊接程序	50 组可定义程序
电极寿命	5000 次
热缩套管	20mm~60mm
资料存储	6000 组
显示器	5" 高分辨率 LCD 彩色显示器
通讯接口	USB (B 型)
施工照明	1 LED 照明
电量指示	4 段 LED 电量指示
工作环境	温度: -10~+50 $^{\circ}$ C, 湿度: 0~95%RH(不结露),海拔: 0~5000m
工作电源	锂电池: 12V/5.2AH 交流适配器:输入 100~240v 50/60Hz; 输出 15V/4A
重量	2.48kgs (含电池); 2.1kgs(不含电池)
尺寸(长 x 宽 x 高)	130 x 135 x130 mm



2. 标准配置

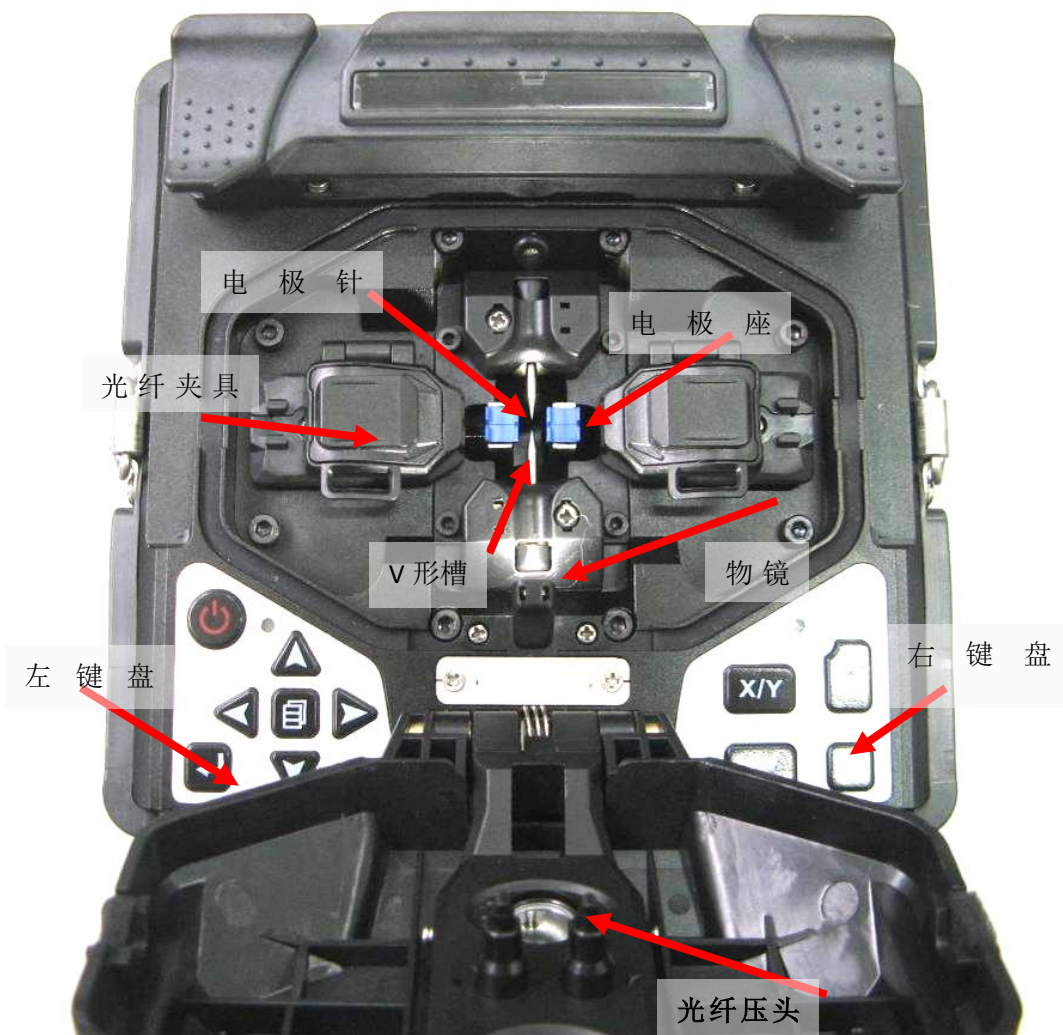
- 1.主机 x1 台
- 2.精密光纤切割刀 x1 把
- 3.光纤剥线钳 x1 把
- 4.皮线光纤开剥钳 x1 把
- 5.180ml 防洒点滴瓶 x1 只
- 6.三合一光纤熔接夹具 x1 付
- 7.备用电极 x1 付
- 8.热缩套管(60mm) x 25 根
- 9.电池 x1 块
- 10.交流适配器 x1 只
- 11.冷却托盘 x1 个
- 12.说明书 x1 份
- 13.提带 x1 条
- 14.ABS 携带箱及背带 x1 个
- 15.光盘（附通讯程序,驱动及使用说明）

3. 其他熔接操作必需品

- 1) 光纤热缩管（20~60mm; 另购）.
- 2) 无水酒精(纯度>99%， 另购).
- 3) 薄纸巾， 纱布或脱脂棉布.（另购）

4. 熔接机部件名称





熔接步骤要点

3、怎样得到小的熔接损耗

1-1、必要的日常清洁工作

- 清洁 V 型槽
- 清洁反光镜
- 清洁光纤压头
- 清洁物镜
清洁物镜时不需要拆除电极针

1-2、选择/使用合适的熔接模式

请根据不同的光纤种类选择正确的熔接模式。

1-3、每次熔接前的设备清理

- 清洁开剥刀刀片
- 清洁切割刀橡胶垫、刀片

1-4、熔接步骤

- 请确保开剥后的光纤上涂覆层残渣和其它污物已被清除
- 请使用浓度为 99%以上的纯酒精
- 不要让已切割好的光纤末端触碰到任何物体或受到污染
- 将光纤末端放置于 V 型槽边缘与电极中心之间
- 将光纤正确放在 V 型槽的底部
- 确保正确的切割长度，如果切割长度过短则光纤的涂覆层边缘可能会碰到 V 型槽，这样在放电过程中两根光纤就不能充分相互靠近从而导致不良的熔接损耗
- 不要紧绷光纤，否则在放电过程中两根光纤就不能充分相互靠近从而导致不良的熔接损耗
- 检查光纤端面切割角度和形状。光纤切割角度会影响熔接质量，大的切割角度将会增大熔接损耗



- 可以从显示屏上面观察放电情况。如果观察到放电“颤动”或“亮度忽明忽暗”，此时放电可能不稳定，将导致损耗不良
- 加热时将热缩管置于加热器中部，避免受热不均导致额外损耗

4、供电

请仅使用厂商提供的交流适配器

请仅使用厂商提供的蓄电池及电池充电器

2-1、避免交流适配器损坏

- 交流发电机可能会产生不正常的输出交流高压或不规则的频率
- 发电机输出的这种不正常的高压和频率可能会导致燃烧、电击和设备损坏，甚至会造成火灾、人身伤害或死亡。所以在连接交流电源之前要先用万用表测量发电机的输出电压值

2-2、电池

- 即使不去使用电池，电池的容量也会随着时间的推移而逐渐变小，而且如果电池被完全放电，那么它将再也不能充进电了。所以，如果长期储存电池或使用电池后，请及时为电池充电
- 如需长期储存一块电池，无论此电池之前已充进多少电，应每六个月对它进行充电
- 请参照以下条件来操作/充电/长时间储存电池
操作： $-10^{\circ}\text{C} \sim 50^{\circ}\text{C}$
充电： $0^{\circ}\text{C} \sim 40^{\circ}\text{C}$
长时间储存： $-20^{\circ}\text{C} \sim 30^{\circ}\text{C}$

基本操作

1、电源连接

熔接机提供两种供电方式：1.电池；2.交流适配器。

1-1 插入电池

将电池插入到电池插槽内直到它正确到位。

1-2 取出电池

一手按住释放按钮并扶持住熔接机边缘，一手将电池推出。


1-3 连接适配器

将电源适配器插头对准主机后端电源插口，确保有效插入。

1-4 断开适配器

关机后，将电源适配器插头拔出便可。

2、开机

安装好电池，确保电池电力充沛，或接插好外部电源后，按下面板开机按钮，开启机器。

3、放置光纤

3-1 打开防风罩和光纤夹盖具；

3-2 依据使用的光纤类型选择夹具方式；夹具使用请见—6.光纤夹具使用

3-3 把准备好的光纤放置在v型槽内，并使光纤末端处于v型槽边缘和电极尖端之间；

3-4 用手指捏住光纤，然后合上光纤夹盖具以保证光纤不会移动，并确保光纤放置在v型槽的底部。如果光纤放置不正确，请重新放置光纤；

3-5 按照上面的步骤放置另一根光纤；

3-6 关闭防风罩。

4、熔接操作

4-1、可选工作模式：自动，手动，全自动。


手动：操作依据屏幕右侧菜单提示操作，手动完成对芯及熔接作业。

自动：关闭上防风罩，按下放电键开始对纤，完成后按下放电键开始熔接。

全自动：关闭上防风罩开始对纤芯并进行熔接。

4-2 可选择光纤类型：单模（SM）/多模（MM）/非零色散位移（NZDS）/掺饵（ED）

4-3 暂停功能：开启/关闭

开启：在自动及全自动模式下,对芯完成后会先暂停,须手动按放电键才进行熔接。

关闭：不影响自动及手动模式下的作业方式。

5、取出光纤并加热


5-1 打开加热器上的加热盖；

5-2 打开防风罩；

5-3 打开左右两侧光纤夹盖具；

5-4 将光纤取出并将热缩管移至熔接点处,注意熔接点须位于套管中央；

5-5 将热缩套管放置于加热器中央,并盖上加热盖；

5-6 按加热键进行加热,加热指示灯会同时亮起；

5-7 当加热指示灯熄灭后加热完成；

5-8 当打开加热盖,取出光纤检查是否有气泡；

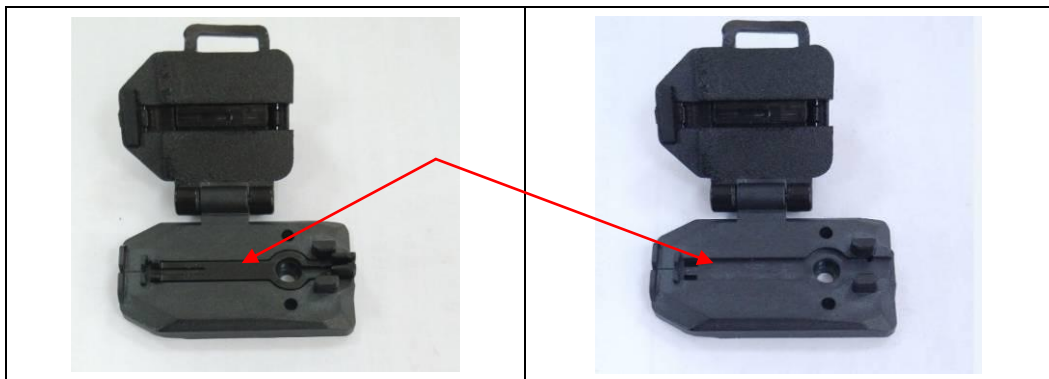
5-9 完成检查后将光纤放置于散热盘中待其冷却。

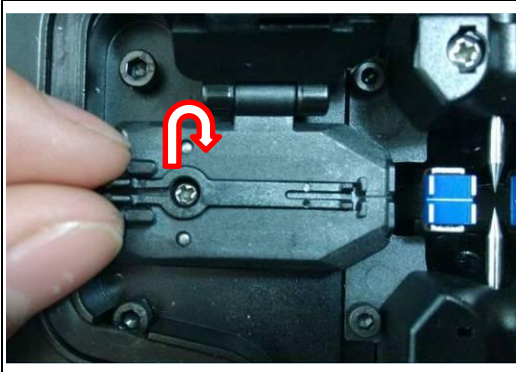
6、光纤夹具使用

3合1夹具设计,适合跳线,皮线,裸线光纤使用,夹具由可拆卸导向槽及本体构成,导向槽如图示意.不装配到向槽时可适用于跳线及皮线类光纤,装配上导向槽时可用于裸线类光纤.

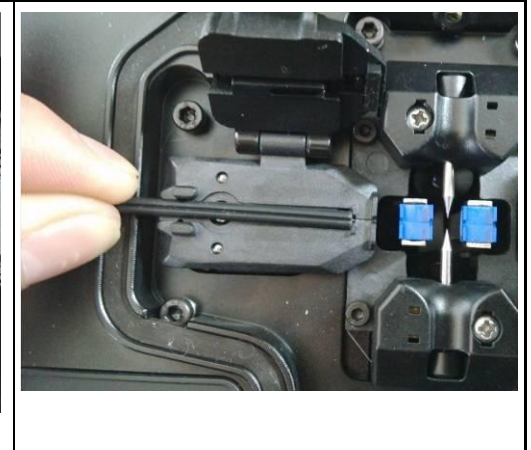
6-1 跳线或皮线光纤使用:

切割跳线或皮线时,取出导向槽使用,如图示.





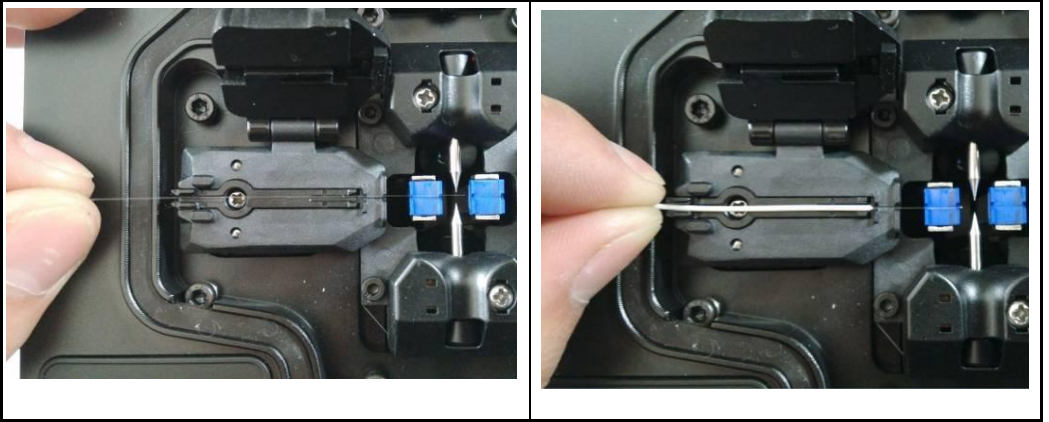
将切割好的光纤放入夹具内，定位好后盖下压板。



6-2 裸线光纤使用:

将导向槽定位卡榫放入夹具预留的槽位孔，注意用力适当，不可折断卡榫。装配后便可使用。

将切割好的光纤放入夹具，定位好后盖下压板



熔接质量维护

1、熔接前的清洁和检查

以下描述的是关键的清洁点和重要部位的保养检查

1-4、 清洁 V 型槽

如果 V 型槽中有灰尘或污染物，光纤压头就不能正确的压住光纤，从而导致熔接损耗偏大，所以在平时的操作过程中应经常检查和定期清洁 V 型槽。

- 打开防风盖
- 用一根蘸有酒精（99%以上的酒精）的棉签清洁 V 型槽的底部，并用干棉签清除 V 型槽内的多余酒精。
- 如果 V 型槽内的脏物不能用蘸有酒精的棉签清除，可用切割好的光纤端面去清理 V 型槽的底部，然后重复上一步骤。
- 清洁 V 型槽时小心不要用力过度，以免损坏 V 型槽。
- 小心不要碰到电极针尖

1-5、 清理光纤压头

如果光纤压头上有脏物，压头就不能正常压住光纤，从而降低熔接质量。

- 打开防风盖
- 用一根蘸有酒精（99%以上的酒精）的棉签清洁压头的表面，并用干棉签清除压头表面的多余酒精。

1-6、 清洁防风罩反光镜

如果反光镜表面有脏物，光通路清晰度下降，造成光纤纤芯的位置不准确，导致熔接损耗的增大。

- 用一根蘸有酒精（99%以上的酒精）的棉签清洁防风罩反光镜，并用干棉签清除多余酒精。
- 防风罩反光镜表面没有条纹和污迹。

1-4、清洁光纤切割刀

切割刀的刀片或是垫子有脏，切割质量会下降，导致光纤表面有灰尘，熔接损耗的增大。用一根蘸有酒精（99%以上的酒精）的棉签清洁切割刀的刀片和橡胶压垫。

1-6、 放电测试

大气环境如：温度、湿度、气压，是在不断变化的，使放电温度也在变化。由于电极的磨损，光纤的碎屑粘接而造成的放电强度的是无法自动修正的。放电的中心位置有时会向左或向右移动。此时因该进行放电测试来解决这些问题。

在以下条件下使用熔接机时，也应该进行放电测试如：超高温、超低温、极干燥、极潮湿、电极劣化、异类光纤接续、清洁、更换电极后，或上述条件同时存在的情况下。

2· 定期的检查和清洁

为了保证较好的熔接质量，建议对熔接机做定期的检查和清洁。

2-3、 清洁物镜镜头

如果物镜镜头表面有脏物，正常的观测到的光纤纤芯位置可能会被影响，导致熔接损耗的增大或不良的熔接，所以定期清洁二个物镜镜头，否则脏物累积而难以清除。

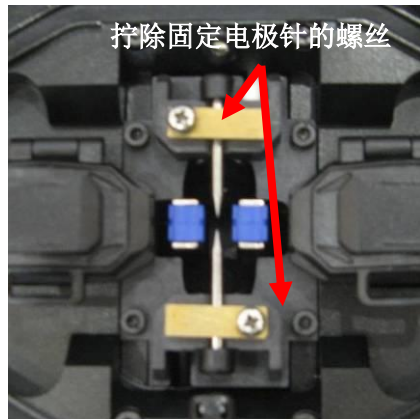
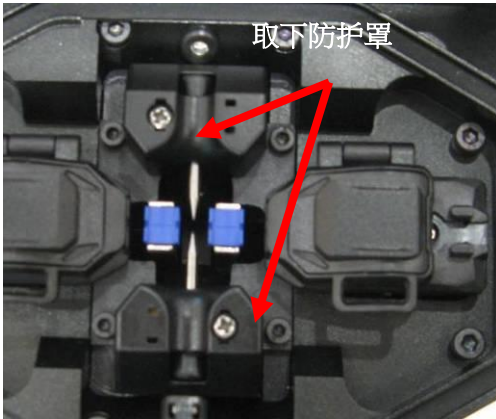
- 在清洁之前，首先关闭电源。
- 用蘸有酒精（99%以上的酒精）的棉签轻轻擦拭物镜镜头的表面，从镜头的中间开始做圆形运动开始擦，一直到镜头的边缘，反复几次，直到没有脏物或污迹、条纹。最后用一根干净的干棉签擦去表面残留的酒精。
- 清洁的时候小心不要碰到电极的针尖。
- 建议在更换电极针的时清洁物镜镜头。

2-4、 更换电极

电极在使用中会磨损，电极针尖上还会有硅氧化物的聚集，要定期清洁氧化物可有效的延长电极针的使用寿命。建议在熔接机放电 3000 次后更换电极。如果继续使用，很可能导致非常大的熔接损耗并降低熔接点的强度。

更换电极针的步骤：


- 关闭熔接机电源
- 打开防风罩，取下电极防护罩，拧除固定螺钉，拆下旧的电极针



- 用蘸有酒精的棉纸清洁新电极针，然后把电极针正确的安装到熔接机上并拧紧固定螺丝。
- 打开电源，将制备好的光纤放入熔接机做放电测试

菜单

1、 菜单的进入与选择

在系统“准备就绪”下按“”进入菜单，按“◀”，“▶”选择 1-5 号菜单

1 号“系统设置”菜单

2 号“熔接模式”菜单



3 号“熔接记录”菜单

4 号“维护菜单 1”菜单

5 号“维护菜单 2”菜单

2、“系统设置”菜单




按“▲”“▼”移动光标，按“”进入你想进入的程序，再按“▲”“▼”修改参数值（移动小方框内的光标），按“”确认，修改完成。

2-1、“工作方式”菜单

按“”进入“工作方式”菜单，按“▲”“▼”移动光标有两种工作方式可选择“手动，自动或全自动”。选择完成按“”确认保存。修改完成按“”退出。

● 自动工作方式

在常规的光纤经清洁和切断后，把准备好的光纤放置在 v 型槽，按“”熔接程序自动对芯熔接。在正常的熔接操作时，一般选择自动的工作方式。


● 全自动工作方式


在常规的光纤经清洁和切断后，把准备好的光纤放置在 v 型槽，关闭上防风罩即开始对纤芯并进行熔接


● 手动工作方式

在手动工作方式下，光纤的对芯、放电、熔接的每一个步骤都由操作员利用键盘控制。

在手动工作方式下按键的功能

“”为选择键：可选左、右、X、Y 四个电机的操作



“”为切换键，可上下移动光标，选择操作命令。

“”为光纤推进键，可推进光纤。

“◀”和“▶”为左、右电机的推进、后退键，可控制左、右电机的推进、后退。




“▲”和“▼”为 X、Y 电机调芯的上行、下行键，可控制 X、Y 电机的上行、下行。

2-2、“暂停”功能

按“”进入“暂停”功能菜单，按“▲”“▼”可选择暂停功能“开启或关闭”。选择完成按“”确认保存。




在正常的熔接操作时，一般暂停功能“关闭”。

2-3、“间隙位置”功能

按“”进入“间隙位置”功能菜单，按“▲”“▼”修改参数值。修改完成按“”确认保存。修改完成按“”退出。


“间隙位置”是指光纤调芯完熔接前，两根光纤与电极之间的中心位置。取值范围：**00-60** 在放电位置正常时，间隙位置取值为：**30**。在做放电测试时，放电位置发生偏移时，如果放电测试结果是左边的球大，间隙位置取值为：小于 **30**。如果放电测试结果是右边的球大，间隙位置取值为：大于 **30**。

2-4、“加热时间”功能

按“”进入“加热时间”功能菜单，按“▲”“▼”修改参数值。修改完成按“”确认保存。修改完成按“”退出。

取值范围：**20-90** 默认值为：**40**

2-5、“语言”功能

按“”进入“语言”功能菜单，按“▲”“▼”可选择功能“中文或英文或其他语言（若有）”。选择完成按“”确认保存。按“”退出菜单。

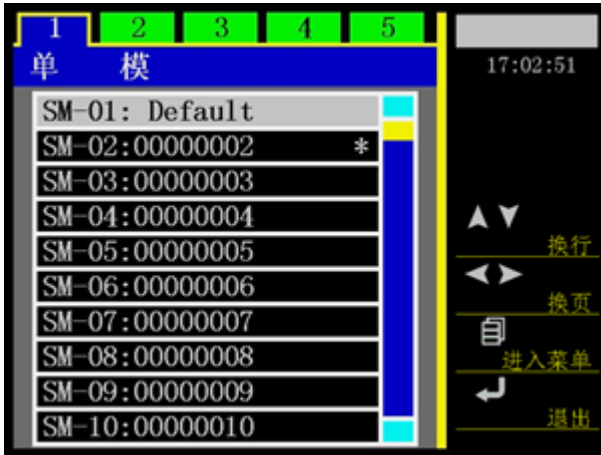
2-6、“时间设置”功能



按“”进入“时间设置”功能菜单，按“▲”“▼”可选择“年、月、日、时、分”，按“◀”，“▶”对参数修改。修改完成按“”确认保存。修改完成按“”退出。

3、“熔接模式”菜单



按“▲”“▼”移动光标，按“”进入你想进入的“熔接模式”程序，



再按“▲”“▼”选择你所需要执行或修改的程序号，按“”选择你希望使用的程序（带“*”号为目前执行程序）。若要修改程序参数，按“”进入该程序修改具体参数值（default 为出厂设置无法被修改）。




SM-02:		17:00:49
名 称	00000002	
预熔时间	0.18Sec	
预熔强度	085	
熔接时间	01.8Sec	
熔接强度	095	
推进量	15	▲▼ 换行
推进速度	055	☰ 修改
端面质量	15	
对芯间隙	10	↵ 退出

按“▲”“▼”移动光标，按“☰”进入需修改的菜单，按“▲”“▼”修改参数，再按“☰”确认保存。修改完成按“↵”退出。

功能项	功能说明	取值范围
预熔时间	预放电时间	0-1.0
预熔强度	预放电强度	0-200
熔接时间	熔接放电时间	0-10.0
熔接强度	熔接放电强度	0-200
推进量	熔接时电机向前推进的量	0-60
推进速度	熔接时电机向前推进的速度	0-60
端面角度	光纤切割端面的角度	0-15
对芯间隙	左右光纤对芯完成时之间的间隙	0-50








4、“熔接记录”菜单



按“”进入“熔接记录”菜单，按“”，“”选择查看熔接记录。
在此菜单下可以看到 **6000** 次的熔接记录

5、“维护菜单 1”菜单




按“”“”移动光标，按“”进入你想进入的程序，再按“”“”修改参数值（移动小方框内的光标），按“”确认，修改完成。按“”退出

5-1、“放电测试”功能

为确保稳定的熔接质量，使用者应定期操作。在以下条件下使用熔接机时，应进行

放电试验：超高温、超低温、极干燥、极潮湿环境、电极恶化、异类光纤接续、清洁或更换电极后。

放电试验需要使用 2 根准备接续的光纤，按照一般熔接的方法对光纤剥纤、切断、和放置。按“”进入放电测试程序。

- 放电后，屏幕上显示一个数值，如果数值在 20-30 之间，说明放电强度正常。如果数值小于 20 说明放电强度弱，要增大相应执行程序的放电强度。如果数值大于 30 说明放电强度过强，要减小相应执行程序的放电强度。
- 放电后，如果两侧光纤融化程度不同，右侧融化程度高则增大“系统设置”菜单中“间隙位置”的值，左侧融化程度高则减小。

5-2、“稳定电极”功能

当外界环境突然发生变化时，放电强度有时会变的不稳定，从而导致熔接损耗变大，特别是熔接机从低海拔地区移至高海拔地区时，需要一定的时间来稳定放电强度，在这种情况下，稳定电极可以加快放电强度稳定的过程，需要做多次的放电试验来稳定电极。

5-3、维护信息

进入该菜单可看到本机的出厂序列号、软件版本号、固件版本号和本机的总放电次数。

5-4、系统调试

进入该菜单设备自动检测工作状态，显示状态参数，仅供维修维护使用。

5-5、传感器状态

进入该菜单显示本机内置的各部分传感器工作状态，仅供维修维护使用。

6、“维护菜单 2”菜单



6-1、“密码设置”功能




按“☰”进入“密码设定”功能菜单，按“▲”“▼”可选择字符。修改完成按“☰”确认保存。按“↵”退出菜单。






6-2、“显示器亮度调节”功能

按“☰”进入“显示器亮度调节”功能菜单，按“▲”“▼”可调整显示器的亮度。调整范围 0-3。修改完成按“☰”确认保存。按“↵”退出菜单。




6-3.“按键声音”功能

按“”进入“按键声音”功能菜单，按“▲”“▼”可选择按键声音的关闭或开启。修改完成按“”确认保存。按“”退出菜单。

6-4.“图像翻转”功能

按“”进入“图像翻转”功能菜单，按“▲”“▼”可选择图像翻转的关闭或开启。修改完成按“”确认保存。按“”退出菜单。
在显示屏上正视图像或翻转 180 度显示图像。

6-5.“张力测试”功能

按“”进入“张力测试”功能菜单，按“▲”“▼”可选择张力测试功能的关闭或开启。修改完成按“”确认保存。按“”退出菜单。

问题与故障排除

1.开机与供电

- 打开电源开关，电源没有反应

原因：a 电源插座没有插好

b 电源开关接触不良

c 电池没有正确插好

解决方法：检查电源插头或电池是否插好，以熔接机连接是否正确，后查看电源开关是否良好。

- 开启熔接机，机器无任何反应（屏幕没有亮光）

原因：a 电源保险丝断开

b 机器内部发生短路或故障

c 电池电量不足或极性接反

d 交流适配器坏，电压输出不对

e 显示屏坏

解决方法：检查电源保险丝是否断开，机器内部有无短路或其它故障。主板电源保险丝更换，机器内部短路或其它故障，请与经销商联系维修或返厂维修。

检查电池电量不足需要充电，检查电池极性是否接反，若有则改之。

检查交流适配器电压输出是否正常（输出电压为 12V），若不正常则需更换交流适配器。请与经销商联系更换专用的交流适配器。

显示屏的亮度出厂时已调好，若不能正常的显示，说明显示屏有故障，请与经销商联系维修或返厂维修。

● 开机后中，总是显示“系统复位”机器一直处于复位中

原因：a 熔接机光电开关有故障

b 电机或电机驱动有故障

解决方法：请与经销商联系维修或返厂维修。

2. 熔接操作

● 放置光纤后，显示屏有半边图像很暗或不亮

原因：a 防风罩没有放到位

b 防风罩内反光镜位置角度偏移

c 对应的灯不亮

d 对应的摄像头信号控制线脱落或摄像头有故障

解决方法：检查防风罩是否盖好，有无异物卡住防风罩。调整反光镜的角度到正确的位置。检查对应的灯是否不亮，若不亮请与经销商联系维修或返厂维修。

● 按“AUTO”键光纤停止不动，按“RESET”键系统能正常复位，但光纤仍不动

原因：a 光纤断纤

b 光纤压板没有压住光纤

解决方法：重新制作光纤。重放光纤，合上光纤压板，用手向后轻拉光纤，能轻易拉动，说明光纤压板没有压住光纤。检查光纤压条能否弹起，不能弹起的需要维修。

● 按“AUTO”键光纤向前运动一定位置后，又向前运动，最后显示“重放光纤”

原因：a 光纤切割长度达不到要求

b 光纤压板向前推进有障碍

解决方法：光纤切割长度约为 10~16mm，达不到要求的重新制作。在光纤压板推进方向，用手轻推光纤压板，检查有无障碍，确定其位置，处理之。

● 按“AUTO”键，光纤在调芯过程中，一边光纤图像在垂直方向上下移动，两端光纤端面对不齐。不能熔接。

原因：a 精密 V 型槽上有灰尘，导致一边的光纤位置偏高，大于另一边的光纤上下远动的最大值。

b 物镜表面、灯、反光镜、CCD 上有灰尘或暗斑。

解决方法：用一根蘸有酒精（99%以上的酒精）的棉签清洁 V 型槽的底部，并用干棉签清除 V 型槽内的多余酒精。如果 V 型槽内的脏物不能用蘸有酒精的棉签清除，可用切割好的光纤端面去清理 V 型槽的底部，然后重复上一步骤。用一根蘸有酒精（99%以上的酒精）的棉签同样清洁物镜表面、灯、反光镜，并用干棉签清除多余酒精。仍然不能解决，请与经销商联系维修或返厂维修。

- 经常出现对不齐就熔接，结束后显示损耗大，或熔接失败

原因：a 光纤脏、光纤端面不良

- b 物镜镜头上、灯、反光镜片上有灰尘或暗斑

解决方法：重新制作合格的光纤，用一根蘸有酒精（99%以上的酒精）的棉签同样清洁物镜表面、灯、反光镜，并用干棉签清除多余酒精。仍然不能解决，请与经销商联系维修或返厂维修。

- 总是显示一边光纤端面不良

原因：a 菜单中“端面设置”值偏小

- b 物镜镜头上、灯、反光镜片上有灰尘或暗斑

- c 相对应的灯不亮

- d V 型槽内有灰尘，或光纤没有正确放入 V 型槽内

解决方法：进入菜单增大“端面设置”值。用一根蘸有酒精（99%以上的酒精）的棉签同样清洁 V 型槽、物镜表面、灯、反光镜，并用干棉签清除多余酒精。检查相对应的灯是否正常，光纤有没有正确放入 V 型槽内。仍然不能解决，请与经销商联系维修或返厂维修。

- 熔接过程中电极不放电

原因：a 选择了没有设置参数的程序或程序中放电强度设置为 0

- b 高压电源损坏或电极连接线脱落

解决方法：检查选择的程序是否正确或程序中放电强度设置是否正确。仍然不能正常放电，请与经销商联系维修或返厂维修。

- 熔接现象正常，但熔接损耗一直偏大或熔接失败

原因：a 检测系统有故障或物镜镜头和反光镜片上有灰尘。

- b 参数中光纤“端面设置”的值较大

- c 放电熔接后机器检测还没有完成就打开了防风盖。

解决方法：用一根蘸有酒精（99%以上的酒精）的棉签同样清洁物镜表面、灯、反光镜，并用干棉签清除多余酒精。检查参数中光纤“端面设置”的值是否较大。然后再重新做放电试验直到电流适中。仍然不能解决，请与经销商联系维修或返厂维修。

- 按“**AUTO**”键,间隙设置,调芯都正常,但熔接不上,总是烧成二个球。

原因：**a** 熔接电流太大,环境湿度太大

b 推进量偏小或为**0**,推进速度值偏大

c 光纤压板没有压住光纤

d 光纤本身质量不好,包层脱离

解决方法：换干燥的环境下看是否还有该问题,确认所熔接的光纤没有包层脱落的现象,进入使用程序菜单,检查参数设置并设置正确的参数,然后再重新做放电试验直到电流适中。仍然不能解决,请与经销商联系维修或返厂维修。

- 多模光纤熔接后起泡、变粗或变细

原因：**a** 光纤端面不合格或光纤表面脏

b 程序参数设置有问题

解决方法：保证光纤端面良好,做放电试验直到电流适中。仍然变粗或起泡则增大程序“预熔电流,预熔时间”的值。相反则减小程序“预熔电流,预熔时间”的值和增大“熔接推进”量,仍然不能解决,请与经销商联系维修或返厂维修。

- 熔接损耗指标一直偏大

原因：**a** 光纤有灰尘,熔接机**V**型槽有灰尘

b 放电电流不适中

c 对不齐就熔接

d 电极老化

e 程序参数设置不当

f 光纤端面不好,光纤切割刀有问题

g 操作环境较恶劣如：大风或潮湿等

h 较特殊光纤

解决方法：首先要求测试方法正确,然后做各类清洁（**V**型槽、物镜镜头、灯、反光镜、电极针），选择合适的程序进行放电测试,调整光纤切割刀保证切割光纤端面良好。如果仍然熔接损耗指标偏大,通过增大或减小“预熔时间、预熔强度、熔接推进量、熔接推进速度”的值,多次进行参数找到较好的熔接参数,或恢复出厂时的参数设置。仍然不能解决,请与经销商联系维修或返厂维修。

- 电极上放火花或电极向附近金属上放电

原因：**a** 电极连线松动

b 操作环境潮湿

解决方法：检查电极的连线是否松动。换干燥的环境下看是否还有该现象。仍然不

能解决，请与经销商联系维修或返厂维修。

3、加热操作

- 热缩套管没有完全收缩

原因：a 加热时间设置过短

b 由于外界温度太低使加热没有充分完全

解决方法：调整程序，延长加热时间

- 热缩管粘在加热槽内

原因：部分热缩管可能引起粘连

解决方法：待完全冷却后再取出或用棉签在其边缘轻轻拨动，使其与加热槽脱离。

- 加热指示灯不亮，但能正常加热

原因：a 加热器有故障

b 加热指示灯坏

解决方法：请与经销商联系维修或返厂维修。

- 加热指示灯亮，加热器不加热。或加热指示灯不亮，加热器也不能加热

原因：加热器有故障，或加热控制电路故障

解决方法：请与经销商联系维修或返厂维修。

保固卡和运输方式

1.保固卡

1-1、保修期限及条件

如果熔接机在发货之日起的一年之内发生故障，我们将为其免费维修。但如果在保修期内发生以下情况则不予免费保修：

- (7) 由自然灾害造成的故障或损坏；
- (8) 由错误操作引起的故障或损坏；
- (9) 忽略本手册中的操作说明和步骤擅自操作引起的故障或损坏；
- (10) 易损易耗件（如电极针）；
- (11) 由非正常电压供电引起的故障或损坏；
- (12) 其他未尽事项请见保固卡内容；

1-2、维修所需的信息

请随熔接机附上以下信息：

- (4) 您的全名、行业、公司、部门、地址、电话号码、传真号码和电子邮箱
- (5) 熔接机的型号和序列号
- (6) 遇到的问题
熔接机在什么时候发生了什么问题；
现在的情况如何，等等。

1-3、维修前的信息记录

请事先记录好熔接机里的储存内容，例如熔接结果、熔接模式等，因为在维修时这些信息数据可能会丢失。

2. 熔接机的运输

2-1、由于熔接机是高精密仪器，一定要用原装携带箱来运输和储存，以防潮与防震，如果需要维修熔接机，发送前请在携带箱内一并放入相关配件，如电源适配器等。

2-2、在发送熔接机之前，请先与经销商或代理商联系，以确认维修事宜。

设计与变更

为提升产品性能，产品软件及硬件技术升级会有变动，恕不奉告。

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