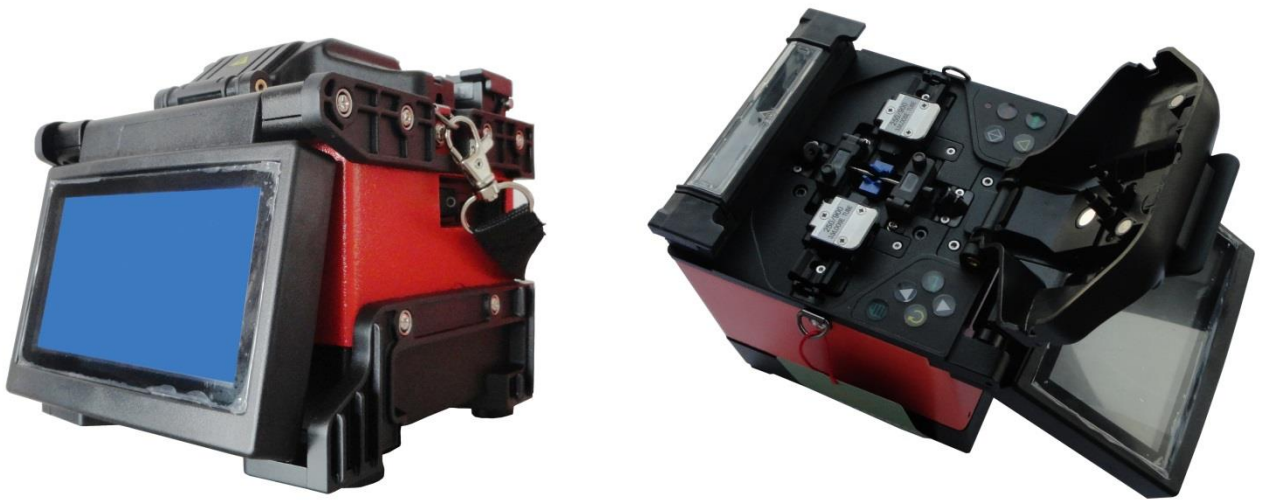


Introduction



Warnings and Cautions for Safe Operation

The Fusion Splicer is used in different outdoor environment for fiber splicing "field splicing", User must be aware that arc fusion splicing maybe brings some dangers. Therefore, safety requirements are included in this instruction manual.

- Read this manual carefully and completely before operating the splicer.
- Adhere to all safety instructions and warnings contained in this instruction manual.
- Retain this manual for future reference.

WARNING

1. Never operate the splicer in an environment where flammable liquids or vapors exist. Risk of dangerous fire or explosion may result from the electrical arc in such an environment.
2. Do not use the splicer near any hot equipment or in any place of high temperature. Possible equipment failure or fire may result.
3. Do not touch the splicer, AC power cord and AC plug if your hand is wet. Possible electric shock may occur.
4. Do not operate the splicer if water condensation is present on surface of splicer. This may result in electric shock or equipment failure.
5. The splicer is precision adjusted and aligned. Do not allow the unit to receive a strong shock or impact. Possible equipment failure may result. Use carrying case to transport and store the splicer. The carrying case protects the splicer from damage, moisture, vibration and shock during storage and transportation.
6. Do not place the splicer in an unstable or unbalanced position. The splicer may shift and lose balance, causing the unit to fall. Personal injury or equipment damage may occur.
7. Keep the splicer free from sand, dust, lubricants and other contaminants. The presence of such substances may degrade the splicing performance and cause equipment failure or damage.
8. Do not use any chemical other than alcohol to clean the objective lens, V-groove, mirror, LCD monitor, etc., of the splicer. Otherwise, blurring, discoloration, damage or deterioration may result.
9. The splicer requires no lubrication. Oil or grease may degrade the splicing performance and damage the splicer.
10. Do not use compressed gas or canned air to clean the splicer. They may contain flammable materials that may ignite during the electrical discharge.

- 11.** Do not store the splicer in any area where temperature and humidity are extremely high. Possible equipment failure may result.
- 12.** Before using the shoulder belt of carrying case, inspect the belt and hook for excessive wear or damage. Carrying the case with a damaged belt may cause it to fall and may result in personal injury or equipment damage.
- 13.** Do not touch the electrodes when the splicer is on and power is supplied to the unit, the electrodes generate high voltage and high temperatures that may cause a severe shock or burn. Turn the splicer off, and disconnect the AC power cord, or remove the battery pack when replacing the electrodes. (Note: Opening the wind protector stops arc discharge.)
- 14.** Use only the 100-240V AC, 50-60Hz/12V DC, 14Ah with it. The proper supply voltage source is 100-240V AC, 50-60Hz. Check the AC Power source before use. Using an improper AC power source may cause fuming, electric shock or equipment damage and may result in personal injury, death or fire.
- 15.** Use the supplied AC power cord. Do not place heavy objects on the AC power cord. Do not pull, heat up or modify the AC power cord. Use of an improper cord or a damaged cord may cause fuming, electric shock or equipment damage and may result in personal injury, death or fire.
- 16.** Connect the AC power cord properly to the splicer and wall socket. When inserting the AC plug, make sure there is no dust or dirt on the terminals. Incomplete engagement may cause fuming, electric shock or equipment damage and may result in personal injury, death or fire.
- 17.** It uses a three-prong (core) AC cord that contains an earthed ground safety mechanism. The splicer MUST be Grounded/Earthed. Use only the supplied three-prong (core) AC power cord. NEVER use a two-prong (core) power cord, extension cable or plug.
- 18.** Use only the approved battery pack with the machine. Only the battery pack can be used as the approved battery pack.
- 19.** Use the specified charger cord to recharge the battery pack. Using other battery chargers and charger cords may cause fuming or equipment damage and result in personal injury, or death and it could cause a fire.
- 20.** The splicer inlet is used to disconnect the power cord in the event of a fault. Be sure to position the splicer so that the power cord can be disconnected easily and quickly.
- 21.** Disconnect the AC or DC power cord from the splicer inlet or the wall socket (outlet) immediately if the splicer or the external battery emits fumes, a bad smell, or becomes noisy or hot. Leaving the abnormal condition unattended will cause equipment failure, electric shock or fire and may result in personal injury, death or fire.

22. Disconnect the AC or DC power cord from the splicer inlet or the wall socket(outlet)immediately if liquid (e.g.,water) or foreign matter (e.g.,screw) enters the splicer. Leaving the splicer in a damaged state may cause equipment failure,electric shock or fire and may result in personal injury,death or fire. **12.** Before using the shoulder belt of carrying case,inspect the belt and hook for excessive wear or damage.Carrying the case with a damaged belt may cause it to fall and may result in personal injury or equipment damage.

23. Caution should be taken when removing the fiber protection sleeve from the tube heater after the heat shrink cycle is completed. The tube heater and fiber protection sleeve are hot and should not be touched. Possible burn may result

24. Replace the electrodes properly.

- Use only specified electrodes.
- Set the new electrodes in the correct position.
- Replace the electrodes as a pair.


Disregard of the above instructions may cause abnormal arc discharge and result in equipment damage or degradation in splicing performance.

25. The equipment must be repaired or adjusted by a qualified technician or engineer. Incorrect repairs may cause fire or electric shock. Should any problem arise, please contact your nearest sales agency.

Specifications	
Applicable Fiber	Single mode and multi mode silica based optical glass fiber Cladding diameter: 100-150um Coating diameter: 0.1-1.0mm
Cleave Length	Standard spec : 16mm
Mean Splice Loss(Note 1)	Single mode fiber : Typ.0.02dB Dispersion shifted fiber : Typ.0.04dB Multi mode fiber : Typ.0.01 dB
Mean Splice Time(Note 2)	8 seconds
Fiber Protection Sleeve Shrinking Time (Note 3)	40mm / 60mm sleeve : Typ.40seconds
Dimensions	142mm(W) / 122mm (D) / 138mm(H)
Weight	1.95 kg
AC Adapter	Input: 100~240V(50~60Hz) Output: 12V 3A
Proof Test Force	1.96N (200gf)
Program test	Atmospheric pressure maximum altitude : 3500m) 、 temperature and humidity. Automatic calibration by observing distance of the GAP during arc discharge
Wind Resistance	Maximum permissible wind velocity: 15m/s
Program of Splice Mode	SM、MM、DS、NZDS、ER
Fiber Protection Sleeve Shrinking	60mm, 40mm, and other micro protection sleeve
Heating	User program
Storage of Splice Results	Maximum permissible wind velocity: 15m/s

Note 1 : Mean splice loss:

Data based on splicing same-type fibers having an average quality according to the ITU-T standard.

Note 2 : Mean splicing time ·Length of time from the start of operation by pressing START till the end of loss estimation. Length of time from the start of heating by pressing <  > till the end of cooling.

Components

No.	Name	Fig.
(1)	Arc Fusion Splicer	
(2)	Spare Electrodes	
(3)	Instruction Manual	
(4)	Carrying Case	
(5)	Cooling salver	
(6)	Fiber Stripper	
(7)	Fiber Cleaver	
(8)	Skin cable strip	
(9)	SC Fiber Holder	
(10)	Connector for Drop Cable	
(11)	Connector for SC	

Accessory for Operation

Fiber Protection Sleeve	
Stripper	
Fiber Cleaver	
Fiber Cleaning Tool	<p>Dispenser</p> <p>Thin Cotton Swab</p> <p>Lint-free tissue or Gauze</p>

Description and Function of Splicer

Panel Keyboard



Right Keyboard

Key	Name	Function
	Heat	Start/stop tube heater
	Start	Start splice operation
	Reset	Splicer Rest
	Shift	Shift up, down, right, left



Left Keyboard

Key	Name	Function
	Menu	1 . Enter Main Menu 2 . Confirm Menu
	Exit	Exit
	Down	1 . Menu: move cursor down 2 . Manual: move fiber down
	Up	1 . Menu: move cursor up 2 . Manual: move fiber up
	Confirm	1.Choose Program and confirm menu

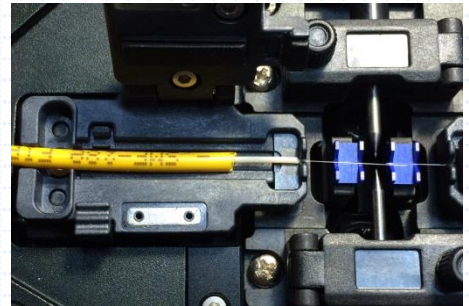
Operation of Fiber Holders

The fusion splicer equipped with an universal fiber holder, by adjusting, it can work with bare fiber, pigtail, drop cable and SOC

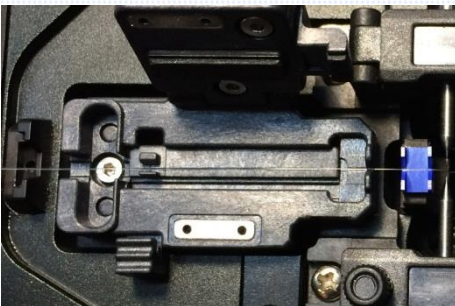
Fiber Holder has two fiber-placing position:



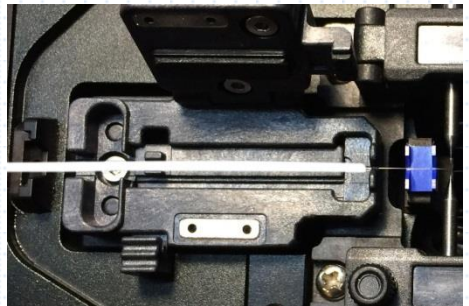
For drop cable and patch cord



For Pigtail



For Bare Fiber



For 900 Bare Fiber

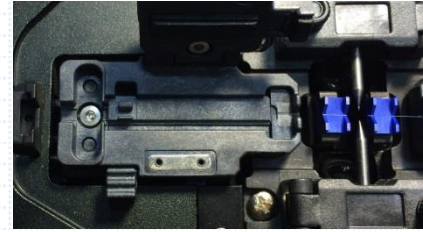
Change the Universal and SOC fiber holders by loosen the screw



Loosen the screw by this allen

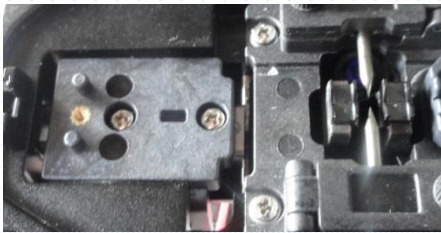


Pull or push driving level to change position



Pull or push driving level to change position

Change the SOC Fiber Holder for SOC Splicing operation as follows



Take off the fiber



Put the SC to Fiber holder

Prepare and Place Fiber

Clean the fiber outer coating approx. 100mm in length from the fiber end with alcohol-impregnated gauze or lint-free tissue. If dust or other impurities on the outer coating enter the fiber protection sleeve, burnout or breaking of fiber may result after completion of installation

Protection Sleeve operation

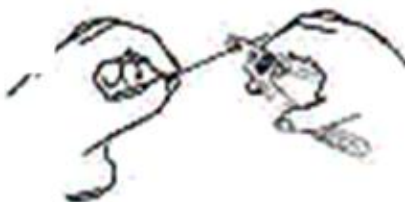
Pass the fiber through the fiber protection sleeve, (Fig.3-2)



1- Cleaving Fiber



2- Remove Coating



3- Clean Bare glass



4- Cleaving Fiber

Remove the fiber coating 30-40mm with a stripping tool.

⇒ **After this operation**, handle the fiber so as not to damage its bare glass

Clean the bare part with another alcohol tissue
 ⇒ **Check:** After this operation, handle the fiber so as not to damage the fiber so as not to damage

⇒ **Check:** Use high quality alcohol with greater than 99% pure

⇒ **Check:** Change lint-free tissue each time

Fiber Cleaving (①Cover, ②Main body, ③ Pressure pad) .

(1) Open the Cover and Pressure pad
 (2) Put the stripped the fiber to the V-groove

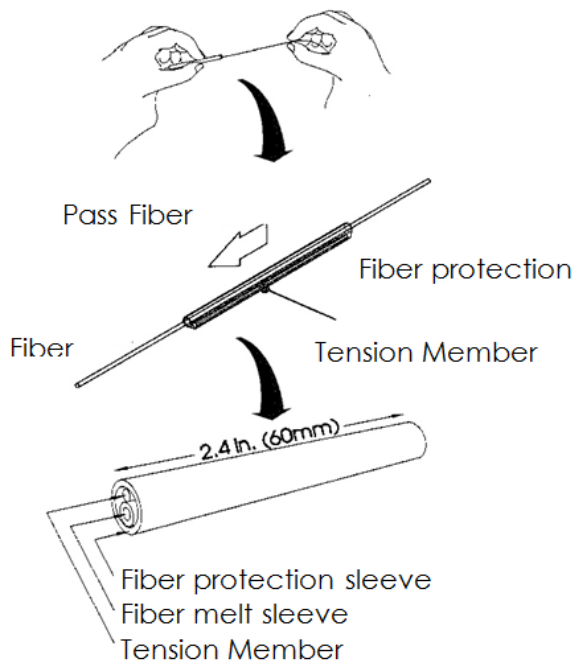


Fig 3-2 Protection Sleeve Operation

Fig 3-3 Prepare Fiber

1. Open the cover and pressure pad, put the stripped fiber on the V-groove. And make sure that the cleaver length is set as per operators' intended length.
2. Close the pressure pad to fix the fiber.
3. Close the cover and make sure that the end of the fiber is sticking out of the rubber pad exactly in a straight line.
4. Push the blade carriage to the rear until it stops.
5. Open the cover.
6. Take out the cleaved fiber with care in order not to bring the harm to the end face of fiber.
7. For the continuous operation, remove the cleaved fiber, in this process, be careful not to get injured by the cutting edge.



Fig 3-4 Fiber Cleaving

Setting Fiber in Splicer

(1) Open the wind protector.

(2) Open the left and right sheath clamps.

(3) Place fiber in the V-groove.

⇒**Check:** Make sure the fiber is not twisted when setting it into the splicer.

⇒**Check:** If the fiber coating has curl memory, or bend memory, Load the fiber in such a manner that the crown (curve) of the memory is turn upward.

⇒**Check:** Care should be taken to prevent damage or contamination of the fiber end-face. Fiber end-face contact on ANY item including V-groove bottom may result in poor quality splices.

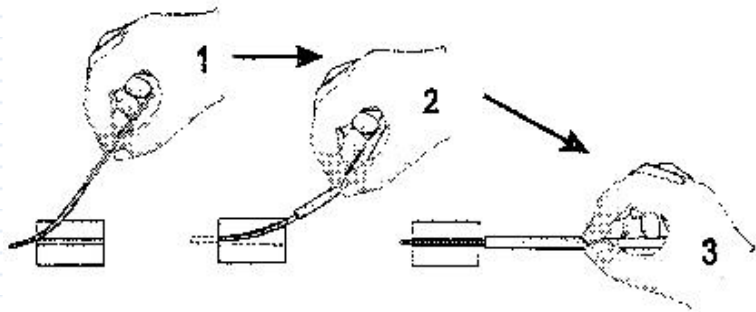
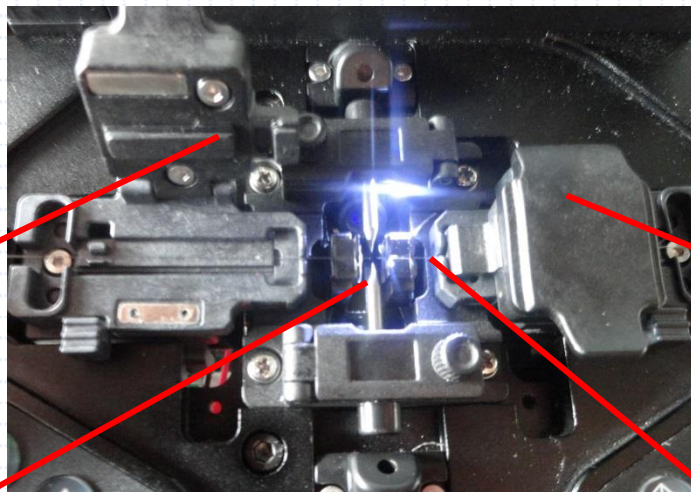


Fig 3-5 Setting Fibers I

(4) Gently close the sheath clamp while holding the fiber.

⇒**Check:** Observe fiber setting in the V-groove. The fiber should rest in the bottom of the V-groove, Reload fiber if it does not rest properly.

⇒**Check:** Fiber end-face should rest between the V-groove tip and electrode center line. It is unnecessary that the fiber end-face be exactly at the midpoint.



Left Sheath Clamp

Right Sheath Clamp

Left Fiber

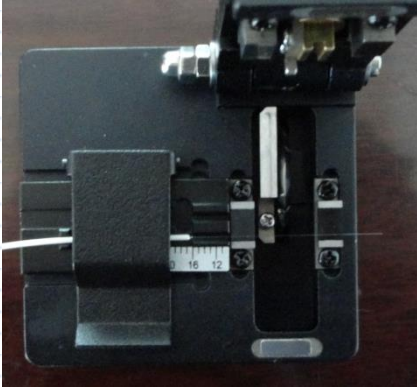
Right Fiber

Fig.4-4 Setting Fibers II

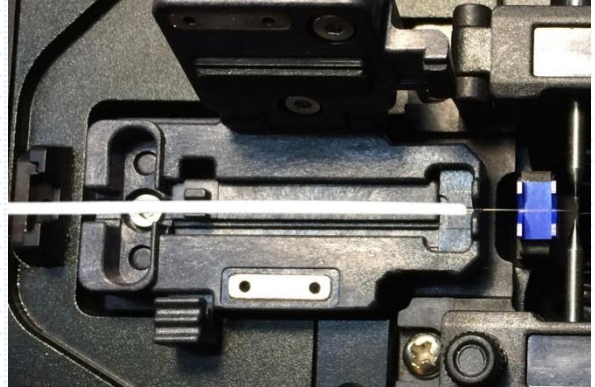
- (5) Repeat steps (3) and (4) for second fiber.
- (6) Gently close the left and right fiber clamps.
- (7) Close the wind protector.

Pigtail Preparing and setting

- 1. Prepare the pigtail
- 2. Place the pigtail to fiber cleaver and the cleaving length is 16mm



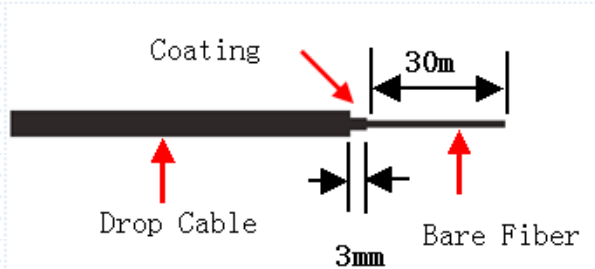
Place the prepared pigtail to Fiber Holder



Close the pressure pad and prepare the right side fiber, then do following step

Drop cable preparing and setting

- 1. Prepare the drop cable as needed



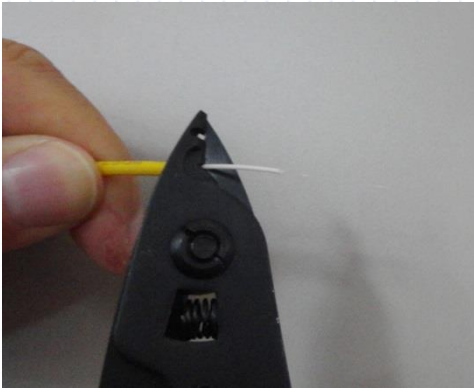
- 2. Place the drop cable to fiber cleaver and the cleaving length is 16mm
- 3. Place the prepared drop cable to fiber holder



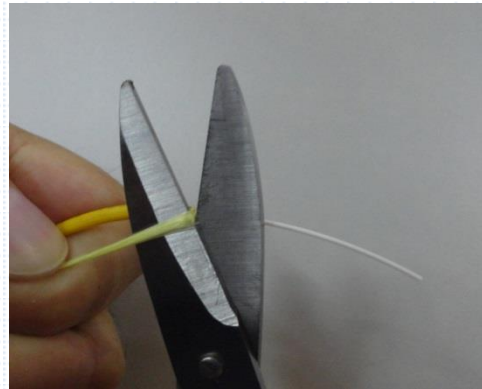
4. Close the pressure pad and prepare the right side fiber, then do following step

Patch cord preparing and setting

1. Prepare the Patch Cord



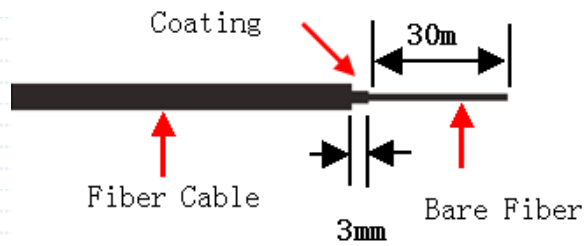
Small cut



Cut off



Big cut



2. Place the patch cord to fiber cleaver and the cleaving length is 16mm



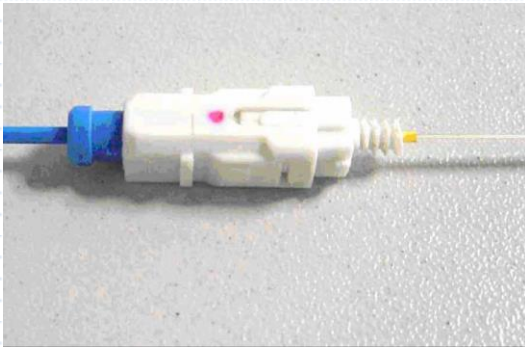
3. Place the prepared patch cord to fiber holder



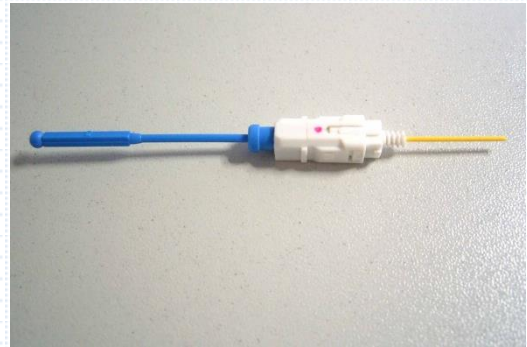
4. Place the prepared drop cable to fiber holder

Splice on connector preparing and setting

1.Prepare the Splice on connector

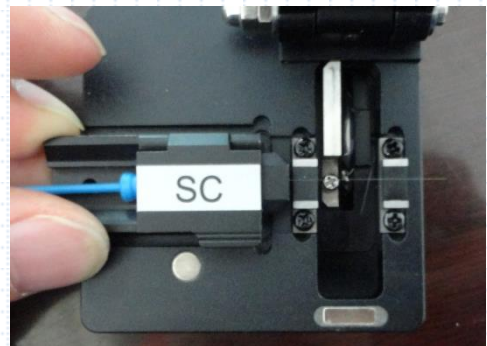


Splice on connector



Strip the SOC
and keep 1mm coating

2.Place the Splicer on connector to the fiber holder and then place to fiber cleaver and cleaving



3.Place the prepared Splice on connector ,together with the fiber holder, to fusion splicer



4.Close the pressure pad and prepare the right side fiber,then do following step

Splicing operation

It uses image processing to identify abnormal conditions that sometimes occur during the splicing process. A small portion of these defects sometimes goes undetected and a poor quality splice occurs. Visually inspect the fiber image on the monitor to confirm acceptance or rejection during the various stage of the splicing process.

(1) Start of splicing

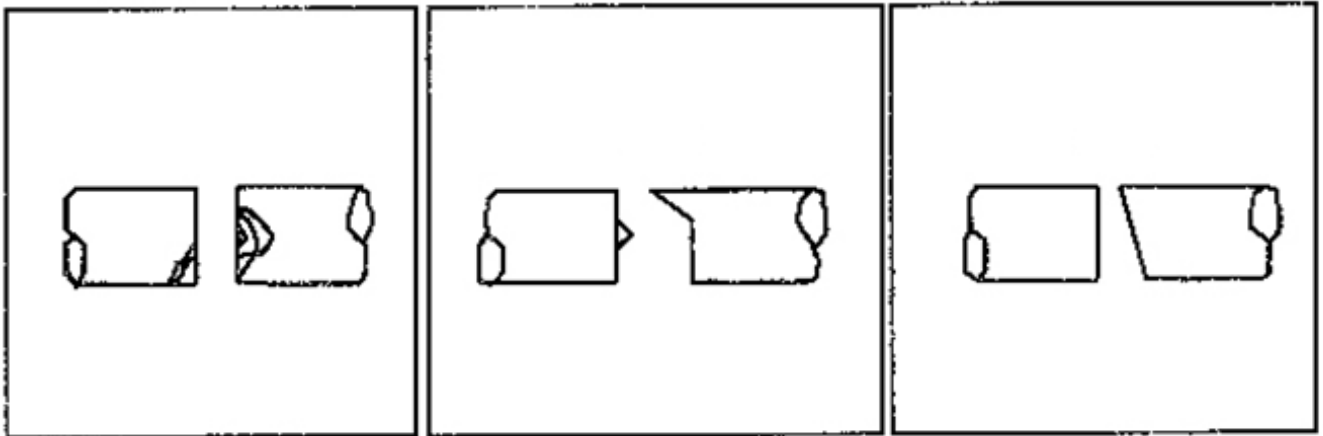
Press <  > moves the left and right fibers forward. After completion of cleaning arc discharge, the fibers stop at the predetermined position.

⇒**Note:** When the fiber are moving forward and they appear to hop up and down, contamination may be present in the V-grooves or the fiber surface, Clean the V-grooves and redo fiber preparation.

(2) Cleave angle measurement and alignment operation

Visually examine the condition of the fiber end-face while the splicer is in operation or at a pause.

⇒**Check:** Even if no cleave angle error is displayed, press <  > and redo fiber preparation if the following cases occur.



Crack

IPL

Inclin

Fiber End Face

When the threshold of cleave angle error is exceeded an error message is displayed : “Left Fiber End-face badness” or “Right Fiber End-face badness” , Then redo cleave fiber.

Left/Right fiber incise End-face

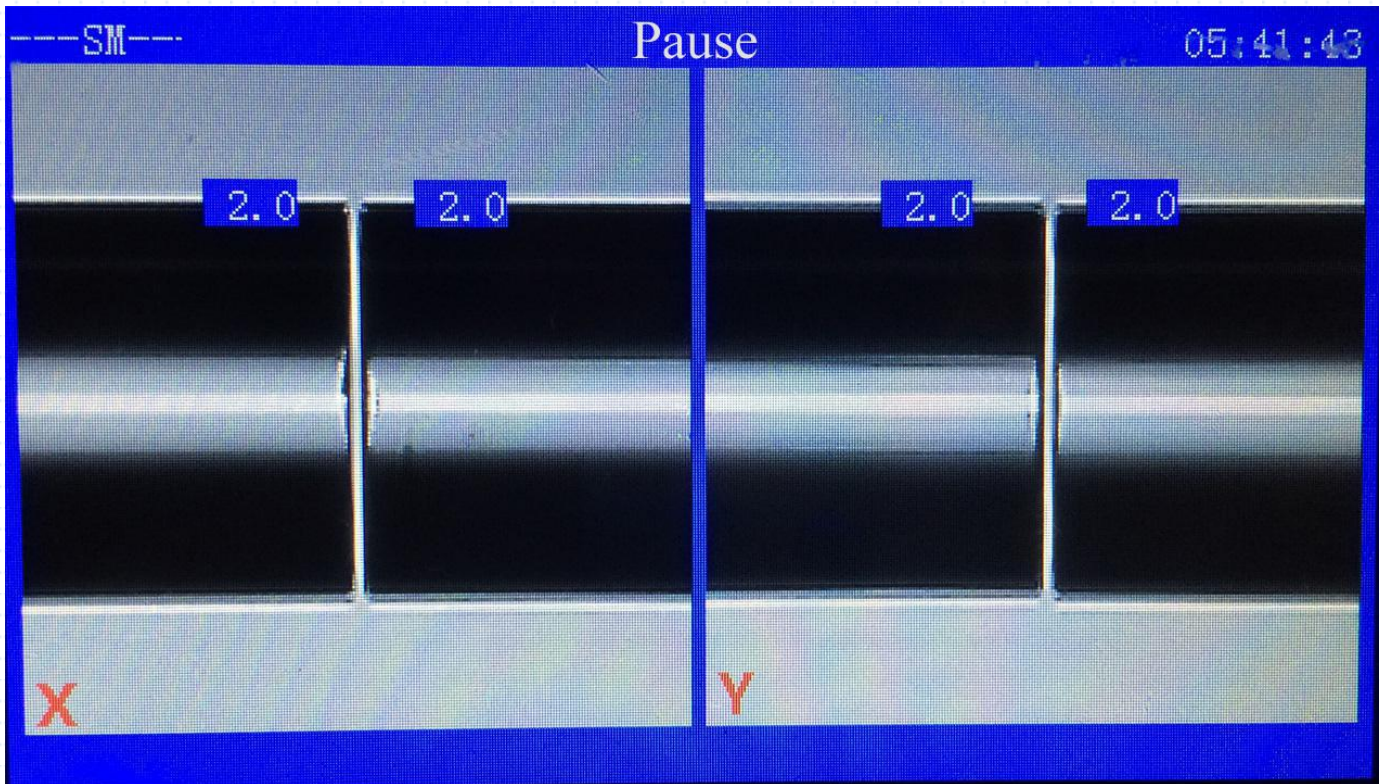


Fig 3-8 Alignment

Heating with arc discharge

After aligning the fibers, the splicer will produce a high voltage arc discharge to fuse the fibers together. During arc discharge, observe the fiber image on the monitor screen.

If some part of the image exhibits an extremely bright glow (hot spot), which is created by burning contaminants located on the surface or end-face of the fiber, there is a possibility that the fiber core will be deformed. Although deformation can be detected by the loss estimation function, a re-splice is recommended.

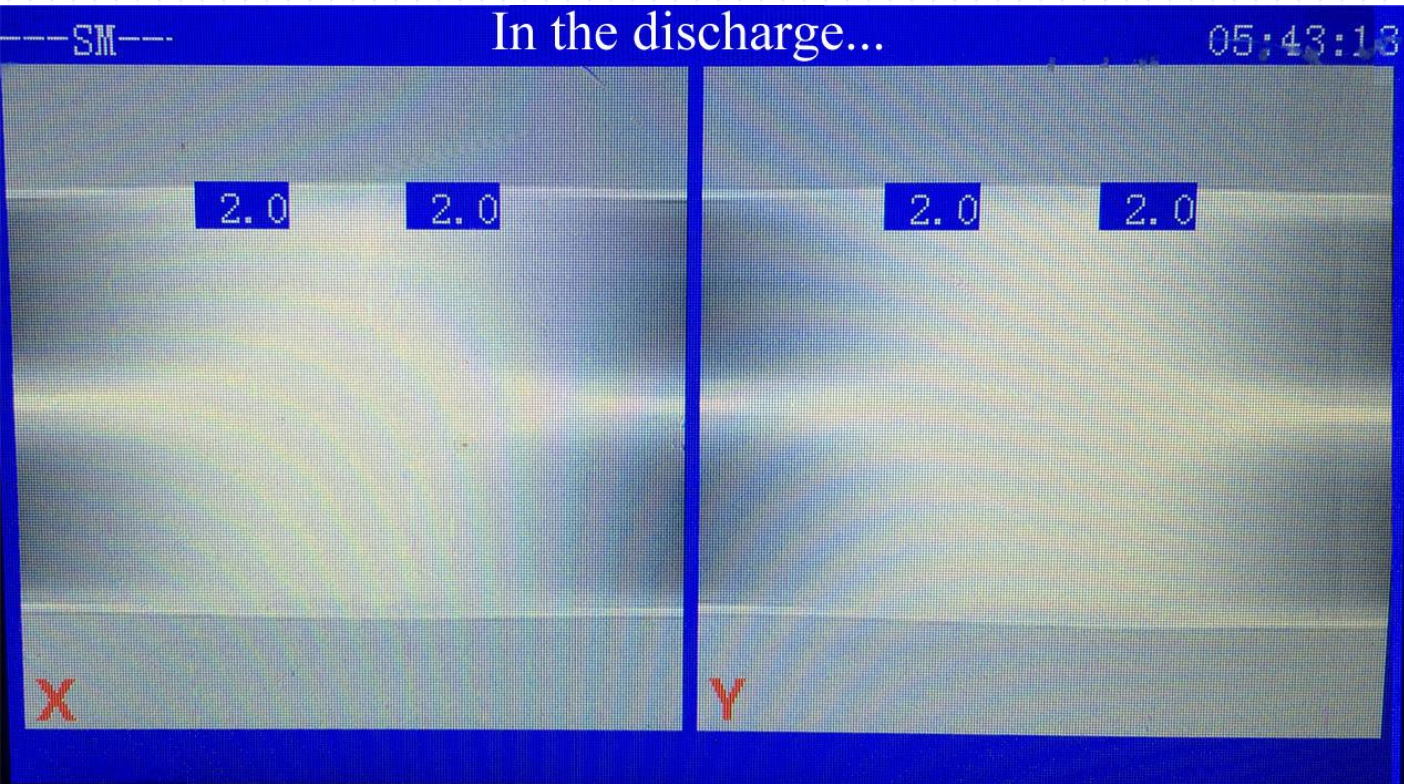
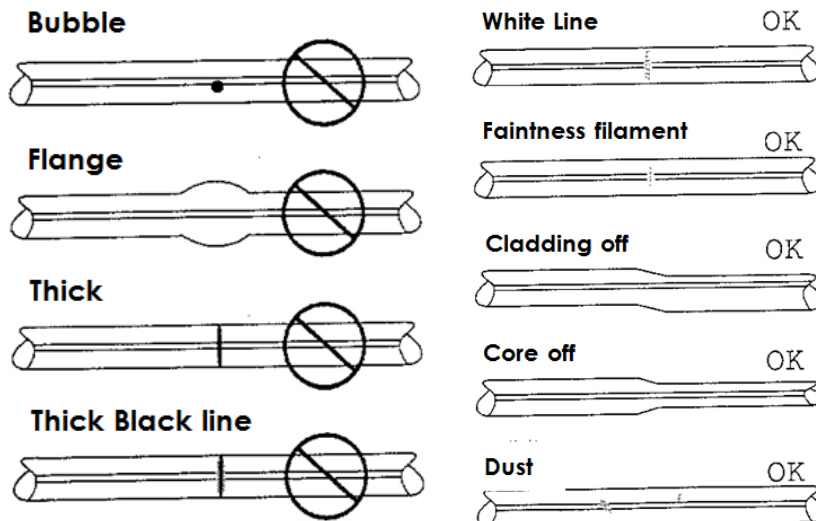


Fig.3-9 Fibers Being Spliced

Splice Inspection

When the spliced state is abnormal, the splicer displays an error message “Splice Lost” A re-splice is recommended.

⇒**Note:** It is best to perform an arc test at this stage for the splicer to determine the best program for the fiber type.



⇒**Note:** A slightly fat splice is normal. There is no problem with the splice loss and reliability.

⇒**Note:** White line or black line will appear on fiber's joint with fluorine and titanium, Because of optics, There's no effect to joint.

Splice loss estimating

The estimated splice loss is displayed on the screen

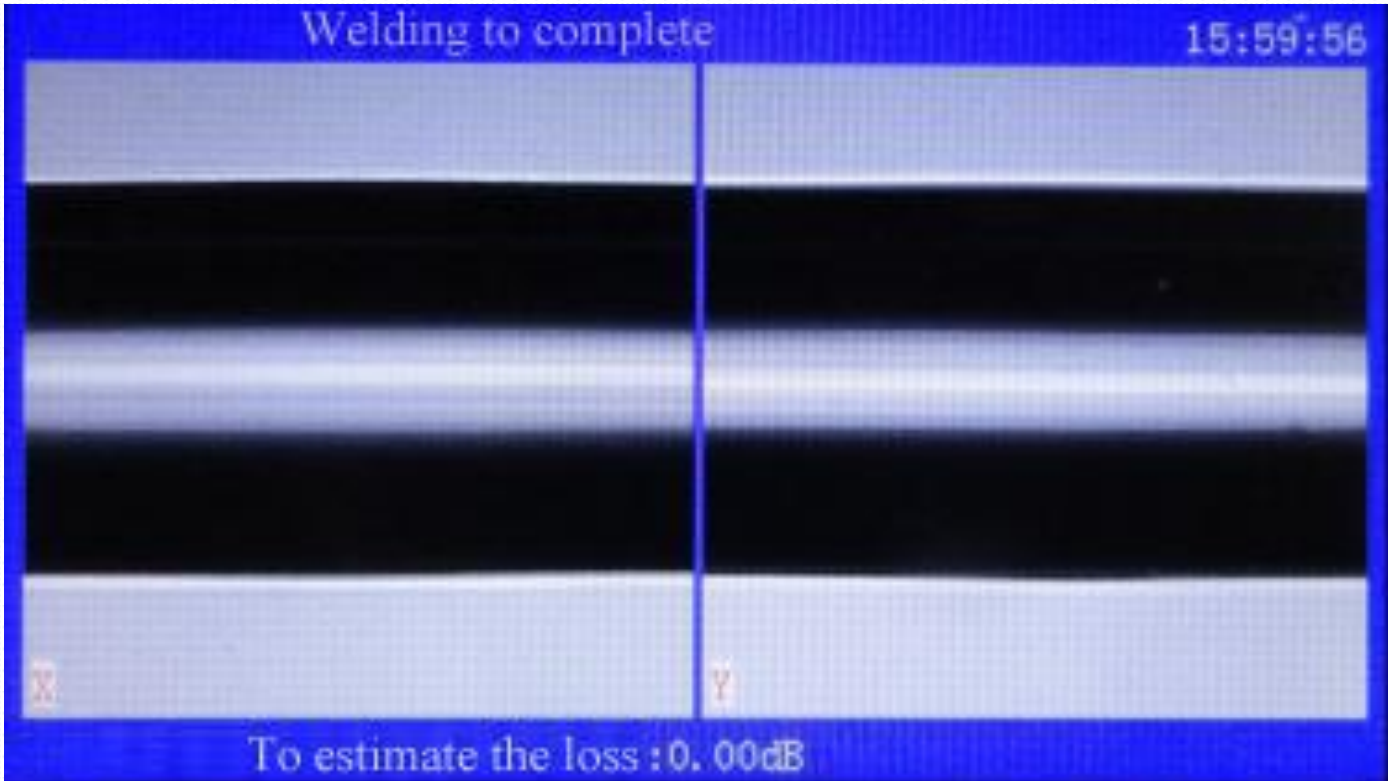


Fig.3-11 Result of Fiber Splicing

In some cases the splice loss can be improved with the re-arc feature.

Press the <➡>. After re-arc discharge, Not displayed of splice loss.

⇒**Note:** There are cases when the splice loss will deteriorate after re-arc discharge

Storing splice result

Press <⬆> or open the wind protector and the splicer

Will automatically perform the proof test and stores the splicing result. In the memory CMOS chip of the splice result. DVP-750 can storage 8000 item splice result

Fiber Removal

(1) Open the wind protector

⇒ **Check:** Heater clamps should be open, ready to receive fiber and splice protector sleeve.

(2) Open the left sheath clamp, holding the left fiber in your hand.

(3) Open the right sheath clamp, holding the right fiber in your hand.

(4) Remove the fiber from the splicer.

Reinforcing the Splice

(1) Slide the fiber protection sleeve to the center of the splice and move it to the tube heater.

⇒ **Check:** Make sure the splice point and fiber protection sleeve are in the center of the tube heater.

⇒ **Check:** Make sure the reinforcing material is placed downward.

⇒ **Check:** Make sure the fiber is not twisted.

(2) While applying tension to the fiber, lower the fiber into the Center the splice point

(3) Close the heater

Center the splice point and the sleeve

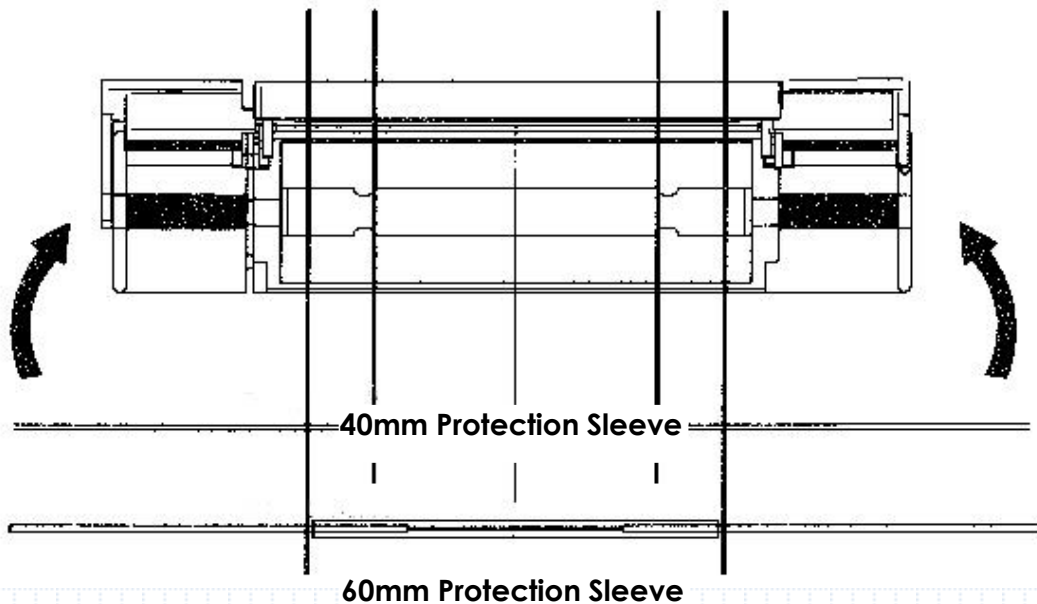




Fig.3-12 Setting in Tube Heater

⇒ **Check:** Check again to see that the splice point and fiber protection sleeve are in the center of the tube heater.

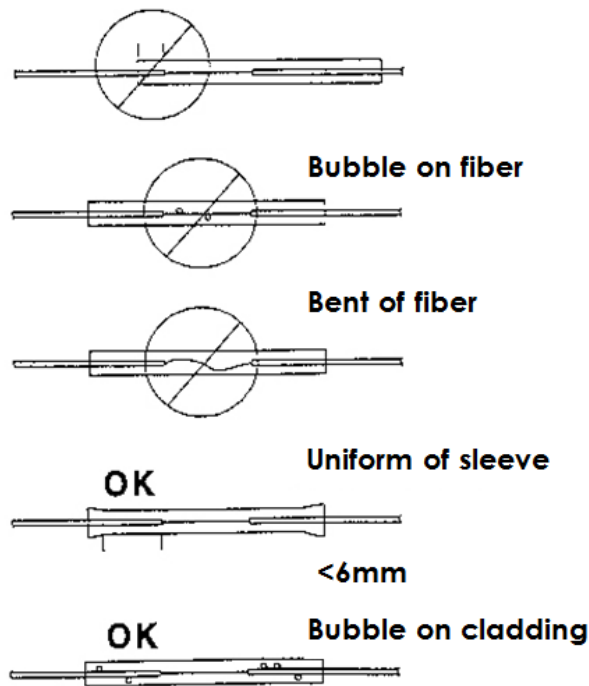
(4) Press <  > to start a tube-heating cycle. Upon completion of heating, The heater LED turns off.

⇒ **Note:** To abort the tube heating cycle, press <  >

(5) Open the left and right heater clamps. While applying tension the fiber and then take off the fiber

⇒ **Note:** On occasions the fiber protection sleeve may adhere the bottom of the tube heater. Simply use a cotton swab or similar soft tip object to gently push the fiber protection sleeve to dislodge.

(6) Visually check the splice reinforcement for bubbles and impurities. Shown in Fig.4-16, Three for disqualification needed rework; Twain for eligibility.



Storing the fusion splicer

(1) Turn the switch to "0" position

(2) Take off AC adapter

(3) Fusion splicer is an exact instrument. Its carrying case is especially design, With guarantee the fusion splicer not influence of bump ,dust, hydrosphere. Put in carrying case in time of the fusion

⇒ **Check:** Cut off the power before storing.

⇒ **Check:** Cleaning the crucial parts in time: Pickup camera, Lamp-house lens, Fiber press and V-groove, Wipe off the dust and dunghill.

⇒ **Check:** Would the LCD surveillance screen vertical vail, Entireness cling to the fusion splicer

⇒ **Check:** Unchain the having line put in the carrying case

⇒ **Check:** Lift the fusion splicer cased the carrying case.

⇒ **Check:** Cased the other fittings and expendable, Lid and button the carrying case.

Note: Eliminate the liquid in the bottle in time if the alcohol bottle in the carrying case . For fear spill influence the facility.

Maintenance of Splicing Quality

Cleaning and Checking before Splicing

Critical cleaning points and maintenance checks are described below. Cleaning V-grooves If contaminants in the V-grooves, correct clamping may not occur, resulting in higher splice loss. The V-grooves should be frequently inspected and periodically cleaned during normal operation.

(1) Open the wind protector and fiber clamps.

(2) Clean the bottom of the V-groove with an alcohol-impregnated thin cotton swab as shown in Fig. 4—l. Remove excess alcohol from the V-groove with a clean dry swab.

⇒ **Check:** Use a high quality alcohol, greater than 99% pure.

⇒ **Check:** Do not use excessive force when cleaning the V-groove The V-groove may be damaged

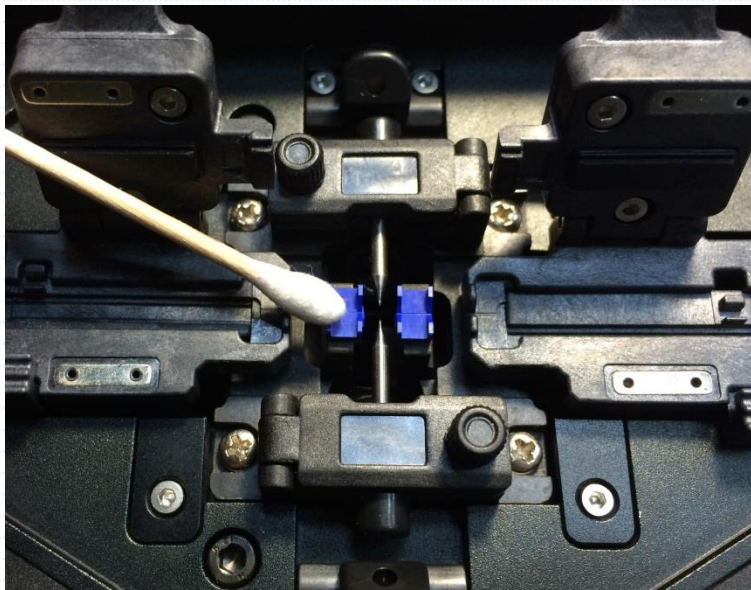


Fig.4-1 Cleaning V-grooves

(3) If the contaminants in V-groove cannot be removed with an alcohol-impregnated thin cotton swab, use a cleaved fiber end-face to dislodge contaminants from V-groove bottom. Repeat step **(2)** after this procedure.

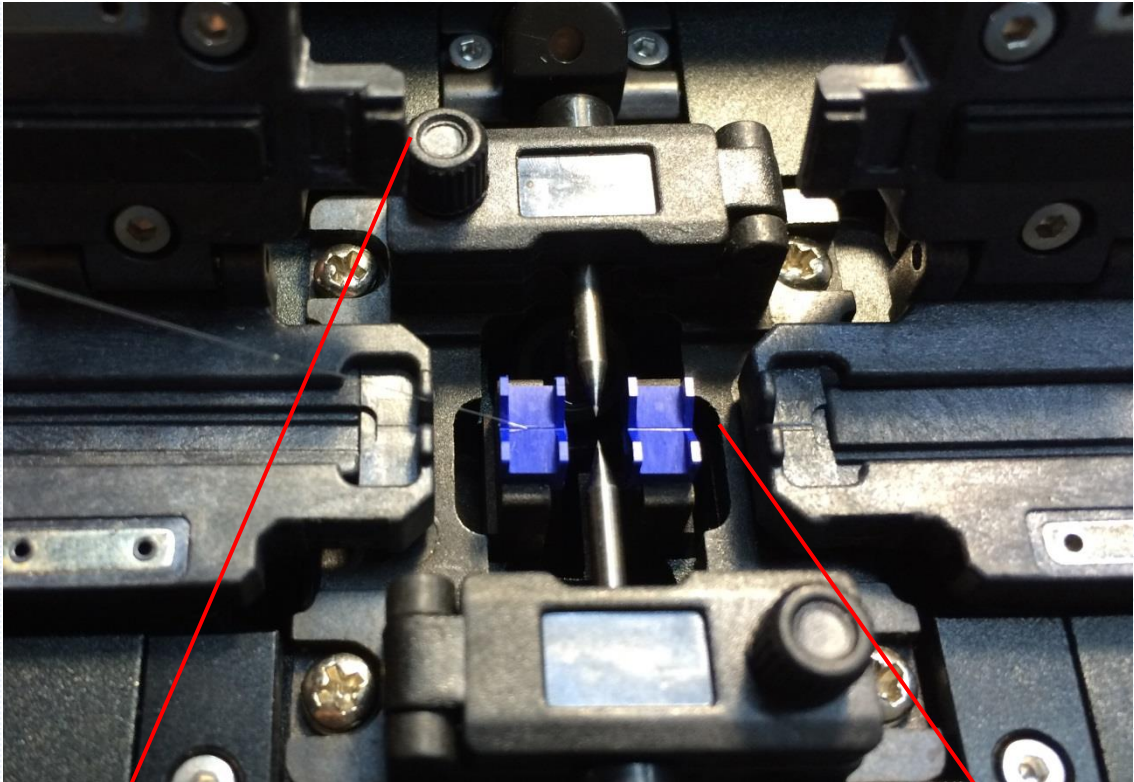


Fig.4—2 Cleaning V-grooves with Cleaved Fiber

Cleaved Fiber

V-Groove

Cleaning Fiber Clamp Chips

If contaminants are present on the clamp chips, correct clamping may not occur, resulting in poor quality fiber alignment splices. The fiber clamp chips should be frequently inspected and periodically cleaned.

(1) Open up the wind protector

(2) Clean press stand surface with an alcohol-impregnated thin cotton swab. Remove excess alcohol from the press stand surface with a clean dry swab

⇒ **Check:** Use a high quality alcohol greater than 99% pure cotton swab fiber press stand cleaning fiber press stand.

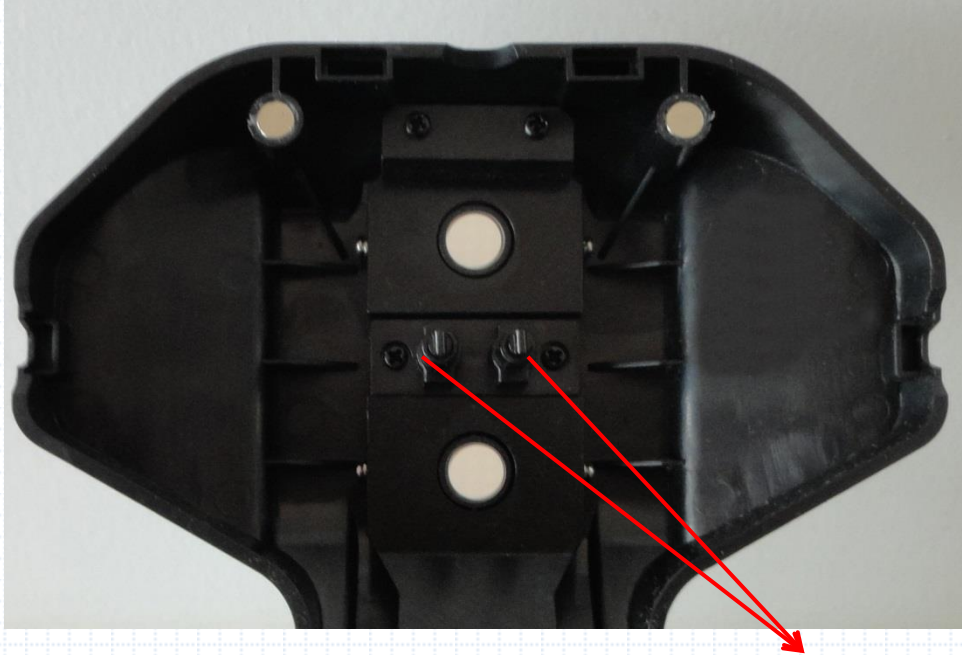


Fig 4-3 Clean Pressure Foot

Pressure Foot

Cleaning Mirrors surface

If the mirrors surface becomes dirty, the core position may be incorrect due to decreased optical path clarity, resulting in higher splice loss.

(1) Clean the mirror surface with an alcohol-impregnated thin cotton swab as shown in **Fig.4** —4. Remove excess alcohol from the mirror surface with a clean dry swab.

⇒**Check:** Use a high quality alcohol, greater than 99% pure.

(2) Mirror should be clean and smudge free.

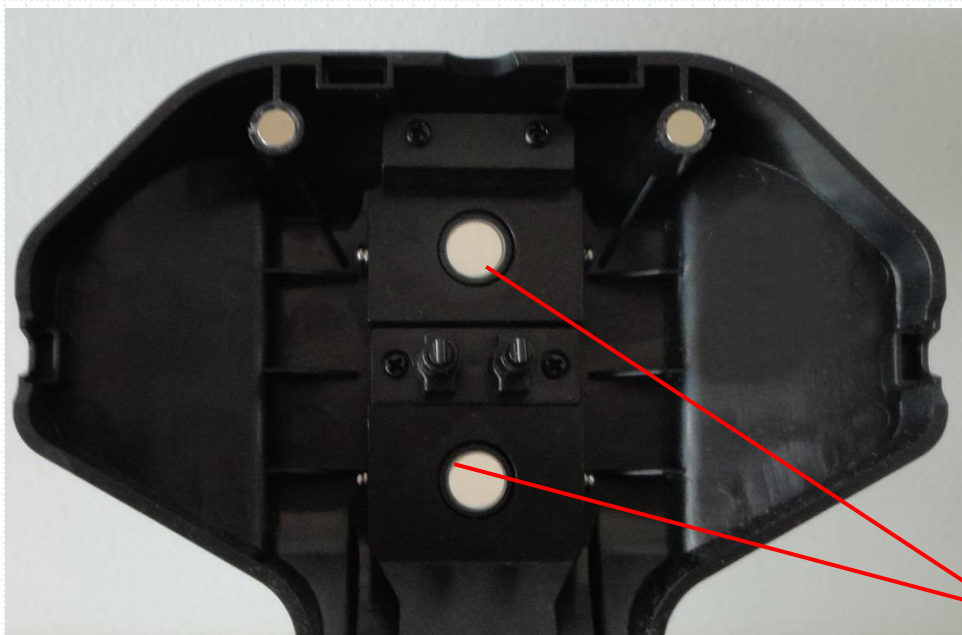


Fig 4-4 Clean Protector Mirror

Mirror

Program Test

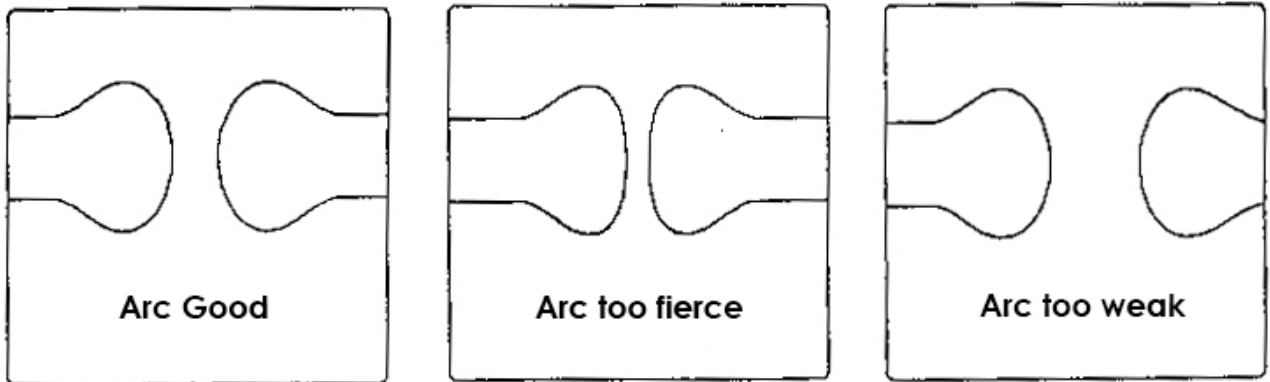
Atmospheric conditions such as temperature, humidity, and pressure are constantly changing which create variability in the arc temperature.

The splicer contains a temperature, humidity, and pressure sensors that are used in a constant feedback monitoring control system to regulate the arc power at a constant level.

Changes in arc power due to electrode wear and glass adhesion cannot be corrected automatically. Also, the center position of arc discharge sometimes shifts to the left or right.

Using fusion splicer at herein after conditions, Also discharge test: Highest temperature, Lowest temperature, Too desiccation, Too humidity, Electro de inferior, Different fiber connect, After cleanness and instead electrode, Or all condition are concurrence.

Arc test according to specifically fusion program request discharge intensity, Self-regulation discharge parameter, And seed discharge high temperature area adjust fiber center station.



(1) Program test need twain fiber. According to commonly fusion means vs fiber stripper sever and placed

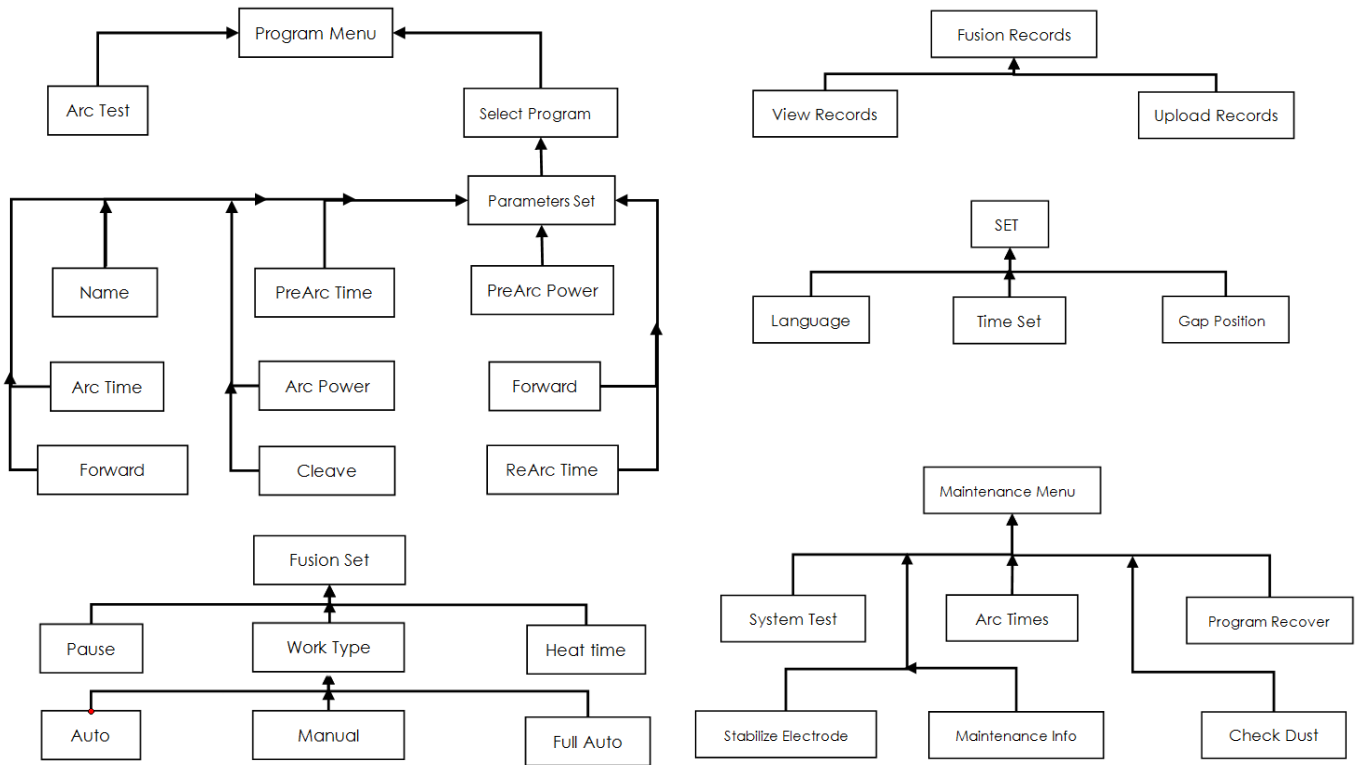
(2) In wait for state, Press <⏏> enter “Setup Menu”
Fluctuate arrowhead move to “Program Test”, Press <▶> start program test.

(3) Program test automatism adjust discharge intensity. Repeat test until screen display “Arc good”

(4) After program test, Press <⏏> exit and return to automatism splicing state.

Menu Commands

Menu Commands Tree



Program Test

Welding machine with a built in discharge test system. Users should be regular operation, to ensure stable quality. See page xxx for specific operation.

Selects Program

In standby state, press < > enter Program, move “ ” or “ ” to select program, press < > to confirm it

Move cursor to fiber type, press < > to confirm, press < > to exit

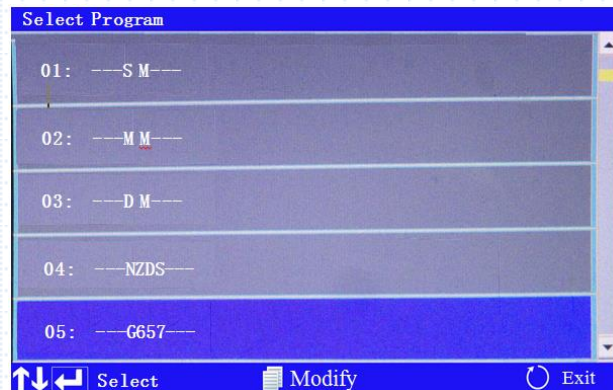
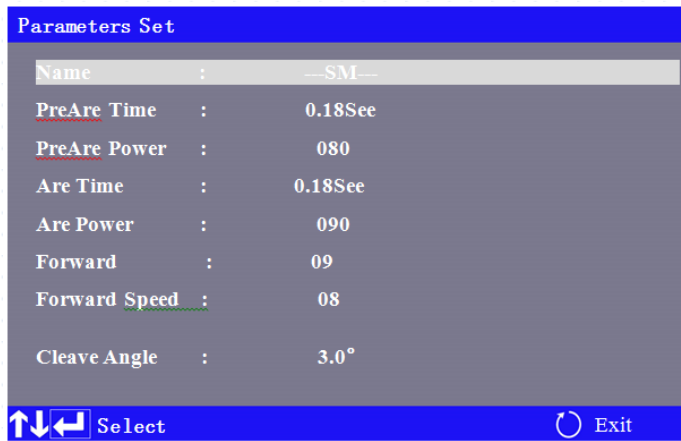


Fig 5-1 Select Program

Fiber kind of fibers:

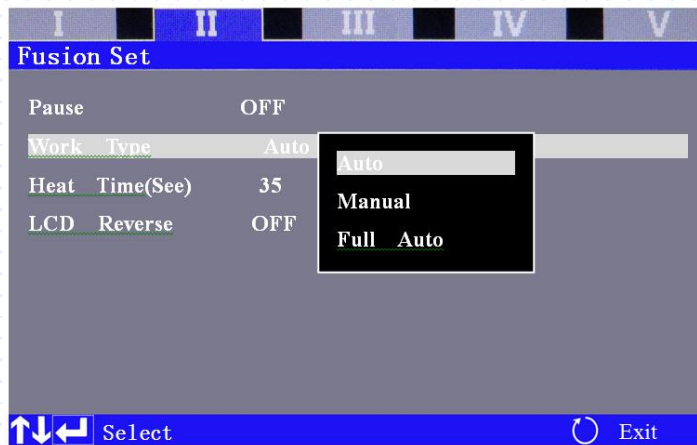
Fiber Type	Meaning
SM	Single mode
MM	Multi mode
DS	Dispersion shifted
NZDS	Non-zero Dispersion shifted
G657	G657


Fig.5-2 Program Modify

Function	Function Explain	Value area
PreArc Time	Prefuse Time	0~1
PreArc Power	Prefuse Power	0~250
Arc Time	Fusion arc time	0~10.0
Arc Power	Fusion arc power	0~250
Forward	Fiber move forward in fusion time	0~60
Fiber move forward in fusion time	Fiber move speed in fusion time	1~10
leave Angle	Fiber incise end-face angle	0~5.0
Re Re-Arc time	Re-arc interval	0~25.0

Working type

In standby state, press < > enter program menu, press “ ” enter fusion set; press “ ” or “ ” change work type (see Fig 5-3 work type) 。 Press< :confirm, press< >exit.


Fig5-3 Work Type

AUTO working type

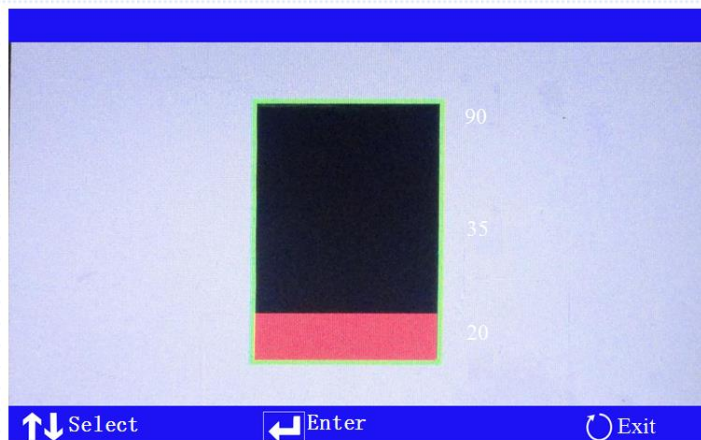
Auto working type is the commonly used type, after clean and cleave fiber, the fusion splicer will automatically do splicing operation.

Manual working type

With this working type, alignment, arc... will operated by manual.

Heat time

In Standby State, Press < > enter "Program Menu", press < > move the cursor to "Fusion Set", use "" or "" move the cursor to heating time, press <


Fig5-4 Heating time

Fusion Record

Enter this menu, may check the last 8000 record Press < > enter Program Menu, press < > enter "Fusion Record" and choose "View Records", Press < > enter (Fig 5-6) .

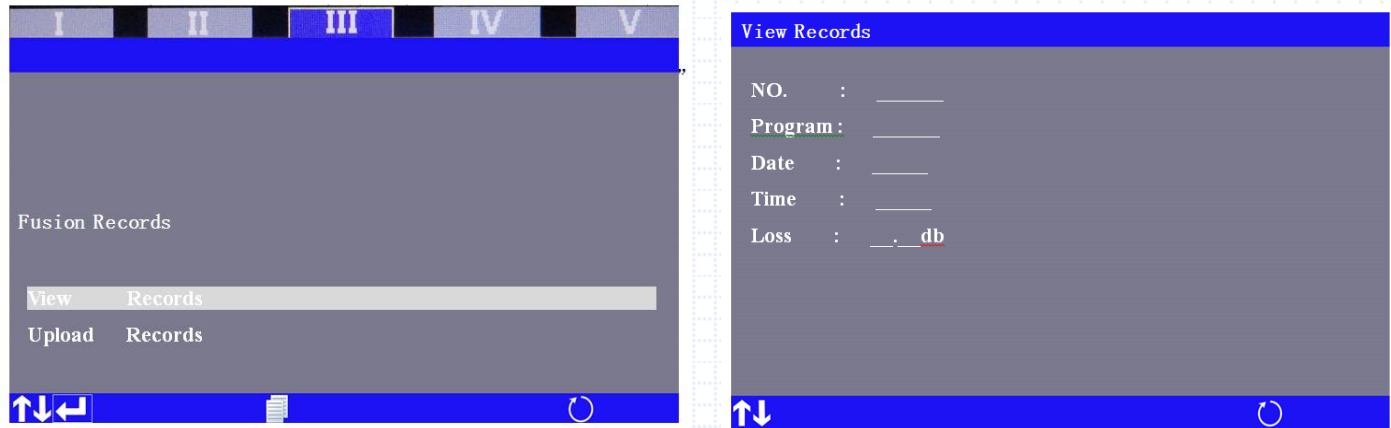


Fig 5-6 Fusion Record

Error Message List

Follow the remedy precisely as shown in the following lists. If it is not possible to eliminate the problem, there is the possibility of the splicer being faulty and the splicer may require service. Consult your nearest us with the following information:

- Model name of the splicer
- Serial number of the splicer
- Error message
- Situation when the error occurs

Error Message	Reason	Remedy
Replace Left fiber	The left fiber is set too far back.	· Reset, Moves left fiber forward
Replace Right fiber	· The right fiber is set too far back.	· Reset, Moves right fiber forward
Replace both fiber	· The left or right fiber is set too back.	· Reset, Moves left/right fiber all forward · Reset, Moves left or right fiber forward
Left cleave bad Right cleave bad	· Bad fiber end-face · Dust or dirt on the fiber surface. · "End-face angle" set up too strict	· Check the condition of fiber cleaver. When the blade is worn, rotate the blade. · Put "End-face angle" loose to suitable degree
Both cleave bad	· Dust or dirt on the objective lens or the wind protector mirror.	· A new preparation fiber · Clean the lens or mirrors
Please close the wind protector	· Unable to start splicing when the wind protector opens. · The wind protector is opened during splicing operation.	· Press < > reset after closing the wind protector
Fusion failure	· The fiber stuff amount is insufficient. · The pre-fuse power is too strong.	· Increase stuff amount in the parameter setup menu · Minish pre-fuse power in the parameter setup menu