ShinewayTech®
Dependable Partner for Future Networks

USER MANUAL

Optical Fiber Fusion Splicer

O F S – 95

PLEASE READ THIS INSTRUCTION MANUAL CAREFULLY BEFORE OPERATING THE EQUIPMENT.

ADHERE TO ALL SAFETY INSTRUCTIONS AND WARNINGS CONTAINED IN THIS MANUAL.

KEEP THIS MANUAL IN A SAFE PLACE.

SHINEWAY TECHNOLOGIES, INC

CE FC

About This Manual

Thank you for purchasing ShinewayTech® product. Please read this manual carefully before using any of ShinewayTech® products. Always observe the warnings and cautions appearing throughout this manual.

This manual contains the information necessary for proper operation and maintenance of ShinewayTech® OFS-95 Optical Fiber Fusion Splicer, troubleshooting instructions as well as information regarding obtaining services.

ShinewayTech® OFS-95 Optical Fiber Fusion Splicer is carefully assembled and undergoes a rigorous mechanical, electrical, and optical inspection prior to shipment. For detailed packing information, please refer to the packing list. Upon receiving the instrument, please check for any obvious signs of physical damage that may have occurred during shipment. Report any damage to the shipping agent or the representative of Shineway Technologies, Inc. immediately. Retain the original packing materials in case reshipment becomes necessary.

If necessary, please contact us via email: support@shinewaytech.com.

A

The splicer has been designed for splicing Silica-based optical fibers for telecommunications. Do not attempt to use this machine for other applications. ShinewayTech Inc. gives much consideration and regard to personal injury. Misuse of the machine may result in electric shock, fire and/or serious personal injury.

Follow all safety instructions

Read and understand all safety instructions

Stop using it when it malfunctions

Ask our service centers for repair as soon as possible.

Instruction Manual

Read this instruction manual carefully before operating this machine. Store this instruction manual in a safe place

Notices

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No part of this manual may be reproduced in any form or by any means (including electronic storage and retrieval or translation into a foreign language) without prior agreement and written consent from Shineway Technologies, Inc. as governed by international copyright laws.

Warranty

The material contained in this document is subject to change without notice. Shineway Technologies, Inc. makes no warranty of any kind with regard to this material, including, but not limited to, the implied warranties of merchantability and fitness for a particular purpose. Shineway Technologies, Inc. shall not be liable for errors contained herein or for incidental or consequential damages in connection with furnishing, performance, or use of this material.
The battery is a consumable part and is not subject to the warranty.

ISO9001 Certification

The product exactly conforms to ISO9001 International Quality System Standard through improving process control by ShinewayTech®. It is one part of our objective which is continually increasing customers' satisfaction.

B

Safety Instructions

During each stage of operation of this instrument, please always observe the following safety instructions. Not taking any safety precautions or following the instructions will violate the safety standards of design, manufacturing and application of these instruments. In no case will Shineway Technologies bear the responsibilities for consequences incurred by violation of the following instructions.

General

This product is a Safety Class 3 instrument. The protective features of this product may be impaired if it is used in a manner not specified in the operation instrument.

Environmental Conditions

It is designed to operate at a maximum relative humidity of 95% and at altitudes of up to 5000 meters. For more details, please refer to the specifications tables.

Before Applying Power

Verify that the product is set to match the available line voltage, the correct fuse is installed, and all safety precautions are taken. Note the instrument's external markings described under Symbols.

Do Not Operate in an Explosive Atmosphere

Do not operate the instrument in the presence of flammable gases or fumes.

Do Not Remove the Instrument Cover

Operating personnel must not remove instrument covers. Component replacement and internal adjustments must be made only by qualified service personnel.

Safety Terms Used in This Manual

WARNING!	The WARNING sign denotes a hazard. It calls attention to a procedure, practice, or the like, which, if not correctly performed or adhered to, could result in personnel injury. Do not proceed beyond a WARNING sign until the indicated conditions are fully understood and met.
CAUTION!	The CAUTION sign denotes a hazard. It calls attention to an operating procedure, or the like, which, if not correctly performed or adhered to, could result in damage to or destruction of part or the entire product. Do not precede beyond a CAUTION sign until the indicated conditions are fully understood and met.
NOTE	The NOTE sign information that may be beneficial during the use and maintenance of the instrument.

WARNING!
OFS-95 has been designed for splicing Silica-based optical fibers for telecommunications. Do not attempt to use this machine for other applications. Shineway Technologies, Inc. gives much consideration and regard to personal injury. Misuse of the machine may result in electric shock, fire and/or serious personal injury. a) Follow all safety instructions. b) Stop using it when it malfunctions and ask our service centers for repair as soon as possible. c) Read this instruction manual carefully before operating this machine.
Disconnect the AC power cord from the AC adapter inlet or the wall socket

(outlet) immediately if user observes the following or if the splicer receives the following faults:

a) Fumes, bad smell, noise, or over-heat occurs.
b) Liquid or foreign matter falls into cabinet.
c) Splicer is damaged or dropped.

If this occurs, ask our service center for repair. Leaving the splicer in a damaged state may cause equipment failure, electric shock or fire and may result in personal injury, death or fire.

Use only the AC adapter / battery charger designed for this splicer. Using an improper AC power source may cause fuming, electric shock or equipment damage and may result in personal injury, death or fire.

Do not disassemble or modify the splicer, AC adapter or battery. In particular, do not remove or bypass any electrical or mechanical device (e.g. a fuse or safety switch) incorporated into the design and manufacturing of this equipment. Modification could cause damage that may result in personal injury, death, electric shock or fire.

Never operate the splicer in an environment where flammable liquids or vapors exist. Risk of dangerous fire or explosion could result from the splicer's electrical arc in such an environment.

Do not use compressed gas or canned air to clean the splicer. They may contain flammable materials that could ignite during the electrical discharge.

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.
NOTE: Arc discharge stops when wind protector is opened.

Turn the splicer off and disconnect the AC power cord before replacing electrodes.

Safety glasses should always be worn during fiber preparation and splicing operation. Fiber fragments can be extremely dangerous if it comes into contact with the eye, skin, or is ingested.

Use only proper power source.

a) Check the AC power source before use: Proper AC power source is AC100-240V, 50-60Hz. Proper DC power source is DC10-12V. Improper AC or DC power source may cause fuming, electric shock or equipment damage and may result in personal injury, death or fire;

b) AC generators commonly produce abnormally high AC output voltage or irregular frequencies. Measure the output AC voltage with a circuit tester before connecting the AC power cord. Such abnormally high voltage or frequency from a generator may cause fuming, electric shock or equipment damage and may result in personal injury, death or fire. Make sure the generator is regularly checked and serviced.

Do not modify, abuse, heat or excessively pull on the supplied AC cord. The use of a damaged cord may cause fuming, electric shock or equipment damage and may result in personal injury, death or fire.

OFS-95 uses a three-prong (core) AC cord that contains an earthed ground safety mechanism. The splicer MUST be grounded. Use only the supplied three-prong (core) AC power cord. NEVER use a two-prong (core) power cord, extension cable or plug.

Connect AC power cord properly to the splicer (inlet) and wall socket (outlet). When inserting the AC plug, make sure there is no dust or dirt on the terminals. Engage by pressing the female plug into the splicer (inlet) and the male plug into the wall socket (outlet) until both plugs are fully seated. Incomplete engagement may cause fuming, electric shock or equipment damage and may result in personal injury, death or fire.

Do not short-circuit the terminals of AC adapter and optional battery. Excessive

electrical current may cause personal injury due to fumes, electric shock and equipment damage.

Do not touch the splicer, AC power cord and AC plugs with wet hands. This may result in electric shock.

Do not operate splicer near hot objects, in hot temperature environments, in dusty/humid atmospheres or when water-condensation is present on the splicer. This may result in electric shock, splicer malfunction or poor splicing performance.

When using Li-ion battery, follow the instructions below. Failure to follow these may result in explosion or personal injury.

a) Do not charge battery with other methods than instructed.
b) Do not discard battery into an incinerator or fire.
c) Do not charge or discharge battery near a flame or under direct sunlight.
d) Do not excessively shake or jar the battery.
e) If battery leaks of liquid residue, be careful handling the battery so the liquid does not get in skin or eye contact. If it reaches contact, immediately wash skin or eyes thoroughly and see the doctor. Dispose of the battery and call the service center for replacement.
f) If charge did not complete in four hours or the "CHARGE" LED is constantly on, immediately stop charging and call the service center for repair.

CAUTION!

Do not store splicer in any area where temperature and humidity are extremely high. Possible equipment failure may result.

Do not touch protection sleeve or tube-heater during heating or immediately after completion of heating. Their surfaces are very hot and touching these may

result in skin burn.

Do not place the splicer in an unstable or unbalanced position. The splicer may shift or lose balance, causing the unit to fall. Possible personal injury or equipment damage may result.

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 supplied carrying case for transportation and storage. The carrying case protects the splicer from damage, moisture, vibration and shock during storage and transportation.

Follow the below listed instructions for handling electrodes.

a) Use only specified electrodes.
b) Set the new electrodes in the correct position.
c) Replace the electrodes as a pair.

Failure to follow the above instructions may cause abnormal arc discharge. It can result in equipment damage or degradation in splicing performance.

Do not use any chemical other than pure alcohol (99% or greater) to clean the objective lens, V-groove, mirror, LCD monitor, etc., of the splicer. Otherwise blurring, discoloration, damage or deterioration may result.

The splicer requires no lubrication. Oil or grease may degrade the splicing performance and damage the splicer.

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

Table of Contents

Introduction

ShinewayTech® OFS-95 Optical Fiber Fusion Splicer is for fiber fusion with low splice loss and ensures splice long-time stabilization. Splice loss depends on certain conditions like fiber preparation, splicing parameters, fiber condition, variation after splicing and etc.

The standard principle of splicing is not complicated, firstly the splicer finds the fiber core and aligns it correctly, and then it splices the fiber with the arc generated by the electrodes. There are two major technologies to ensure high-quality splice, LID (Local Injection and Detection) and CDS (Core Detection System), which is also widely known as PAS (Profile Alignment System).

OFS-95 with PAS technology is designed for splicing many types of optical fibers. It is small in size and light in weight, making it suitable for any operating environment. It is easy to operate and it splices fast while maintaining low splice loss. In order to achieve the splicer's full capabilities, read the following important information.

- **Splice mod**

Use [SM] splice mode for standard SM fiber (ITU-TG.652) splicing. It completes in 9 seconds and is the quickest mode for SM fiber splicing.
Use [AUTO] splice mode if fiber type is not identified. Splice takes longer but it covers most conventional fibers splicing for following reasons.

a) [AUTO] mode first identifies fiber type by analyzing fiber profile, and then unique splicing condition is chosen for the type of fiber. The types of fibers covered by [AUTO] are all the conventional fibers, such as SMF (G652), NZDSF (G655), MMF (G651), etc. The [AUTO] modes takes longer for the above processes but is recommended in fiber type is not sure.

b) [AUTO] mode comes with automatic arc calibration function, which observes the splicing process and feedback adequate heat power information

to the next splice (See next chapter for detail).

- **Automatic arc calibration function**

This function calibrates the arc power at every splice. When the automatic arc calibration function is enabled, performing the [Arc calibration] function before a splice operation is not necessary. The automatic arc calibration function works in AUTO modes only. It doesn't work in the standard splice modes. When using those modes, performing [Arc calibration] before splicing is strongly recommended.

- **Environment Performance**

To operate by the bad environment, the splicer has improved the performance.

Dropping

Water-Proof

Dust

ShinewayTech does not guarantee that the splicer will not be damaged under these conditions.

- **Unique function**

a) Operating display can be changed

The OFS-95 can be operated with monitor in front or at back. The fiber/display image on the monitor can be changed.

b) Sheathe clamping method

Either conventional sheathe clamping system or "fiber holder system (optional)" can be selected.

c) Carrying Case with worktable.

The top cover of caring case can be used as a work table.

d) Upgrade the software

OFS-95S's software can be upgraded via internet by using "Software Download Tool" software. Refer to the instruction manual of "Software Download Tool.

NOTE

- The splicer is equipped with a LCD monitor, manufactured in a high quality-controlled factory environment. However, some black dots may appear, or red/blue/green dots may remain on the screen. The screen brightness may not appear uniformly depending on viewing angle. Note that these symptoms are not defects, but are nature of LCD.

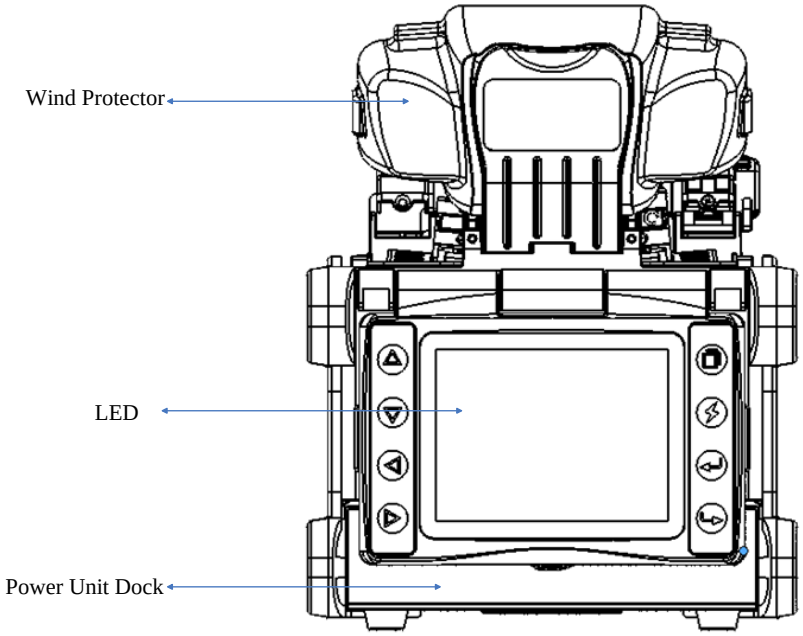
Description of Products

1. Components of Splicer

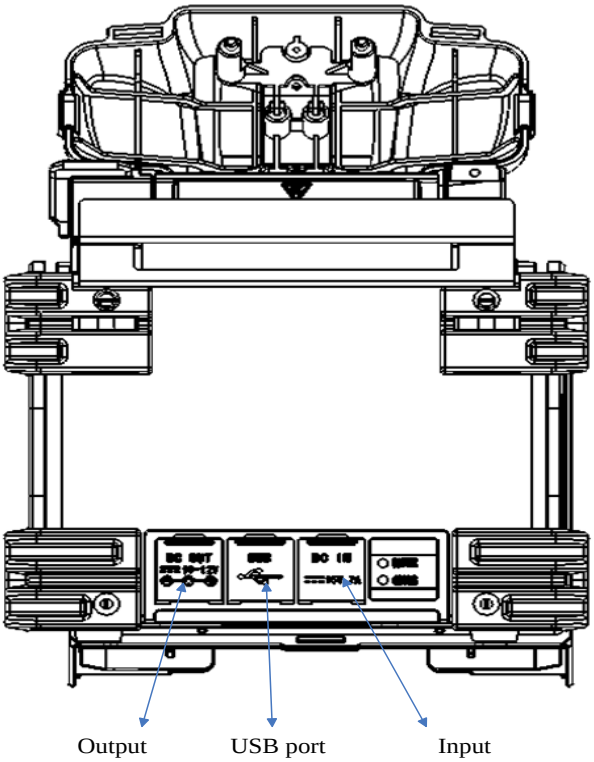
- **Our Splicer**

2. Description and Function of Splicer

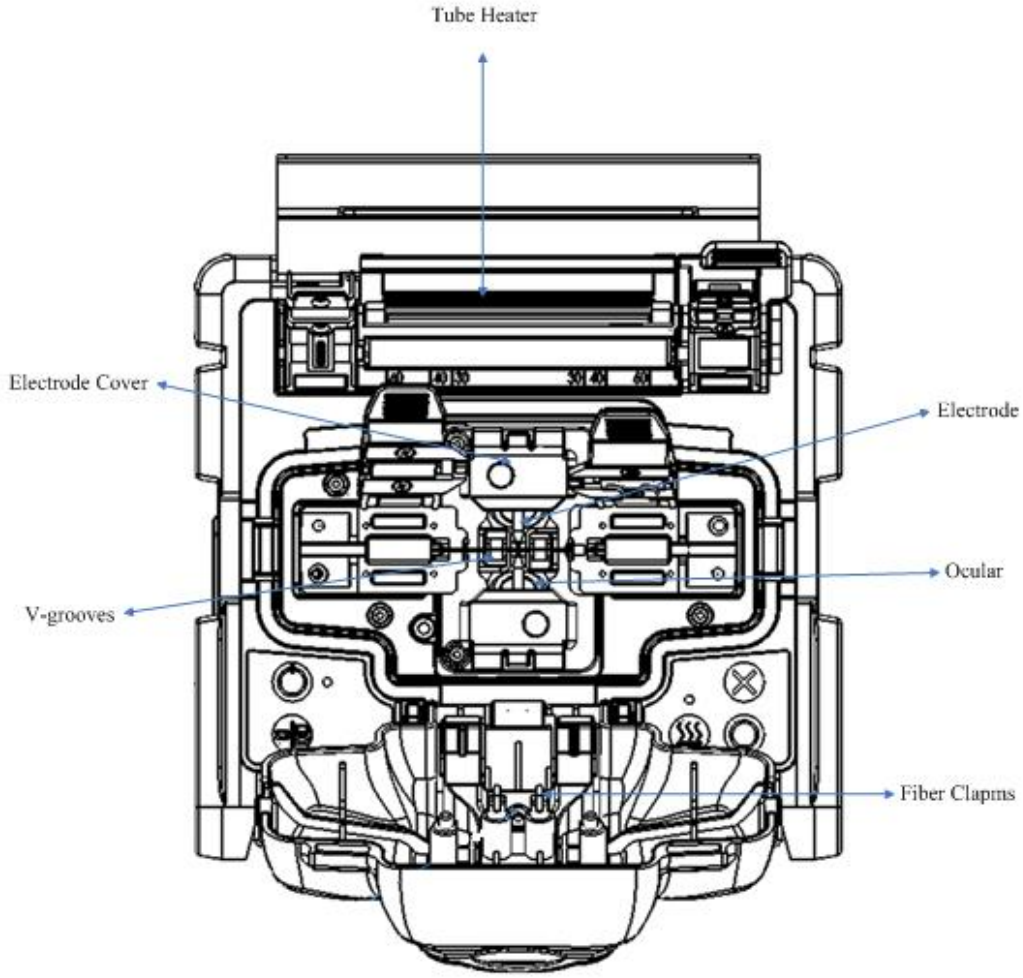
➢ Front Side of OFS-95



➢ Back Side of OFS-95



- **Top Side of OFS-95**



- **Keypad of OFS-95**

Left keypad

Right keypad

Screen keypad

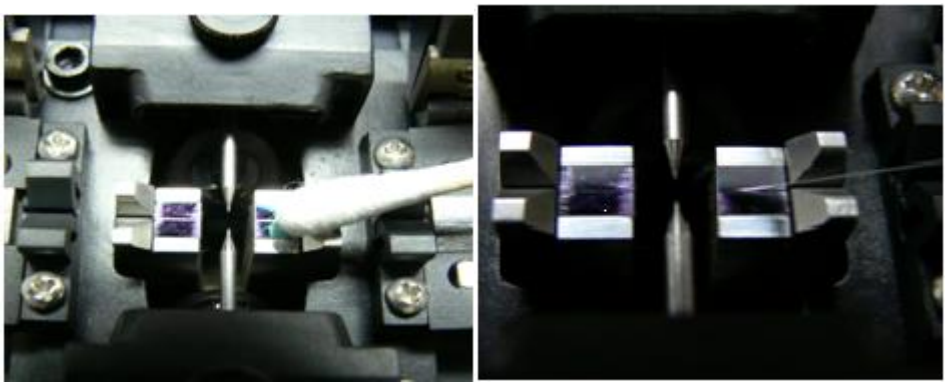
	Main menu		Heat
	Power		Left
	Return		Right
	ARC		Down
	Enter		Up
	Cancel		Splice
	Switch screen		

Point of the Splice Procedure

1. To Get a Stable Low Splice Loss

➢ **Daily Cleaning Before Splicing Operation**

a) Clean the V-grooves.



HINT: Sometimes, to clean the V-grooves, may need useing a stripped fiber to clean dust.

b) Clean the wind protector Clamp Chips.

c) Clean Objective Lens every week, or when it's dirty.

NOTE: Do not touch or hit electrode tips (in this case electrodes do not remove from the splicer).

- **Select / Use the Suitable Splice Mode**

  How to select the "Splice Mode"

  a) When splicing only standard SM fibers (ITU-T G.652), "SM AUTO" mode is recommended.
  b) When splicing many types of fibers, "AUTO" mode is recommended, but splice speed is slow.
  c) Splicing speed of "SM FAST" mode is fast, but periodical Arc calibration is required.

- **Clean the Equipment before Every Splicing**

  a) Clean the blade of stripper.
  b) Clean the cleaver pads and blade and rubber anvil.

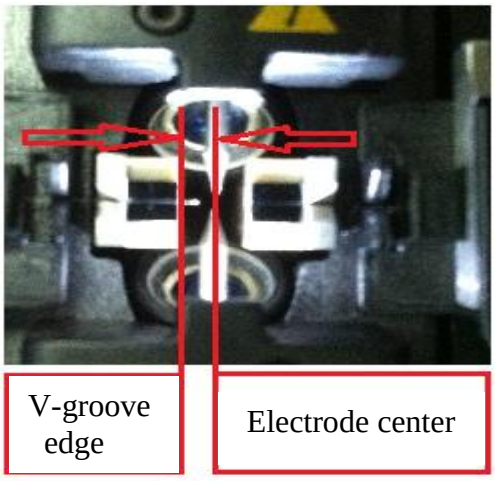
- **Splicing Procedure**

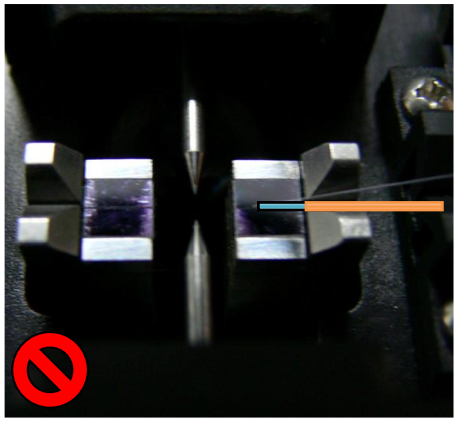
  a) Make sure the stripped fiber is free of coating debris or contamination.

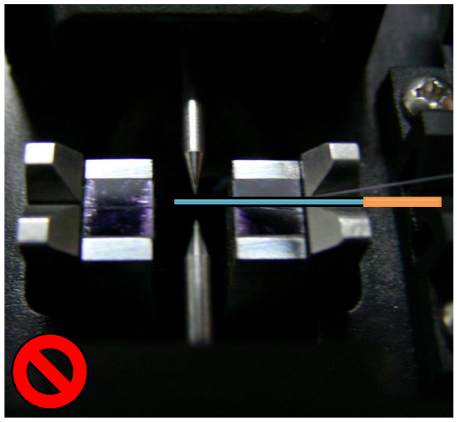
b) Use only 99% or better purity alcohol.

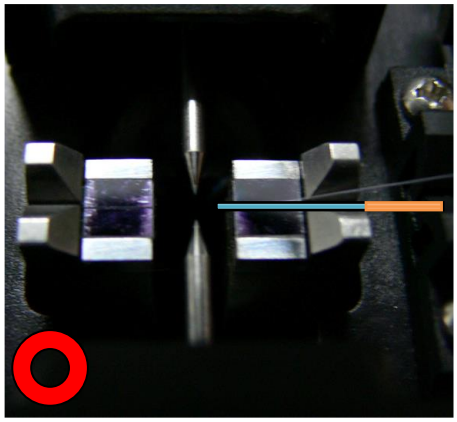
c) Do not allow the cleaved fiber ends to touch anything or become contaminated.

d) Place the fiber end face between V-groove edge and Electrode center.



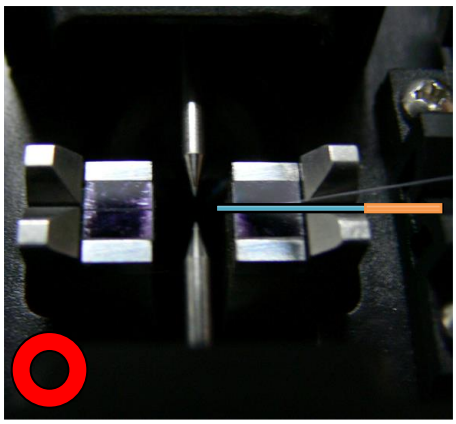


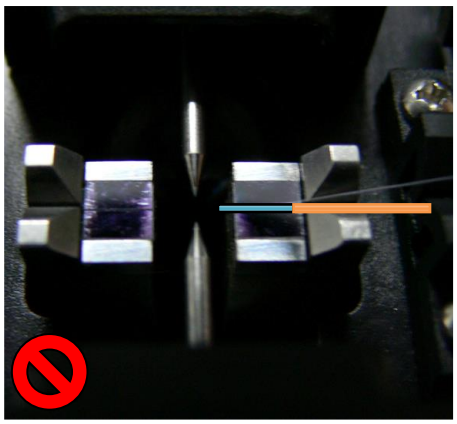




e) Place fiber in the bottom of V-groove for successful splicing.

f) Make sure if the cleave length is correct. Fiber coating edge may hit the V-groove in case with shorter cleave length, and then the fibers may not be stuffed each other during arc discharge and result in worse splice loss.

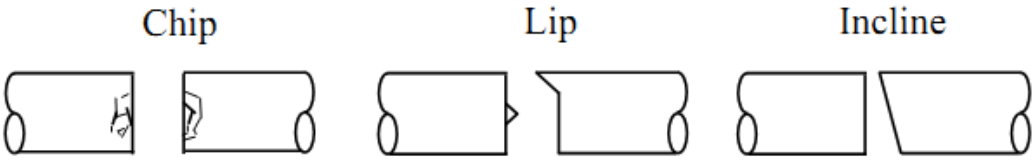




The cleave length is too short

g) Do not put tension to the fibers, or the fibers may not be stuffed each other during arc discharge and result in worse splice loss.

h) Check the fiber angle and cleave shape. The fibers cleave angle affects splicing quality. Large cleave angle worsens splice loss.



i) Visually check the arc discharge with the monitor. In case the arc discharge is observed “wobbling” or “brightness changes”, arc discharge may be unstable and the heat distribution to the fibers as well resulting in worsened splice loss. Perform “Stabilize Electrodes”

j) When splicer indicates following message, splice loss may be high. “Arc discharge is not stable. Electrodes should be stabilized to reform the arc discharge.” Load prepared SM fibers onto splicer in order to stabilize electrodes. After completing it, re-splice fibers.

- **Heating**

a) Select the heater mode most suitable for the protection sleeve to be used. Each tube-heating mode is optimized for a type of protection sleeve. Other manufacture's fiber protection sleeve may not shrink completely. At that time extend the heating time.

b) Centering protection sleeve in tube heater

2. Power Supply

Use only supplied AC power cord.

Connect to ground with ground terminal of AC power cord.

- **Battery**

a) The capacity of the battery gradually decreases as nature even if it is not used. If the battery discharges completely, the battery may no longer be able to be re-charged. Charge the battery before long time storage and after use.

b) If a battery is to be stored for a long time, periodical charge of every six months is recommended regardless of battery charge level of the battery.

c) Follow below conditions for operation/charge/long time storage (1 week or longer).

Operation: -10 ℃~ 50 ℃

Charge: 0 ℃ ~ 40 ℃

Long Time Storage: -20 ℃ ~ 30 ℃

Basic Operation

1. About Power

- **Inserting Power Supply into Splicer**

OFS-95 can be powered by external power adaptor and power supply unit.

a) Inserting or detaching power supply unit

Insert power unit into Power unit dock until it clicks into place.

b) Detaching power supply unit

Turn off the splicer. Push the release button, located on the side of the splicer body, and remove the power supply out of the splice body.

- **Battery operation**

Check and make sure the remaining battery capacity is 20% or greater before operation otherwise few splices can be made.

Two ways to check remaining battery capacity：

a) If battery is already inserted in the splicer, turn splicer ON. Power source of "Battery" is automatically identified and the remaining battery capacity is displayed on the "READY" screen.
b) Or press battery check button on the battery pack. The remaining battery capacity is indicated on the LED indicator.

READY screen Remaining battery capacity indicator

Remaining battery capacity display	Remaining battery capacity indicator	Remaining battery
	5 LED	80~100%
	4 LED	60~80%
	3 LED	40~60%
	2 LED	20~40%
	1 LED	Less than 10%

NOTE

- Do not place battery on top of AC adapter or vise-versa.
- Battery can be charged while AC adapter is in power unit dock of OFS-95 regardless of under operation or not.
- CHARGE LED turns off when battery charge is completed. If CHARGE LED flashes, replace the battery with a new one.
- If battery charge does not complete in five hours or CHARGE LED does not turn ON, the battery, AC adapter or both need replacement. Ask your

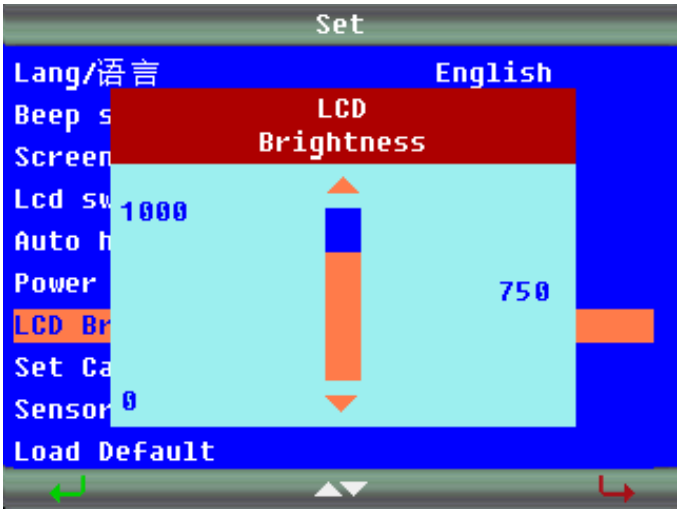
service agent for further instruction.

2. Turning Splicer "ON"

Press [ ] and hold it until the green LED on the keypad is "ON". The “READY” screen is displayed after all the motors reset to their initial positions. The power source type is automatically identified. If the battery is used, the remaining battery capacity is displayed.

➢ **LCD Brightness Adjustment**

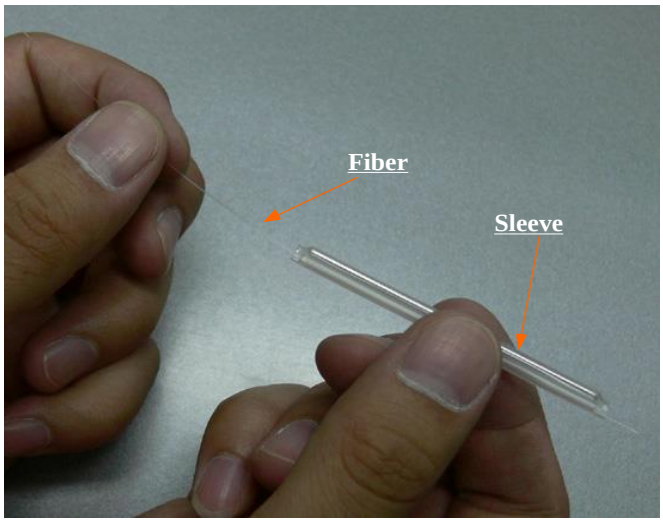
In the “Ready” interface after splicer is powered on, press [ ][ ] button to adjust LCD brightness; press [ ] button to confirm.



3. Fiber Preparation

A. Placing Protection Sleeve over Fiber

Clean optical fiber with alcohol-impregnated gauze or lint-free tissue approximately 100mm from the tip. Place the protection sleeve over the fiber.



CAUTION!

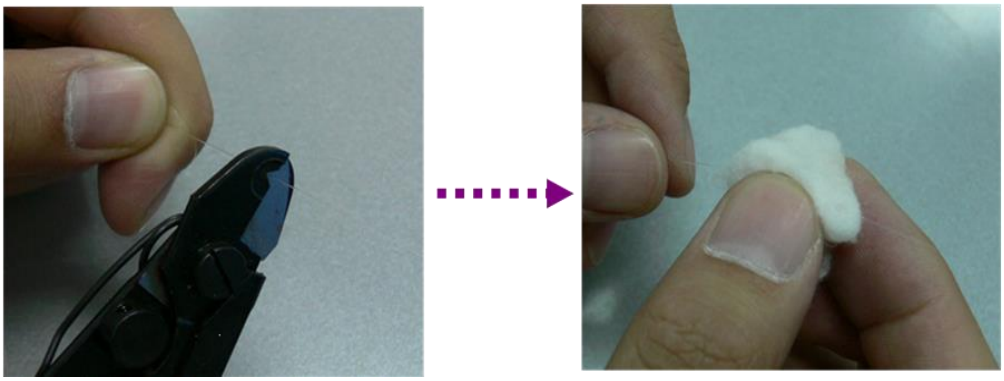
- Clean optical fiber with alcohol-impregnated gauze or lint-free tissue. Dust particulates can enter inside the protection sleeve and might result in a future fiber break or attenuation increase.
- Make sure fiber is passed into the protection sleeve.

- When protection sleeve core tube is longer than the length of outer sheath, the excess part should be cut off to avoid micro bend after heating.

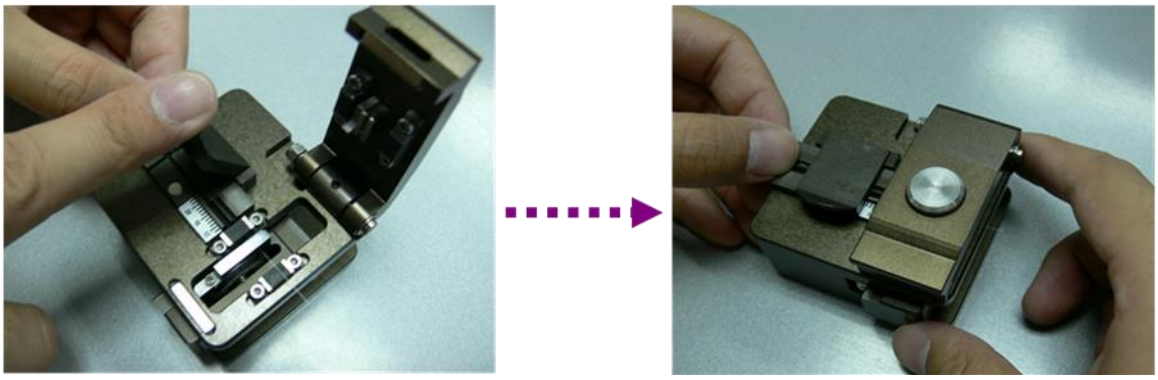
B. Stripping and Cleaning Fiber

➢ **Sheath Clamp**

Strip fiber's outer coat 30 to 40 mm from its tip with a stripping tool. Clean the fiber with alcohol (Purity ≥99%) impregnated gauze or lint-free tissue thoroughly.



C. Fiber Cleaving



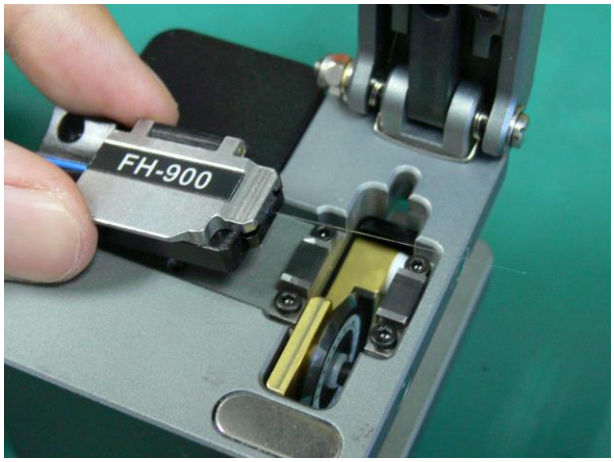
➢ **Fiber holder System**

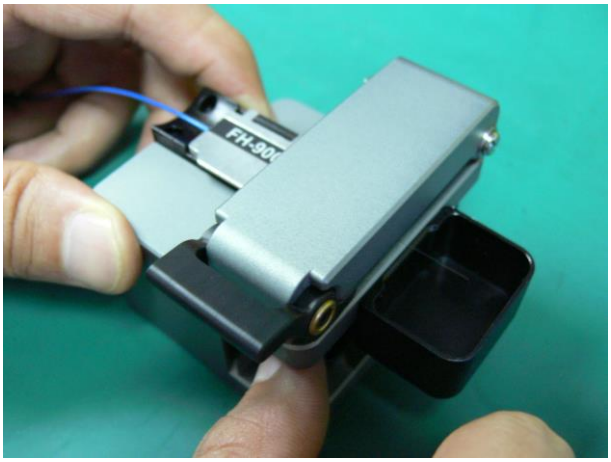
a) Put container from the storage position to the work position; pull the slider out of cleaver; open the large and small plate as shown below;

b) Set the fiber holder which is with a striped and cleaned fiber into the

fixture slot. Close the large plate. Push the slider to another side for cutting the fiber off;

c) Open the large plate and take fiber holder out.





NOTE

- Do not let the fiber end-face touch anything.
- Do not put fingers in the driving area of the slide button as personal injury may result.
- After pushing it half way down, releasing the pressure on the cutting lever may result in bad cleaving quality.

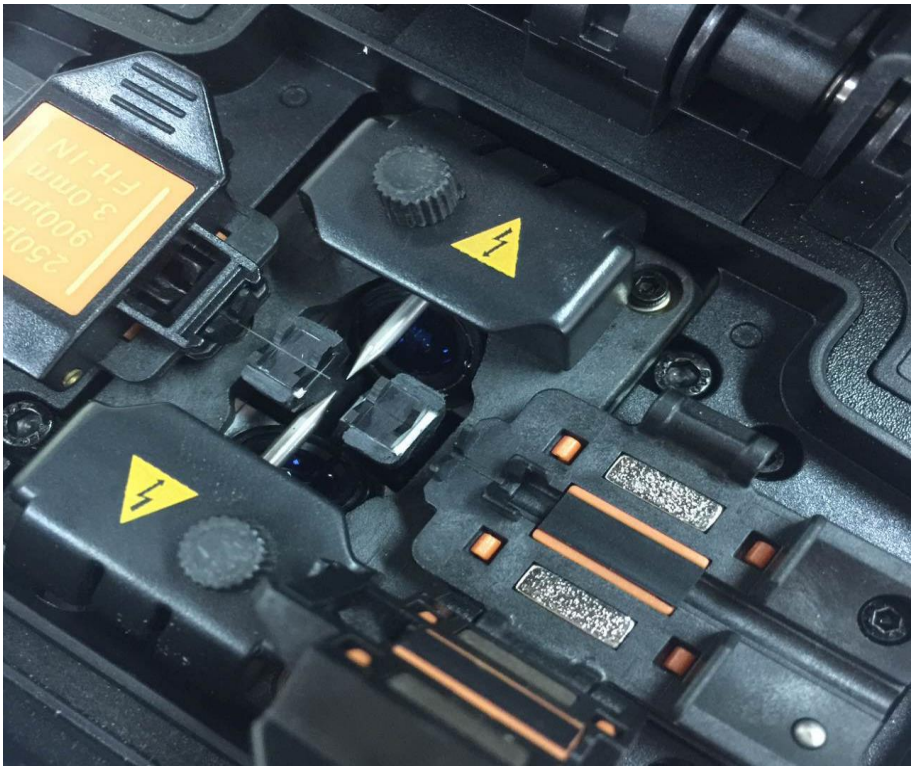
4. Loading Fiber to Splicer

➢ **Sheath Clamp**

a) Open wind protector and sheath clamps.

b) Place prepared fiber onto v-groove so that the fiber tip is located between the v-groove edge and tip of electrode.

c) Hold fiber with fingers and close sheath clamp so that the fiber does not move. Make sure the fiber is placed in the bottom of the v-grooves. If fiber is not placed properly, reload fiber.



d) Load another fiber in the same manner as in above step.

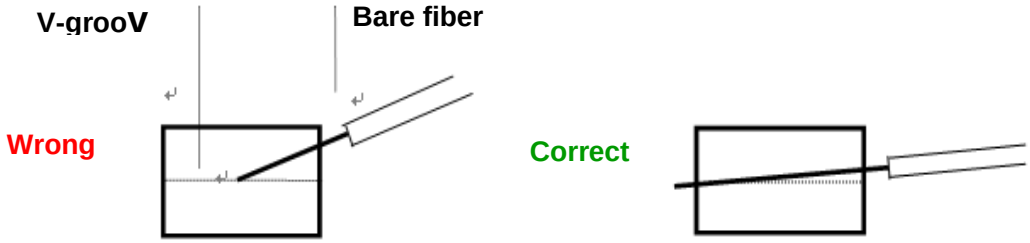
e) Close wind protector.

NOTE

- If fiber coating has some memory curl, place fiber so that the curve of memory is turned upwards.
- Be careful to not bump the prepared fiber tips into anything to maintain fiber end-face quality.

CAUTION!

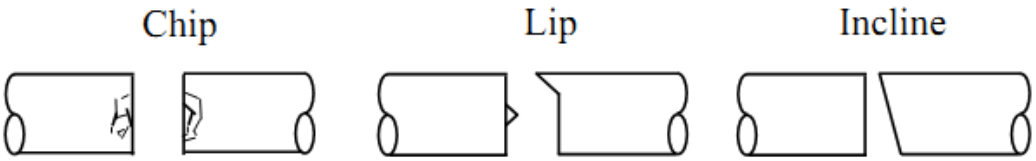
- Keep the prepared fiber out off other stuff, in case of breaking the end face of fiber.
- After this step, the preparation steps are done. Close the windshield at last.



5. Splicing Procedure

To assure a good splice, the optical fiber is observed with the image processing system equipped in the OFS-95. However, there are some cases when the image processing system cannot detect a faulty splice. Visual inspection with the monitor is often necessary for better splicing yield. Procedure below describes standard operating procedure.

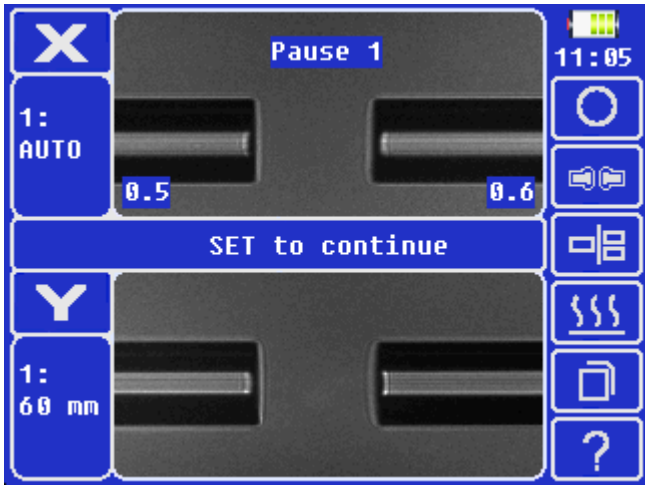
a) After fibers are loaded in the splicer, press  button and fibers move forward toward each other. The fiber forwarding motion stops at a certain position shortly after the cleaning arc is performed. Next, the cleave angle and end-face quality are checked. If the measured cleave angle greater than its set threshold or fiber chipping is detected, the buzzer will sound and an error message warns the operator. The splicing procedure pauses. If no error message is displayed, the below stated end-face conditions are used for visual inspection. If observed, remove the fiber from the splicer and repeat fiber preparation. These visual defects may cause a faulty splice.



b) After fiber inspection, the fibers are aligned core-to-core or cladding-to-cladding. Cladding axis offset and core axis offset measurements can be displayed.

c) After completion of fiber alignment, arc discharge is performed to splice the fibers.

d) Estimated splice loss is displayed upon completion of splicing. Splice loss is affected by certain factors stated in Page 27. These factors are taken into account to calculate, or estimate, splice loss. The calculation is based on certain dimensional parameters, such as MFD. If either the cleave angle measured or the estimated splice loss exceeds its set threshold, an error message is displayed. If the spliced fiber is detected as abnormal, such as "Fat", "Thin" or "Bubble", an error message is displayed. If no error message is displayed but the splice looks poor by visual inspection through the monitor, it is strongly recommended to repeat the splice from the beginning.



NOTE

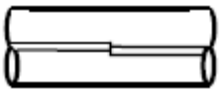
- Splice point sometimes looks a bit fatter than other parts. This is

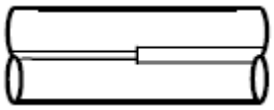
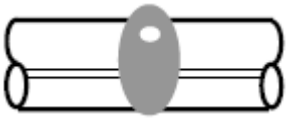
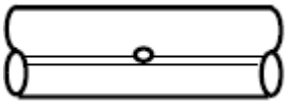
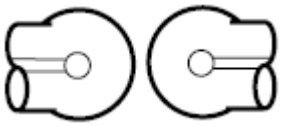
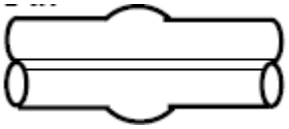
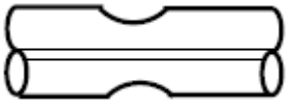
considered a normal splice, and does not affect splice loss.

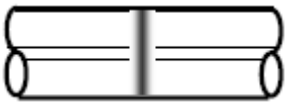
- To change threshold for estimated splice loss or cleave angle, see [Splice Mode] for details.
- Splice loss may be improved in some cases by additional arc discharges.

  Press button for an additional arc discharge (re-arc). Splice loss estimate and splice check are performed again. Splice loss may be worsened in some cases by additional arc discharges (re-arcs). Additional arc discharge can be set to "disabled", or limited to the number of additional arcs.
- Splicing result is automatically saved in splicer memory

➢ **Splice loss increase: Cause and remedy**

Symptom	Cause	Remedy
Core axial offset 	Dust on v-groove or fiber clamp chip	Clean v-groove and fiber clamp chip.
Core angle 	Dust on v-groove or fiber clamp chip	Clean v-groove and fiber clamp chip.
	Bad fiber end-face quality	Check if fiber cleaver is well conditioned.
Core step 	Dust on v-groove or fiber clamp chip	Clean v-groove and fiber clamp chip.
Core Curve	Bad fiber end-face quality	Check if fiber cleaver is well conditioned.

	Prefuse power too low or prefuse time too short.	Increase [Prefuse Power] and/or [Prefuse Time].
MFD Mismatch 	Arc power too low	Increase [Arc Power] and/or [Arc Time].
Combustion 	Bad fiber end-face quality	Check the cleaver
	Dust still present after cleaning fiber or cleaning arc.	Clean fiber thoroughly or Increase [Cleaning Arc Time].
Bubbles 	Bad fiber end-face quality	Check if fiber cleaver is well conditioned.
	Prefuse power too low or prefuse time too short.	Increase [Prefuse Power] and/or [Prefuse Time].
Separation 	Fiber stuffing too small	Perform [Motor Calibration]
	Prefuse power too high or prefuse time too long.	Decrease [Prefuse Power] and/or [Prefuse Time].
Fat 	Fiber stuffing too much	Decrease [Overlap] and perform [Motor Calibration].
Thin 	Arc power not adequate	Perform [Arc Calibration]
	Some arc parameters not adequate	Adjust [Prefuse Power], [Prefuse Time] or

		[Overlap].
Line 	Some arc parameters not adequate	Adjust [Prefuse Power], [Prefuse Time] or [Overlap].

NOTE

- A vertical line sometimes appears at the splice point when MM fibers or dissimilar fibers (different diameters) are spliced. This does not affect splice quality, such as splice loss or tensile strength.

6. Removing spliced fiber

a) Open lids of tube heater.
b) Open wind protector.
c) Hold left fiber with left hand at the edge of wind protector and open left sheath clamp or fiber holder lid.
d) Open right sheath clamp or fiber holder lid.
e) Hold right fiber with right hand, and remove spliced fiber from the splicer.

NOTE

- Keep on holding fiber until fiber is completely transferred to tube heater.

7. Heating protection sleeve

a) Transfer fiber with protection sleeve to tube heater. Protection sleeve is placed in the center of the tube heater.
b) Place fiber with protection sleeve in the middle of tube heater. While placing it in the tube heater, apply some tension on the fiber so the tube heater lids automatically close. Then press  button starting heating

process.

NOTE

- Make sure the splice point is located at the center of the protection sleeve.
- Make sure the strength member in the protection sleeve is placed downwards.

c) Then red HEAT LED turns on. The buzzer beeps and the HEAT LED turn off when tube heating is completed.

d) Open tube heater lids and remove protected fiber from the tube heater. Apply some tension to the fiber while removing it from the tube heater.

NOTE

- Protection sleeve may stick to bottom plate of heater. Use a cotton swab to help remove sleeve from heater.

e) Visually inspect the finished sleeve to verify no bubbles or debris/dust is present in the sleeve.

f) Attach the Cooling Tray onto the splicer.

g) Remove the protected fiber from the splicer.

NOTE

- Do not touch the shrunken sleeve after removing the fiber from the tube heater. It may be hot.

h) Place the removed fiber into the Cooling Tray.

i) Leave the fiber in the Cooling Tray until the shrunken sleeve is cooled down.

Maintenance of Splicing Quality

1. Cleaning and Checking before Splicing

Critical cleaning points and maintenance checks are described below.

A. Cleaning V-grooves

If contaminants are present in the V-grooves, proper clamping may not occur, resulting in higher splice loss. The V-grooves should be frequently inspected and periodically cleaned during normal operation. To clean the V-grooves do the following steps:

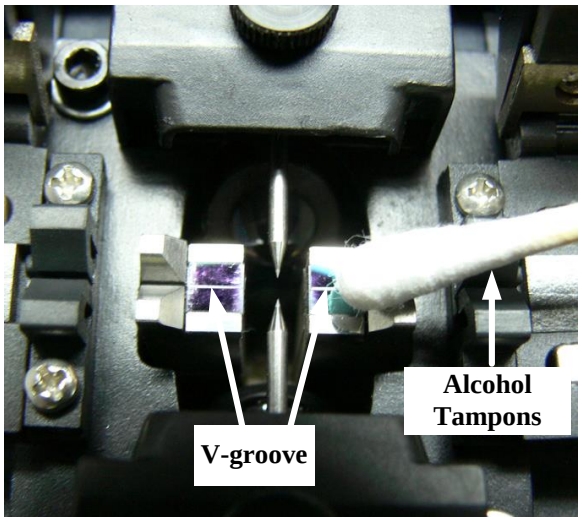
a) Open the wind protector.

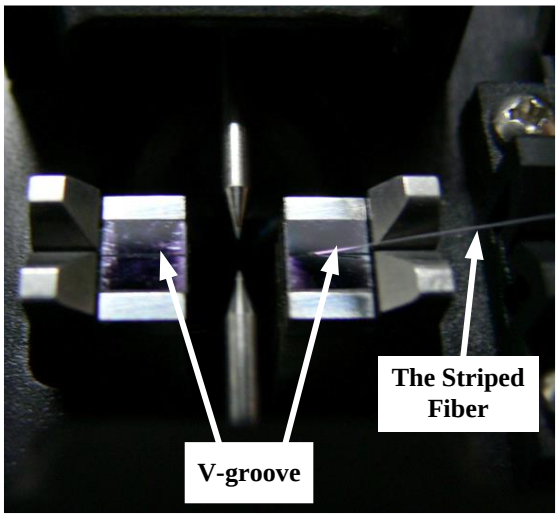
b) Clean the bottom of the V-groove with an alcohol-impregnated thin cotton swab. Remove excess alcohol from the V-groove with a clean dry swab.

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

NOTE

- Be careful to not contact the electrode tips.
- Do not use excessive force when cleaning the V-groove. The V-groove arm may get damaged.





B. Cleaning Fiber Clamp Chips

If contaminants are present on the clamp chips, proper clamping may not occur, resulting in poor quality splices. The fiber clamp chips should be frequently inspected and periodically cleaned during normal operation. To clean the clamp chips do the following:

a) Open the wind protector.
b) Clean the surface of the chip clamp with an alcohol-impregnated thin cotton swab. Remove excess alcohol from the chip clamp with a clean dry swab.

C. Cleaning Fiber Cleaver

If the circular blade or clamp pads of the fiber cleaver become contaminated, the cleaving quality could degrade. This may lead to fiber surface or end-face contamination, resulting in higher splice loss. Clean the circular blade or clamp pads with cotton swab soaked with alcohol.

D. Arc Calibration

See Page [Arc Calibration].

2. Periodical Checking and Cleaning

In order to maintain the splicing quality of the splicer, periodical inspection and cleaning are recommended.

A. Cleaning Objective Lenses

If the objective lens's surface becomes dirty, normal observation of the core position may be incorrect, resulting in higher splice loss or poor splicer operation. Therefore, clean both of them at regular intervals. Otherwise, dirt may accumulate and become impossible to remove.

To clean the objective lenses do the following:

a) Before cleaning the objective lenses, always turn off the splicer.
b) Gently clean the lenses' (X-axis and Y-axis) surface with a dry and thin

cotton swab. Using the cotton swab, start at the center of the lens and move the swab in a circular motion until you spiral out to the edge of the lens surface.

c) The lens surface should be clean and free of streaks or smudges.

d) Turn on the power and make sure no smudges or streaks are visible on the monitor screen. Press X/Y key to change the screen and check the state of the lens surface on both the X- and Y-screens. Perform dust check.

NOTE

- Do not hit or touch tip of electrode when cleaning it or remove electrode before cleaning objective lens.
- Recommends to clean the objective lens when replace electrodes.

B. Rotating Cleaver Blade

If cleaving quality drops (usually cleave 1000 to 1500 times), the blade may be worn. Please follow the step to adjust the blade angle: do the following:

a) Within 1.5mm hex wrench to loosen the compression screw of blade;

b) Rotate blade to the next scale number (generally there are 16 or 24 two types of blade);

c) Hold the side-face of blade and relock the screw to complete the adjustment.

C. Blade cycle use

A blade after 16 (24) scales have been used, if adjust the blade height, can be use again by cycling once or twice:

a) Within 1.5mm hex wrench to loosen two compression screws on the tool holder;

b) Follow the direction of dial to adjust the height-direction adjusting stud at the bottom of slider. Turn it as clockwise direction. The white spot on stud should correspond to the grid of one scale turn;

c) Relock these two compression screws, test cleaving, and check the

cleaving quality. Follow the steps above until the height of stud is perfect (to see the trouble removal for details).

D. Replace the blade

When the blade circulation is used, and you cannot improve the cleaving quality by changing the angle of blade and adjusting the height of stud, the blade needs to be replaced.

a) Within 1.5mm hex wrench to remove the screw and gasket of blade;
b) Turn blade to the tool holder side, then hold side faces of blade and take it out;
c) Replace the used blade by a new one, and then screw the gasket and screw on.

NOTE

- DO NOT let the blade to collide anything!

Menu Operation

Press button to enter splicer menu, there are six main menus: “Splice Mode Menu”, “Heat Mode Menu”, “ Calibration and Maintenance Menu”, “Data”, “Splice Setting Menu”, and “Setting Menu” as shown below:

1. Splice Mode Menu

A. Splice Mode

The optimum splice setting for a specific fiber combination consists of the below listed splicing parameters. In other words, the optimum splicing parameters depend on the fiber combinations, and are different from fiber to fiber.

- Parameters for controlling arc discharge / heating.
- Parameters for calculating estimated splice loss.
- Parameters for controlling fiber alignment and splicing procedures.
- Threshold for error messages.

A series of optimum splice parameters for major fiber combinations are already stored in the splicer. These parameters are stored in the database area and can be copied to the user-programmable area. These splice parameters can be edited for a specific fiber combination.

➢ How to select the "Splice Mode"

- For those who prefer stable splice loss (rather to quick splicing with high yield). Use the "AUTO" mode.
- For those who are not sure of the optical fiber type to be spliced. Use the "AUTO" mode.
- For those who would like to shorten splicing time with AUTO modes. If the type of optical fiber has already been identified, use "AUTO SM", "AUTO DS", "AUTO MM1" or "AUTO NZ" depending on the fiber type. These exclusive AUTO modes skip a process for fiber type identification, so the total splicing processes take less time.
- For those who prefer quick splice of SMF with high yield to consistent splice loss. Use "SM FAST" Mode

- For those who prefer the lowest possible splice loss to any other considerations. Use “AT1(SM)” and optimize splicing condition for your specific fiber combination.
- For those who prefer the manual splicing to type of optical fiber has already been identified, use “SM”, “DS”, “MM1” or “NZ” depending on the fiber type. Optimize splicing condition for your specific fiber combination.
- For those who splice non-conventional fibers, select the best suit splicing mode in “BLANK”. “AUTO” splice modes do not cover non-conventional fiber splicing.

➢ Database

Mode No.	Splice Mode	Description
1	AUTO	For splcing in most cases, in which the splicer will automacially adjust splice parameters according to fiber type. Automatic arc calibration works in this splice mode.
2	AUTO SM	For splicing standard Single-mode fiber (ITU-T G652). The MFD is 9 to 10 um at wavelength of 1310 nm. Automatic arc calibration works in this splice mode.
3	AUTO DS	For splicing Dispersion-shifted fiber (ITU-T G653). The MFD is 7 to 9 um

		at wavelength of 1550 nm. Automatic arc calibration works in this splice mode.
4	AUTO NZ	For splicing Non-zero dispersion-shifted fiber (ITU-T G655). The MFD is 9 to 10 um at wavelength of 1550 nm. Automatic arc calibration works in this splice mode.
5	AUTO MM1	For splicing Multi-mode fiber (ITU-T G651). Core diameter: 50.0 to 62.5 um. Automatic arc calibration works in this splice mode.
6	SM	For splicing standard Single-mode fiber (ITU-T G652). The MFD is 9 to 10 um at wavelength of 1310 nm. User can edit every parameters of this splice mode. Like prefuse power, prefuse time, arc power, arc time, align, proof test, and so on. The manual splicing operaiton is provided. Automatic arc calibration doesn’t work in this splice mode.
7	DS	For splicing Dispersion-shifted fiber (ITU-T G653). The MFD is 7 to 9 um at wavelength near 1550 nm. User can edit every parameters of this splice mode. Like prefuse power,

		prefuse time, arc power, arc time, align, proof test, and so on. The manual splicing operaiton is provided. Automatic arc calibration doesn't work in this splice mode.
8	NZ	For splicing Non-zero dispersion-shifted fiber (ITU-T G655). The MFD is 9 to 10 um at wavelength of 1550 nm. User can edit every parameters of this splice mode. Like prefuse power, prefuse time, arc power, arc time, align, proof test, and so on. The manual splicing operaiton is provided. Automatic arc calibration doesn't work in this splice mode.
9	MM1	For splicing Multi-mode fiber (ITU-T G651). Core diameter: 50.0 to 62.5 um. User can edit every parameters of this splice mode. Like prefuse power, prefuse time, arc power, arc time, align, proof test, and so on. The manual splicing operaiton is provided. Automatic arc calibration does not work in this mode.
10	AT1(SM)	Users can decide how small or big the loss is. (0.1~15dB) The manual splicing operaiton is provided.

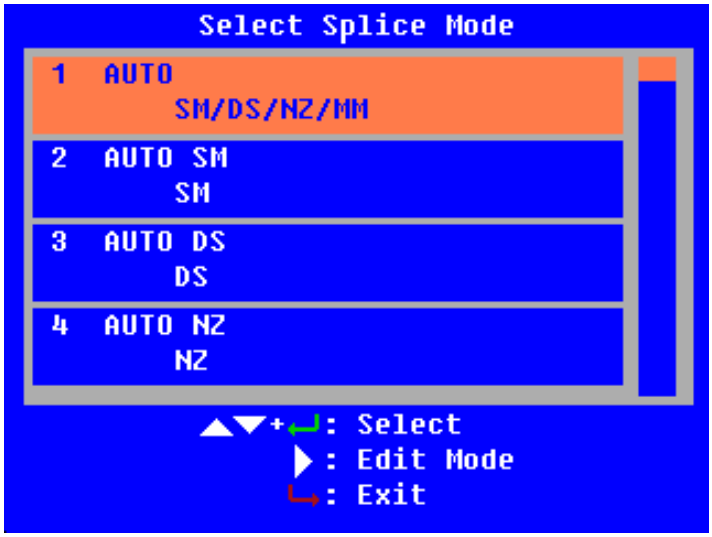
11	SM FAST	For splicing standard Single-mode fiber (ITU-T G652). The MFD is 9 to 10 um at wavelength of 1310 nm. It is the fastest splice mode. 9 Second splicing process without considering limits.
12~60	BLANK (other modes)	There are many types of splice modes, other than the ones stated above, can be edited by users.

B. Select Splice Mode

Select an appropriate splice mode for type of fiber to be spliced.

Press Menu key at [READY], [PAUSE1], [PAUSE2] or [FINISH] state to open [Splice Menu]. Select [Select Splice Mode] and the [Select Splice Mode] menu is displayed.

In “Splice Mode Menu”, Move cursor by pressing button to select “Splice Mode Menu” option, press button to enter, shown below:



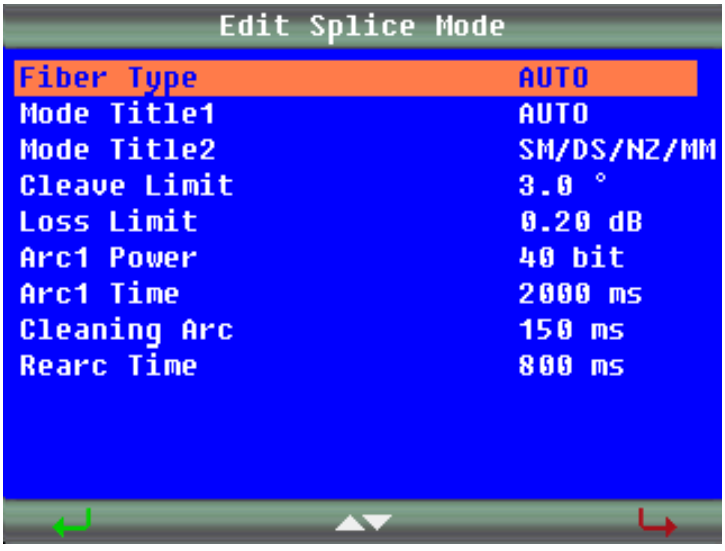
Select an appropriate splice mode for type of fiber to be spliced, press or button to select splice mode, click button to confirm.

"1 AUTO SM/NZ/DS/MM" mode is recommended for splcing in most cases, in which the splicer will automacially adjust splice parameters according to fiber type.

C. Edit Splice Mode

Splicing parameters in each splice mode can be modified.

In [Select Splice Mode] menu, press button to enter "Edit Splice Mode" and modify splice mode as shown above:



Press or button to select the parameter to be modified, press button to enter parameter setting.

Press or button to modify parameter, press button to confirm.

NOTE

In AUTO mode, certain parameters cannot be changed.

Parameter	Description
Fiber Type	List of splice modes stored in database is displayed. A selected splice mode stored in the database area is copied to a selected splice mode in the user-programmable area.
Mode Title1	Title for a splice mode expressed in up to 10 characters.
Mode Title2	Detail explanation for a splice mode expressed in up to 10 characters. Title2 is displayed at the [Splice Mode Select] menu.
Cleave Limit	Set cleave limit. An error message is displayed if the cleave angle of either the left or right fiber ends exceeds the selected threshold.
Loss Limit	An error message is displayed if the estimated splice loss exceeds selected threshold (loss limit).
Arc Power	In SM/DS/MM/NZ/AUTO modes, the Arc Power is fixed at 40 bits.
Arc Time	Arc Time is fixed at 1500 ms for SM and DS modes, 2000 ms for NZ mode, and 3000 ms for MM mode. This is automatically set depending on the fiber type when AUTO mode is selected.
Cleaning Arc	A cleaning arc burns out micro dust on the surface of the fiber with an arc discharge for a short period of time. The duration of the cleaning arc can be changed by this parameter.
Rearc Time	Splice loss may be improved by an additional “rearc” discharge in some cases. The duration of this additional arc can be changed by thisparameter.

2. Heater Mode

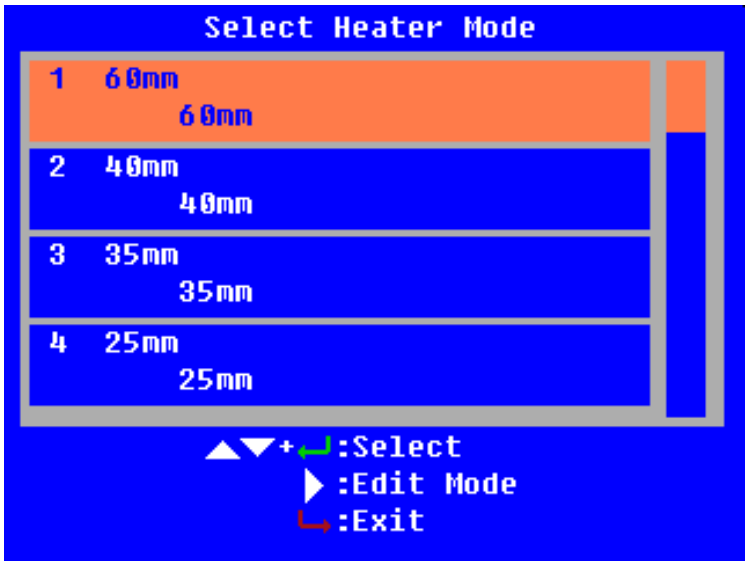
There are 20 user-programmable heating modes. Select one best suitable for the protection sleeve used.

Each tube-heating mode is optimized for a type of protection sleeve. These modes can be found in database area for reference. Copy the appropriate one and paste it to the user-programmable area. The operator can edit the user-programmable modes.

A. Select Heater Mode

In 1.“Splice Mode Menu”, press button to select “Select Heater Mode”, press button to enter as shown below:

Select the heater mode most suitable for the protection sleeve to be used.



Press or button to select a heater mode, press button to confirm.

B. Edit Heater Mode

Tube-heating conditions stored in heater mode can be edited or changed.

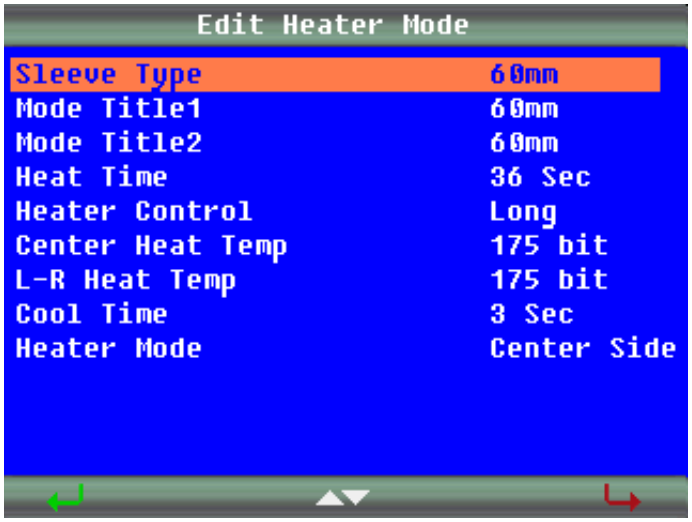
Editable parameters include: Heat Time, Heat Temp (heating temperature) and etc. Heat Time will automatically adjust according to atmospheric conditions e.g:

ambient temperature. The real Heat Time may vary from set Heat Time.

Sets heating temperature. Fiber coating may melt if Heat Temp is over 190℃

Sets Finish Temp (Finish Temperature). When heater approaches this temperature the buzzer beeps announcing the sleeve is cooled down and is ready to be taken out of the heater.

In “Select Heater Menu”, press button to enter “Heater Mode Edit” menu as shown below:

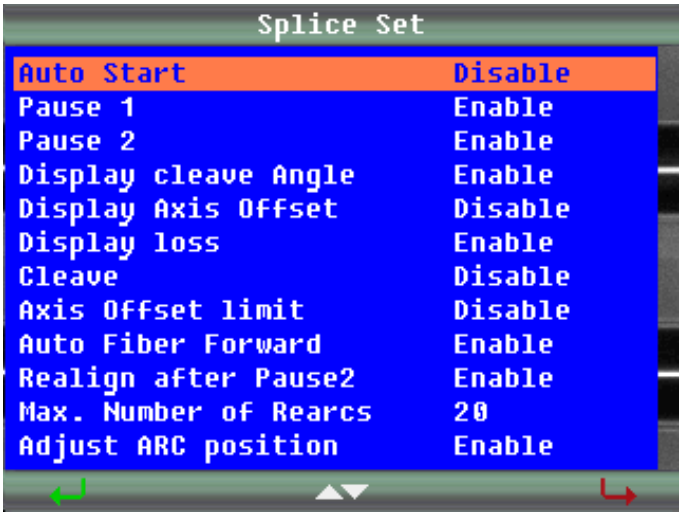


Press or button to select the parameter to be modified, press button to enter parameter setting.

Press or button to modify parameter, press button to confirm.

3. Splice Set

Splice Set include: Auto Start, Pause, Cleave Angle Display and etc.



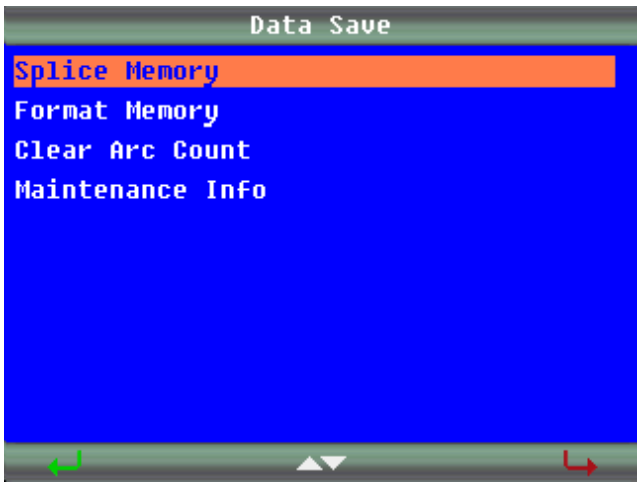
In “Splice Mode Menu”, press button to select “Splice Option” and press button to enter as shown above:

Press or button to select the parameter to be modified, press button to enter parameter setting.

Press or button to modify the parameter and press button to confirm.

4. Data Save

OFS-95 stores up to 5,000 splicing results. In “Splice Memory” menu, operator can review saved results or delete saved results.



5. Set Menu

This menu is used to change language and power save settings. etc.

Press or button to select 2.“Management Menu”, press button to enter, as shown below:

A. Language

In “Set”, press or button to select “Lang/语言/”, press button to enter as shown below:

Press or button to select the target language and press button to confirm.

B. Beep switch

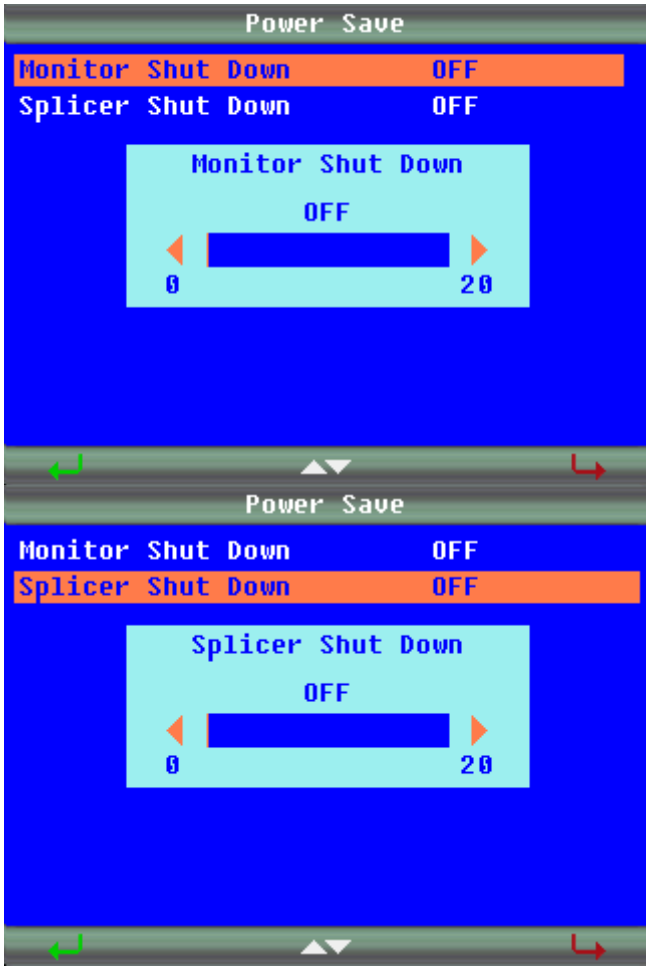
C. Screen direction

D. Lcd switch

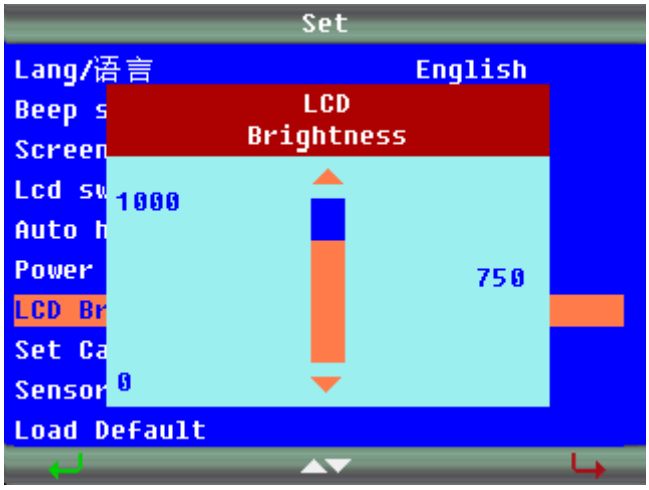
E. Auto heat switch

F. Power Save

Power Save function is important for energy conservation which turns off the power supply to the LCD monitor if the splicer performs no operation after a certain period of time (0 – 20 minutes adjustable). LED indicator turns on after Power Save is enabled, pressing any key to turn back on the LCD monitor. Splicer can also automatically turn off after certain period of time without operation (0 – 20 minutes adjustable)

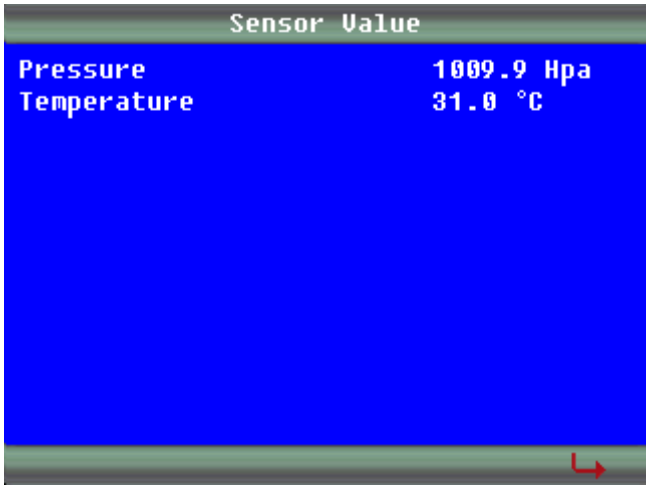


G. LCD brightness

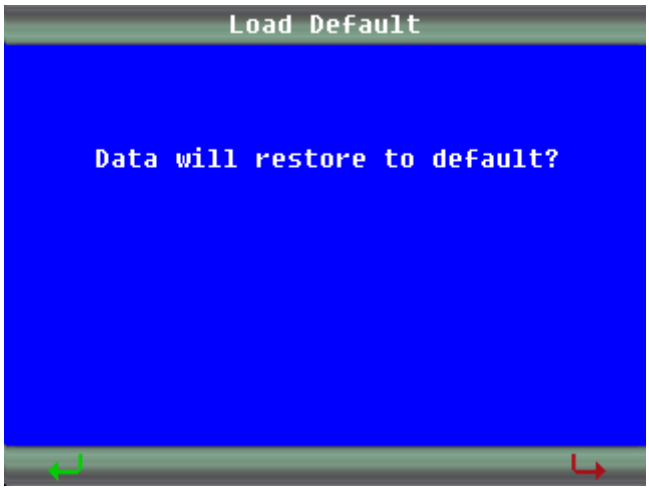


H. Set calendar

I. Sensor value



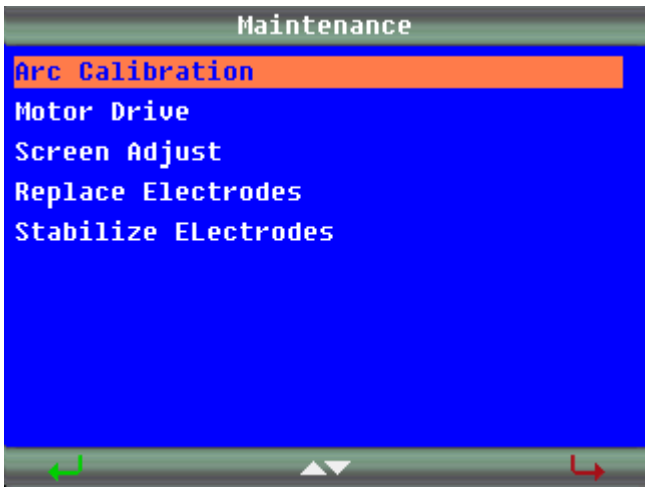
J. Load Default



6. Maintenance Menu

OFS-95 has the ability to perform routine maintenance, in “Maintenance” Menu, operator can Arc Calibration, Motor Drive, Screen Adjust, replace electrodes and stabilize electrodes.

Press △ or ▽ button to select the target language and press ↵ button to confirm.



Common Problems and Troubleshooting

NOTE

A vertical line sometimes appears at the splice point when MM fibers, or dissimilar fibers (different diameters) are spliced. This does not affect splice quality, such as splice loss or tensile strength.

Error Message	Reason	Solution
Left/Right/L-R fiber set too close!	• The fiber end-face is placed on the electrode centerline, or beyond it. • The cleave length (bare fiber part) is too long. • Dust or dirt is on the objective lens or the wind protector mirror.	• Press RESET, and set the fiber end-face between the electrode centerline and the V-groove edge. • Confirm the setting position of the stripped fiber end on the fiber cleaver. Check the cleave length. • Execute the [Dust Check]. Clean the lens or the mirror when dust or dirt exists.
Left/Right/L-R fiber set too far!		
Reset Left/Right fibers!		
Clear Left/Right fibers!	• Dust or dirt is on the objective lens or the wind protector mirror. • [Cleaning Arc] time is too short or “OFF.”	• Completely prepare the fiber again (strip, clean and cleave). • Execute the [Dust Check]. Clean the lens or the mirror if dust or dirt exists.

	• Splicing indistinct core fibers with the SM or DS modes. • [Align] is set to “Core” to splice indistinct core fibers when using other splice modes. • [Focus] is incorrectly set when using other splice modes.	• Set the [Cleaning Arc] time to “30ms.” When splicing carbon coated fibers, set to “100ms.” • Use the MM mode to splice indistinct core fibers (i.e. MM fiber). • Set [Align] to “Clad” to splice indistinct core R-Too Dusty fibers (i.e. MM fiber). • Set [Focus] to “Edge” to splice indistinct core fibers (i.e. MM fiber). To splice distinct core fibers, “Auto” or the correct focus value should be entered.
Left/Right fiber X/Y set error! X/Y Motor out of range!	• The fiber is not set correctly at the bottom of the V-groove. The fiber position is out of focus range. • Dust or dirt is on the fiber surface resulting in focus failure. • Dust or dirt is on the objective lens or the wind protector mirror.	• Press RESET key, and re-position the fiber again to seat it correctly at the bottom of the V-groove. • If fibers are not shown out fully, please go to the 4th page of MENU interface and choose "screen adjust". Follow the description shown on screen to let all edges of fibers to show out. • Completely prepare the fiber again (strip, clean and cleave). • Execute the [Dust Check]. Clean the lens or mirror if dust or dirt

		exists.
Cover is open!	The wind protector is opened during splicing operation.	Press RESET key after closing the wind protector.
Left/Right/L-R fiber angle error!	• [Core Angle Limit] is set too low. • Dust or dirt is on the V-groove or the clamp chip. • Bad fiber end-face.	• The splicer measures the core angle only when using other splice modes. Increase the [Core Angle Limit] to an adequate limit. (1.0 degree is standard) • Clean the V-groove and clamp chip, and set the fibers again. If the error occurs again, strip, clean and cleave the fibers. • Check the condition of fiber cleaver. If the blade is worn, rotate the blade to a new position.

If got High Estimated Loss

Reason	**Solution**
Insufficient fiber cleaning	Dust or dirt on the fiber surface results in bad splice loss and low tensile strength. • Clean the fiber surface sufficiently.

	• Do not clean the fiber after cleaving to prevent dust on the fiber end-face. • Avoid any contact with the fiber end-face. • Press "TEST" bottom to calibration.
Bad fiber end-face.	• Check the condition of fiber cleaver. If the blade is worn, rotate the blade to a new position. • Confirm the [Cleave Limit] setting. 2.0° or less is recommended.
Dust or dirt is on the V-groove or the clamp chip.	Dust or dirt on the V-groove or clamp chip causes poor fiber movement during fiber stuffing. Clean them periodically.
Dust or dirt is on the lens or mirror.	Execute the [Dust Check]. If dust or dirt exists, clean the lenses or mirrors.
Bad electrode condition.	Replace the electrodes if they appear worn (rounded tip shape), dirty or bent.
Inadequate arc power.	Calibrate the arc power with the [Arc Calibration] function.
Using unsuitable splice mode.	Select a suitable splice mode for the fibers to be spliced.
[Loss Limit] is set too low.	Increase [Loss Limit] to an adequate limit.
Fibers were spliced after Error was canceled.	Select the appropriate splice mode from the Other modes.

Inadequate arc parameters in other splice modes.	Confirm the arc parameters are adequate to splice the fibers.
Inadequate Estimating parameters in Other mode.	Confirm the estimating parameters are adequate to estimate the loss. The MFD mismatch function does not work for certain types of specialty fibers. In these cases, set the [MFD Mismatch] to “OFF”.

Warranty Information

1. Terms of Warranty

All ShinewayTech® products are warranted against defective material and workmanship for a period of one (1) year from the date of shipment to the original customer. Any product found to be defective within the warranty period would be repaired or replaced by Shineway Technologies Inc. free of charge.

In no case will Shineway Technologies, Inc. liabilities exceed the original purchase price of the product.

2. Exclusions

The warranty on your equipment shall not apply to defects resulting from the following:

- *Unauthorized repair or modification*
- *Misuse, negligence, or accident*
- *Consumptive parts (e.g electrodes)*

Shineway Technologies, Inc. reserves the right to make changes to any of its products at any time without having to replace or change previously purchased units.

3. Warranty Registration

A warranty registration card is included with the original shipment of equipment. Please take a few moments to fill out the card and mail or fax it to the local Customer Service Center of Shineway Technologies, Inc. to ensure proper initiation of your warranty term and scope of your warranty.

4. Returning Instruments

To return instrument for reasons of yearly calibration or other, please contact the local Customer Service Center of Shineway Technologies, Inc. to obtain additional information and a RMA# (Return Materials Authorization number). And describe briefly reasons for the return of the equipment, to allow us offer you more efficient service.

NOTE

To return the instrument in the case of repair, calibration or other maintenance, please note the following:

- Be sure to pack the instrument with soft cushion like Polyethylene, so as to protect the shell of the instrument.
- Please use the original hard packing box. If use other packing material, please ensure at least 3 cm soft material around the instrument.
- Be sure to correctly fill out and return the warranty registration card, which should include the following information: company name, postal address, contact, phone number, email address and problem description.
- Be sure to seal the packing box with exclusive tape.
- Be sure to ship to your representative or the agent of the Company in a reliable way.

5. Contacting Customer Service

Please check our web site **(www.shinewaytech.com)** for updates to this manual and additional application information. If you need technical or sales support, please contact local **Shineway Technologies** Customer Service.

Shineway Technologies (China), Inc.:

Address: Floor 7, Zhongtai Plaza, No.3 Shuangqing Rd.
Haidian District, Beijing, P.R.China
Postal code: 100085
Tel: +86-10-62953388
Fax: +86-10-62958572
Email: support@shinewaytech.com
WEB: www.shinewaytech.com

THANK YOU FOR CHOOSING SHINEWAY TECHNOLOGIES!