1st

Instruction manual

Fusion Splicer 100R



Fujikura

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.
There is a change without a previous notice.

We are not responsible for the products that are not purchased from our authorized distributors.

Please consent beforehand.

The software equipped in splicer and its related documents are protected by copyright laws and international treaty provisions as well as other intellectual property laws.

Copying some or all of instruction manual without notice is forbidden without explicit permission from our company.
It cannot use on the Copyright Act except that it uses as an individual.

Breakdown due to disassembly of the 100R

Do not remove the protector from the fusion splicer, without first consulting a nearest Fujikura authorized distributor for instruction. Tightening the original screw without the protector present may damage mechanism inside.

---Caution for Air Transport---

This product contains Lithium Ion Battery.
Before shipping this product, inform the transport company that this product contains the lithium-Ion battery, and follow their instructions.

---Caution for Hot Surface---

Some parts of this product become hot.
Do not directly touch the hot electrodes or around the heater with your fingers.

Note: LCD monitor

This fusion splicer is equipped with an LCD monitor. LCD monitors are manufactured at a high-quality factory, but the pixels of the LCD monitor may appear black or may keep glowing red / blue / green. Also, the monitor may be difficult to see depending on the angle. These are not defects but are characteristic of LCD monitors.

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The fusion splicer is designed for splicing Silica-based optical fibers for telecommunications. Do not use this machine for any other applications. Fujikura Ltd. gives significant consideration to personal injury and any resulting damages. Misuse of the machine may result in electric shock, fire, and/or serious personal injury and any damage.

Follow all safety instructions

Read and understand all safety instructions.

Stop using it when it malfunctions

Have our service centers repair it as soon as possible.

Instruction Manual

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

The following alert symbols are used in this instruction manual and machine to indicate warnings and caution for safe use. Understand the meanings of these symbols.



WARNING!

There is a possibility of death or serious injury resulting from improper use by ignoring this indication.



CAUTION!

There is a possibility of personal injury or physical loss resulting from improper use by ignoring this indication.

Symbol means “Pay attention”



Pay attention to hot surface!

Symbol means “Must not do”



You must not disassemble!

Symbol means “Must do”



You must disconnect a plug!

WARNINGS!



Disconnect the AC power cord from the AC adapter inlet or the wall socket (outlet) immediately. Use the device in a location where you can quickly unplug the power cord in case of an emergency. Improper use of the device may lead to equipment damage, electric shock, fire, or injury.

- Fumes, bad smell, noise, or overheating occurs.
- Liquid or foreign matter falls into the cabinet.
- Fusion splicer is damaged or dropped.



Use only the designated AC adapter. Using any other AC adapter may cause equipment damage, electric shock, fire, or injury.

- 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.
- When using an AC generator with AC output voltage of AC220-240V especially, Fujikura Ltd. recommends the following measures to correct the condition.
  1. Connect a step-down transformer between the generator and the AC adapter to lower the AC voltage from AC220-240V to AC100-120V.
  2. Or, use an AC generator with an AC output voltage of 100V.



Do not disassemble or modify the fusion 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.



Use the supplied AC power cord. Do not place heavy objects on the AC power cord. Use of an improper or damaged cord may cause fuming, electric shock, or equipment damage, and may result in personal injury, death, or fire.



The fusion splicer 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.



When carrying the case with the shoulder belt, check the belt and hooks for damage before use. Carrying the case with a damaged shoulder belt may cause the belt to break or come off, resulting in personal injury or equipment damage.

WARNINGS!

Never operate the fusion splicer in an environment where flammable liquids or vapors exist. Risk of dangerous fire or explosion could result from the fusion splicer's electrical fusing in such an environment.
Do not use compressed gas or canned air to clean the fusion splicer. They may contain flammable materials that could ignite during the electrical discharge.
Do not touch the electrodes when the fusion 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: Fusing stops when the wind protector is open. Turn the fusion splicer off and disconnect the AC power cord before replacing electrodes.
Safety glasses should always be worn during fiber preparation and splicing operations. Fiber fragments can be extremely dangerous if they come into contact with the eye, skin, or are ingested.
Do not touch the fusion splicer, AC power cord and AC plugs with wet hands. This may result in electric shock. If the fusion splicer is wet, do not power it on. Wipe off any moisture thoroughly with a dry cloth before use.
Do not operate the fusion splicer near hot objects, in hot temperature environments, in dusty / humid atmospheres, or when water condensation is present on the fusion splicer. This may result in electric shock, fusion splicer malfunction or poor splicing performance.
When using the optional battery, follow the instructions below. Failure to follow these may result in explosion or personal injury. • Do not charge with any charger other than the supplied one. • Do not expose the battery to heat or throw it into flames • Avoid discharging or charging the battery under direct sunlight. • Avoid impacting the battery. • If the battery's internal liquid leaks, avoid contact with your skin and eyes. If it gets on your skin or in your eyes, wash thoroughly and consult a doctor immediately. • For battery disposal, please contact the service center. • If the charge is not completed in five hours or the battery charge does not start, immediately stop charging and call the service center for repair.

WARNINGS!

When using the power bank, follow the instructions below.
Improper use can lead to equipment damage and potential injury.

- Make sure the power bank complies with the USB PD standard and follow the precautions. Do not use power banks that are not compatible with this fusion splicer..



- Use the included USB cable for connection.
- Please ensure that no foreign objects or moisture are present inside the connector before powering on.
  Otherwise, it may result in device failure, smoke emission, ignition, or fire.
- Do not force the connector if it is deformed.
  This may cause device malfunction, smoke emission, ignition, or fire
- Do not use a damaged USB cable for connection.
  Using a damaged cable may result in device failure, smoke, sparking, or fire.

Using power banks not compatible with this product or USB cables other than the supplied ones may cause malfunction, fire, or injury.

CAUTIONS!

	Do not store the fusion splicer in any area where temperature and humidity are extremely high. Possible equipment failure may result. After long-term storage, ensure the fusion splicer is functioning correctly before turning it on.
	Do not touch the protection sleeve or tube-heater during heating or immediately after heating is complete. Their surfaces are very hot, and touching them may result in skin burns.
	Do not place the fusion splicer in an unstable or unbalanced position. The fusion splicer may shift or lose balance, causing the unit to fall. Possible personal injury or equipment damage may result.
	The fusion splicer is precision-adjusted and aligned. Do not allow the unit to receive a strong shock or impact. Possible equipment failure may result. Use the supplied carrying case for transportation and storage. The carrying case protects the fusion splicer from damage, moisture, vibration and shock during storage and transportation.
	Follow the instructions below for handling electrodes. • Use only specified electrodes. • Set the new electrodes in the correct position. • Replace the electrodes as a pair. Failure to comply with the above may cause damage to the fusion splicer or degrade its performance.
	Do not use any chemical other than pure alcohol (99% or greater) to clean the objective lens, V-groove, LCD monitor, and other components of this fusion splicer. This may result in reduced functionality or damage to the fusion splicer.
	The fusion splicer requires no lubrication. Oil or grease may degrade the splicing performance and damage the fusion splicer.
	Please always request repairs from the manufacturer. Incorrect repairs can cause fire or electric shock and are dangerous.

RECYCLING and DISPOSAL

In the European Union



In accordance with the European Parliament Directive, electrical parts and materials that can be reused and/or recycled have been identified to minimize the use of new resources and the amount of waste sent to landfill.
In the European Union, do not discard this product as unsorted municipal waste. Contact your local authorities.

In other countries

[Recycling]

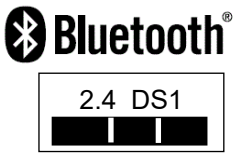
To recycle this product, disassemble it first, sort each part separately by material components, and follow your local recycling regulations.

[Disposal]

This product can be disposed of in the same way as the standard electric products. Follow your local disposal regulations.

Bluetooth® Wireless Technology

- The fusion splicer uses the Bluetooth technology for wireless data communication



- The wireless data communication is done at a frequency of 2.4GHz band, and employs the DSSS modulation scheme. The estimated interference distance is 10m or less.

CAUTIONS!

	When using the fusion splicer, the optical fiber cleaver and the ribbon fiber stripper near medical devices, turn the wireless communication function of these off.
	Turn the power of the fusion splicer off in the aircraft. For the optical fiber cleaver and the ribbon fiber stripper, remove batteries to turn off the wireless data communication.

- Typical wireless certifications are:

USA FCC Rules Part 15 FCC ID：QOQ11
CANADA Industry Canada Rules RSS-247 IC：5123A-11
European Union RE directive 2014/53/EU
RE Directive: 2014/53/EU
EN300 328, EN301 489-1, EN301 489-17 and EN62368-1
JAPAN Radio-wave Law Article38-24 paragraph 1 R209-J00255

- If you have any questions for other countries, contact a nearest Fujikura authorized distributor listed in the following web site:

https://www.fusionsplicer.fujikura.com/service/index.html

Radio Frequency Regulation Information

Taiwan

取得審驗證明之低功率射頻器材，非經核准，公司、商號或使用者均不得擅自變更頻率、加大功率或變更原設計之特性及功能。低功率射頻器材之使用不得影響飛航安全及干擾合法通信；經發現有干擾現象時，應立即停用，並改善至無干擾時方得繼續使用。前述合法通信，指依電信管理 法規定作業之無線電通信。低功率射頻器材須忍受合法通信或工業、科學及醫療用電波輻射性電機設備之干擾。
使用過度恐傷害視力、使用30分鐘請休息10分鐘。
未滿2歲幼兒不看螢幕，2歲以上每天看螢幕不要超過1小時。

Brazil ANATEL

Este equipamento não tem direito à proteção contra interferência prejudicial e não pode causar interferência em sistemas devidamente autorizados

Product Features

Linked with smartphone app

With the app Splice+, you can view location information and splice results. Additionally, it is equipped with a locking function to prevent theft.

DOWNLOAD

Google Play で手に入れよう

App Store からダウンロード

Splice Coach function

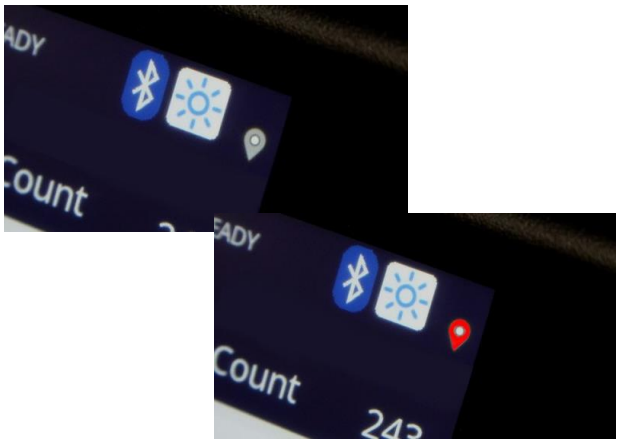
Step-by-step instructions appear on the screen, allowing for seamless and confident work.



Compatible with mobile batteries*

Supports charging via standard mobile batteries, ensuring reliability even during sudden power loss.

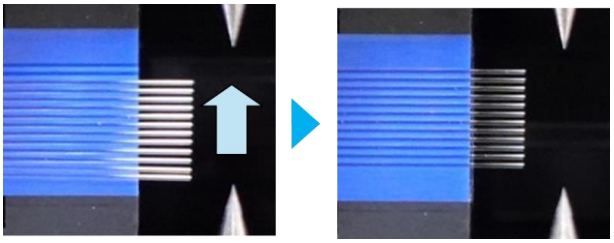
⚠ Please confirm that any mobile battery connected to this product meets USB PD standards and adhere to the mobile battery's precautions. Do not use mobile batteries that are incompatible with this machine.



GPS

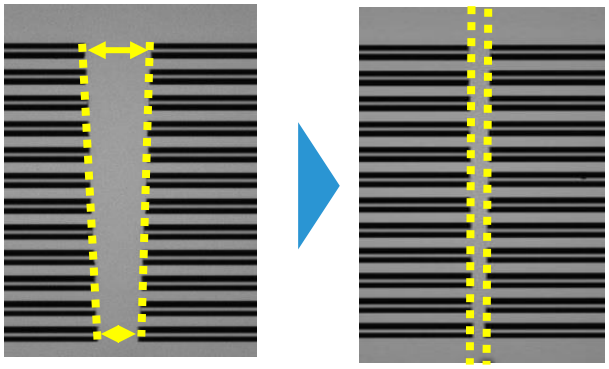
Location information acquired via GPS at the time of splicing is saved in memory. It helps with daily workflow management.

AUTO FIBER FIT™ (Automatic Fiber Alignment)



Even with the automatic feature,

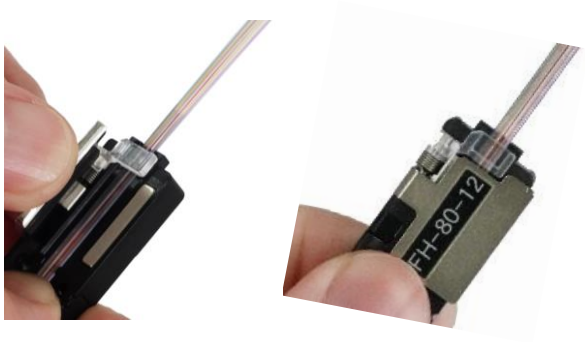
visually confirm that no fibers are crossing or overlapping before initiating the splice.



Automatic End-Face Gap Adjustment

This feature automatically ensures a uniform gap between the left and right fiber end-faces before splicing.
Compared to conventional models, this function delivers superior splicing quality and consistency.

New Fiber Holder Design (FH-80)



The tip of the fiber holder features a temporary clamp that holds the optical fibers in place.
This mechanism prevents fiber displacement (misalignment) when using SWR® (Spider Web Ribbon®), ensuring the fibers stay in their intended positions.

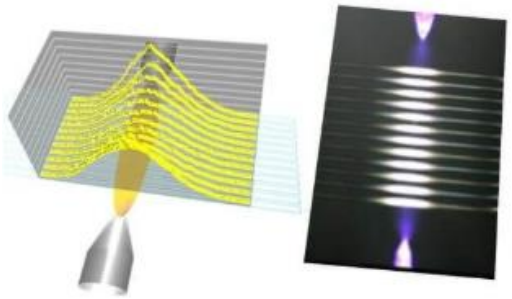
Wide Range of Fiber Holders for Various Fiber Types



Our system is compatible with high-count fiber ribbons up to 16 cores.
We offer a variety of V-grooves and fiber holders tailored to specific fiber counts and pitches.
The V-grooves are designed for easy replacement by the user, allowing for quick adjustments in the field.

Active Fusion Control Technology

ACTIVE FUSION
CONTROL TECHNOLOGY



放電時の光ファイバ発光輝度を分析し、
リアルタイムで放電制御を行います。
作業環境が変化した場合も、
適切な放電熱量を光ファイバに加えることで、
安定した接続品質を実現します。

Active Blade Management Technology

ACTIVE BLADE
MANAGEMENT TECHNOLOGY



Automatic blade rotation to
the next position



Detects blade worn position!

The blade condition is managed in real-time via Bluetooth.
When worn position is detected, the blade automatically rotates to the next position, allowing work to be performed at the optimal position.

Equipment Introduction

This fusion splicer is a designed for splicing the ribbon fiber and optical single fiber. It is small in size and lightweight, making it suitable for any operating environment. It is easy to operate and it splices fast while maintaining low splice loss.
In order to master this fusion splicer, please read this instruction manual.



Splice mode

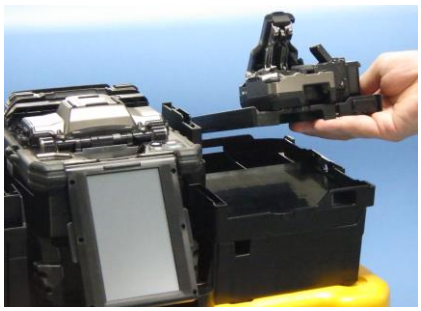
This fusion splicer has both standard and automatic splice modes. The automatic modes consists of [SM AUTO], [SWR AUTO], [MM AUTO], [NZ AUTO], [DS AUTO]. When using AUTO mode, the automatic fusing power calibration function is enabled.
The standard splice modes consists of [SM] for SMF (ITU-T G652), [SWR] for Spider Web Ribbon fiber based on SMF (ITU-T G652), [NZ] for NZDSF (ITU-T G655), [DS] for DSF (ITU-T G653) and [MM] for MMF (ITU-T G651). The standard splice modes require executing [Fusing Power Calibration] before splicing.

Automatic fusing power calibration function

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

Carrying Case (CC-48)

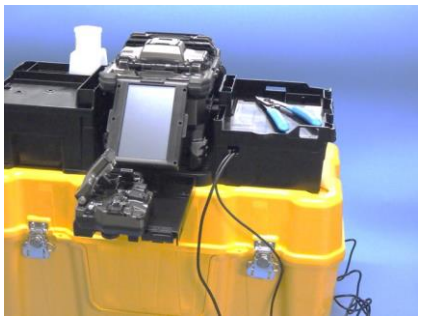
The CC-48 is a heavy-duty carrying case designed to protect the splicer and its accessories from impacts and harsh field environments.





1. Remove the tray from the right side of the workbench and place it in front of the splicer.
   This enables cleaver operation directly in front of the user.





2. Power and USB cables can be connected without removing them from the workbench.





3. By implementing a hinge-opening design on the right side of the worktable, tools can be accessed without removing the workbench out of the carrying case.

As with previous models, the carrying case can be used as a workbench.





Carrying Case
[CC-48]

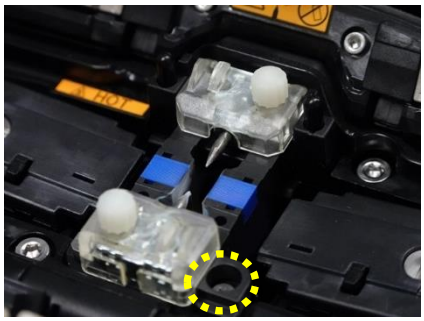
Note on Transport:
Always use the CC-48 Carrying Case when transporting the splicer to prevent misalignment or damage to the precision optics.

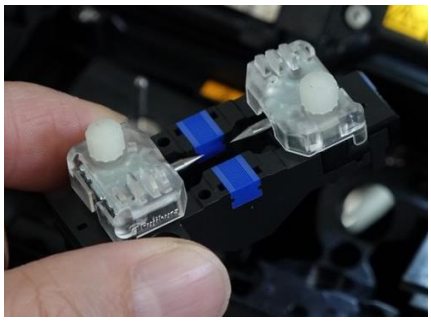
Replaceable V groove

This splicer has replaceable V-grooves to solve this problem. Instead of returning for maintenance, users can resume splicing within minutes by replacing the V-grooves.
In addition, these replaceable V-grooves come with electrodes pre-installed and stabilized. Replacement is quick and easy.



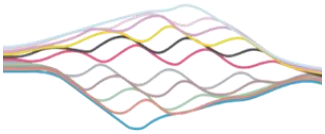
Spare V-groove with the stabilized electrodes.



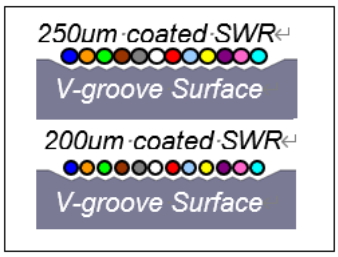


Loosen the securing screws and remove the V-grooves.

The FH-80 series fiber holder is compatible with many types of fiber ribbon, such as 0.3mm or 0.4mm thick encapsulated ribbons and 200µm or 250µm coated Spider Web Ribbon (SWR). The 250µm pitch V-grooves in the FH-80 fiber holder simplify SWR loading and ribbon preparation.



Spider Web Ribbon®
(SWR®)





Components of Splicer

The standard splicer package is as follows. Check the equipment items mentioned in this list.

Standard Package List.



Mass Fusion Splicer [100R]



Battery Pack [BTR-19]



AC Adapter [ADC-22]



AC Power Cord [Acc-xx]



Optical Fiber Cleaver [CT60]



Stripper [RS03]



Single Fiber Stripper [SS05]



Electrodes (spare) [ELCT2-16C]



USB Cable [USB-02]



Fusion splicer Strap [ST-02]



Alcohol Pot [AP-02]



Hexagonal Wrench [HEX-01]

Tripod Screw [TS-04A]

Carrying Case Strap [ST-04]

Carrying Case [CC-48]

Wireless/PC/Clamp Setting Guide [SG-11-E]

Tripod Screw [TS-04B]

J-Plate [JP-11]

Work Table L,R [WR-11L,R]

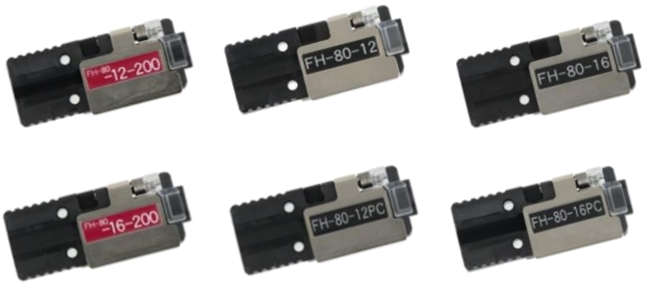
Warning and Caution [WAC-01-E]

If you would like more detailed information, such as how to use the carrying case, please contact the < Contact Address > at the end of this manual.

Other Necessary Items for Splicing Operation

Fiber coating diameter	for Ribbon Fiber	for Single Fiber
Fiber holder (Optional)	[FH-80] Series 	[FH-70] Series 
Fiber protection sleeves (optional)	Standard sleeve 40mm length [FP-05] 	Standard sleeve 60mm length [FP-03], [FP-03M] 40mm length [FP-03 (L = 40)] 





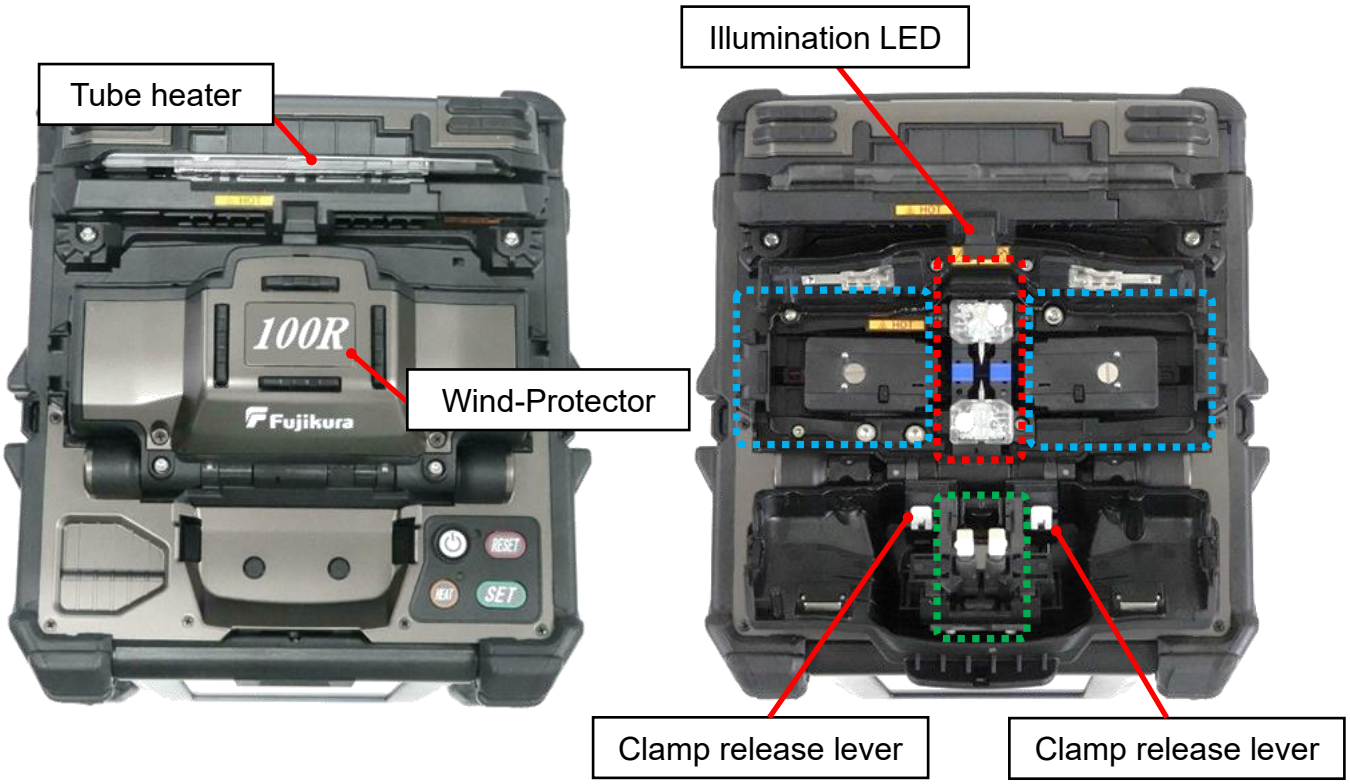
Use the correct V-grooves and fiber holders suitable for your specific needs.

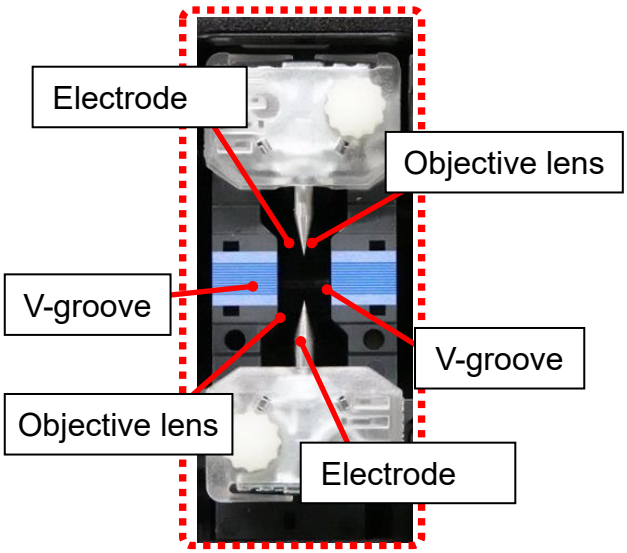
For details on types and usage, refer to the "Technical Support" contact list at the back of this document.

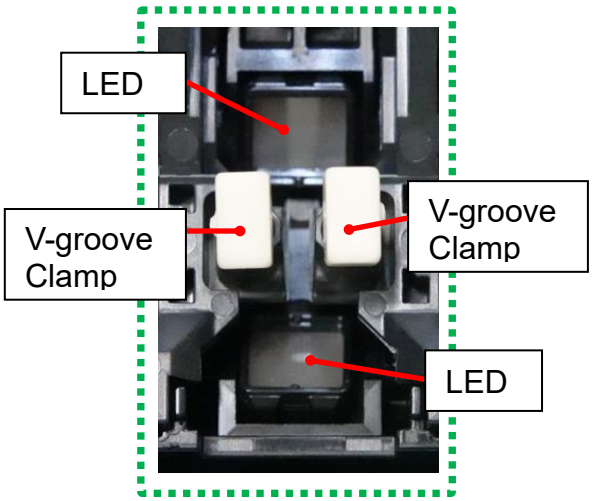
Description and Function of Splicer

Parts name

Top View

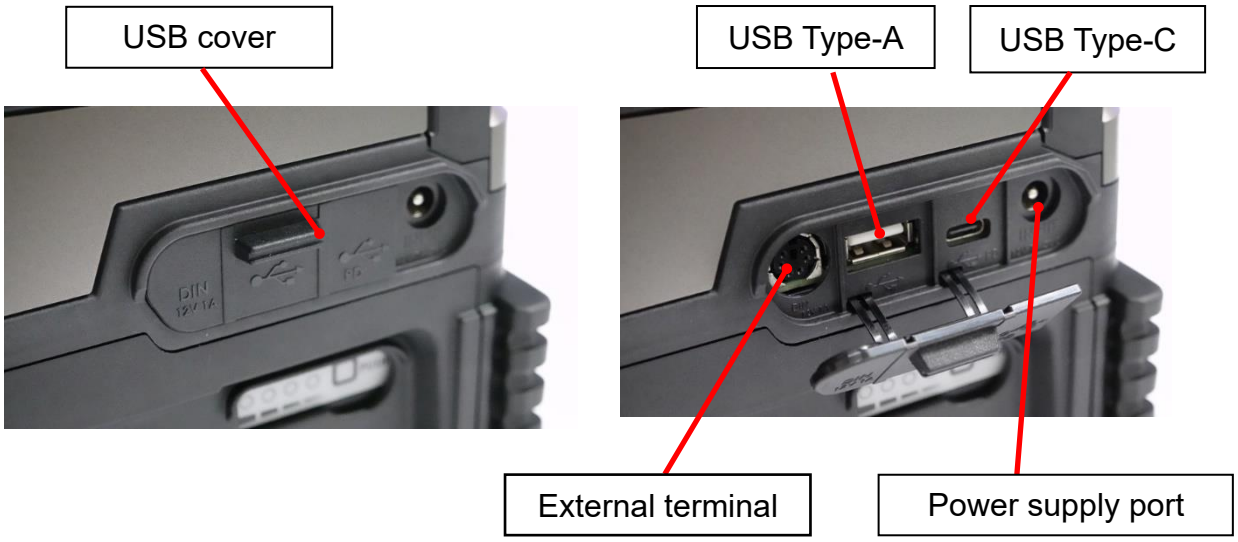




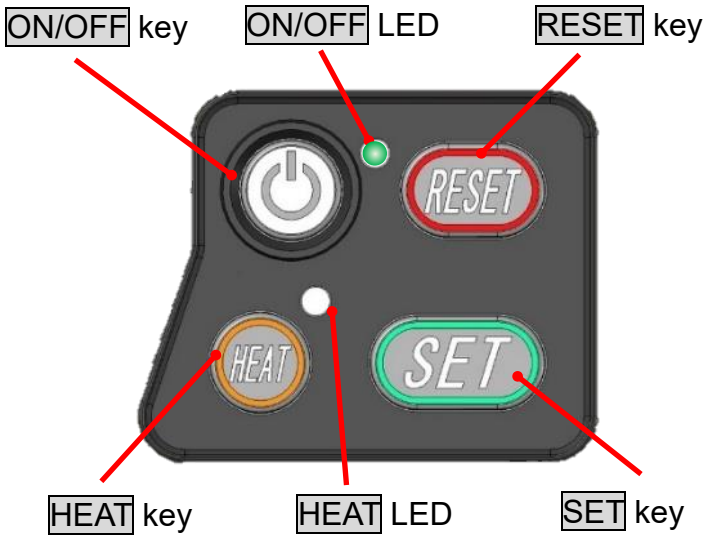


Angled Front View





Functions of each Key



Key Name	Key Function
ON/OFF key ON/OFF LED	To turn/the power on or off. LED turns green when pressing the ON/OFF key, and turns red when pressing it again.
HEAT Key HEAT LED	Starts the tube heater heating process. When the HEAT key is pressed once during heating, the LED will start blinking. The heating operation is stopped if the HEAT key is pressed again while the LED is blinking.
RESET Key	Regardless of the splicer's status, [RESET] stops any function except the tube heater heating process. After pressing, the splicer will return to the ready state with a beep sound.
SET Key	Starts the splicing operation or progresses through a PAUSE state.

Power Supply for the fusion splicer

The fusion splicer can be operated using AC power, DC power, or a battery.

AC Operation

1. When operating the fusion splicer with AC power, use an AC adapter (ADC-20) and an AC power cord (ACC-xx), or either Power Unit of the following.
   Battery Pack (BTR-19) or DC adapter (DCA-03).
   *The Battery pack (BTR-19) can be used while charging.
2. Firmly insert the AC power cord into the AC inlet of the AC adapter.
3. Properly insert the supply terminal of the AC adapter into the inlet of the power unit.





AC Adaptor
[ADC-22]



AC power code
[ACC-**]

AC generators commonly produce abnormally high AC output voltage.

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.



Check the AC voltage before inserting the power cord to generator.

DC operation with an external battery

1. When operating the fusion splicer with DC power, use the DC cord (DCC-20 or DCC-21).
2. Connect the DC cord to the DC supply.
3. Insert the DC cord into the inlet of the Power Unit.





DC cord [DCC-20]



DC cord [DCC-21]

- Do not supply DC15V or greater.
- If the polarity (positive / negative) is wrong, the protection circuit in DCA-03 or BTR-19 shuts down the DC output.

Battery Operation

Please use the supplied battery pack BTR-19.

Before using the battery

The battery is not fully charged at the time of shipment.
Please see the next section for charging instructions.

Adhere to below practices to prevent battery damage.

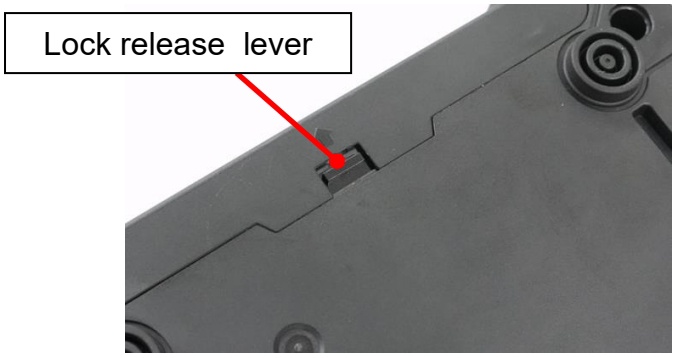
- The capacity of the battery gradually decreases even if it is not used. If the battery discharges completely, the battery may no longer be able to be re-charged. Charge the battery before storing for a long time and after every use.
- If a battery is to be stored for a long time, periodical charge every six months is recommended regardless of battery charge level.
- Operating Environment Conditions

Operate	: -10 to 50 degree C
Recharge	: 0 to 40 degree C
Storage less than 1 year	: -20 to 20 degree C
Storage less than 3 months	: -20 to 40 degree C
Storage less than 1 month	: -20 to 50 degree C

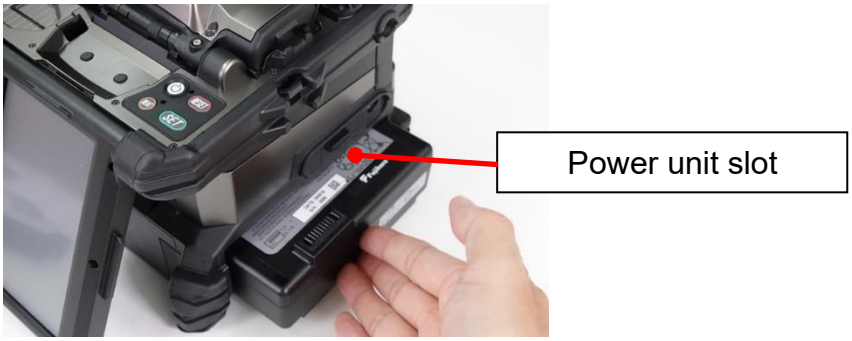
Attaching and detaching the Battery unit(BTR-19)

Attaching Battery unit(BTR-19)

Remove the battery cover with the lock release lever disengaged.
Insert the Battery unit BTR-19 fully into the Power unit slot of the fusion splicer.







Dettaching Battery unit(BTR-19)

After turning off the splicer, remove the BTR-19.



How to check the remaining battery capacity from the splicer display

If the fusion splicer is equipped with a battery, turn the splicer power ON. The power source of "Battery" is automatically identified, and the remaining battery capacity is displayed on the "READY" screen.
The battery level can be checked by the number of bars on the battery icon.



100~75%	
75~50%	
50~25%	
Less than 25%	

Remaining battery capacity

The battery charge indicator on-screen is an approximate estimate.
It is recommended to charge the battery before operating on battery power.
If splicing on battery power, we recommend fully charging the battery before operating. Please ensure the battery level is above 20% before starting the operation. If the battery level is 20% or below, only a few splices and heat shrink operations can be performed.

- To provide the maximum number of fiber splices and heating cycles, please use the power-saving mode.

How to check the remaining battery capacity of the battery pack

If the battery is not inserted in the splicer, press the battery check push button on the battery pack. The remaining battery capacity is indicated on the LED indicator.



Remaining battery capacity indicator	Remaining battery
4 LED	75~100%
3 LED	50~75%
2 LED	25~50%
1 LED	10~25%
1 LED Flashing	Less than 10%

How to charge the battery

1. Attach the battery pack [BTR-19] to the fusion splicer.
2. For AC, firmly insert the AC power cord [ACC-19] into the AC adapter [ADC-22] terminal. Then firmly insert the AC adapter plug into the fusion splicer.
   For DC, connect the DC power cord [DCC 20 or DCC 21] to the DC power supply. Then, plug the DC power cord's plug into the inlet terminal on the fusion splicer.
3. When charging starts, the battery level indicator will blink according to the remaining capacity.
   When charging is complete, the battery level indicator will turn off.
4. After charging is complete, unplug the AC adapter power plug or the DC power cord from the fusion splicer.

- You can use the fusion splicer while charging the battery pack.
  Insert the battery pack into the fusion splicer, then connect the AC adapter plug or DC power cord plug.
- If charging does not complete or the battery quickly runs out, the battery pack may be defective or at the end of its lifespan.
  Please replace it with a new battery pack.

When using a power bank

This fusion splicer can be used with a power bank that complies with the USB Power Delivery standard. We recommend using a power bank that has been verified for compatibility. Depending on the power capacity of the power bank, charging, fusion splicing, and heating operations will be possible as described below.

Fusion splicer operation	Power delivery output	
	18W~65W less than	65W~100W
Charging	✓	✓
Fusion splicer	✗	✓
Heater operation	✗	✓

Verified power bank

Manufacturer name	Model number
ANKER	737 Power Bank
UGREEN	PB720 100W

- When connecting a power bank to this product, be sure to confirm that it complies with the USB PD standard and follow the precautions for the power bank. Do not use a power bank that is not compatible with this product.
- When connecting a power bank to this product, please use the USB cable included with this product.
- Using a power bank or USB cable other than the one provided with this product may result in malfunction, fire, or injury.



Turning Splicer ON/OFF

Turning Splicer ON

Press and hold the ON/OFF key until the green LED turns on. The following warning screen is displayed.

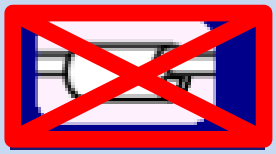


- The license message is displayed twice a month when the fusion splicer is turned on.
- There is a possibility that a language is fixed depending on the country of shipment.

When the license agreement appears, select [Agree]. After all motors return to their home positions, the [Ready] screen will be displayed.
The system will identify the type of installed power unit. If the power unit is a battery, the battery level indicator will appear on the right side of the [Ready] screen.

Heater Calibration function

- If the splicer has not been used for more than one week, the Heater Calibration function automatically starts after powering on.
  During calibration, an “X” icon will be displayed.
  Fusion splicing can be performed, but the heater cannot be used. Please wait until the heater calibration is complete and the "X" icon disappears.



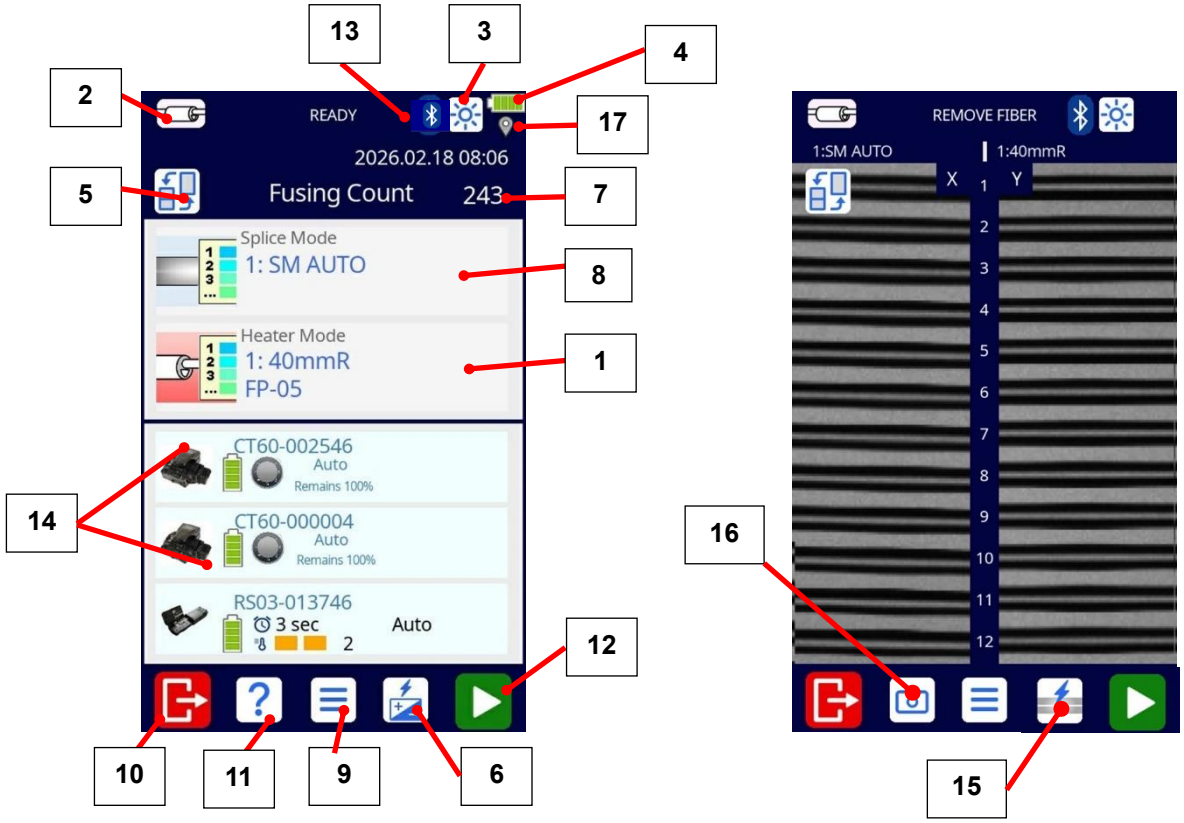
Turning Splicer OFF

Press and hold the ON/OFF key until the red LED lights up, then release.
When turning off the power, if the sheath clamp is open, the wind protector may not close. In that case, close sheath clamps before turning off the power.



Splicer settings / READY screen

Composition of a READY screen



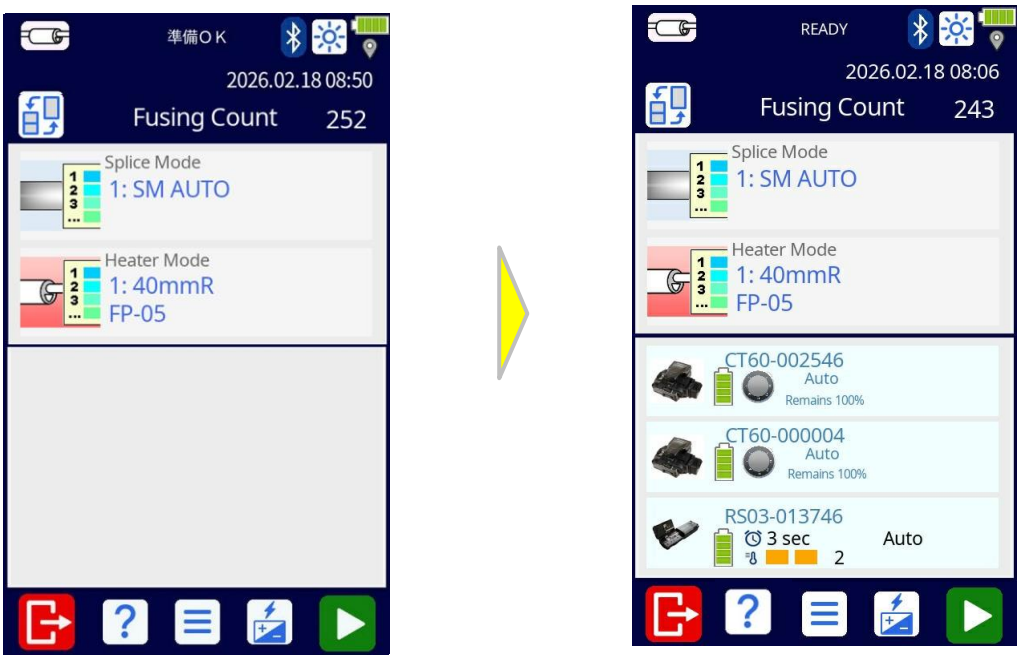
No.	Icon name	Function
1	Heater Mode	Current “Heater mode” is displayed. After tapping the [Heater Mode], the screen appears.
2	Heat	Same as the HEAT key on the sheet key. Tap this icon to start the heater operation.
3	LCD Brightness	Tap this icon to display the [LCD Brightness] screen.
4	Battery Indicator	This icon shows the battery charge capacity.
5	Changing screen	Tap this icon to switch the monitor display in the following order: [X Camera Image] → [Y Camera Image] → [X/Y Camera Image] → [Information].
6	Fusing Power Calibration	Starts the fusion power calibration. “Fusing Power Calibration” function in [Maintenance] can be selected directly.
7	Fusing Count	The number of splices is displayed.
8	Splice Mode	The current “Splice Mode” is displayed. After tapping, the [Splice Mode] screen appears immediately.
9	Main Menu	After tapping, the [Main Menu] screen appears.
10	Reset	Same as the RESET key on the sheet key
11	Help	This is the HELP icon. This function shows information to you.
12	Start	Same as the SET key on the sheet key. Starts the splicing operation.
13	Bluetooth	Tap this icon to display the [Bluetooth] screen.
14	Cleaves & Stripper	This area shows the status of the paired tools. Tapping the Cleaver icon displays the [Management] screen. Each icon displays its status.
15	Additional fusing	Additional fusing can be performed after splicing.
16	Camera	Saving camera images is supported.
17	GPS	The icon indicates the current GPS connectivity. Red: Signal is being received. Gray: No signal is detected.

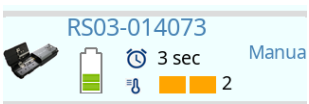
Bluetooth

This fusion splicer is equipped with Bluetooth. By connecting wirelessly with the optical fiber cleaver (CT**), it is possible to change the settings of each model from the fusion splicer. It also monitors the wear level and errors of the cutting blade, notifies the operator of the results, and performs useful functions such as rotating the cutting blade.

Checking the wireless communication status of the fusion splicer

When a device is paired, an icon will appear on the right side of the Ready screen. Selecting each icon takes you to the settings menu, where you can edit it.



Icon	Description
	Tap the icon to display Bluetooth under More Settings.
	The following information is displayed for the paired fiber cleaver: 1. Serial number 2. Battery capacity 3. Remaining blade life 4. Blade rotation method (automatic or manual) Select the icon to enter the Blade Management Menu for more details.
	Wireless communication with two fiber optic cleavers is possible. This icon appears when only one or no fiber-optic cleavers are connected. When you select the icon, the Bluetooth menu will be displayed.
	This image shows the status of paired ribbon fiber stripper as follows. 1: Serial Number 2: Battery capacity 3: Heating time 4: Heater Temperature 5: Control machine (Auto or Manual) When pressing this icon you enter the [Stripper Settings] menu directly.

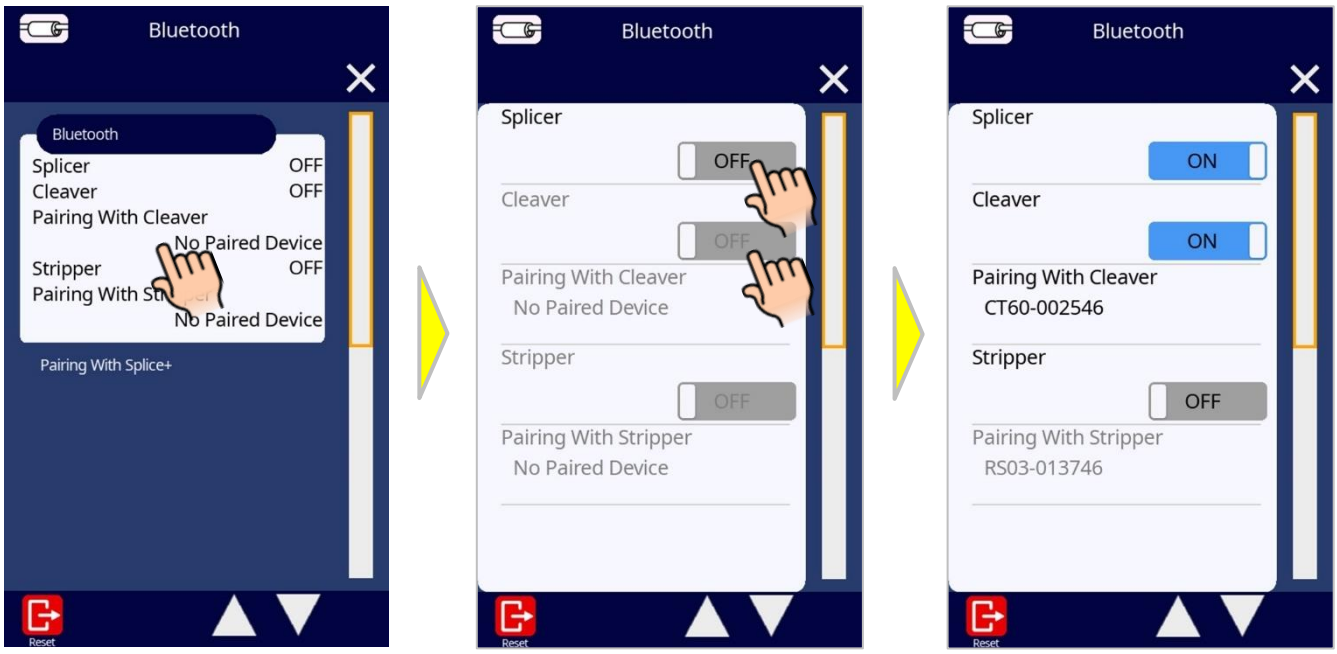
Bluetooth connection with optical fiber cleaver

Once you pair the fusion splicer and optical fiber cleaver, they will automatically pair the next time you use them. If wireless communication does not start, follow the steps below to pair them.

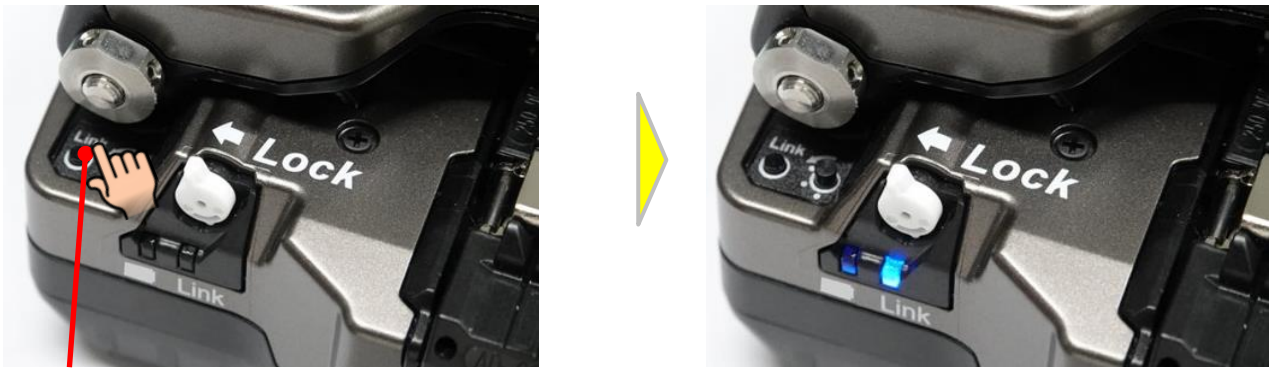
Steps

1. Power on the fusion splicer.
2. Insert batteries into the fiber cleaver. The power will turn on after the batteries are inserted.
3. Tap the Bluetooth icon to enter the Bluetooth menu, then turn on the Fusion Splicer and optical fiber cleaver in the menu.





4. Press the LINK button on the optical fiber cleaver for 6 seconds to put it into pairing standby mode.



Link button

5. When you select "Pair with optical fiber cleaver" on the fusion splicer, the name and serial number of the tool waiting to be paired will be displayed. If the pairing fails, please try again from step 1.



6. Select the tool you want to pair with from the list to begin pairing.
7. If pairing is successful, the LINK LED on the fiber cleaver will flash, then remain lit for a few seconds, and then turn off.
8. When you return to the Ready screen, the serial number will be displayed under Cleavers on the Ready screen.

Device switching

1. In the "Bluetooth" menu, turn on the power to the "Fusion Splicer" and "Cleaver."
2. In the "Bluetooth" menu, select "Pair with Cleaver" and press the SET key to display the "Device List."
3. Select the optical fiber cleaver to connect.
4. Pairing with the selected 9optical fiber cleaver will begin.

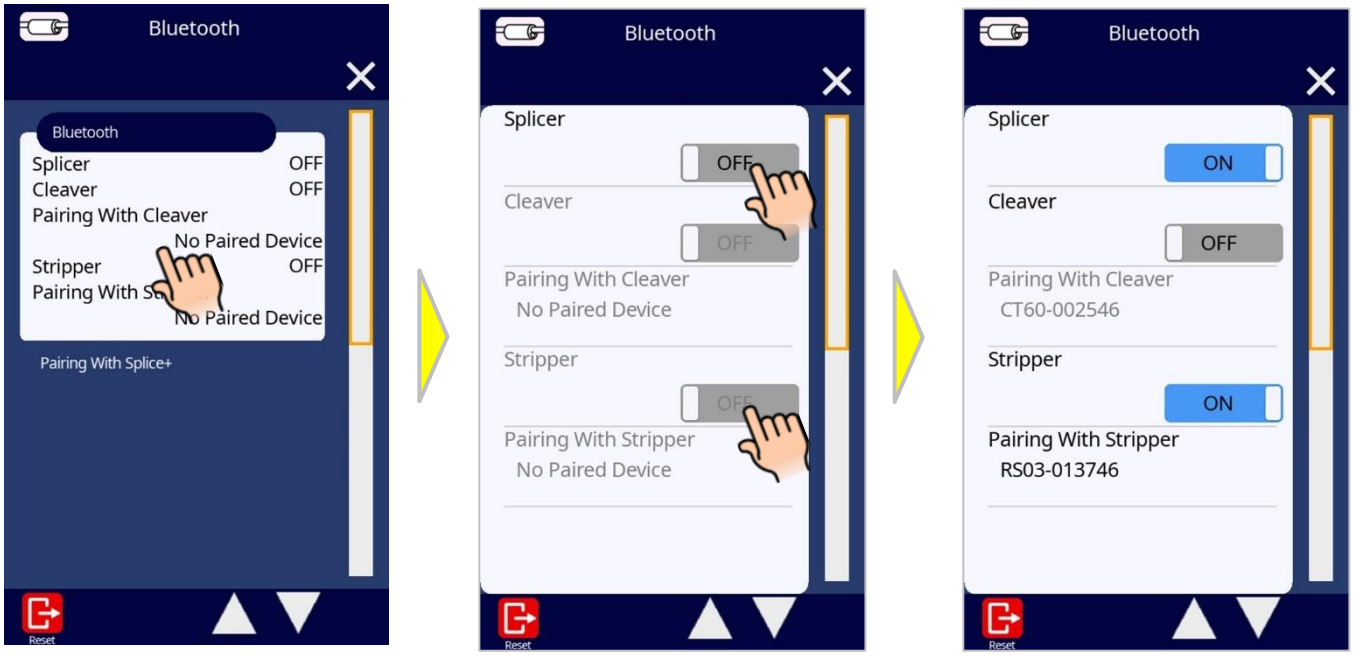
Bluetooth connection with stripper

Once you have paired the fusion splicer and stripper, they will automatically pair the next time you use them. If wireless communication does not start, follow the steps below to pair them.

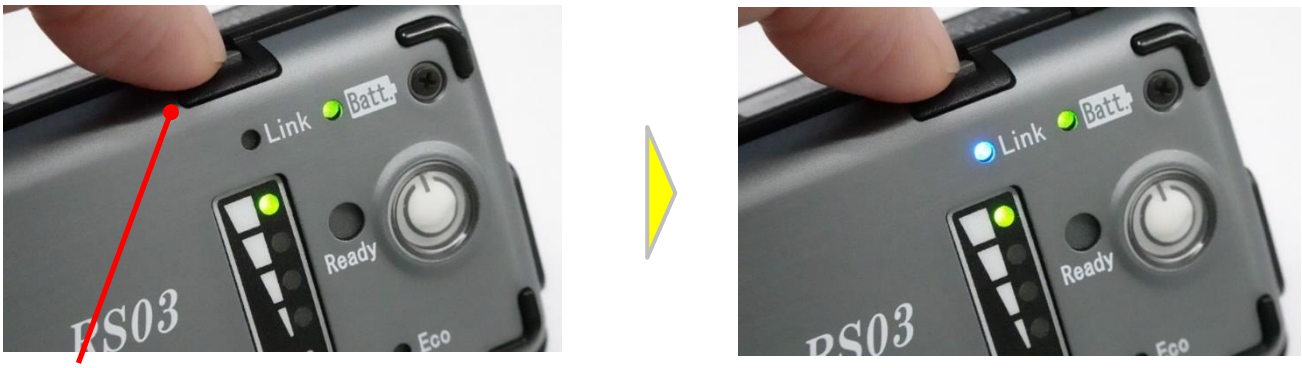
Steps

1. Power on the fusion splicer.
2. Power on the fusion stripper.
3. Tap the Bluetooth icon to enter the Bluetooth menu, and then turn on the Fusion Splicer and Stripper in the menu.



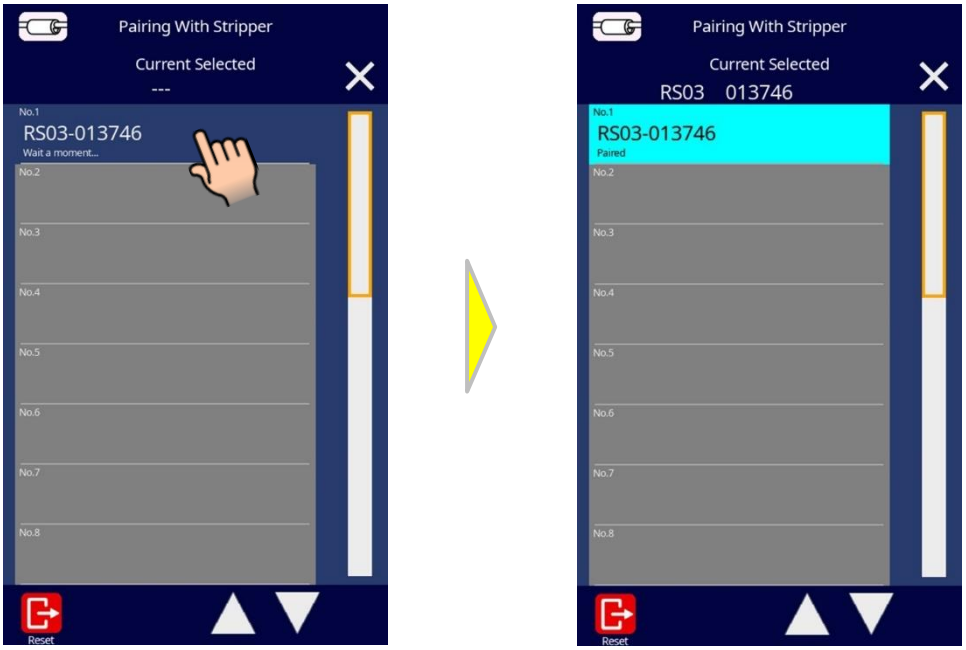


4. Press the LINK button on the stripper for 6 seconds to put it into pairing standby mode.



Link button

5. When you select "Pair with Stripper" on the fusion splicer, the tool name and serial number waiting for pairing will be displayed. If it fails, please try again from step 1.



6. Select the tool you want to pair with from the list to begin pairing.
7. If pairing is successful, the LINK LED on the Stripper will flash, then remain lit for a few seconds, and then turn off.
8. When you return to the Ready screen, the serial number will be displayed under RS03 on the Ready screen.

Device switching

1. In the "Bluetooth" menu, turn on the power to the "Fusion Splicer" and "Stripper"
2. In the "Bluetooth" menu, select "Pair with Stripper" and press the SET key to display the "Device List."
3. Select the Stripper to connect.
4. Pairing with the selected Stripper will begin.

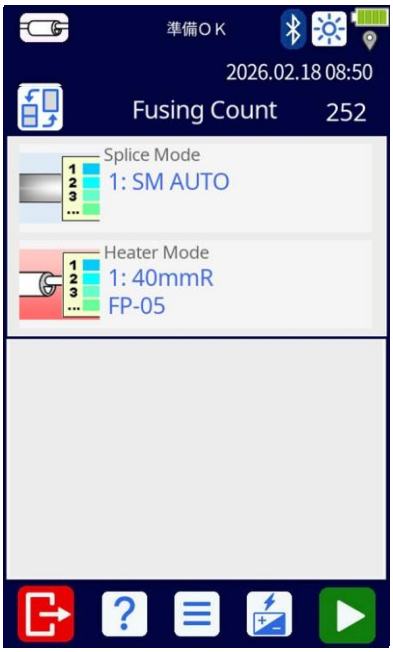
How to turn off Bluetooth

If you are using a fusion splicer in a location where the use of radio waves is prohibited, please turn off the wireless communication function. A fusion splicer cannot block radio waves from optical fiber cleavers. Please turn off the radio waves from each tool.

Procedure for disconnecting: splicer

1. On the [Ready] screen, tap the Bluetooth icon in the wireless communication settings.
2. On the [Bluetooth] screen, change the "Fusion Splicer" setting to "Off."

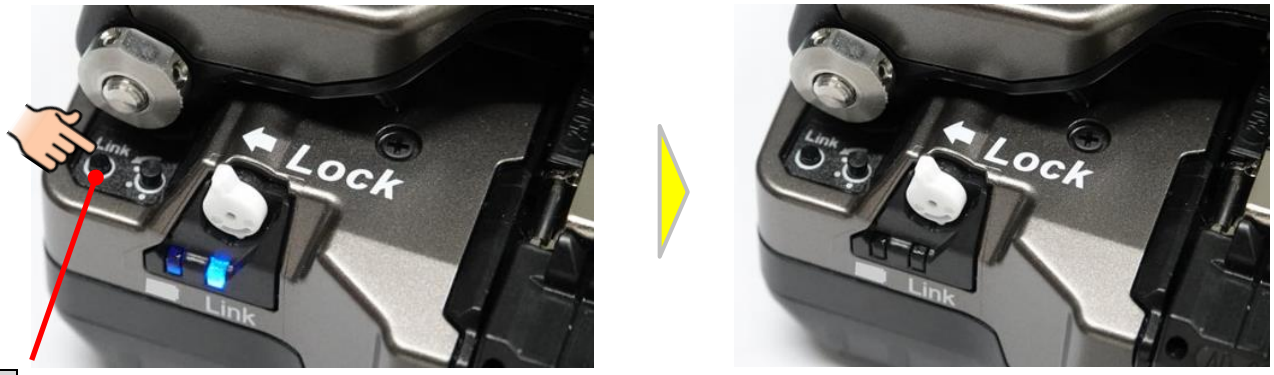




3. Press the Reset button to return to the Ready screen and verify that the Optical Fiber Cleaver is no longer listed.

Optical Fiber Cleaver CT60 Procedure

1. Press and hold the Link button for 6 seconds.
2. The LED will flash blue quickly.
3. Press the Link button once. The signal will stop, and the LED will turn off.



Link button

When transporting by air or when an emergency stop is required

In case of emergency or when transporting by air, please follow the steps below to turn it off.

- Fusion splicer: Turn the power OFF. Radio waves will stop.
- Optical fiber cleaver: Remove the batteries. Radio waves will stop.

RS03 Stripper Procedure

1. Press and hold the Link button for 6 seconds.
2. The LED will flash blue quickly.
3. Press the Link button once. The signal will stop, and the LED will turn off.





When transporting by air or when an emergency stop is required

In case of emergency or when transporting by air, please follow the steps below to turn it off.

- Fusion splicer: Turn the power OFF. Radio waves will stop.
- Optical fiber cleaver: Remove the batteries. Radio waves will stop.

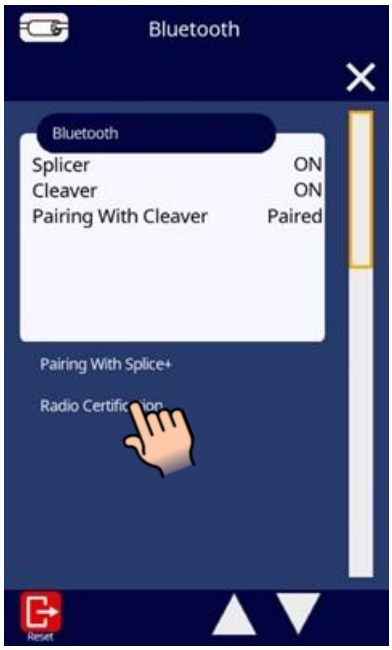
Check radio frequency regulatory

1. Tap the Bluetooth icon to enter the Bluetooth menu.



2. Tap the Radio Certification icon to enter the Radio Certification List Screen.







Composition of Main Menu



Method

1. Tap the Main Menu icon located at the bottom left of the [READY] screen.
2. The [Main Menu] screen will be displayed.

Setting parameters

Icon	Description
Splice Operation	Returns to [READY] screen.
Splice Mode	[Splice Mode] screen appears. This allows access to the splicing parameters.
Splice Settings	[Splice Setting] screen appears. This allows motion of the splicer during both the review/edit and operation.
Heater Mode	[Heater Mode] screen appears. This allows access to the heating parameters.
Memory	[Memory] screen appears. This allows reviewing the splice result or changing comments.
Maintenance	[Maintenance Menu] screen appears. This allows review of the splicer condition.
Other Setting	[Other Setting] screen appears. This allows reviewing/editing wireless communication and supervisor settings.
Guide	[Guide] screen appears. This allows you to view instructional guide videos and pictures built into the fusion splicer.

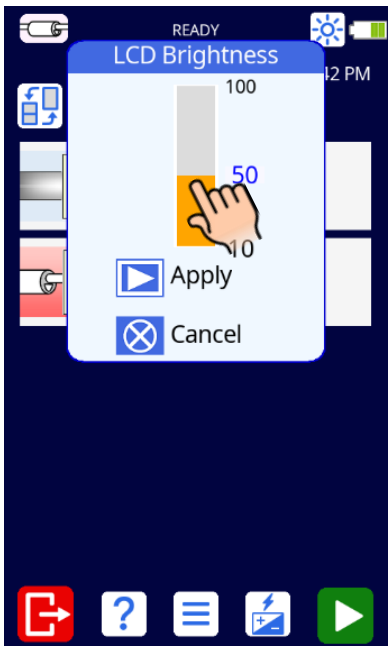
Refer to each section for details of each parameter.

LCD Brightness Adjustment

Monitor visibility changes depending on environmental conditions. To change monitor brightness, tap the LCD Brightness icon in the upper-right corner of the READY screen. The LCD Brightness screen will appear. Slide the Up/Down bar to adjust the brightness to a comfortable level.



[READY]

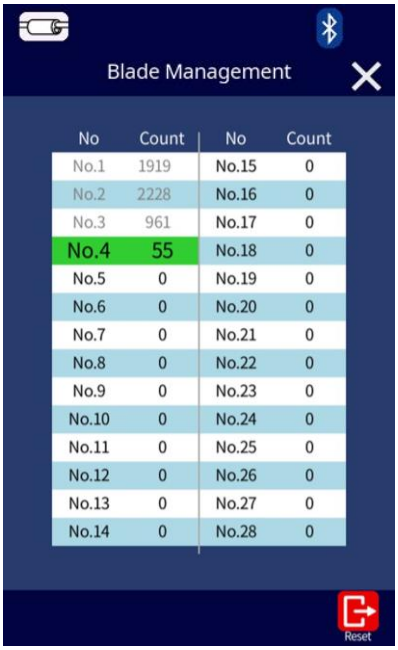


[Brightness]

Wireless communication with tools

When the cleaver is paired with the fusion splicer, the fusion splicer and the tool automatically start wireless communication.
After connecting, the tool status will be displayed on the monitor.





Operation Mode

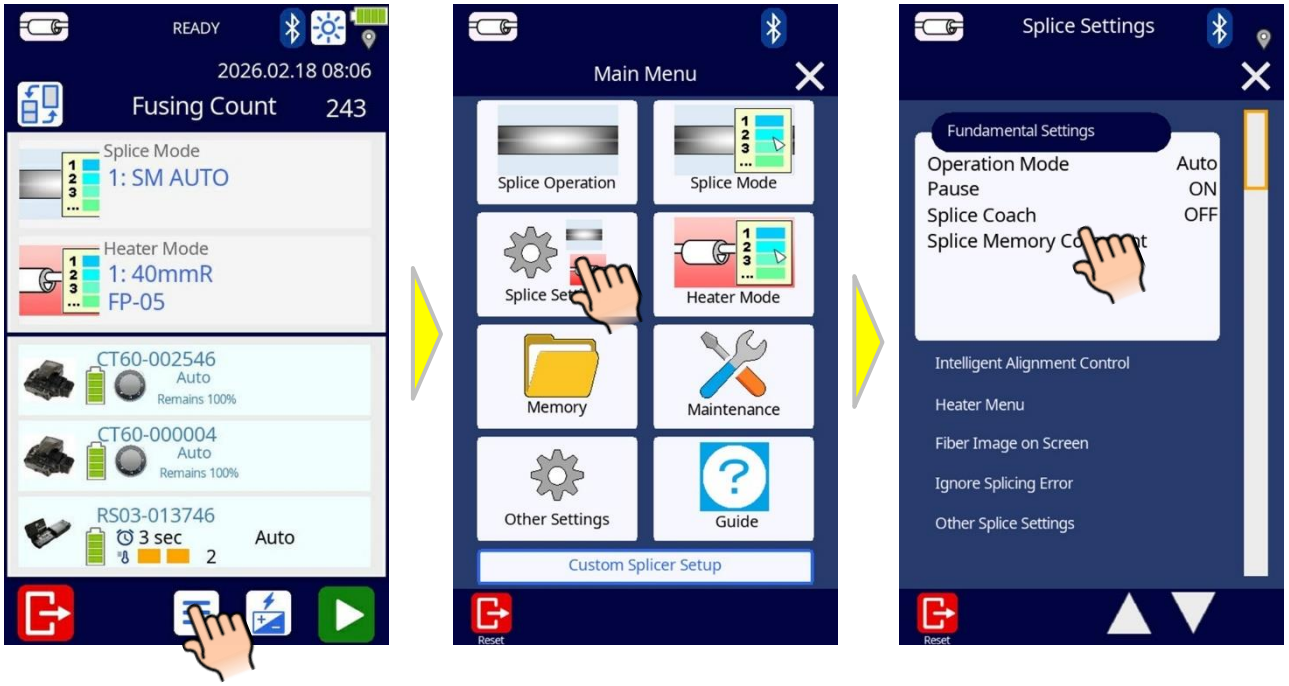
Selection of Operation Mode

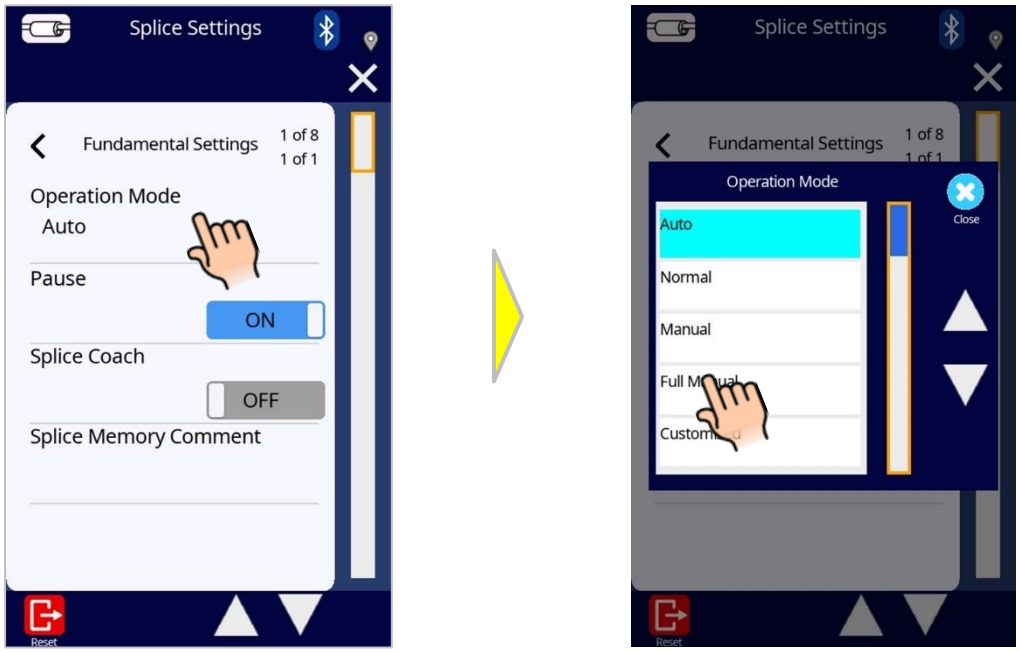
Each operation mode consists of parameters shown below, so that the operation of the equipment can be customized.
You can change the operation of the fusion splicer's automated features according to the operator's speed and preferences.

Parameter	Description
Operation mode	
Auto	Before splicing: Start splicing automatically after setting fibers on the left and right sides. After splicing, the Wind-protector opening and proof test are simultaneously done. Perform sheath clamp opening manually.
Normal	Before splicing: Start splicing automatically after setting fibers on the left and right sides. After splicing: If the SET key is pressed, proof test and wind-protector opening are simultaneously done. Perform sheath clamp opening manually.
Manual	Before splicing: If you press the SET key, start splicing. After splicing: If the SET key is pressed, proof test and wind-protector opening are simultaneously done. Perform sheath clamp opening manually.
Full Manual	Before splicing: Start splicing by pressing the SET key after closing the wind protector. After splicing: Pressing the SET key will start the proof test. Manually open the wind protector and sheath clamps.
Customized	**Operation mode**
	Auto start trigger
	The "Fiber Set", "Cover Close", and "OFF" options can be chosen to trigger when the fusion splicer starts splicing.
	Cover close reaction time.
	Set the time interval between when the fibers are set in the sheath clamps and when the wind-protector closes.
	Wind-protector motion (At the time of customization was selected)
	Power on
	Set the wind protector to open or close when the power is turned on.
	Reset
	Set the wind protector to open or close upon reset.
	Finish
	Set the wind protector to open or close after the splicing is complete.
	Error
	Configure the wind protector to open or close when an error occurs.

How to change the operation mode

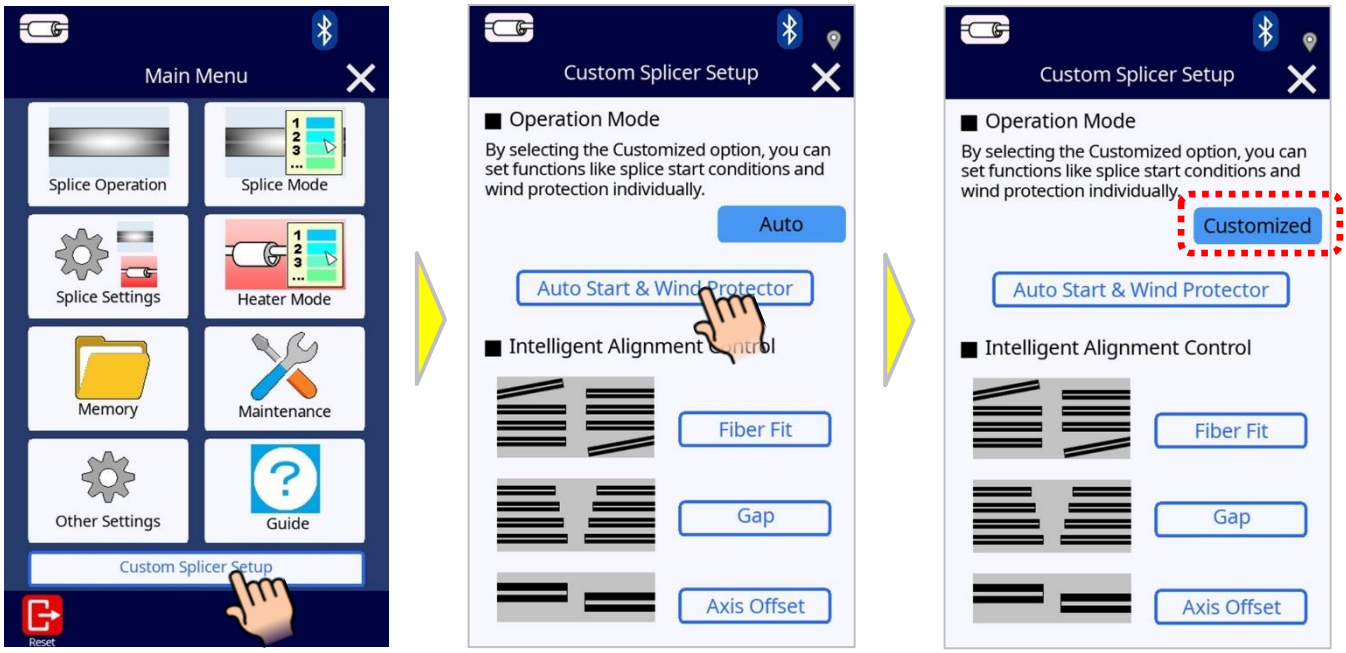
Tap the Main Menu icon on the [Ready] screen, and a [Main menu] screen will be displayed. Tap the Splice setting icon to enter the [Splice setting] screen and tap the “Operation mode” to select the preferred operation.





Custom Splicer Setup

This is a shortcut icon for the custom operation mode. You can individually set the auto start, sheath clamp, and wind shield operations within the operation mode. Changing these settings will change the operation mode to customized.



Parameter	Description
Operation Mode	
Auto	Displaying and Changing the Operation Mode The display will automatically change to "Customized" when any items in "Auto Start & Wind Protector" are modified.
Auto Start & Wind Protector	➢ Auto Start You can select from "OFF," "Fiber Set," or "Cover Close." ➢ Wind Protector Configures the closing timing of the wind protector. ➢ Select "Open" or " Close" for the wind protector operation after splicing. ➢ You can select from the available operating conditions.
Intelligent Alignment Control	
Fiber Fit	You can select from the available operating conditions: OFF / Lite / Standard / Strong
Gap	
Axis Offset	

This unit has an automated Wind-Protector opening-and-closing mechanism and movement changes with the chosen operation mode.

<table>
<tr><td rowspan="2">Operation Mode</td><td colspan="6">Wind-protector motion</td></tr>
<tr><td colspan="2">When error occurred such as Fat,Thin,Loss etc.</td><td>When Error not occurred</td><td rowspan="2">When error occurred except for having enumerated to the following</td><td rowspan="2">When the power supply starts</td><td rowspan="2">When RESET key is pushed</td></tr>
<tr><td>end of splicing</td><td>Pause</td><td>end of splicing</td></tr>
<tr><td>Auto</td><td>Closed</td><td colspan="5">Open</td></tr>
<tr><td>Normal</td><td>Closed</td><td colspan="2">Open</td><td>Closed</td><td colspan="2">Open</td></tr>
<tr><td>Manual</td><td colspan="6">Closed</td></tr>
<tr><td>Full Manual</td><td colspan="6">Closed</td></tr>
<tr><td>Customized</td><td colspan="3">Closed</td><td colspan="3">Open/Closed</td></tr>
</table>

* When the power supply is off, the "Wind-Protector" is closed.
Please be sure to press the power button, turn off the power supply, and then turn off the power button.

As shown in the table above, the sheath clamp release action after splicing varies depending on the proof test ON/OFF setting in splice mode.

If you want to use an additional fuse or similar functions after splicing, note that the wind protector may open depending on the operation mode. Therefore, we recommend setting the operation mode to Manual or Fully Manual mode.

The time between setting the fibers and the wind protector closing is shorter in “Auto” mode, and slightly longer in standard mode. The closing time can be adjusted by the user in “Customized” mode.

Select the Splice Mode

The optimal splice setting for a specific fiber combination consists of the splicing parameters listed below. In other words, the optimal splicing parameters vary depending on the types and combinations of fibers used.

- Parameters for controlling fusing.
- Parameters for calculating estimated splice loss.
- Parameters for controlling fiber alignment and splicing procedures.
- Threshold for error messages.

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

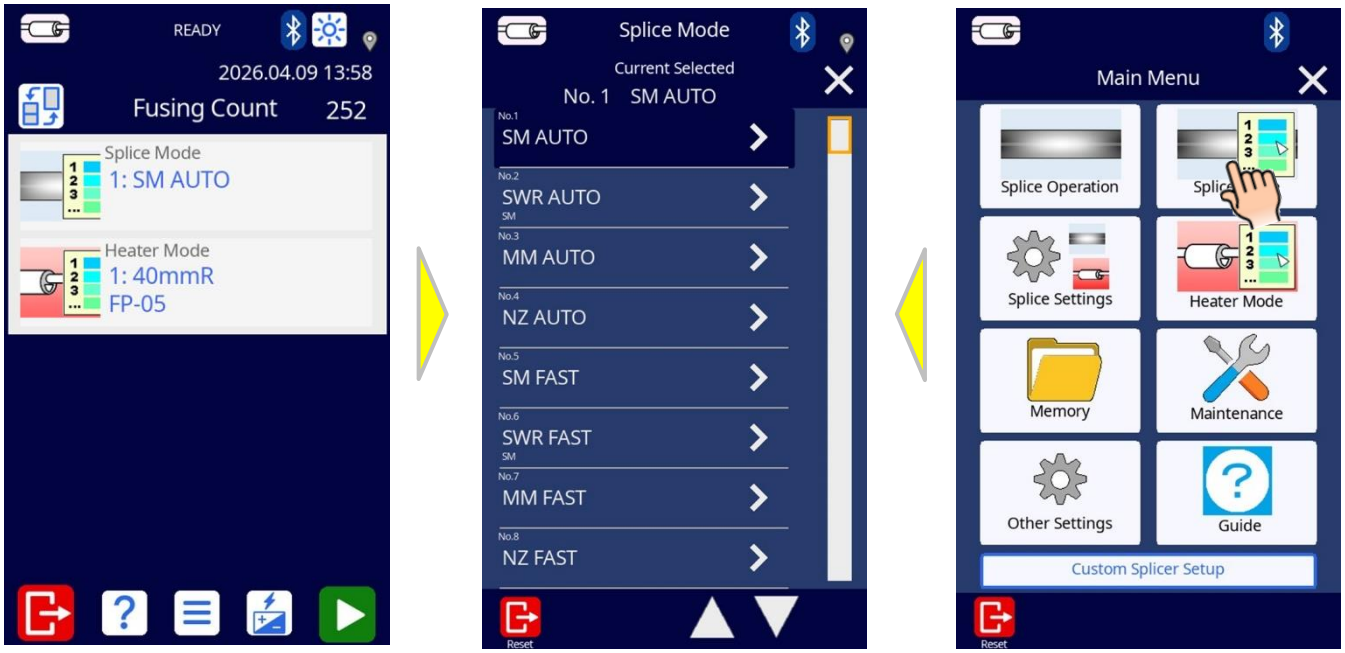
How to select the Splice Mode



- ［** AUTO］ and others
  Use this mode when the fiber type is identified.
- ［** FAST］ and others fast
  Use this mode when the fiber type is identified and prefer quick splice with high yield over consistent splice loss.
- ［SM**］ and others
  When splicing special fibers or fiber ribbons with a specific number of cores, you can adjust various parameters to achieve the optimal splicing conditions.

How to check the splice mode

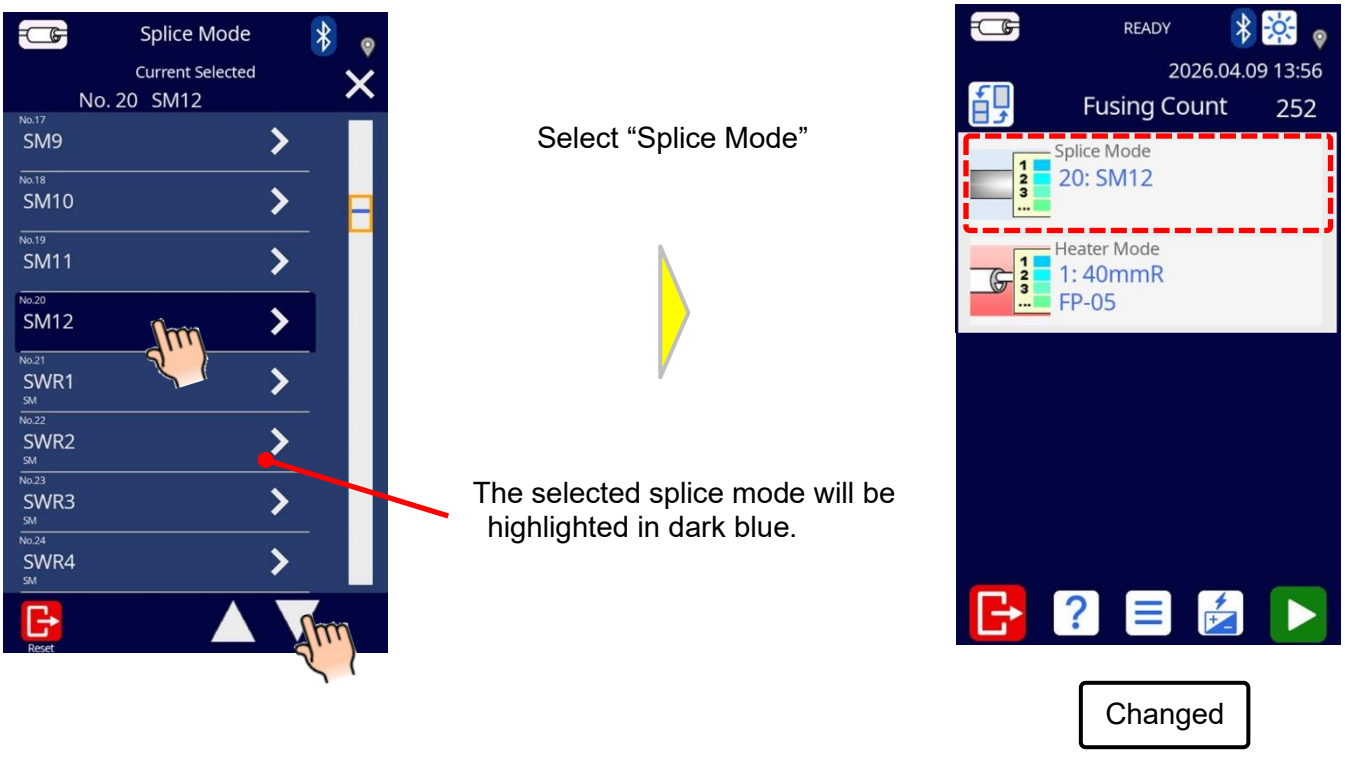
The current splice mode is displayed on the monitor as shown below.



How to change the splice mode

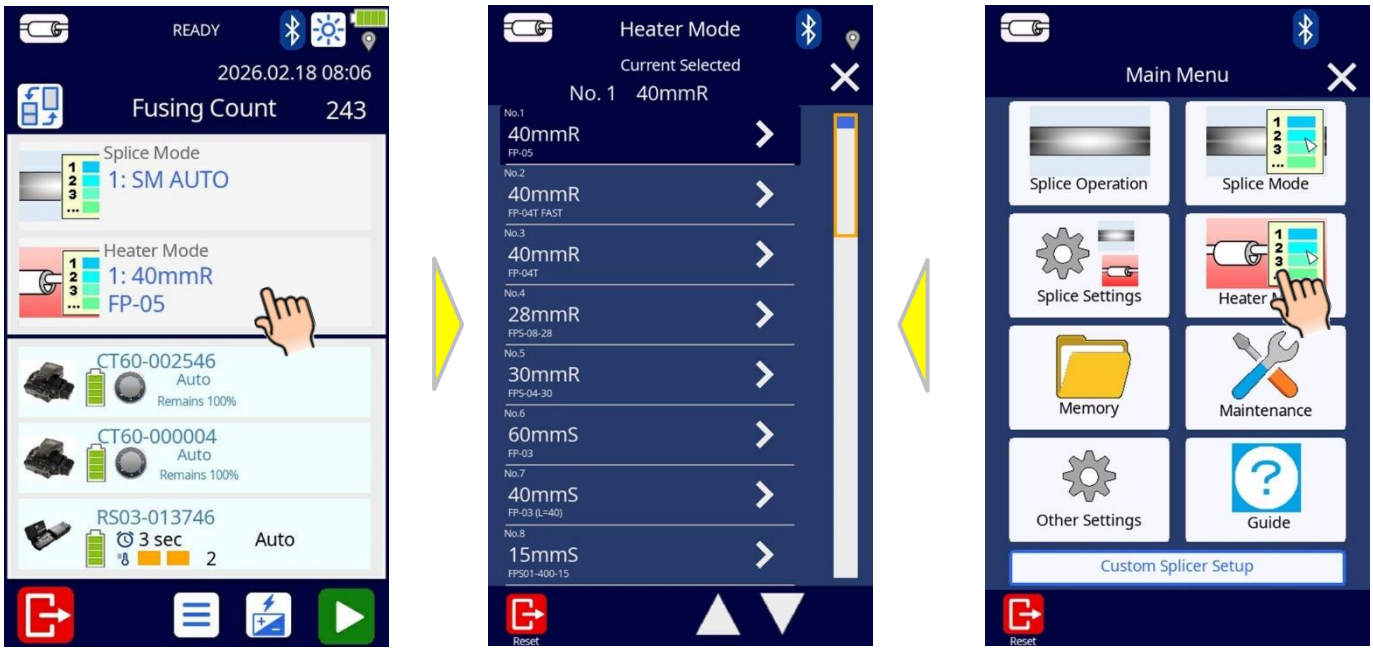
Select an appropriate splice mode for the fiber type to be spliced.

1. Select the [Splice Mode] screen to display the list.
2. Tap the suitable splice mode in the list. Confirm that the change is reflected on the [READY] screen.



How to check the current heater mode

The current heater mode is displayed on the [READY] screen.

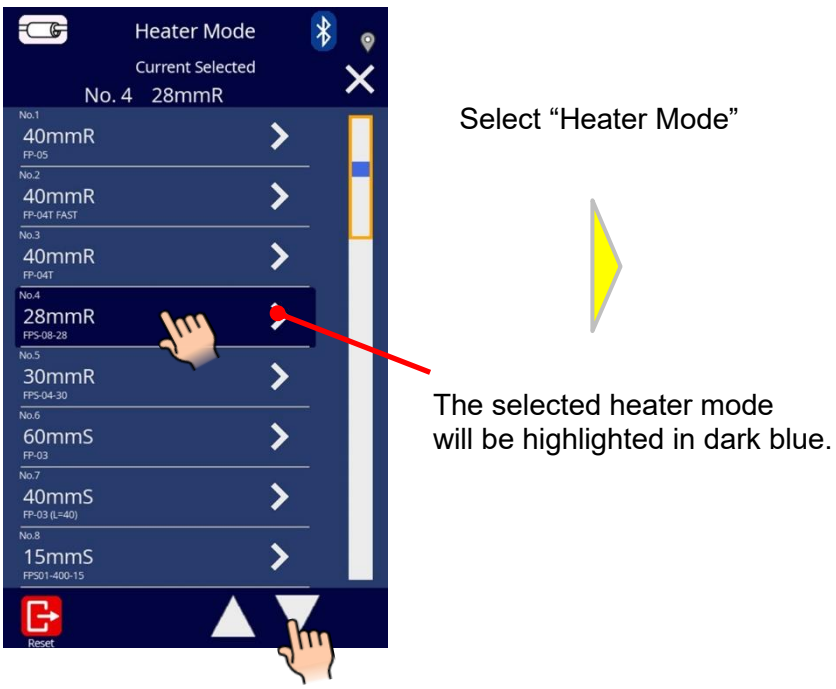


- When using a protection sleeve not made by Fujikura, please set the parameters according to the specific sleeve.
- When using a sleeve made by another manufacturer, the durability of the protected section cannot be guaranteed.

How to change the Heater mode

Select an appropriate heater mode for the type of protection sleeve.

1. Select the Heater Mode icon on the [READY] screen. The [Heater Mode] screen will appear.
2. Tap the suitable heater mode in the list. Confirm that the change is reflected on the [READY] screen.



Preparation of fiber

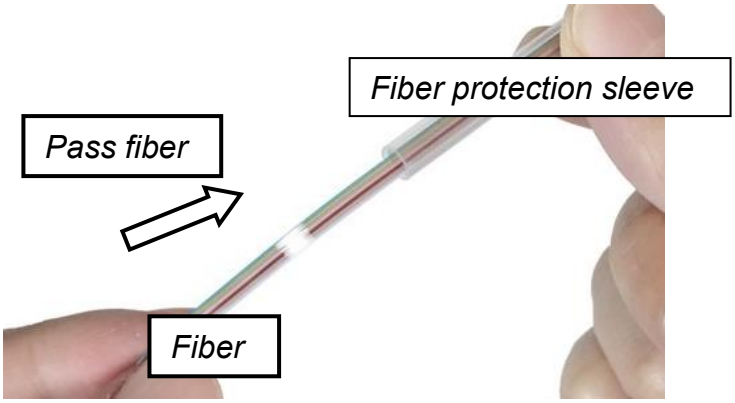
Cleaning optical fiber

Clean the optical fiber with alcohol-moistened gauze or lint-free tissue approximately 500mm from the tip. Dust and particulates from the fiber coating can enter the protection sleeve and might result in a future fiber break or transmission attenuation.

Placing a protection sleeve over the fiber

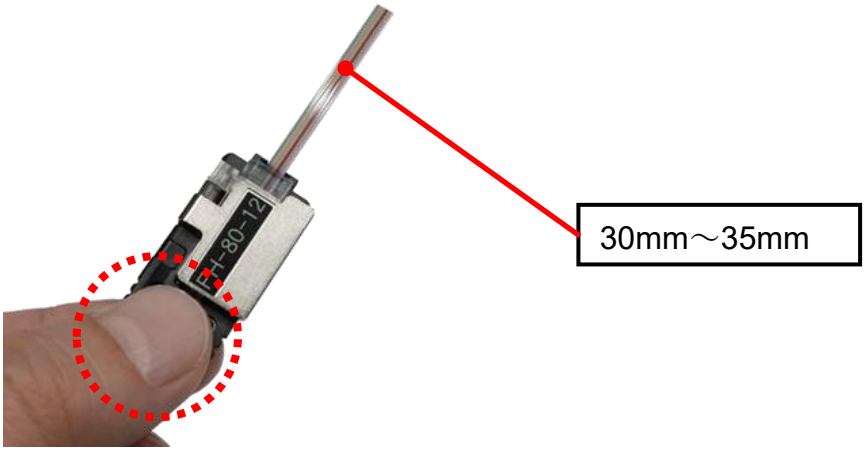
Place the protection sleeve over the fiber on the right side.

➢ Since a left hand serves as a standard at the time of fiber conveyance, the method of inserting a sleeve in a right-hand side fiber is recommended.



Inserting the Fiber into the Fiber Holder

After opening the lid of the fiber holder, insert the optical fiber into the fiber holder. Ensure the fiber is properly aligned with the groove inside the fiber holder, then close the lid.



➢ While holding down the bottom of the fiber holder (the dashed line in the diagram) with your finger, close the lid of the fiber holder.
➢ If the fiber's sheath is bent, place it so that the bend is facing downwards.
➢ At this time, ensure that the first core is on the back side (the sliding part of the lid).
➢ Use an optical fiber holder that matches the number of cores.

Removing the sheath from the optical fiber (RS03)

Power supply to RS03

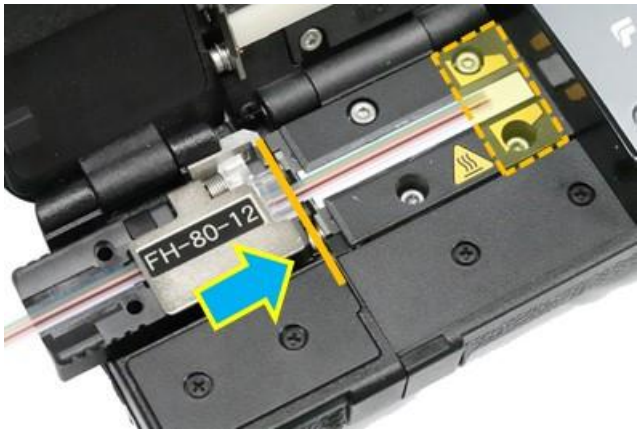
Turn on the RS03 unit. Alternatively, power can be supplied by connecting the DCC-11 to the external terminal of the fusion splicer unit.





Coating removal process using RS03

1. Set the fiber holder into the RS03 holder base. Press it firmly in the arrow direction until no gap remains, then close the lid.



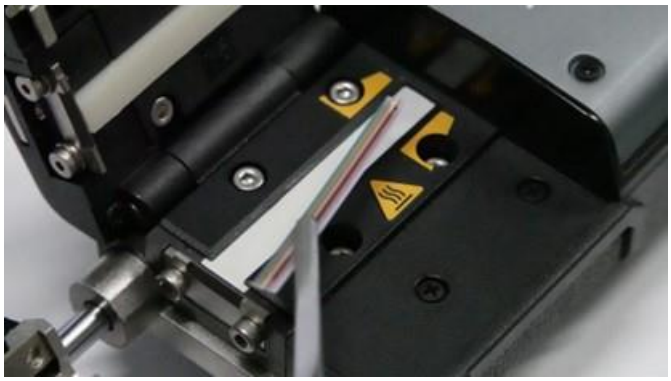


2. Close the lid and the heating LED will turn orange. Once the LED changes to green (heating complete), slide the holder base to remove the coating.





3. Take out the fiber holder. Clear any coating debris from the heater area after each stripping cycle.

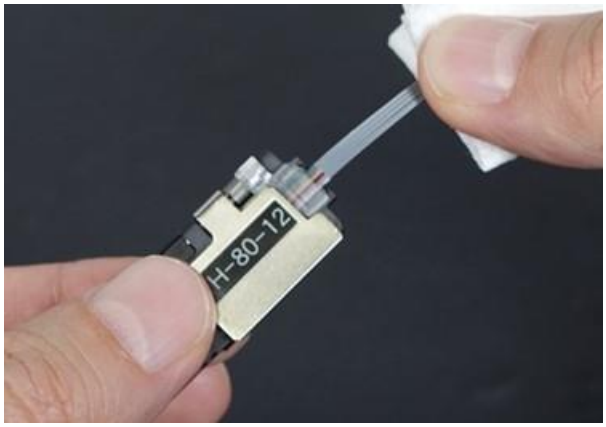


➢ The heater section remains hot immediately after heating. Do not touch it.

Cleaning the optical fiber

Thoroughly wipe the bare fiber using a new gauze dampened with alcohol. Replace the gauze every time.



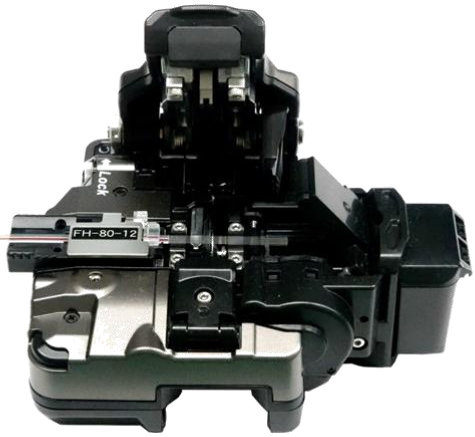


➢ Use alcohol with a purity of 99% or higher.

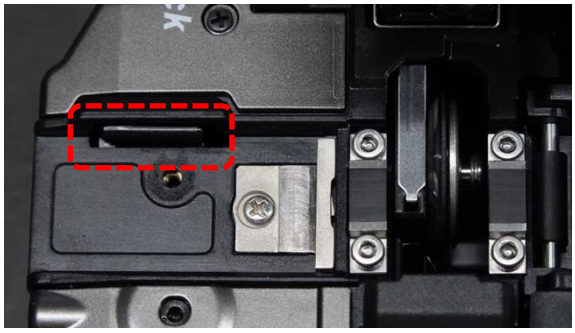
Cleaving the optical fiber(CT60)

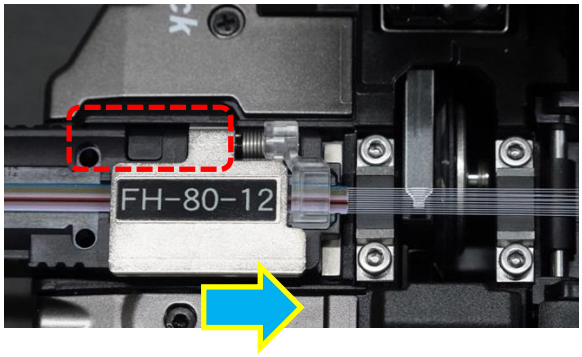
1. Fully push the blade holder to reset the blade, then set the fiber holder into the cleaver.



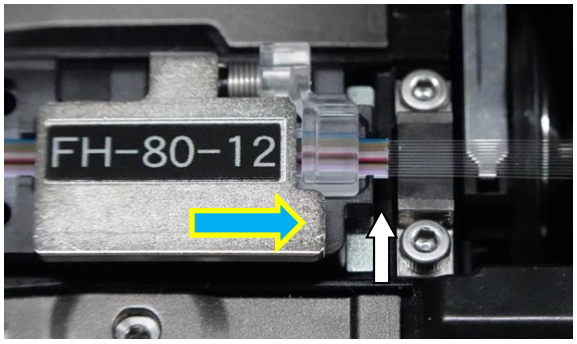


2. Insert the fiber holder until the retainer locks it in place, pushing it toward the blade. Make sure the holder is steady and completely flush with the base, with no gaps or movement.

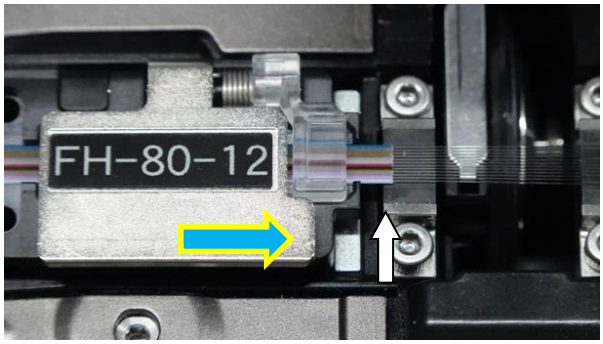




3. Make sure the fiber coating does not overlap the pads. For multi-fiber ribbons, re-strip the fiber if the coating is resting on the pads.



Correct: The coating is not resting on the rubber clamps.



Incorrect: The coating is resting on the rubber clamps.

4. Closing the cleaving lever will automatically cut the optical fiber. After cleaving, open the lever and remove the fiber holder. Be careful not to bump or touch the fiber ends.



➢ Do not place your fingers under the cleaving lever or near moving parts. Doing so may cause injury.

Single Fiber Cleaving Procedure using CT60

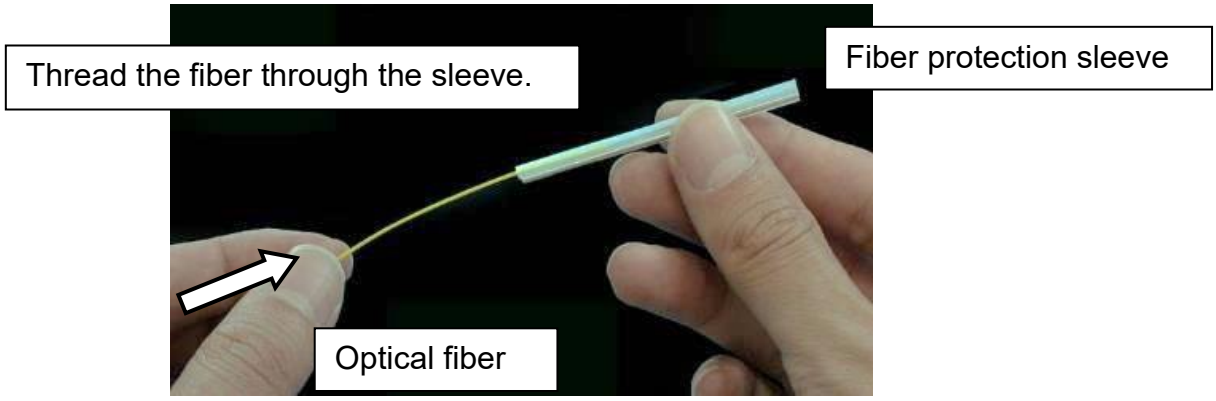
Cleaning the fiber coating

Clean about 500 mm of the fiber coating from the end using alcohol-dampened gauze. Debris trapped inside the fiber protection sleeve may lead to fiber failure after the work is complete.

Loading the protection sleeve

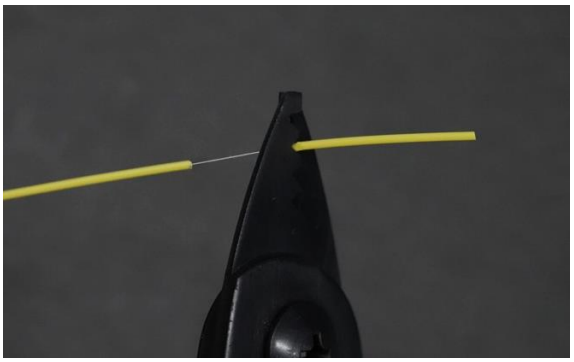
Pass the protection sleeve through the fiber on the right-hand side of the unit.

> ➢ It is best to load the sleeve onto the right fiber because the left hand is usually the reference during fiber transfer.

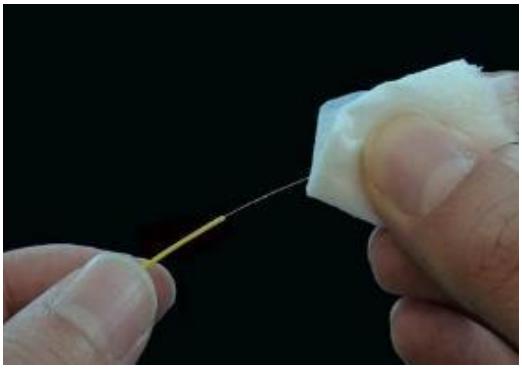


Stripping and Cleaning the Fiber

Strip 30-40 mm of the fiber coating from the tip using a stripper. Thoroughly wipe the bare fiber with alcohol-moistened gauze (replace gauze for each use). If the coated fiber is bent, straighten it by hand.



Stripping



Cleaning

> ➢ Use alcohol with a purity of 99% or higher.

Using a Fiber Holder

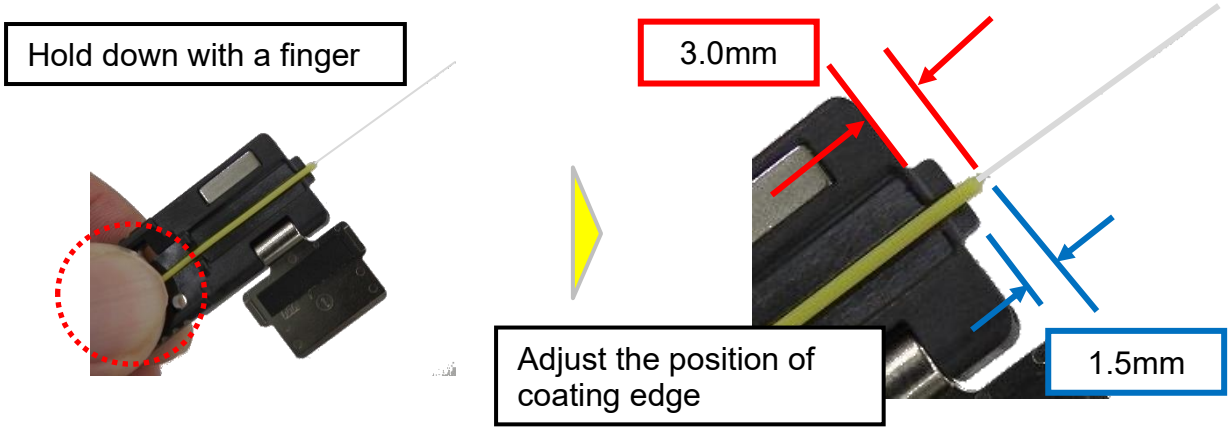
1. Open the fiber holder lid, then place the fiber into the fiber holder.

2. Adjust the position of the fiber, then close the lid of the fiber holder. The position of the fiber depends on the fiber holder, as shown below.

- Select a suitable fiber holder based on the fiber coating diameter.
- If fiber coating has some memory curl, place fiber so that the curl points downwards.
- Close the lid of a fiber holder while pressing down on the coating with a finger on the coating (refer to figure below).

Using a Fiber holder "FH-70 series";

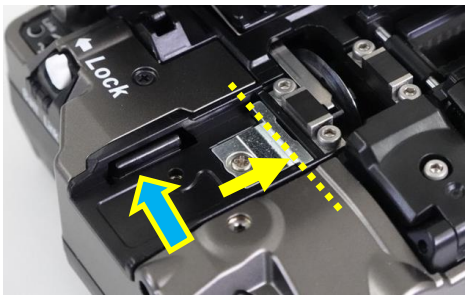
Set the fiber coating edge 3 mm from the end of the fiber holder.
Measuring from the tip of the fiber holder's protrusion, the fiber coating edge will be positioned at 1.5 mm. Use an easily visible reference point to align the fiber coating edge.

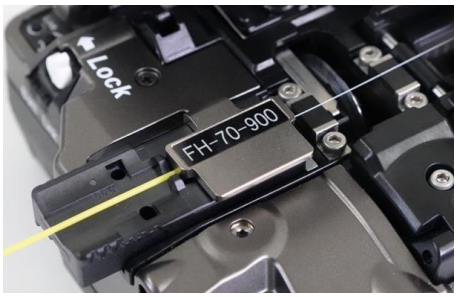


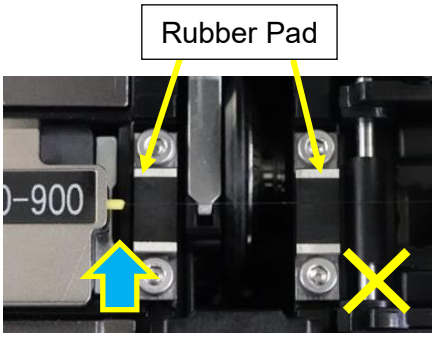
3. Lift the Lever until it stops. The cutting blade will be set to the cleaving position.



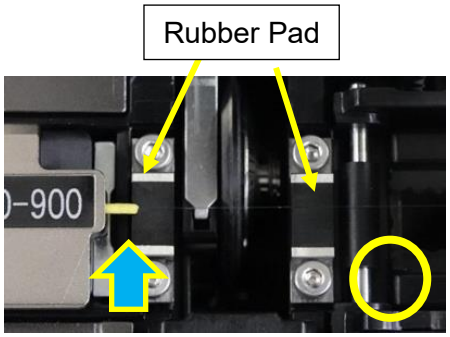
4. Set the Fiber holder into the cleaver. Ensure that only the bare fiber sits on the rubber pads (not the jacket or coating). Adjust the fiber position or prepare it again if necessary.







Not Good



Good

➢ Confirm that the fiber sheath does not sit on the pad when using the fiber holder.

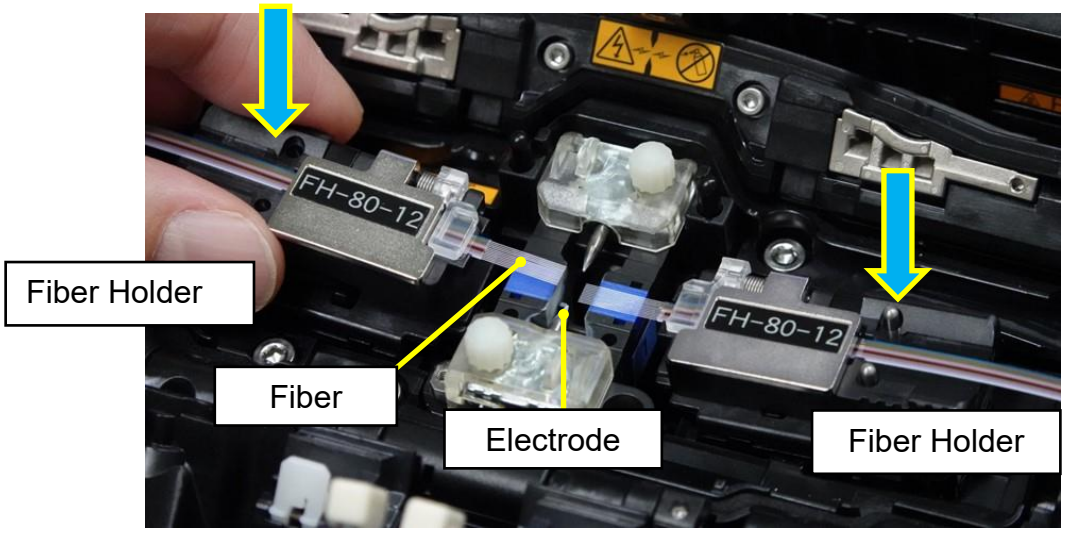
5. Gently close down on the Lever until it stops closing. The blade will automatically cleave the fiber.
Lift the Lever until it stops, then remove the fiber from the cleaver.
Be careful not to let the fiber touch anything, as this can contaminate its end-face.



➢ Do not place your fingers in the cleaving area, as this may cause personal injury.

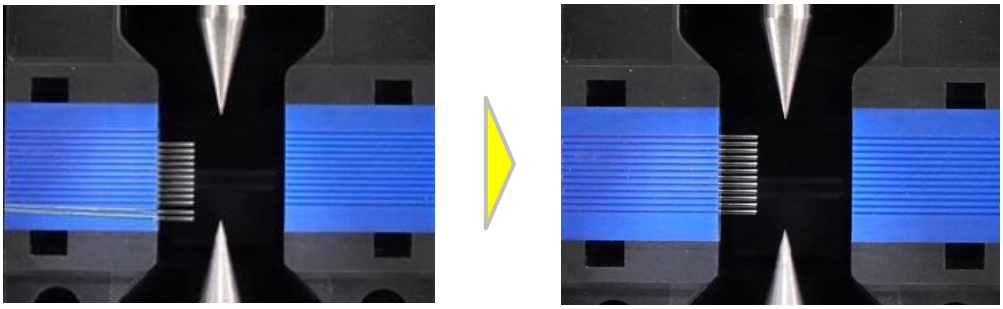
Loading fiber in the splicer

1. Open the wind protector and set the left and right fiber holders into the machine by inserting the guide pins into the guide holes.

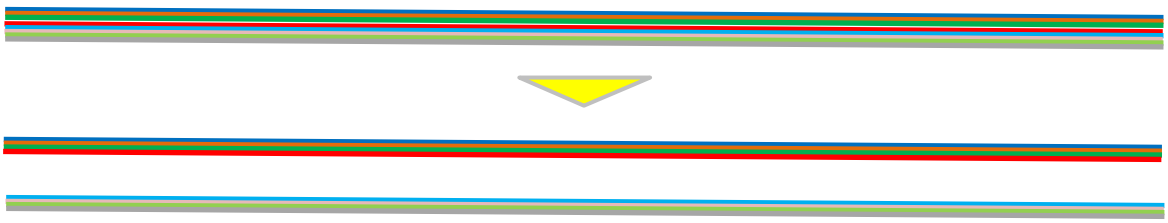


➢ Be careful not to let the prepared fiber tips come into contact with anything to maintain the quality of the fiber end-face.

2. If the optical fiber is not placed in the V-groove, ensure that it is properly seated in the groove.



➢ If the fiber count is high and difficult to seat in the V-grooves, split the SWR ribbon into smaller groups (e.g., 4 or 8 cores).

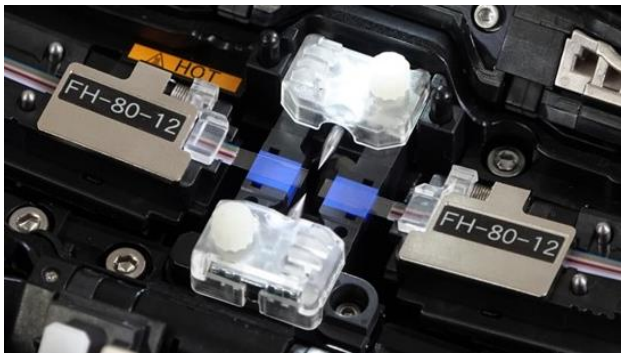


3. Once the wind protector is closed, the fusion splicer will automatically start the splicing process. We recommend performing a discharge test (Fusing Power Calibration before splicing.

Fiber misalignment occurs during automatic wind protector closing.

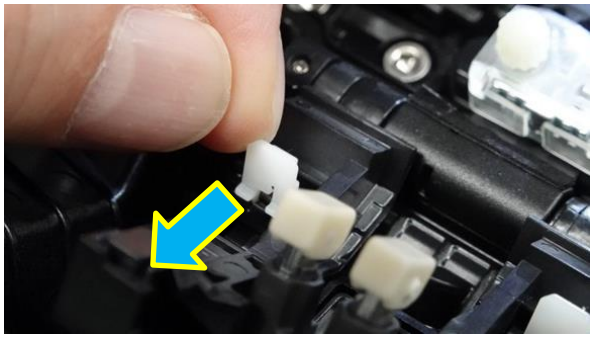
After setting the fiber, you can use the clamp arm release lever to place only the fiber clamps onto the V-grooves. To check for fiber misalignment during the process, set [Cover Soft Close] to OFF. It is also recommended to set the wind protector to manual operation.

[Other Settings] > [Machine Settings] > [Basic Settings] > Set [Cover Soft Close] to OFF.



Set the fiber holder and align the optical fiber correctly in the V-groove.

Flip down the clamp release lever inside the wind protector to enable the clamp release function.





Lift the clamp arm and slowly set it onto the V-groove.

Visually confirm that the fiber position has not shifted.

Independent control is available for the left and right sides.



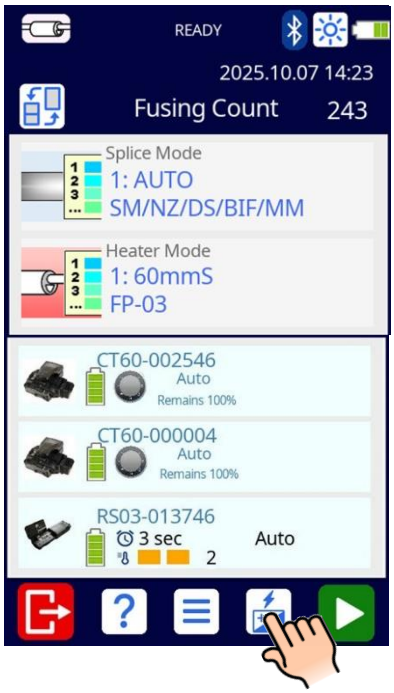
Fusing Power Calibration

Atmospheric conditions, such as temperature, humidity, and pressure, continuously change, creating variability in the fusing temperature. This fusion splicer is equipped with a temperature sensor used in a continuous feedback monitoring control system to regulate the fusing power at a steady level. Changes in fusing power due to electrode wear and glass adhesion cannot be corrected automatically. Also, the center position of fusing sometimes shifts to the left or right. In this case, the fiber splicing position must be shifted relative to the fusing center. It is necessary to perform a fusing power calibration to eliminate both of these issues.

- Fusing power calibration is performed automatically only in [AUTO] mode. Therefore, fusing power calibration is not required in this mode.
- Execute [Fusing Power calibration] before using non-auto mode.
- The [Fusing Power Calibration] function change the fusing power “factor” value. The factor value is used in the algorithm program for all splicing. The fusing power value will not change in the splice modes.

Operation procedure

1. Select the Fusing Power Calibration icon in the [READY] screen.
2. Load prepared fibers into the fusion splicer.





3. Press the SET key to initiate the Fusing Power Calibration.
4. A message appears after Fusing Power Calibration. Please check it and take the appropriate action displayed with the message

- Use standard SMF ITU-T G652, G655 or G657 fiber for Fusing Power Calibration.
- Use well prepared fibers for fusing power calibration. Dust on the fiber surface affects fusing power calibration.
- Cleave angle threshold does not link to the parameter "Cleave Limit" in splicing modes. Cleave angle threshold is independently set for fusing power calibration. See section [Maintenance Settings] to change cleave angle threshold.

“Good” message

Fusing power and splicing position calibration has been completed. Press the RESET key to exit.

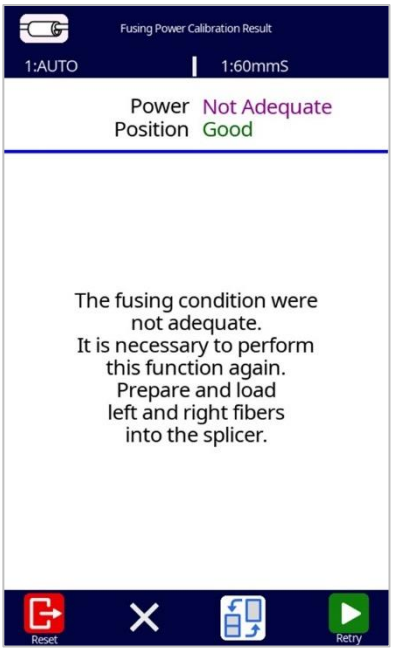
Result: Good



“Not Adequate” message

Fusing power and splicing position calibration are completed, but further calibration is strongly recommended, as the change from the previous fusing power calibration is too large.
Press the SET key to perform fusing power calibration, or the RESET key to exit (fusing power calibration is not completed).

Result: Not Adequate

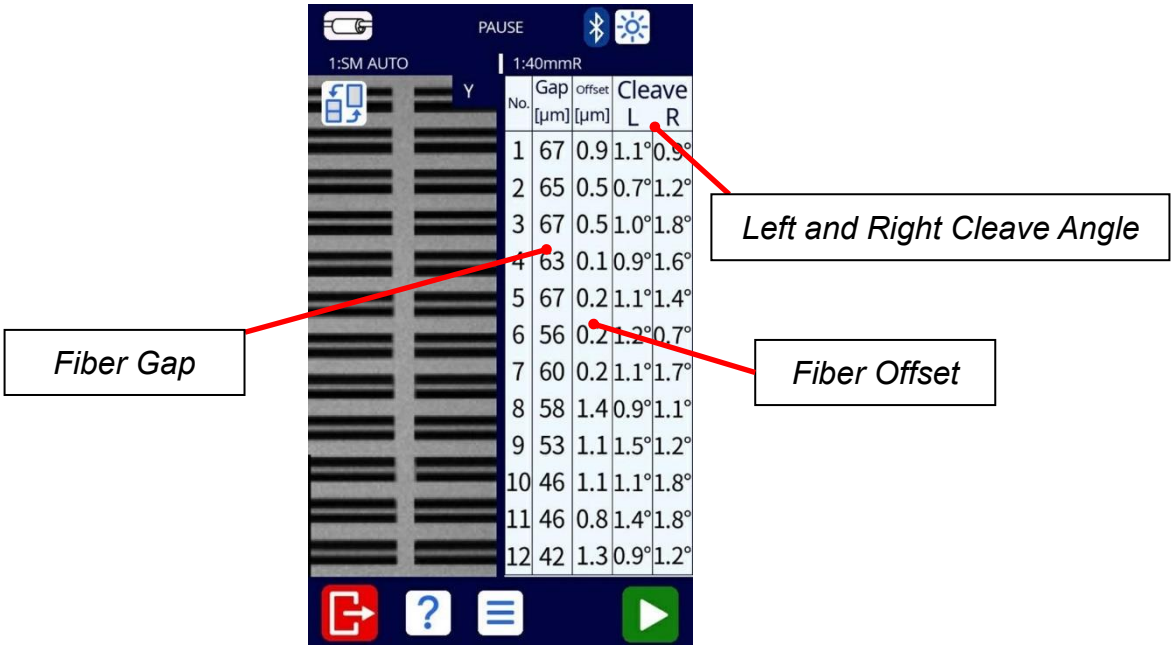


- In some cases, multiple iterations of fusing power calibration are needed until the calibration process is successfully completed and the "Good" message is displayed.
- A number threshold can be set so that a "Test Finish" message is displayed after specific number of fusing power calibrations is performed. See section [Maintenance Settings] for detail

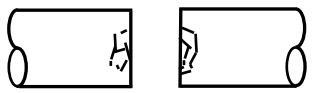
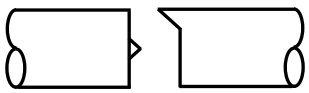
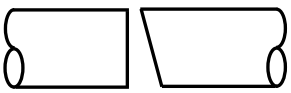
Splicing procedure

To make a good splice, the optical fiber is observed using the image-processing system built into the fusion splicer. 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. The instruction below describes the standard operating procedure.

1. Prepare the fibers for splicing and set the fibers into the leftand right sides of the splicer. If the Splice mode is set to “Auto” or “Normal”, the wind protector will close automatically, and the splicing process witll begin.
2. The left and right optical fibers advance. After the cleaning fuse is performed, the fibers stop at the designated positions, and the end-face angles and splice angles of both fibers are inspected and displayed.



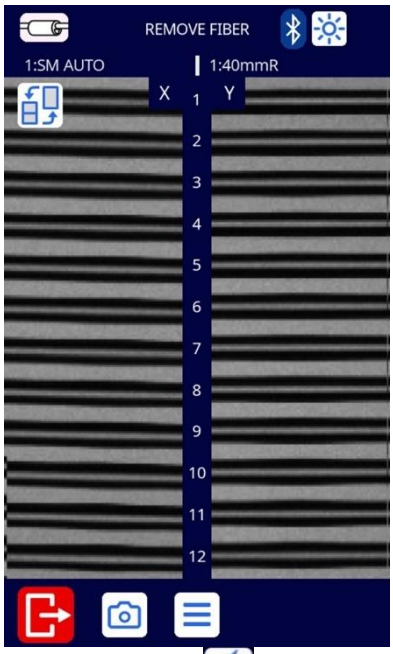
3. Next, the cleave angle and fiber angle are checked. If the measured cleave angle is greater than its set threshold or fiber chipping is detected, the buzzer will sound and an error message warns the operator.
   During operation or pause, visually inspect the end-face condition of the optical fiber. Even if the end-face angle error is not displayed, in the case shown below, the cleave is defective. Press the RESET key and prepare the fiber again.

Cleave Shape NG		Large Cleave Angle
 Chip	 Lip	 Angle

- The pause after cleave angle check and fiber alignment can be enabled.
- The cleave angle threshold can be adjusted. See section [Referring or editing Splice Menu].
- The cleave angle error message can be ignored by pressing SET key to go on to the next step. To disable the cleave angle error. See section [Splice Settings] for detail.
- Cleave angle, during the splicing operation can be hidden. See section [Splice Settings] for detail.

4. Once the inspection is finished, the splicer will pause. Press the SET key to initiate fusing and proceed with splicing.

5. Estimated Loss Calculation: After splicing, the system calculates and displays the estimated splice loss. This estimation accounts for various factors and incorporates conditions such as MFD (Mode Field Diameter).
If the estimated loss exceeds the preset error limit, or if an anomaly is detected, an error message will be displayed—such as Large, Thick, Thin, or Bubble.
Recommendation: If an error occurs, it is recommended to re-splice the fibers to ensure connection quality.



Splice loss may be reduced in some cases by adding an additional fuse. Tap the icon for an additional fuse (re-fusing). Splice loss estimate and splice check are performed again. However, in splice modes other than “Standard” or “Manual,” the wind protector will automatically open after splicing is completed. If an additional fuse is needed, please change the Splice mode accordingly.

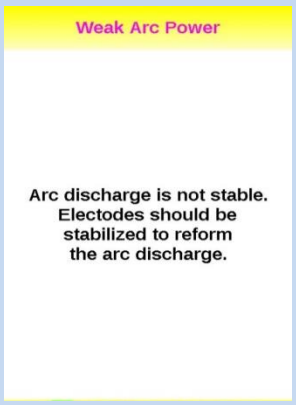
- Restriction of the number of times of additional fusing can be set up.
  Since excessive additional fusing becomes the cause of worsening splice intensity and a splice loss, it can forbid the fusing more than the suitable number of times.
  Refer to [Setting Menu] for details.

- 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 fiber angle, see section [Splice Mode].
- Error messages, such as "Estimated splice loss", "Splice angle", "Fat", "Thin" and "Bubble" can be ignored. This function can be set to "disabled". See section [Splice Settings] for detail.

➢ 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.

Splice loss will increase if an error like the following occurs.

If the operating environment changes significantly, the discharge may become unstable.
In such cases, please stabilize the discharge electrodes before use.



Please Follow the instructions on the screen, and after stabilizing the electrode discharge, perform the Fusing Power Calibration.

Storing splicing results

Splicing results are stored in memory.

➢ After the 20,000th result is stored, 20,001st splice result will overwrite and erase the oldest splice results.

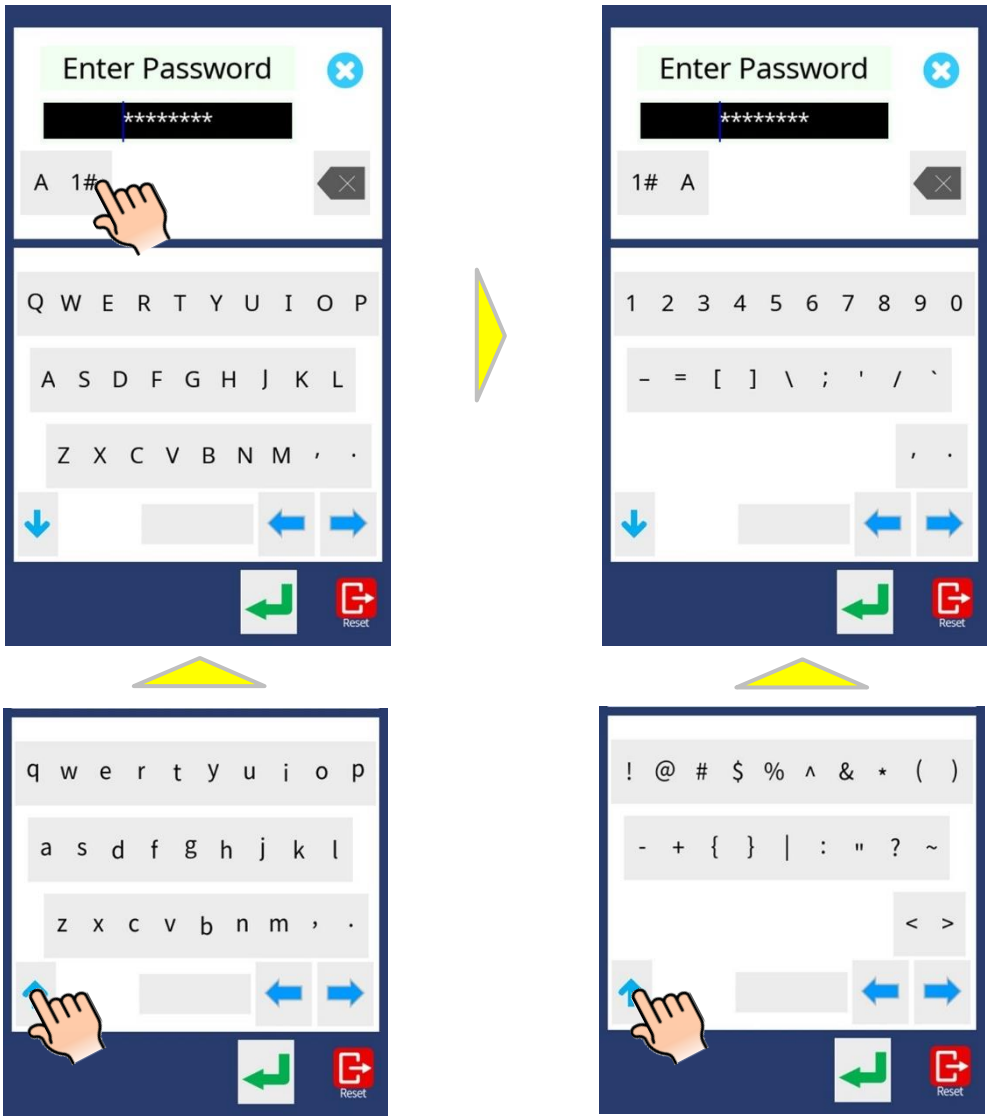
Auto-saving splicing results

The splice result is automatically stored in memory when RESET is pressed upon completion of the splice at the [Finish] screen or when the wind-protector is opened upon completion of the splice at the [Finish] screen.
Comments can be added to and saved with the splicing results. For details, see the memory comment feature in [Splice Settings].

How to input Mode Title/Comment/Password

The character list below is displayed by selecting Mode Title / Comments / Password.

1. Input the selected character using the keypad on the monitor.
   Once text input is complete, press [↵].
2. If the password entered is correct, you will be able to move to the next screen.
   If the password is incorrect, you will be returned to the previous screen.

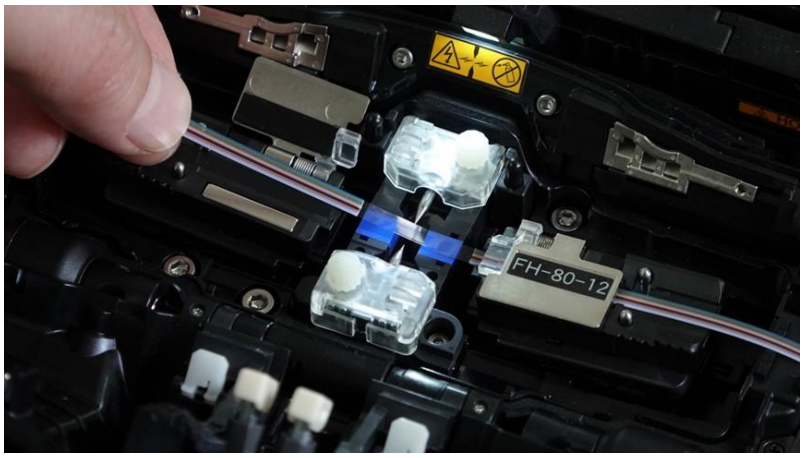


Fiber Proof Test

The strength of the splice point can be checked. The proof test process starts automatically after the splice is completed if the operation mode is set to Auto or Auto (Left/Right), or you can press SET to start it manually. Depending on the selected operation mode, the sheath clamp may also be released. The proof test can be turned ON or OFF.

Heating protection sleeve

1. Hold left fiber with left hand at the edge of splicer.

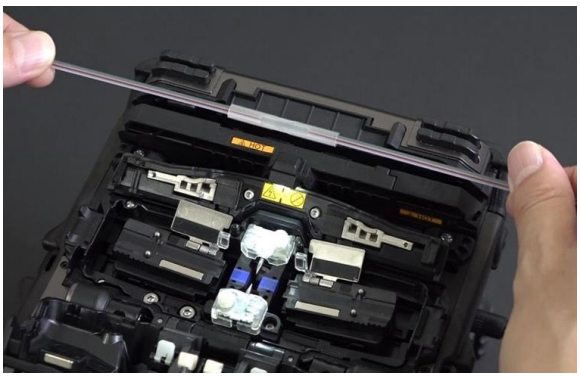


- The left hand position remains the reference point until the optical fiber is set in the heater. Keep holding the fiber until the splice point is fully transferred to the tube heater.

2. Open the right-side sheath clamp lid and place the protection sleeve over the right-side fiber up to the splice point.
3. Hold the right fiber with your right hand, then remove the fiber from the splicer.
4. Place the protection sleeve on the centering guide on top of the heater, and when you move the position of your left hand to the left edge of the device, the splice point will be aligned to the center of the protection sleeve.

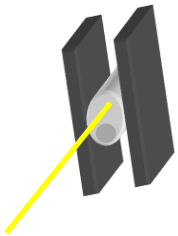
- Check that the splice point is placed in the center of a protection sleeve.
- Check whether the twist has occurred on the right-and-left fiber.
- Ensure the tension member is located beneath the splice point.

5. Do not allow any loss at the splice point during the transfer, and do not apply excessive tension, as it may cause breakage.
6. Move the optical fiber to the heater, place it onto the heater element, and hold it steady.
7. When the heater cover closes automatically and the buzzer sounds, the heating operation will start, so please release the hand holding the fiber. The sheet key LED will light up.

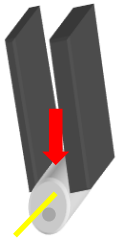


Apply tension to the fiber until heater cover closes completely.

Notes at the time of a sleeve set!!



Hold the fiber and confirm that the sleeve is on the heater section until the buzzer sounds



Releasing your hand too soon will cause the fiber to rest at the bottom without shrinking

- If HEAT key is pressed during tube heating, the HEAT LED blinks. If HEAT key is pressed again, the tube heating process is aborted.





8. If heat processing is completed, buzzer will sound, and a heater lid will open automatically.

- Protection sleeve may stick to heater plate surface. Use a cotton swab to remove sleeve from heater.
- Since it gets very hot in the heater and the sleeve will get hot, you should not touch the sleeve immediately after heating.

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

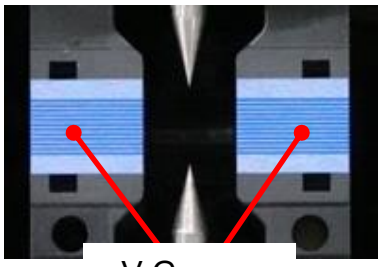


Cleaning and Checking before Splicing

It is possible to maintain the splicer's performance for a long time with proper cleaning and maintenance.
Critical cleaning points and maintenance checks are described below.

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 regular operation. To clean the V-grooves, do the following:



V-Groove

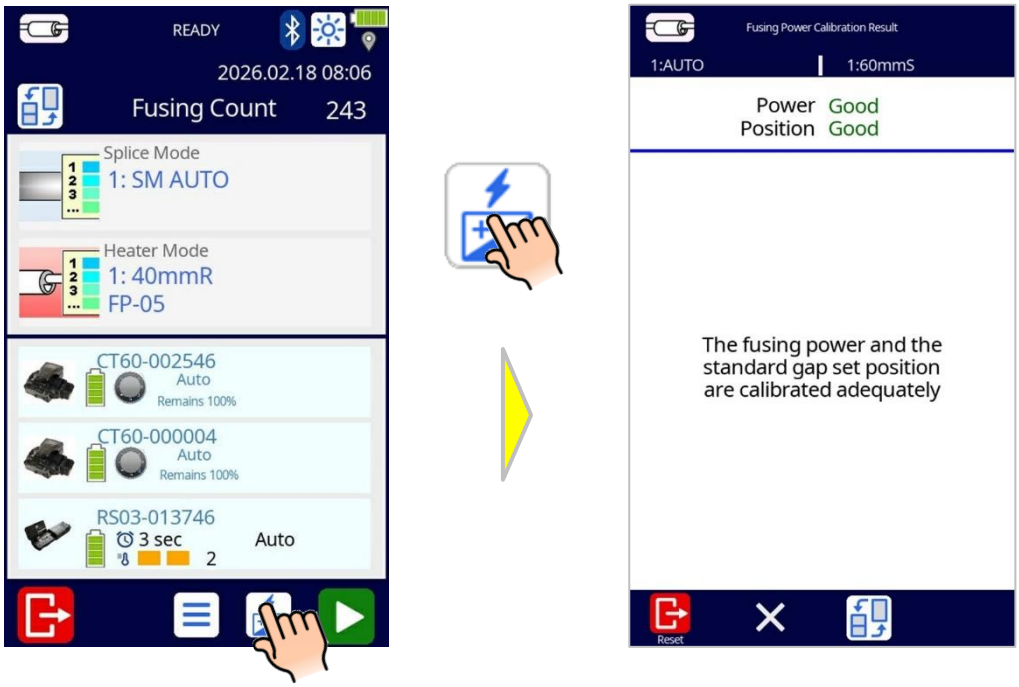
1. Open the wind-protector.
2. Clean the bottom of the V-groove with an alcohol-moistened thin-line cotton swab. Remove excess alcohol from the V-groove with a clean, dry, lint-free swab.



➢ Be careful not to contact the electrode tips.

Fusing Power Calibration

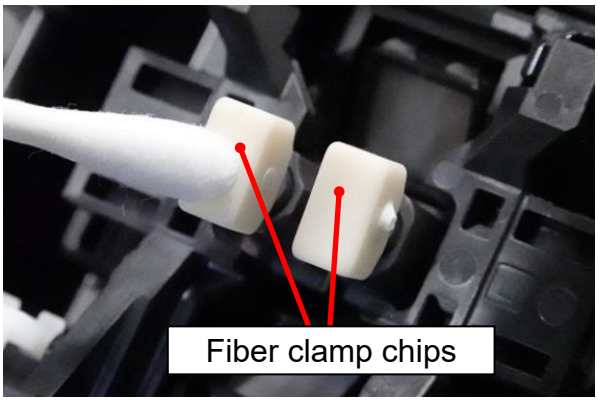
1. Select the [Fusing Power Calibration] icon in the [READY] screen.
2. Load prepared fibers into the fusion splicer.



Cleaning Fiber Clamp Chips

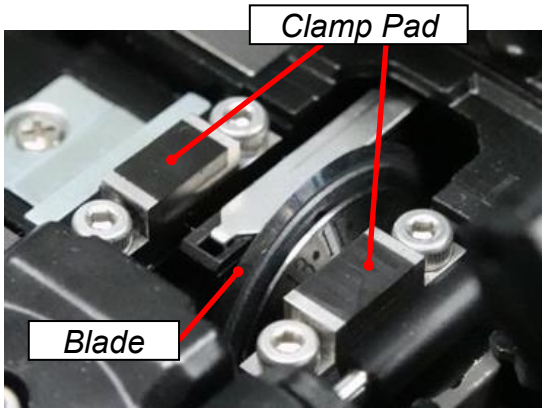
If contaminants are present on the clamp chips, proper clamping may not occur, leading to poor-quality splices. The fiber clamp chips should be frequently inspected and periodically cleaned during regular operation. To clean the clamp chips, do the following:

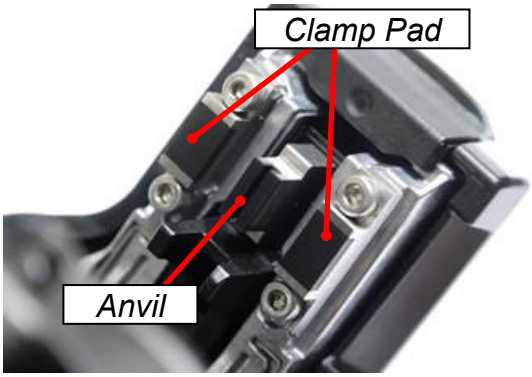
1. Open the wind-protector.
2. Clean the chip clamp surface with an alcohol-moistened thin cotton swab. Remove excess alcohol from the chip clamp with a clean, dry swab.



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 contamination of the fiber surface or end face, resulting in higher splice loss. Clean the circular blade or clamp pads with a cotton swab moistened with alcohol.





Periodical Checking and Cleaning

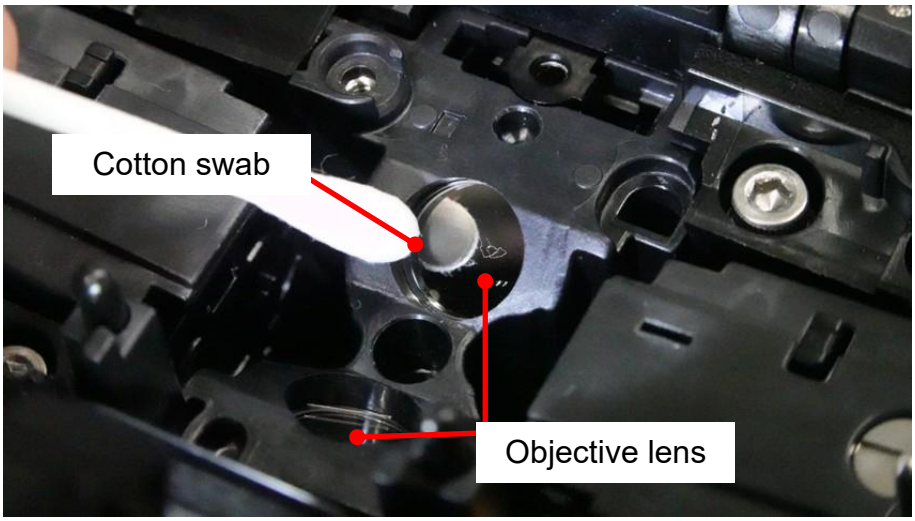
To maintain the splicer's splicing quality, periodic inspection and cleaning are recommended.

Cleaning of the Objective Lens

If the objective lens surface becomes dirty, inaccurate observation of the fiber position may occur, leading to higher splice loss or poor splicer operation. Therefore, it is necessary to clean the objective lens. If not done periodically, dirt may accumulate and become impossible to remove. To clean the objective lens, do the following:

1. Before cleaning the objective lens, always turn off the splicer.
2. Gently clean the lens with an alcohol-moistened thin, lint-free cotton swab. Remove excess alcohol from the lens surface with a clean, dry, lint-free swab.

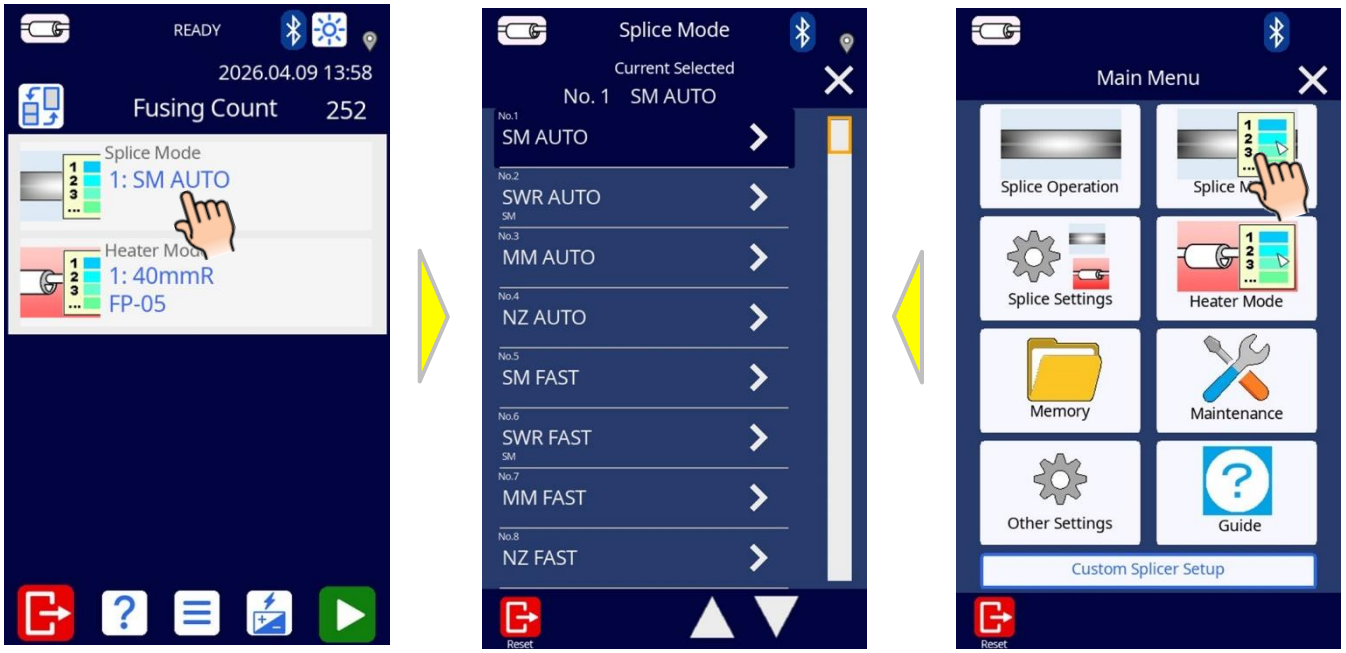
- It is recommended to clean the objective lenses when replacing the electrodes.
- Remove electrodes before cleaning objective lens.
- Do not hit or touch the tip of the electrode when cleaning.



3. Verify the lens surface is clean and free of streaks or smudges.
4. Turn on the power and verify no smudges or streaks are visible on the monitor screen. Perform the Dust Check procedure.

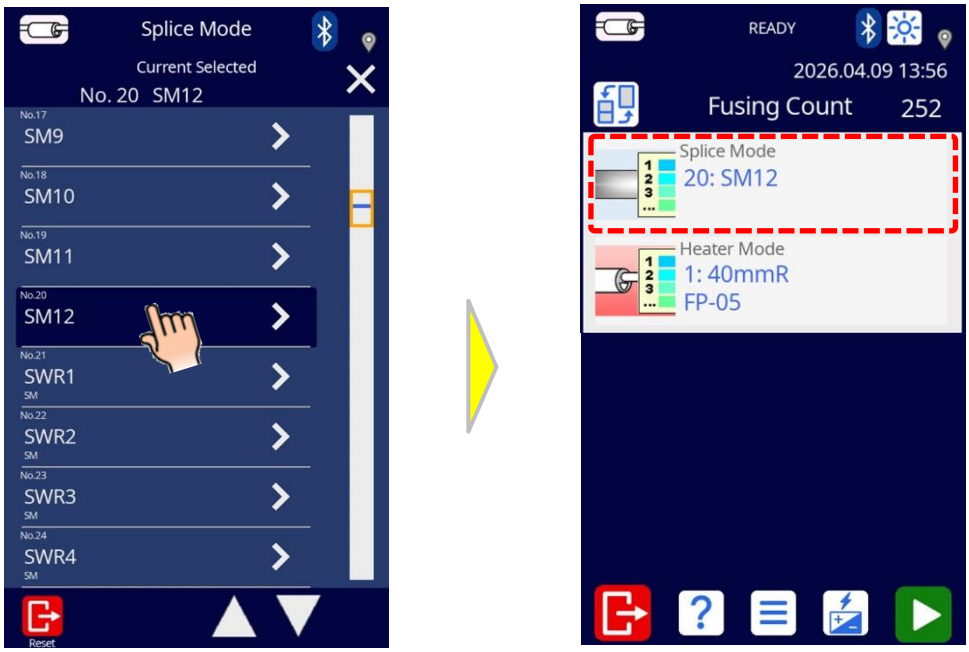
Composition of Splice Mode

Common parameters for all the modes for splicing can be set.
[Splice Mode] screen appears when selecting the Splice Mode icon at [READY] screen.



How to change the splice mode.

1. Select the splice mode icon on the READY screen.
2. Tap the [Splice Mode] to display the list. When it is highlighted in dark blue, the change is complete.
3. Tap the [Reset] icon to return to the [READY] screen.



Splice Mode

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

- Parameters for controlling fusing.
- Parameters for calculating estimated splice loss.
- Parameters for controlling fiber alignment and splicing procedures.
- Threshold for error messages.

A series of optimal 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.

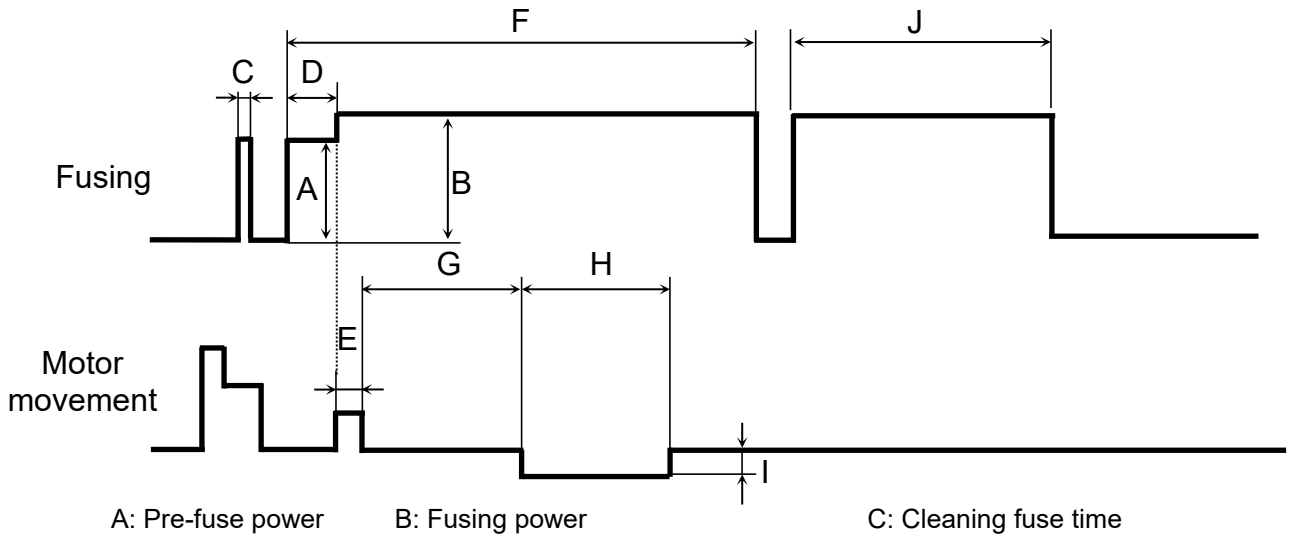
- **How to select the "Splice Mode"**

  - [SM AUTO] and others
    Use this mode if the fiber type is identified.

  - [SM FAST] and others fast
    Use this mode if the fiber type is identified and prefer quick splice with high yield to consistent splice loss.

  - [SM] and others
    For those who prefer the lowest possible splice loss to any other considerations. This mode selected, perform the "Fusing Power Calibration" manually.

The figure below shows the fusing conditions (the relationship between "Fusing power" and "Motor motion"). The conditions can be edited by changing the splicing parameters listed below. Depending on the splice mode, specific parameters cannot be changed.



A: Pre-fuse power
B: Fusing power
C: Cleaning fuse time
D: Pre-imafuse time
E: Overlap
F : Fusing time
G: Taper wait time
H: Taper time related to taper length
I: Taper speed
J: Re-fusing time

Select Splice Mode

AUTO splice mode

In AUTO mode, the amount of heat applied to the fiber is calibrated in real time by analyzing the cladding illumination during fusing and adjusting the fusing current accordingly. This splice mode does not require the operator to perform a fusing power calibration.
This mode identifies the fiber type and automatically selects the optimized splice condition, then performs the splice.
If the fiber type is identified, you can work on splicing with stability by selecting AUTO mode for each fiber type.

Database of splice mode (AUTO)

Splice mode	Description
SM AUTO	For splicing standard Single-mode fiber (ITU-T G652). The MFD is 9 to 10 μm at wavelength of 1310nm.
SWR AUTO	For splicing Spider Web Ribbon fiber. The operation and parameters (except for the parameters in "Stripper Menu") are same as SM AUTO mode.
MM AUTO	For splicing Multi-mode fiber (ITU-T G651). Core diameter : 50.0 to 62.5μm This mode is programmed to achieve the best splice loss of MM fiber. The appearance of splice point doesn't look fat
NZ AUTO	For splicing Non-zero dispersion-shifted fiber (ITU-T G655). The MFD is 9 to 10μm at wavelength of 1550nm.
DS AUTO	For splicing Dispersion-shifted fiber (ITU-T G653). The MFD is 7 to 9μm at wavelength near 1550nm.

Points to note: of **AUTO mode

- NZDS is specified using the splicing mode for standard NZDS fiber. However, for best results, it is recommended that the optimum splice mode be selected for a specific type of NZDS fiber. This is due to the variation in the NZDS fiber properties and optimum splicing parameters are different from one type of NZDS fiber to the next.

Special splice mode

In this mode, the parameters are set in detail and can be changed.
Use this splice mode when you need to change the parameter setting, for example, if the splice loss is high.
Automatic fusing power calibration doesn't work in this splice mode. With this mode selected, perform the "Fusing Power Calibration" manually before splicing.

Database of splice mode (Special)

Splice mode	Description
SM	For splicing standard Single-mode fiber (ITU-T G652). The MFD is 9 to 10μm at wavelength of 1310nm.
SWR	For splicing Spider Web Ribbon fiber. The operation and parameters (except for the parameters in "Stripper Menu") are same as SM mode.
MM	For splicing Multi-mode fiber (ITU-T G651). Core diameter: 50.0 to 62.5μmThis mode is programmed to achieve the best splice loss of MM fiber. The appearance of splice point doesn't look fat
NZ	For splicing Non-zero dispersion-shifted fiber (ITU-T G655). The MFD is 9 to 10μm at wavelength of 1550nm.
DS	For splicing Dispersion-shifted fiber (ITU-T G653). The MFD is 7 to 9μm at wavelength near 1550nm. Automatic fusing power calibration doesn't work in this splice mode.

Basic fiber splice modes are provided.

SMF :	ITU-T G652	MFD : 9~10 μm	Wave length : 1310nm
NZDSF :	ITU-T G655	MFD : 8~10 μm	Wave length : 1550nm
DSF :	ITU-T G653	MFD : 7~9 μm	Wave length : 1550nm
MMF :	ITU-T G651	Core : 50.0 μm, 62.5 μm	

In these modes, the parameters are configured in detail.
. By adjusting the parameter settings, you can optimize conditions for splicing optical fiber.
Perform the fusing power calibration when setting the optimal parameters to ensure proper splicing conditions.
Additionally, typical parameters for splicing different fiber types on the left and right are provided.

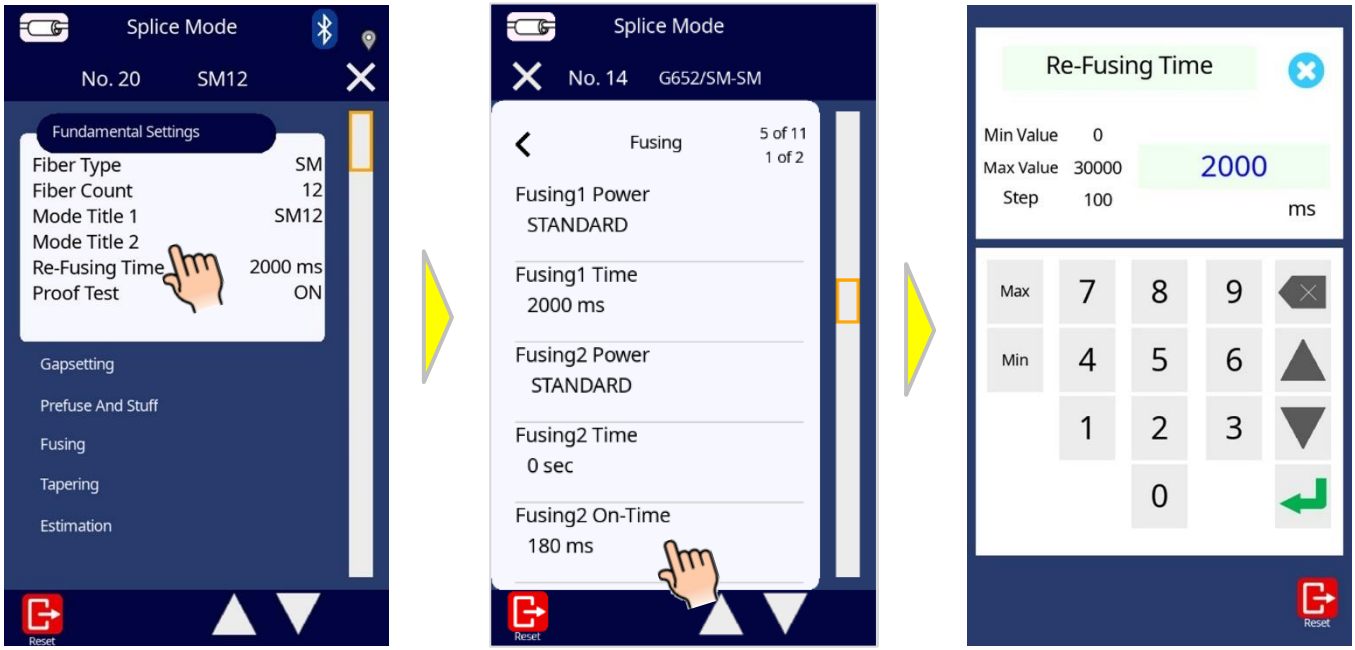
Database of splice mode (FAST)

Splice Mode	Description
SM FAST	For splicing standard Single-mode fiber (ITU-T G652). The MFD is 9 to 10μm at wavelength of 1310nm.
SWR FAST	For splicing Spider Web Ribbon fiber. The operation and parameters (except for “Stripper”) are same as SM FAST mode.
MM FAST	For splicing Multi-mode fiber (ITU-T G651). Core diameter : 50.0 to 62.5μm The appearance of splice point doesn’t look fat
NZ FAST	For splicing Non-zero dispersion-shifted fiber (ITU-T G655). The MFD is 8 to 10μm at wavelength of 1550nm.
DS FAST	For splicing Dispersion-shifted fiber (ITU-T G653). The MFD is 7 to 9μm at wavelength near 1550nm. Automatic fusing power calibration doesn’t work in this splice mode. Execute [Fusing Power Calibration] before splicing.

Referring to or editing the splice mode

Splicing parameters in each splice mode can be modified. Fusing power and Fusing time are considered the two most vital parameters. To edit parameters, follow the steps below:

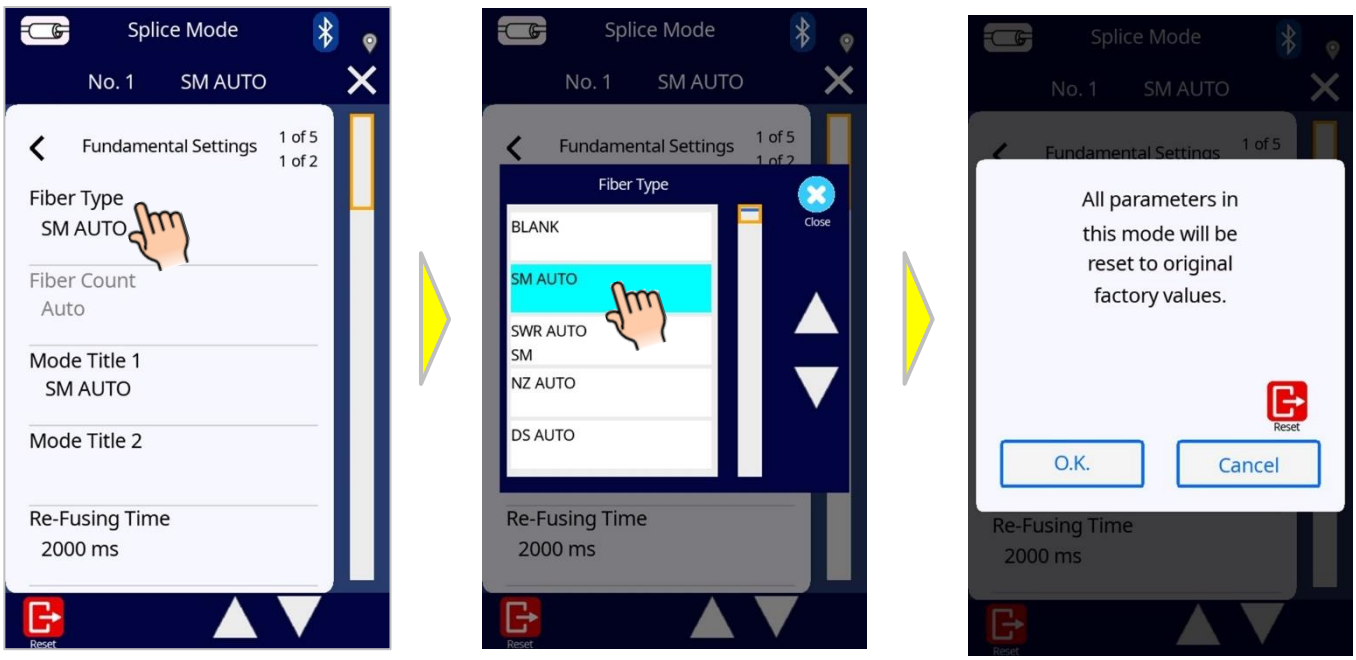
1. In the [Select Splice Mode] menu, tap a splice mode to be modified. The [Edit Splice Mode] menu will be displayed.
2. Tap to select the parameter to be changed.



Initialization of the edited parameter

It can be easily used by returning the mode to the initial setting to restore a preset value for each package after changing the setup of each parameter.

1. Choose the same fiber type in the Fundamental Settings under the splice mode.
2. After choosing the fiber type, the following message will appear; review it and press OK.



Editing or erasing splice mode

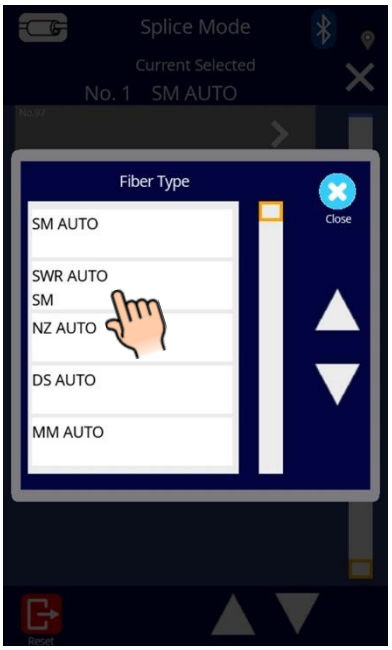
How to create a splice mode

The necessary splice modes are preloaded at the factory shipment, and other modes are displayed as [BLANK]. When adding a new splice mode, please follow the steps below.

1. Select a “BLANK” splice mode and tap the gray area labeled [BLANK].
2. A confirmation screen will appear. Please tap the 'OK'.
3. Select the [Fiber Type]. The splice mode will be copied from the database.
4. Confirm that the splice mode has been added.



Select the “BLANK” in the [Select Splice Mode]



Confirmed

How to erase the splice mode

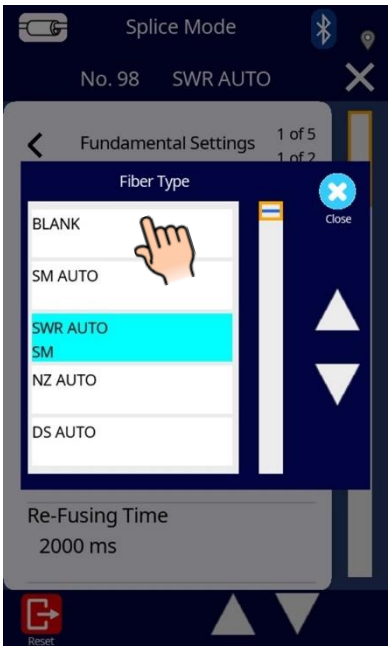
Splice mode can be deleted. Follow the steps below to delete the splice mode.

1. Select the [Fiber Type] and tap the “BLANK”.
2. A confirmation screen will appear. Please tap the 'OK'.
3. Confirm that the splice mode has been deleted

Select the “Fiber Type” in the [Edit Splice Mode] Menu

Delete the splicemode

Select [BLANK]



AUTO mode

The AUTO splice modes include [G652/SM AUTO], [G655/NZ AUTO], [G653/DS AUTO] , and, [G651/MM AUTO]. The FAST splice modes include [G652/SM FAST], [G655/NZ FAST], [G653/DS FAST], and [G651/MM FAST]. The settings shown below can be modified for each mode. All other settings are set to optimal values and cannot be changed.

Parameter	Description
Fundamental Settings	
Fiber Type	The list of splice modes stored in the database is displayed. A selected splice mode stored in the database area is copied to the selected splice mode chosen in the user-programmable area.
Fiber Count	This is not changed. It is fixed to [AUTO].
Mode Title1	Title for a splice mode expressed in up to 11 characters.
Mode Title2	Detailed explanation for a splice mode expressed in up to 15 characters. Title 2 is displayed at the [Splice Mode Select] menu.
Re-fusing Time	Splice loss may be improved by an additional “re-fusing” in some cases. This parameter can change the duration of this additional fusing.
Proof test	An ON/OFF setup of the proof test is done after the splice is performed.
Fusing	
Cleaning Fuse	A cleaning fuse removes dust from the surface of the fiber by fusing for a short period of time. This parameter can change the duration of the cleaning fuse.
Fusing Power	The Fusing Power is fixed at STANDARD for AUTO modes. The Fusing Power is changed automatically.
Fusing Time	Fusing Time is fixed at 6000ms. This is automatically set depending on the cladding illumination during fusing.
Error Limit	
Cleave Angle Limit	Error message is displayed if the cleave angle of either the left or right fiber ends exceeds the selected threshold (cleave limit).
Cleave Shape Error	Error message is displayed if the cleaved end face of either left or right fiber exceeds the selected threshold (cleave shape).
Loss Limit	Error message is displayed if the estimated splice loss exceeds selected threshold (loss limit).
Offset Limit	An error message is displayed if the fiber offset exceeds the selected threshold (offset limit).
Gap Difference Limit	The limit value of an end face irregular error is set up. An error will be displayed if one of end face intervals exceeds a limit value among the end face intervals after a gap set.
Stripper	
Heat Temperature Level	These are stripper parameters. They are automatically sent to the stripper if [Heater Parameter Control] in “Stripper Setting” menu is set to “Splice Mode”. See the detail in “Bluetooth” section.
Heat Finish Time	

Special mode: [SM], [NZ], [DS], [MM]

The special splice modes [SM], [SWR], [NZ], [DS], and [MM] in the database include various optical fiber splicing conditions.
By copying the splice parameters from the database to the user area, these parameters become editable. Various settings shown below can be modified in this mode.

Parameter	Description
Fundamental Settings	
Fiber Type	A list of splice modes stored in the splicer database is displayed. Upon entering the appropriate mode, the selected splice mode stored in the database area is copied to the selected splice mode; upon entering the proper mode, the chosen splice mode stored in the database area is copied to the selected splice mode in the user-programmable area.
Fiber Count	The number of cores of the fiber to connect is chosen.
Mode Title1	Title for a splice mode expressed in up to 11 characters.
Mode Title2	Detailed explanation for a splice mode expressed in up to 15 characters. Title 2 is displayed at the [Splice Mode Select] menu.
Re-fusing Time	Splice loss may be reduced by additional “re-fusing” in some cases. The duration of this additional re-fusing can be changed by this parameter.
Proof test	An ON/OFF setup of the proof test is done after the splice is performed.
Gap setting	
Cleaning Fuse	A cleaning fuse removes dust from the surface of the fiber by fusing for a short period of time. The by adjusting with this parameter.
Gap	Sets the end-face gap between the left and right fibers at the time of aligning and pre-fusion discharge.
Gap set Position	Sets the relative position of the splicing location to the center of the electrodes. Splice loss may be improved in the case of dissimilar fiber splicing by shifting [Gap set Pos] towards a fiber whose MFD is bigger than the other fiber's MFD.
Prefuse And Stuff	
Prefuse Power	Sets the power of the prefuse fusing, which is a fusing that occurs until the fibers begin stuffing. If [Prefuse Power] is set too low, axial offset may occur if cleaved angles are relatively poor. If [Prefuse Power] is set too high, fiber end faces are fused excessively and splice loss gets worse.
Prefuse Time	Sets the duration of the prefuse fusing, which is fusing that occurs until the fibers begin stuffing. Longer [Prefuse Time] produces a similar effect to higher [Prefuse Power].
Overlap	Sets the overlap amount of fibers at the fiber stuffing stage. Relatively small [Overlap] is recommended if the [Prefuse Power] is low, while relatively large [Overlap] is recommended if the [Prefuse Power] is high.

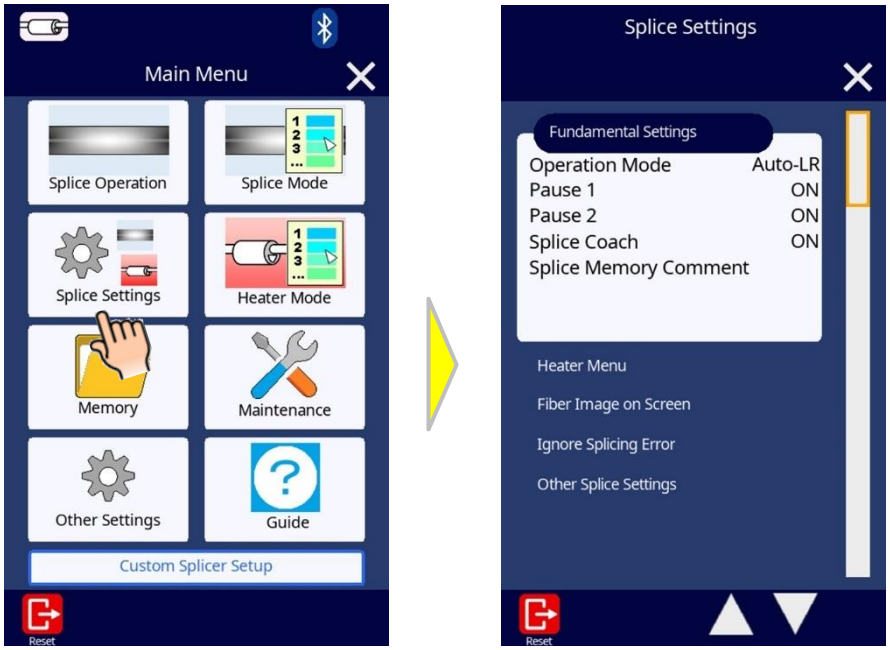
A continuation of the edit parameter lists

Parameter	Description
Fusing	
Fusing Power	Sets Fusing Power. The fusing intensity expressed in units of “bits”.
Fusing Time	Sets Fusing time. The total fusing discharge time including the pre-fuse time.
Tapering	
Taper Splice	Splice loss can be reduced when the fiber is tapered (pulled) during fusing to make the splice thinner. This sets the taper function "ON". The following three parameters determine the taper shape.
Taper Wait	Sets the taper wait time from the end of fiber stuffing to the start of fiber pulling.
Taper Speed	Sets the fiber pulling speed.
Taper Length	Sets the fiber pulling length.
Estimation	
Estimation	Selects splice loss estimation to ON or OFF.
Minimum Loss	This amount is added to the estimated splice loss originally calculated. When splicing specialty or dissimilar fibers, a high actual splice loss may occur even with optimized fusing conditions. To make the actual splice loss concur with the estimated splice loss, set the minimum value of estimate to the minimum optimized actual splice loss.
MFD	Sets MFD of the fibers. This MFD value is taken into account for estimating splice loss.
Core Bending Coef.	The influence, which it has on an estimation loss value is set up. Adjust a value, when you unite an estimated loss.
Error Limit	
Cleave Angle Limit	Error message is displayed if the cleave angle of either the left or right fiber ends exceeds the selected threshold (cleave limit).
Cleave Shape Error	Error message is displayed if the cleaved end face of either left or right fiber exceeds the selected threshold (cleave shape).
Loss Limit	An error message is displayed if the estimated splice loss exceeds selected threshold (loss limit).
Offset Limit	An error message is displayed if the fiber offset exceeds the selected threshold (offset limit).
Gap Difference Limit	The limit value of an end face irregular error is set up. An error will be displayed if one of end face intervals exceeds a limit value among the end face intervals after a gap set.
Stripper	
Heat Temperature Level	These are stripper parameters. They are automatically sent to the stripper if [Heater Parameter Control] in “Stripper Setting” menu is set to “Splice Mode”. See the detail in “Bluetooth” section.
Heat Finish Time	

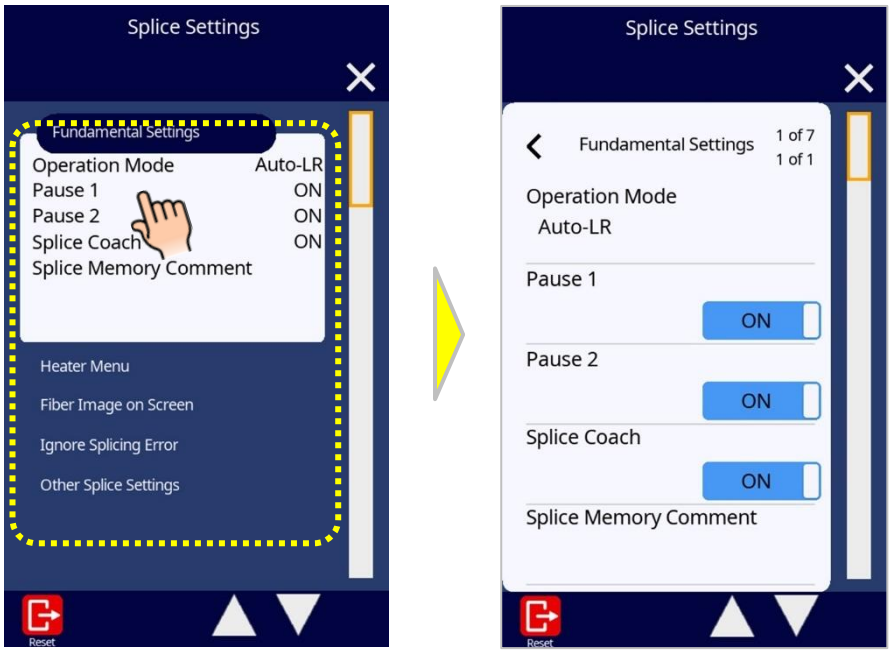
Splice Settings

Parameters common to all the splice modes can be set.

1. Select [Splice Settings] on the [Main Menu].



2. From the list of settings displayed on the screen, select the category to be changed (e.g., Basic Settings, Heating Menu).
3. Select an item to be changed from the list on the screen.
4. The detailed settings screen will be displayed. Please select and modify the necessary items.

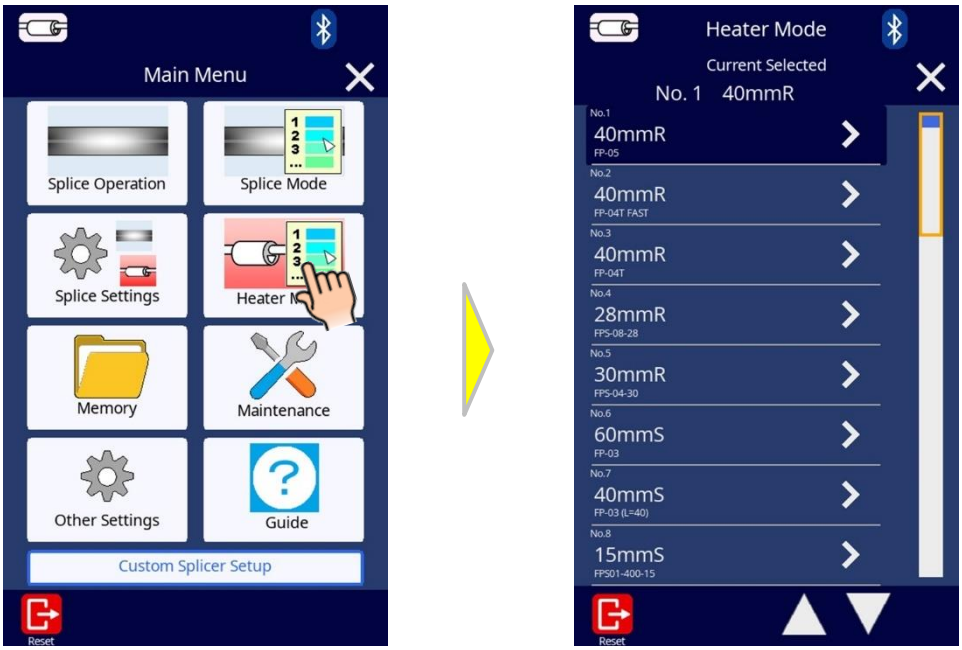


Splicing Settings parameters

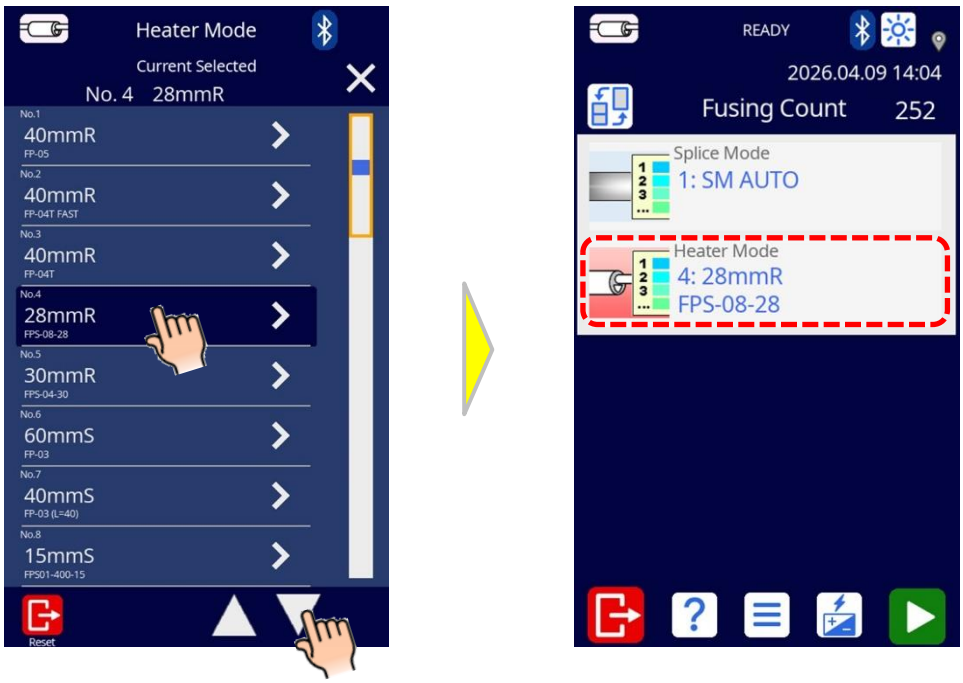
Parameter	Description
Fundamental Settings	
Operation Mode	Automated wind-protector has several operation modes. Operation procedure before and after splicing can be selected. Refer to [Change of the Operation Mode] for details.
Pause	If "Pause" is set to "ON", the splicing operation pauses when fibers are forwarded to gap-set position. Cleave angles are displayed during the pause.
Splice Coach	If set to "ON", the splice coach feature activates and shows the splicing process on the screen via video.
Splice Memory Comment	If you set this, the connection results will be automatically saved to memory when you press the SET or RESET key on the [Connection Completed] screen or open the windshield. No comments are entered when the unit is shipped from the factory.
Intelligent Alignment Control	
Auto Fiber Fit	Fibers that are not seated correctly in the V-groove are automatically repositioned to the correct position. The repositioning time depends on the adjustment setting (Lite, Standard, or Strong).
Gap Correction	Differences in fiber end-face gap spacing are automatically corrected to achieve a uniform distance. The adjustment strength controls the target range (Lite, Standard, Strong)
Axis Offset Correction	Fiber axis misalignment is automatically corrected to ensure proper alignment. The adjustment strength affects the correction time (Lite, Standard, Strong).
Heater Menu	
Auto Cover Open	You can set whether or not to open the cover when the heating is finished.
Cover Close Time	If the heater is not operated for a certain period of time, the cover will close automatically.
Fiber Image on Screen	
Gap set Fusing Estimate READY	Select the screen display during connection. X: Enlarged X-axis display Y: Enlarged Y-axis display X▲▼Y: Combined X-axis and Y-axis images displayed on top and bottom of the screen *An information screen will be added when the device is ready.
Pause Finish	Select the screen to display when the connection ends or is paused. Select and switch between X screen, Y screen, X/Y screen, and data display.
Ignore Splicing Error	
Loss Bubble Fat Thin	Set to "Enable" or "Disable". Enable :An operator can accept and bypass an error shown on the left by pressing the SET key. Disable :An operator can't bypass an error shown on the left.
Cleave Angle Cleave Shape Offset Gap Difference	Set to "Enable" or "Disable". Enable : An operator can accept and continue with the error as shown on the left by pressing the SET key. Disable : An operator can't override the error as shown on the left. The unit repeats the alignment when the operator presses the SET key.
Others Splice Settings	
Max Num. of Re-Fusings	The re-fusing process sometimes improves splice loss. However, excessive re-fusing may decrease the splice strength. With this function, it is possible to limit the number of re-fusing or to disable re-fusing.
Cleaver Counter Mode	When splicing, the splice increments the "Cleave Count".

Composition of Heater Menu

Heating mode and setting values may be selected and changed.
On the [Ready] screen or the [Main Menu] screen, select the heater mode.



1. Select the heater mode on the [Ready] screen.
2. Tap the heater mode to be changed. The change is complete when the item is highlighted in dark blue.
3. Press the RESET key to return to the [READE] screen and confirm that the selection is correct.



Select Heater Mode

Each tube-heating mode is optimized for a type of Fujikura 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. The parameter in Heater mode becomes an addition and change with upgrade of software.

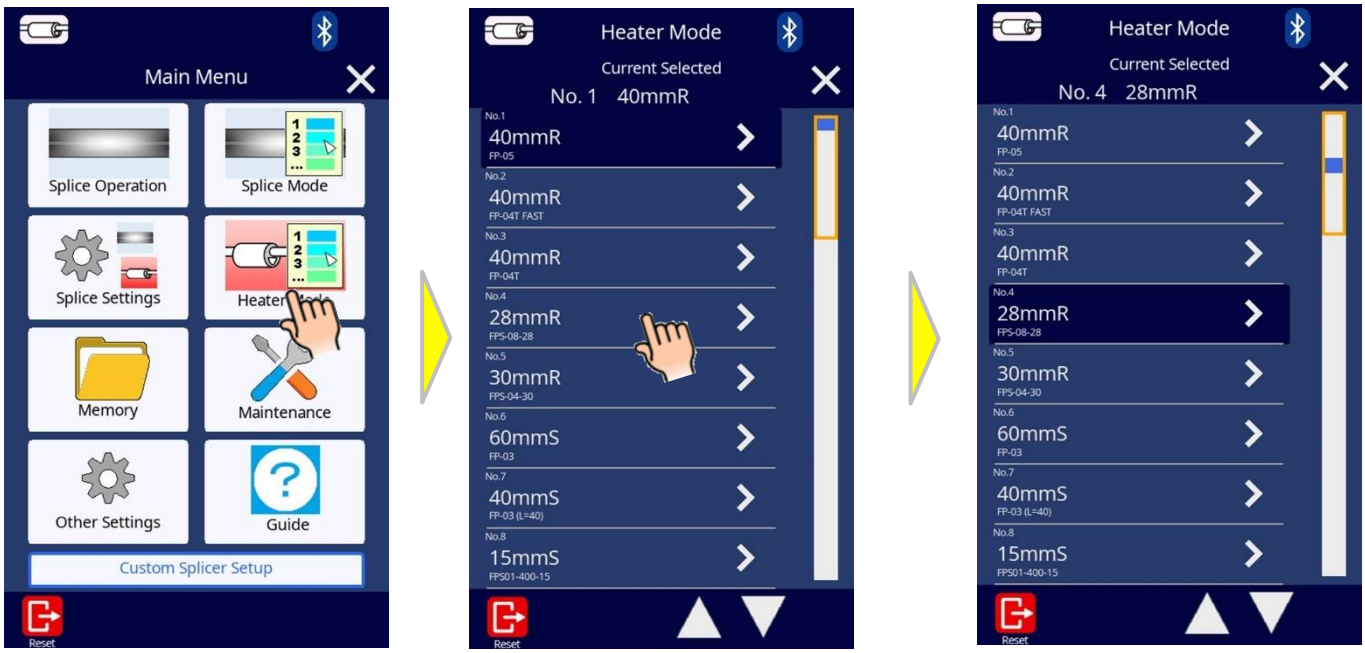
Data Base

Parameter	Description
40mmR FP-05	For standard 40mm protection sleeve, Such as Fujikura FP-05 protection sleeves.
40mmR FP-04T FAST	For standard 40mm protection sleeve. It will finish in less time than 40mmR FP-04T. Please confirm in advance before use, because heat shrinkage may not be stable depending on the usage environment.
40mmR FP-04T	For standard 40mm protection sleeve, Such as Fujikura FP-04T protection sleeves. We recommend using this mode for stable heat shrinkage.
28mmR FPS-08-28	For standard 28mm protection sleeve, Such as Fujikura FPS08-28 protection sleeves.
30mmR FPS-04-30	For standard 30mm protection sleeve, Such as Fujikura FPS04-30 protection sleeves.
60mmS FP-03	For standard 60mm protection sleeve, Such as Fujikura FP-03 or FP-03M protection sleeves.
40mmS FP-03(L=40)	For standard 40mm protection sleeve, Such as Fujikura FP-03(L=40) protection sleeves. Note: Cleave length 8mm with Nylon coated fiber.
mmS FPS01-400-	For 400 or less μm of diameters of coating. In addition, there are 15,20,25, and 34 or 45mm length.
mmS FPS01-900-	For 900 or less μm of diameters of coating. In addition, there are 20,25, and 34 or 45mm length.
60mmS FPS01-DC-60	For protection sleeve of the drops cable.
60mmSS SLIM 60	For slim type 60mm protection sleeve.
40mmSS SLIM 40	For slim type 40mm protection sleeve.

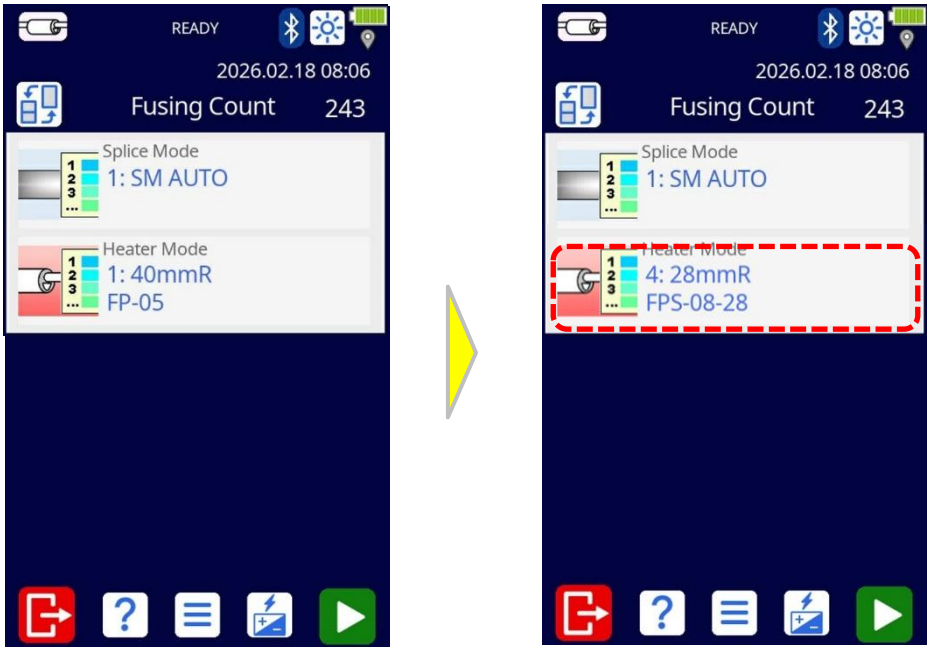
Selecting Heater mode

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

1. Press MENU key to display [Main Menu] in [READY] screen.
2. Select [Select Heater Mode] in [Heater Menu] to display [Select Heater Mode] screen.



3. The selected heater mode can be confirmed on the Ready screen.



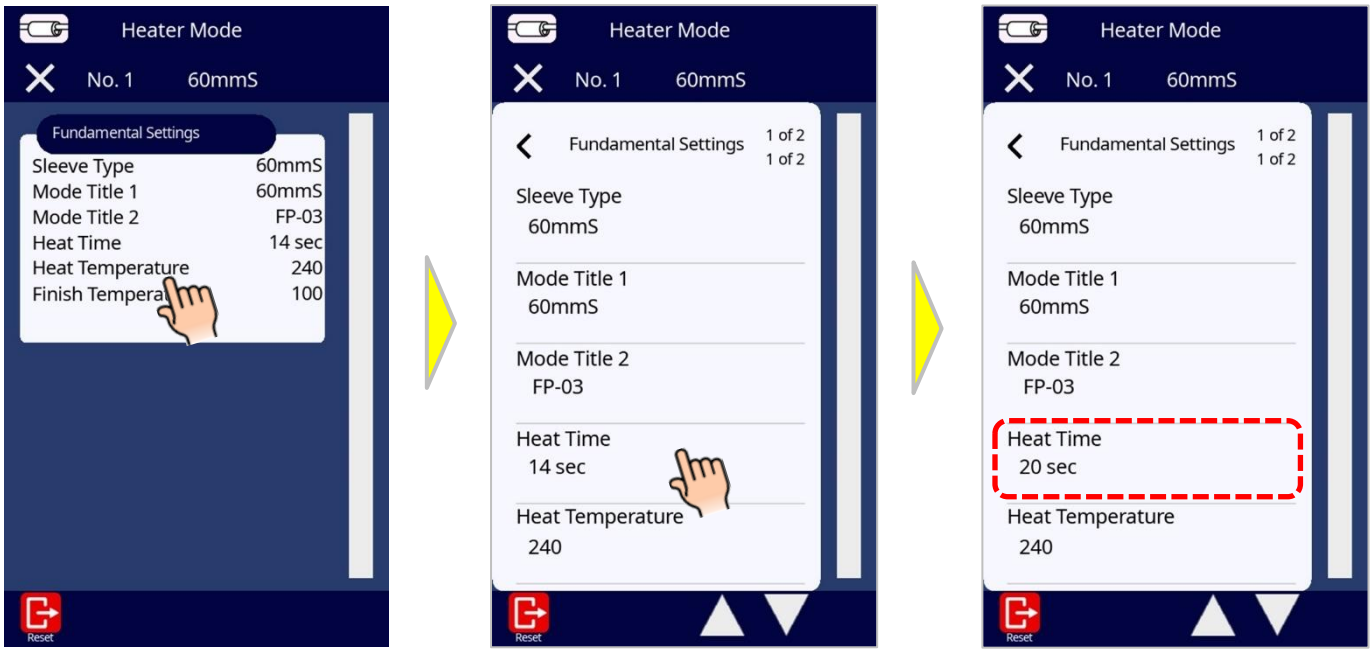
- When using a protection sleeve which is not made by Fujikura, please set parameters based on the specific sleeve.
- When the sleeve of another company is used, the durability of a protection point cannot be warrantied.

Referring to or Editing Heater Mode

Tube-heating conditions stored in heater mode can be edited or changed.
Please follow the steps below to edit each setting value.

1. Tap [>] icon to select heater mode to be modified in [Select Heater Mode] menu.

2. Tap to display the [Edit Heater Mode]. Tap icons on the screen to select each one.
3. After changing the setting values, tap [ENT] to confirm the changes.



Heater mode parameters

Parameter	Description
Sleeve type	Sets sleeve type. List of all heating modes are displayed. Select a mode in the list and this is copied to a user-programmable mode.
Mode Title1	Title of a heater mode that is displayed in the lower right part of the monitor during the splicing/heating process. Max number of characters used is 7.
Mode Title2	Description of a heater mode in the [Sleeve Type] screen. Max number of characters used is 15.
Heat Time	Sets heating time from the beginning to the end (cool-down completion). Heating time is automatically adjusted with atmospheric conditions, such as ambient temperature. Heating time may be longer or shorter than [Heat time] set.
Heat Temperature	Sets heating temperature.
Finish Temperature	Sets the finish temperature. The buzzer beeps after completion of the heating. [Caution] Do not touch the shrunken sleeve after removing the fiber from the tube heater. It may be hot. Hot sleeves easily deform and can cause some residual stress at the splice point. Use J-plate to cool down the sleeve.

Memory

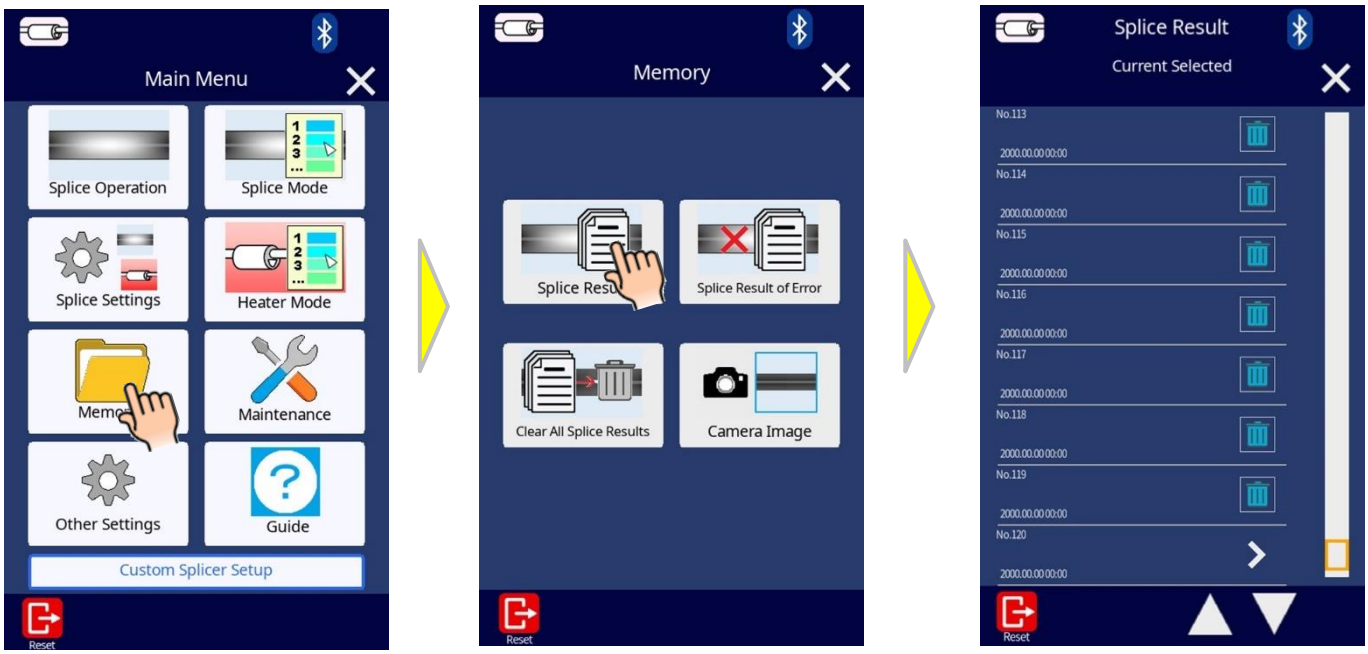
This splicer stores up to 20,000 splicing results. Contents of data stored are different depending on splicing mode.

Splice Results Reference or Elimination

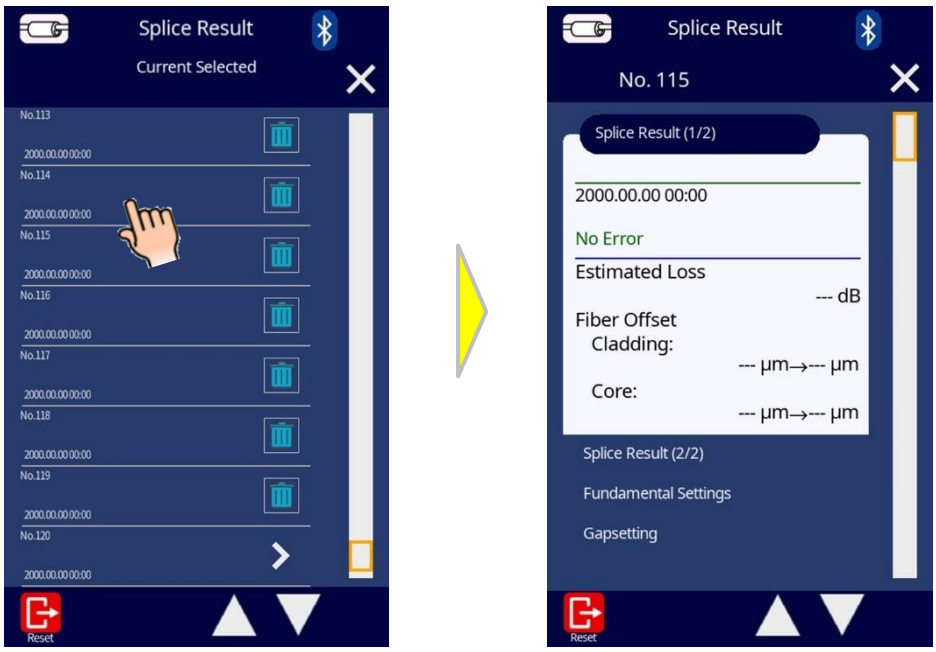
Splicing results stored in the memory can be displayed. Comments can be added or edited.

How to display the splice Result data

1. Select [Memory] in [Main Menu] and select [Splice Results] .



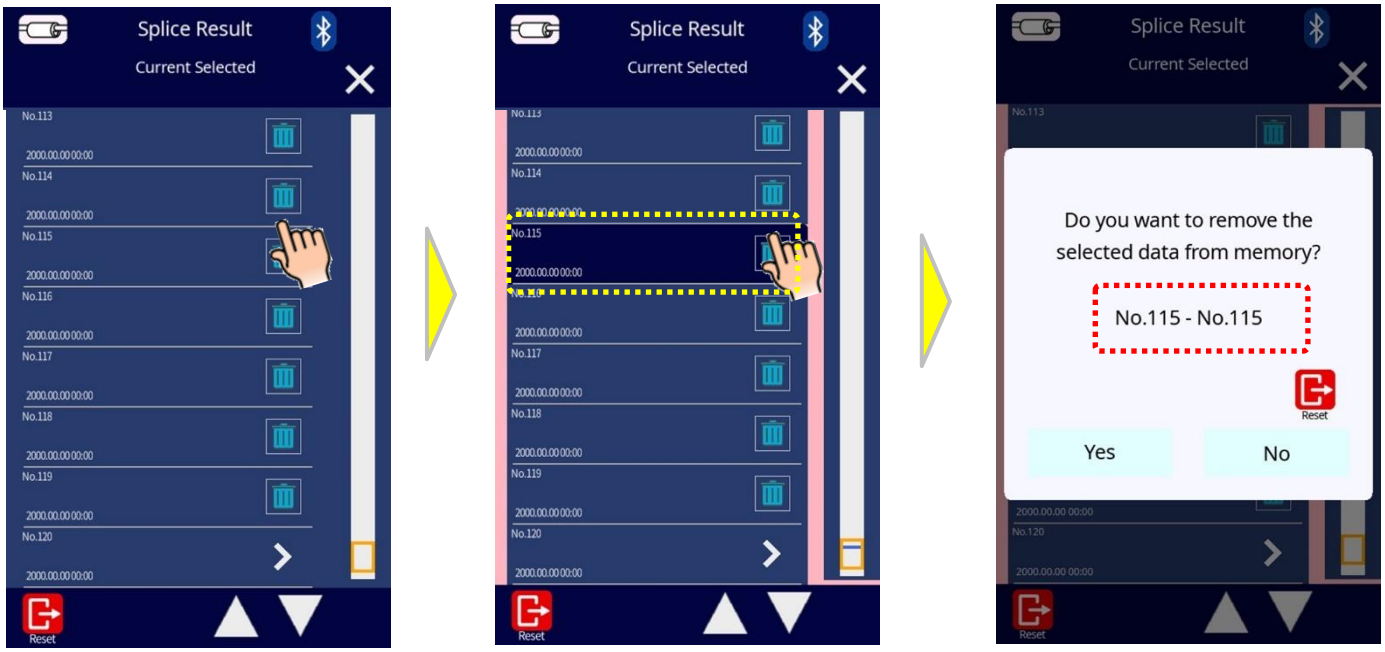
2. Tap the memory number you want to view from the splice results list. You can then access the data from that splice result.



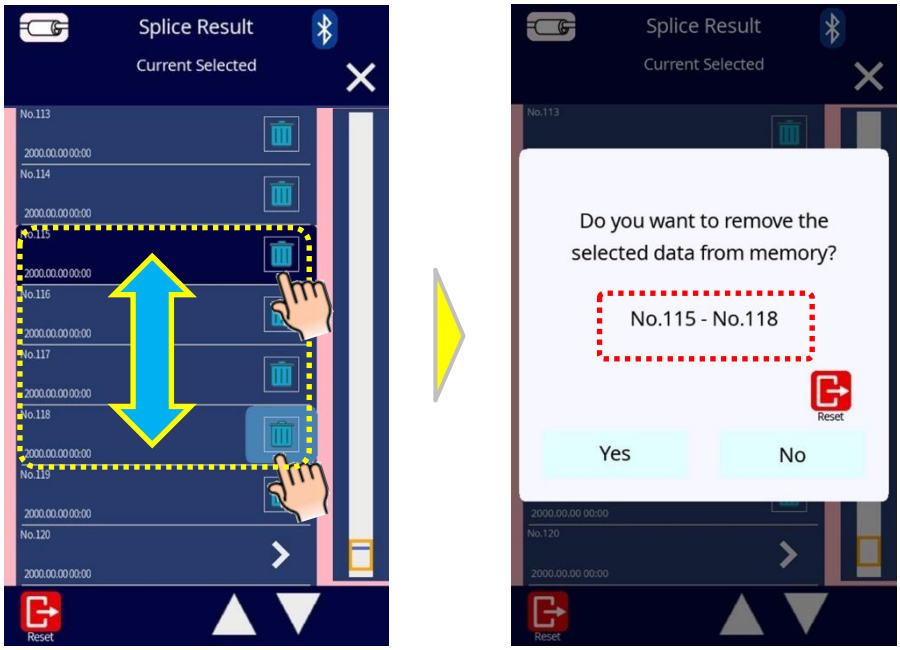
➢ Saved data can be downloaded using the USB cable [USB-02].
Please refer to the Data Connection Operation Manual for instructions

How to Clear the Splice Results data

1. Tap [Memory] in [Main Menu] screen and select [Splice Result].
2. Tap the icon of the memory number to be viewed from the splice results list. The screen will turn pink, entering delete mode. Tap the same icon again to delete only the selected item.



3. Select the first data in the range to be deleted by ENT key.



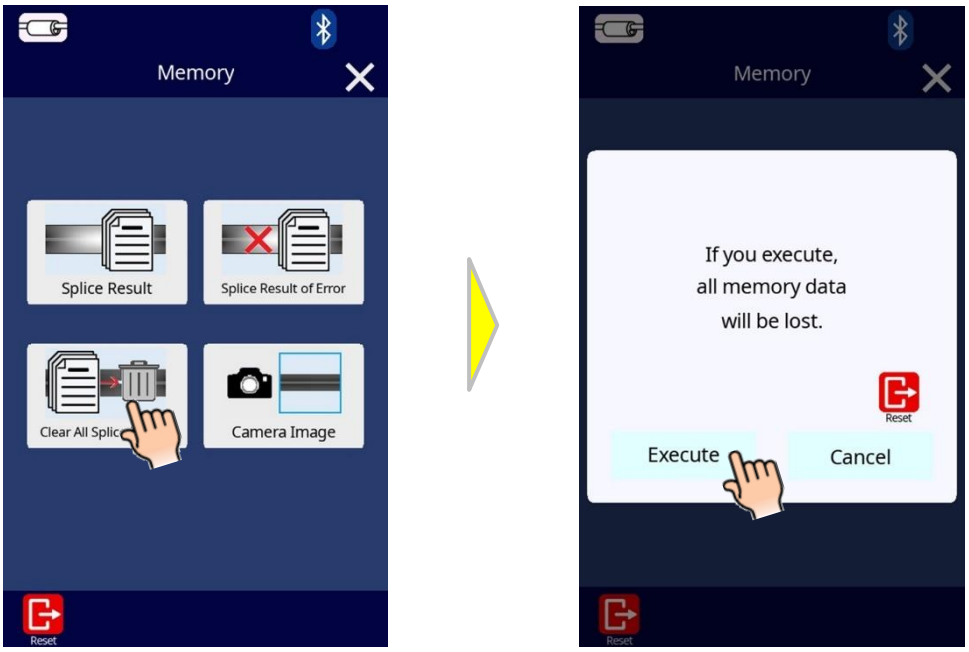
How to view/delete splice error results

Error memories can be displayed exclusively, following the same method as the connection result memory display.
The operation follows the same steps as viewing and deleting connection results

Clear All Splice Results

All splicing results can be cleared at once.

1. Tap the [Clear All Splice Result] in Memory Menu.
2. A confirmation screen will appear. Please tap the 'OK'.



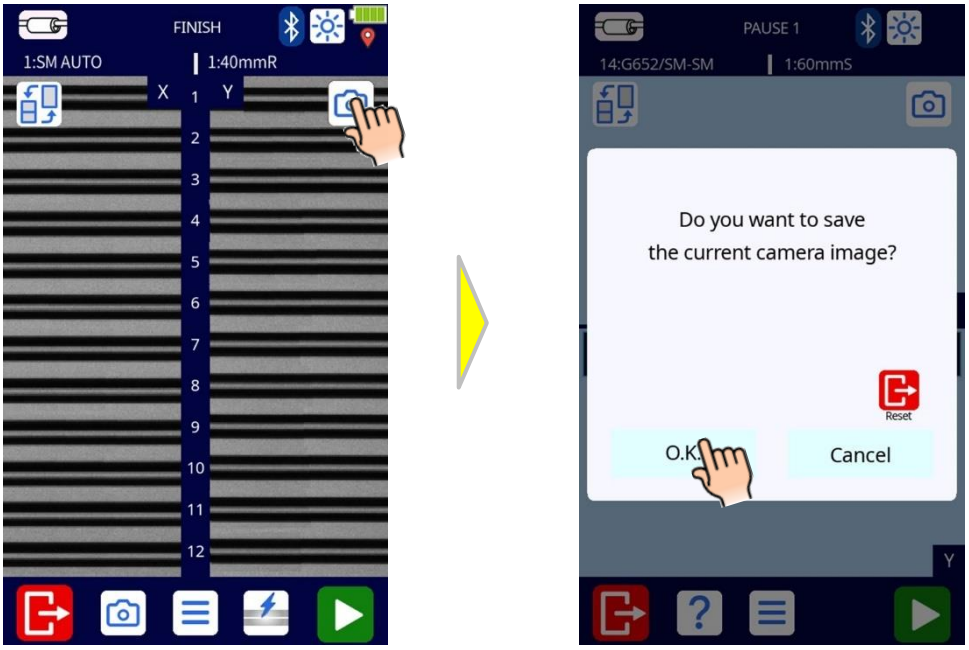
Camera Image

This function is used to store the fiber image after splice or error occurred. A total of 100images can be stored. Once the number of saved images exceeds 100, the oldest images will be automatically removed.

1. Select [Memory] in [Splice Menu].
2. Select [Camera Image] and press ENT key to display [Camera Image] Menu.

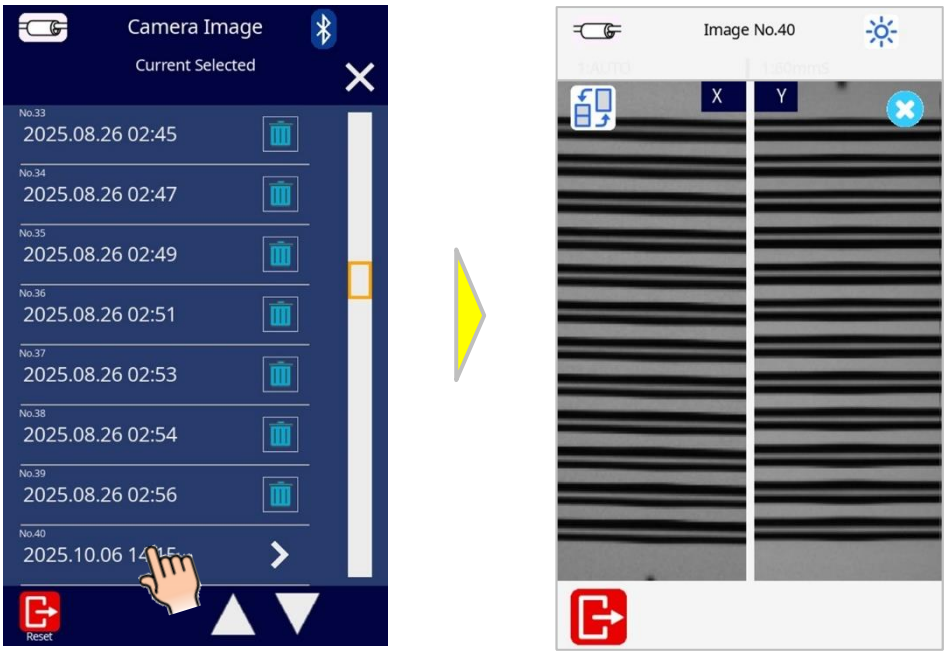
How to save the Camera Image Data

Tap the camera icon an the top right, then tap OK to save the images.



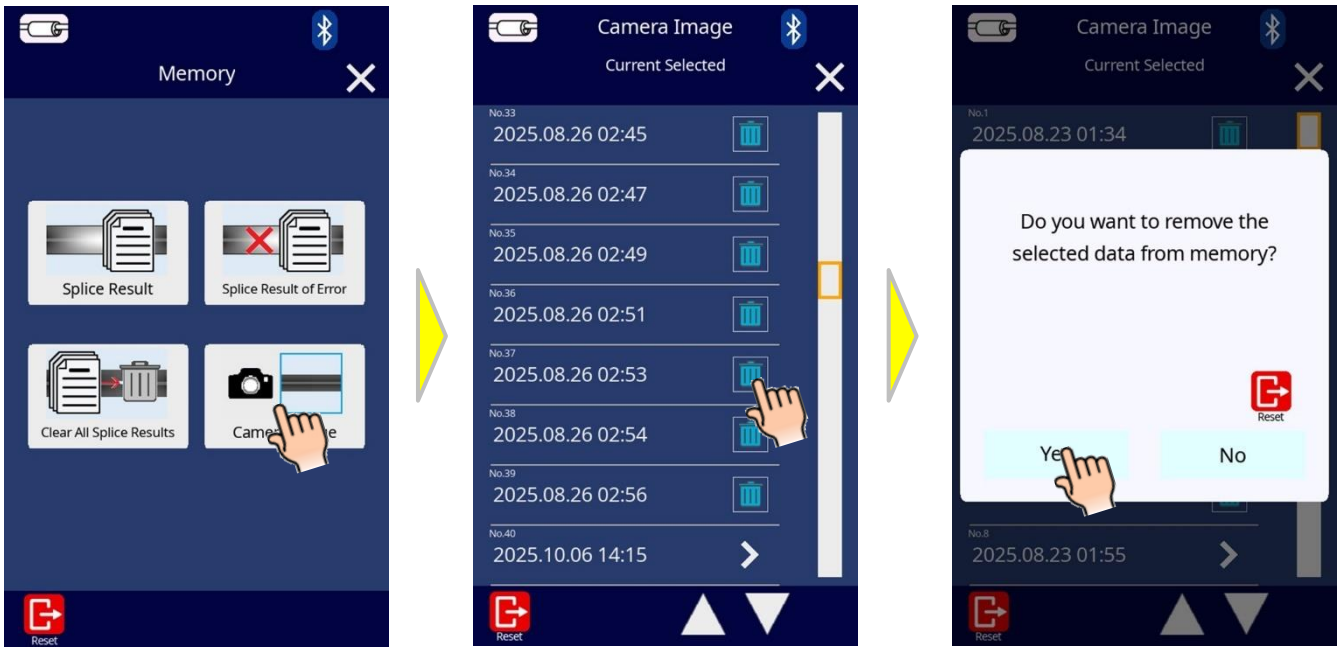
How to display saved Camera Image Data

Display the list of camera images in [Camera Selected], then tap the date to view them.



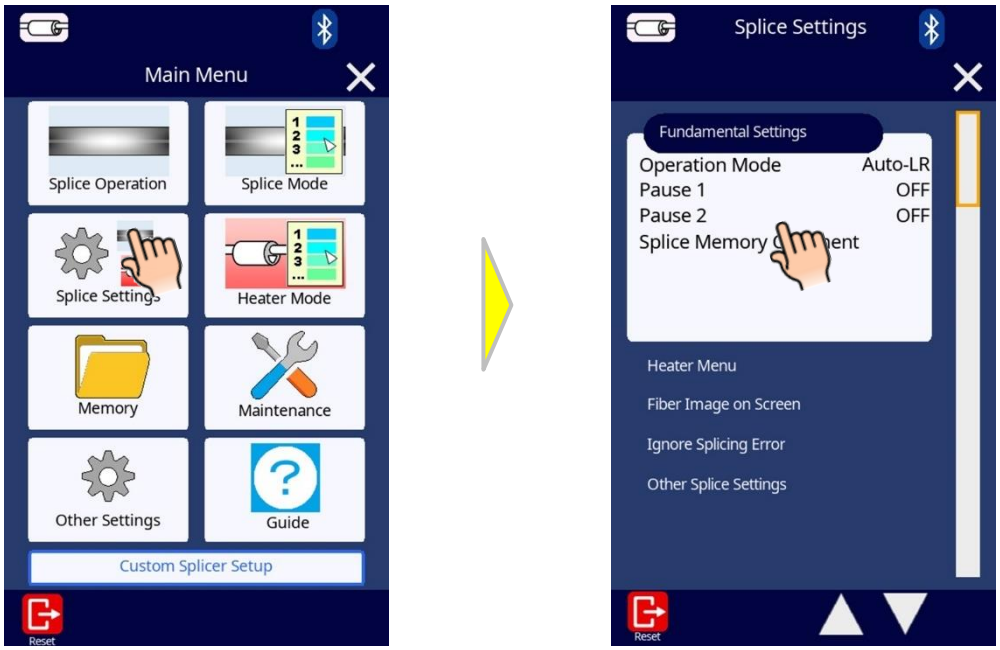
How to delete Camera Image Data

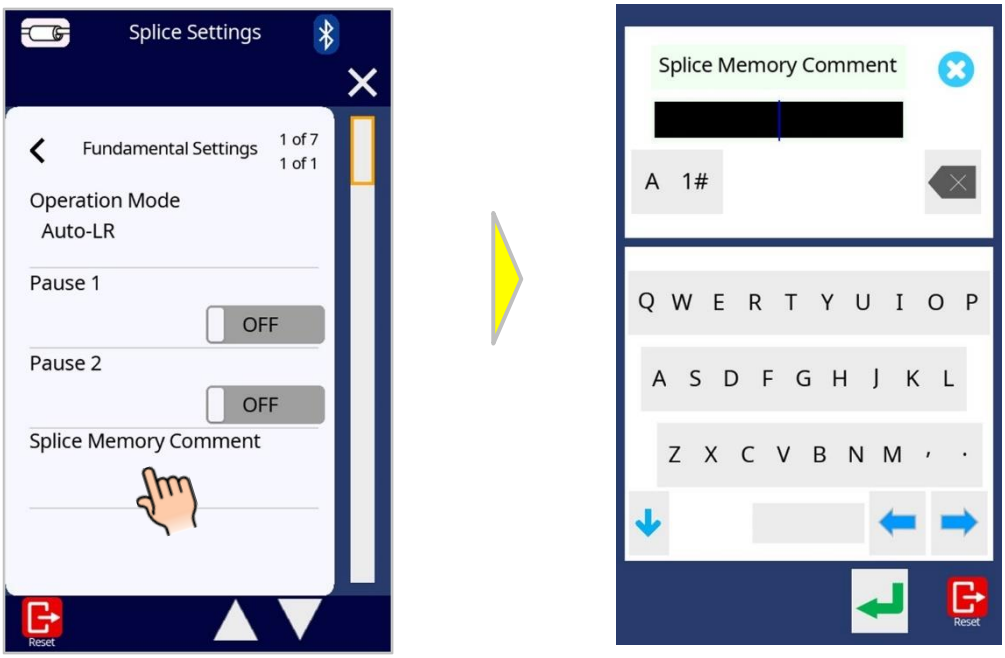
Display the list of camera images in [Camera Selected]. Tap the date to view the data, and tap  to delete.



Splice Memory Comment

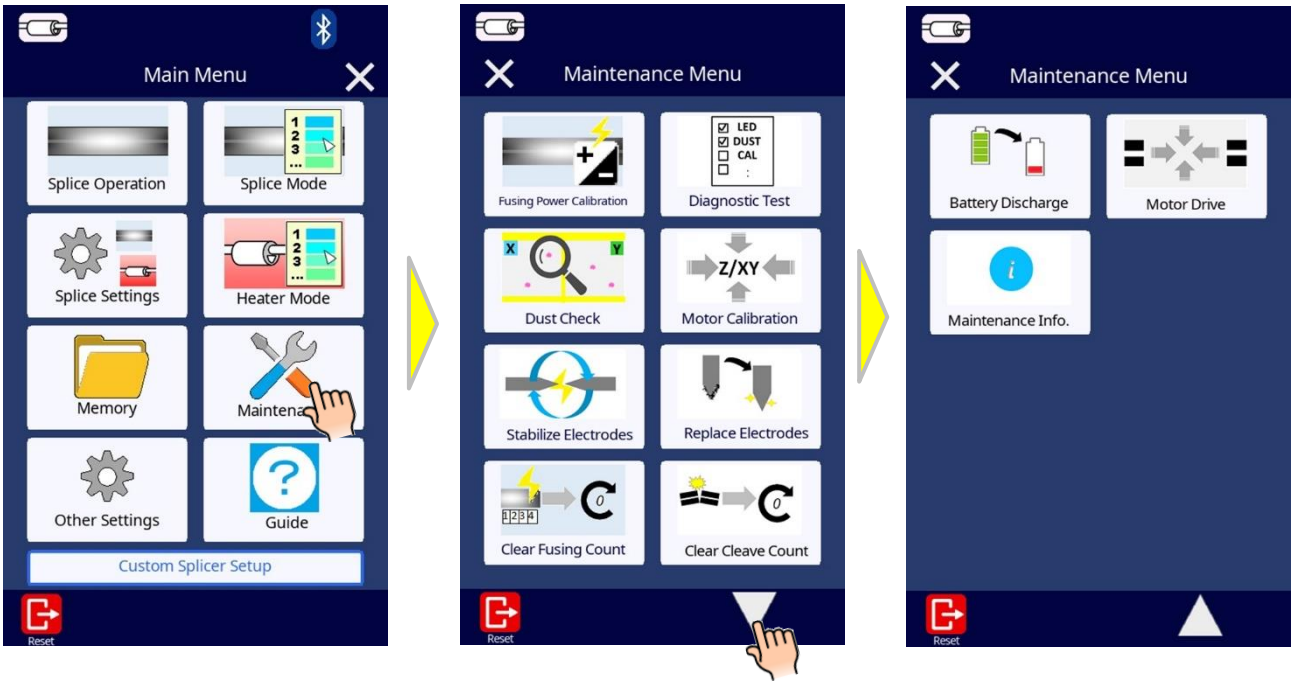
The splicing result is automatically stored in memory when SET or RESET is pressed upon completion of the splice at the [Finish] screen, or when the wind-protector is opened upon completion of the splice at the [Finish] screen. Once a comment is entered, the same comment is used for subsequent splice results.
At the time of factory shipment, no comments have been entered.





Maintenance menu configuration

The device is equipped with functions for performing routine maintenance of the fusion splicer. This section explains how to use them. Select [Maintenance Menu] on the [Main Menu] screen.



Function of the Maintenance Menu

The parameters in the Maintenance Menu are listed below:

Maintenance parameter list

Parameter	Description
Fusing Power Calibration	When executing the Fusing Power Calibration, select this icon. Check the Fusing Power Calibration Section.
Diagnostic Test	Perform this function in the event of splicer operation trouble. Check the Diagnostic Test section.
Dust Check	Check the optical path for dust/dirt, and assess whether it adversely affects splice quality. Check the Dust Check section.
Motor Calibration	Check the Motor Calibration section.
Stabilize Electrode	Check the Stabilize Electrode section.
Replace Electrode	Check the Replace Electrode section.
Clear Fusing Count	Reset the fusing count. Check the Clear Fusing Count section.
Clear Cleave Count	Reset the cleaving count. Check the Clear Cleave Count section.
Battery Discharge	Discharge battery to zero. Check the Battery Discharge section.
Motor Drive	Manual motor operation. Check the Clear Cleave Count section.
Maintenance Info.	View the device information. Check the Maintenance Info. Section.

Fusing Power Calibration

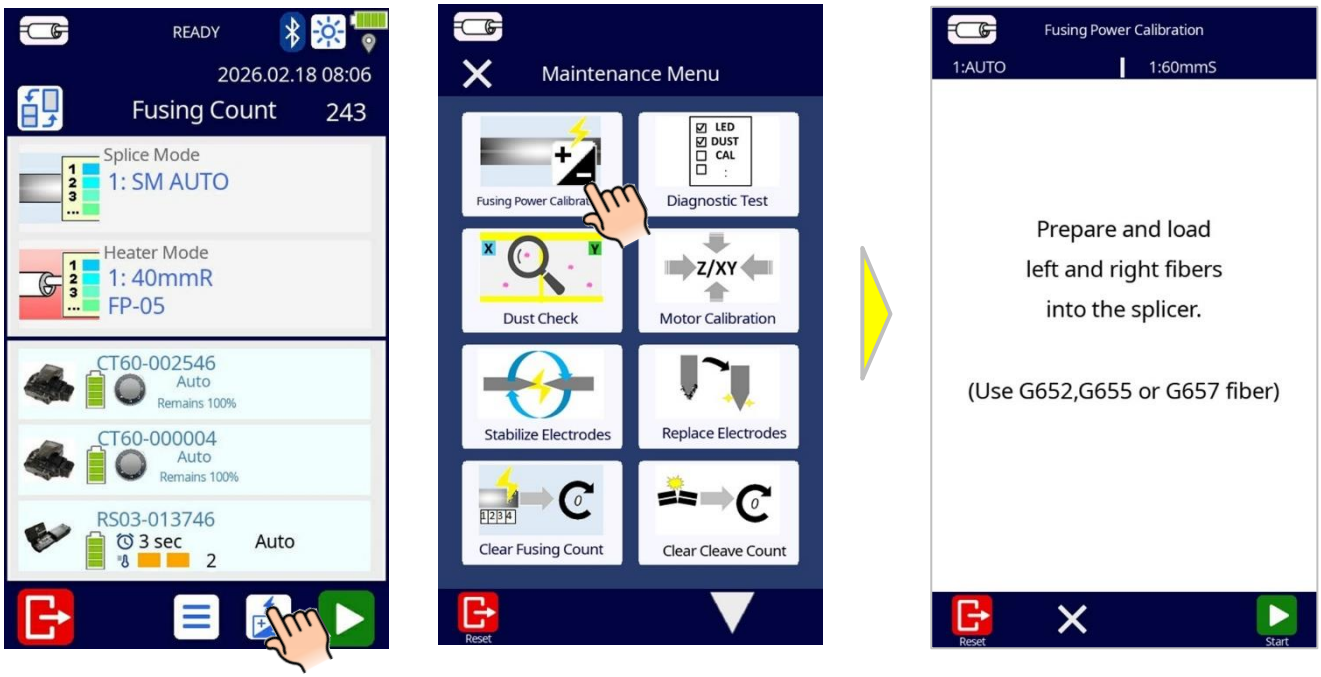
Atmospheric conditions creating variability in the fusing temperature. This splicer is equipped with a temperature sensor used in a constant feedback monitoring control system to regulate the fusing power to a constant,continuous level. Changes in fusing power due to electrode wear and glass adhesion cannot be corrected automatically. Also, the center position of fusing sometimes shifts to the left or right. In this case, the fiber splicing position must be moved relative to the fusing center. It is necessary to perform a fusing power calibration to eliminate both of these issues.

- Fusing power calibration is performed automatically using [AUTO] mode only, so fusing power calibration does not have to be performed when splicing in this mode.
- Execute [Fusing Power Calibration] before using non-auto mode.
- When performing the [Fusing Power Calibration] function, change the fusing power “factor” value. The factor value is used in the algorithm program for all splicing. The fusing power value will not change in the splice modes.

Operation procedure

1. Select [Fusing Power Calibration] or  tap the icon in [Maintenance Menu].
2. Load prepared fibers in the splicer.
3. Close the wind protector.
4. Press SET to start the Fusing Power calibration.

- Use standard SMF ITU-T G652 fiber for Fusing Power Calibration.
- Use well prepared fibers for fusing power calibration. Dust on the fiber surface affects fusing power calibration. If there is debris on the fiber surface, please repeat the preparation process and set the fibers again.
- Cleave angle threshold does not link to the parameter "Cleave Limit" in splicing modes. Cleave angle threshold is independently set for fusing power calibration. See section [Maintenance Settings] to change cleave angle threshold.



“Good” message

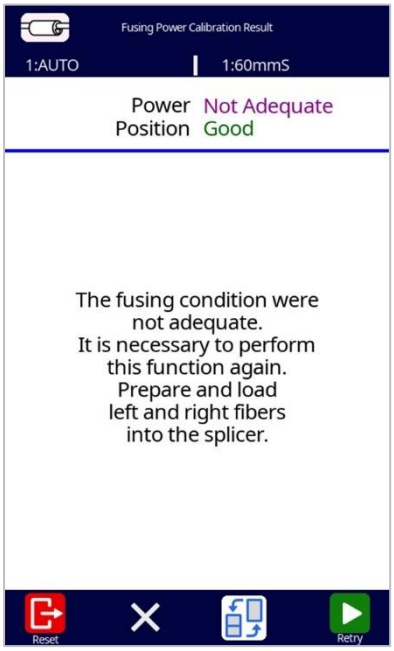
Fusing power and splicing position calibration has been completed. Press the Reset icon to exit.



Result: Good

“Not Adequate” message

Fusing power and splicing position calibration are completed, but further calibration is strongly recommended, as the change from the previous fusing power calibration is too large and significant. Press the Start icon to perform fusing power calibration, or press the Reset icon (fusing power calibration is not completed).



Result: Not Adequate

- In some cases, multiple iterations of fusing power calibration are needed until the calibration process is successfully completed and the "Test Finish" message is displayed. Fusing power calibration can be considered almost completed if multiple iterations are completed without receiving the message.
- Number threshold can be set so that "Test Finish" message is displayed after specific number of fusing power calibrations is performed. See section [Maintenance Settings] for detail.

Diagnostic Test

The fusion splicer has a built-in diagnostic test feature that allows the operator to perform a simple one-step evaluation of the splicer's performance, covering several critical variables. Perform this function in the event of fusion splicer operation trouble.

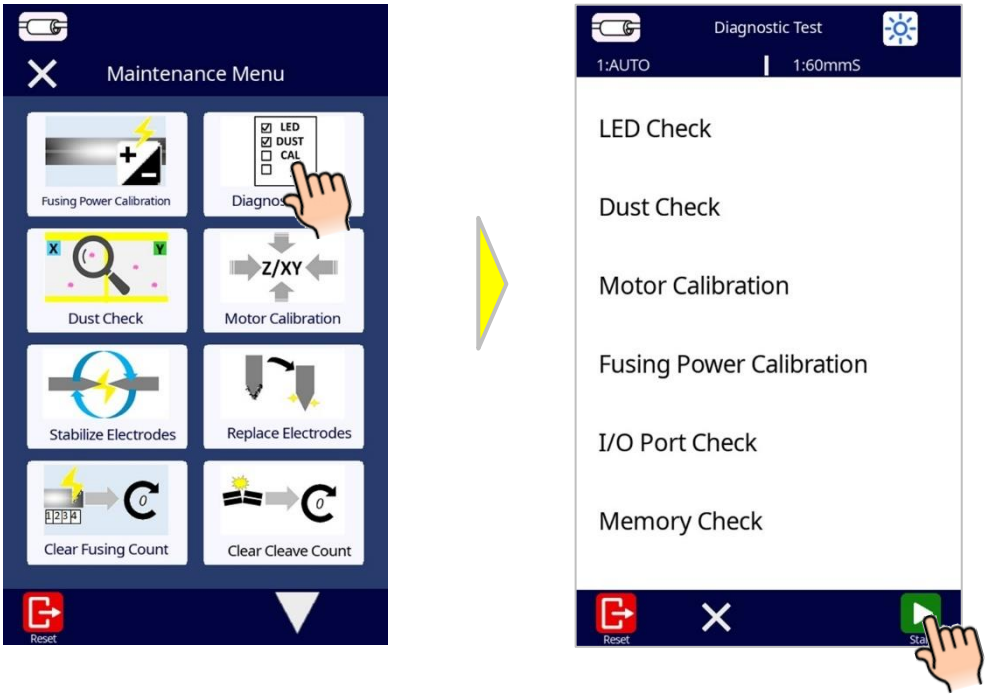
Operation Procedure

1. Select the Diagnostic Test icon in the [Maintenance Menu] and execute.

Check Item	Description
LED Check	Measures and adjusts the brightness of the illumination LED.
Dust Check	Check the optical path for dust/dirt and judge if it adversely affects splice quality. If contamination exists, this function indicates its presence and shows its location.
Motor Calibration	Check the Motor Limit Sensor.
Fusing Power Calibration	Automatically calibrates the fusing power factor and fiber splicing position.
I/O Port Check	Checks for regular normal regular operation of the fusion splicer's input and output ports.
Memory Check	Check the internal fusion splicer memory.

- Before the start of the test, remove the fibers from the fusion splicer.
- When the Motor check is completed, prepare and load the fibers into the splicer and press Start icon.

2. Upon completion of all checks and adjustments, a list of results is displayed. If the dust check result fails, clean the objective lenses. In the case that cleaning doesn't eliminate contamination, there is a possibility that the contamination may have entered the optical path. Please contact the nearest Fujikura authorized distributor for additional instructions. The dust check function can execute independently within the [Maintenance Menu].

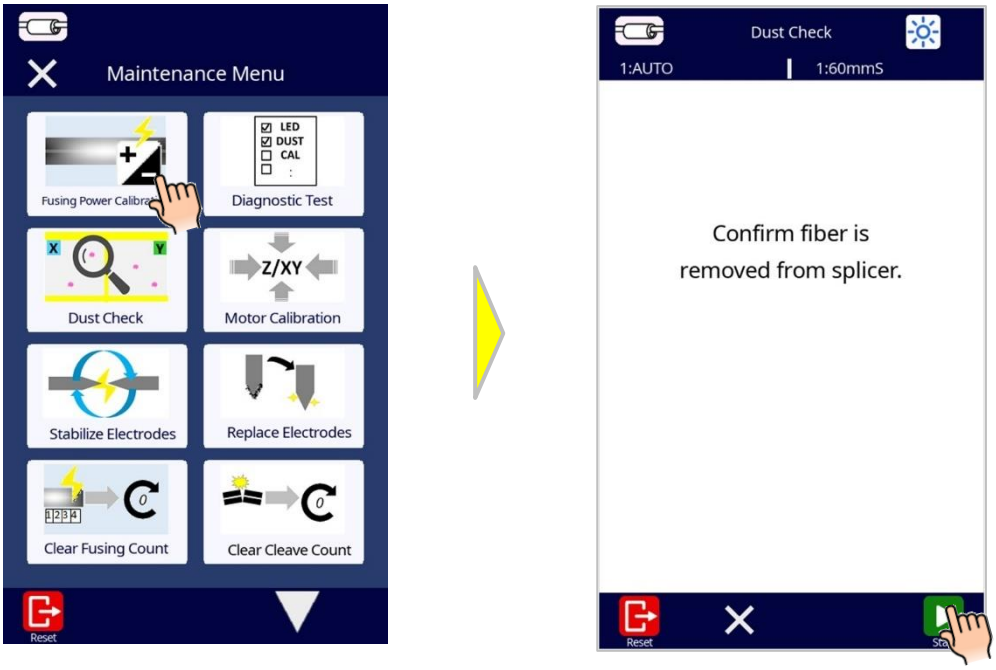


Dust Check

The splicer observes fibers through image processing. Dust or contaminants may interfere with regular observation of fibers and degrade splice quality. This function checks the optical path for contaminants and determines whether they will degrade splice quality.

Operation Procedure

1. Select the [Dust Check] in the [Maintenance Menu].



2. If fibers are set in the splicer, remove them and press the SET key again. The splicer begins the dust check.
3. After observation, the location of contamination is judged as a potential problem blink on the display. If contamination is discovered, clean the objective lenses and repeat [Dust Check] using the cleaning instructions.
4. Perform the [Dust Check], and if it is OK, the process is finished.

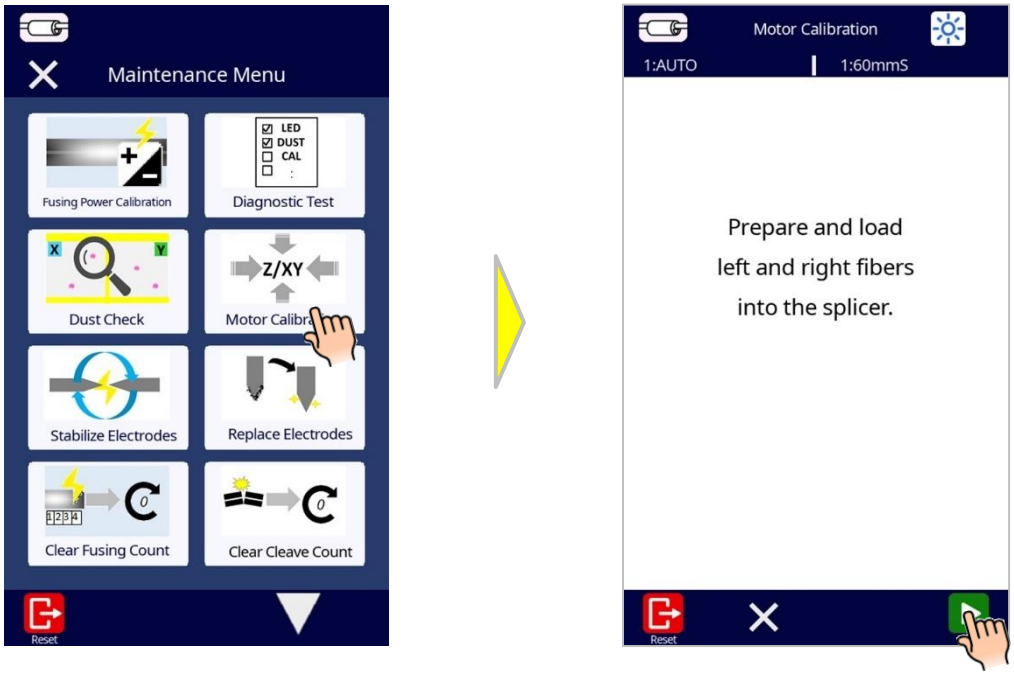
> ➢ In case you have cleaned the objective lenses, and dirt or dust remains, contact the authorized distributor.

Motor Calibration

Motors were adjusted at the factory before shipping. However, motor performance may change for various reasons. This function automatically calibrates the speed of all motors.

Operation Procedure

1. Select the [Motor Calibration] in the [Maintenance Menu].
2. Load prepared fibers in the splicer and tap ▶ icon.
3. Speeds for all motors are automatically calibrated. Upon completion, [Maintenance Menu] is displayed.



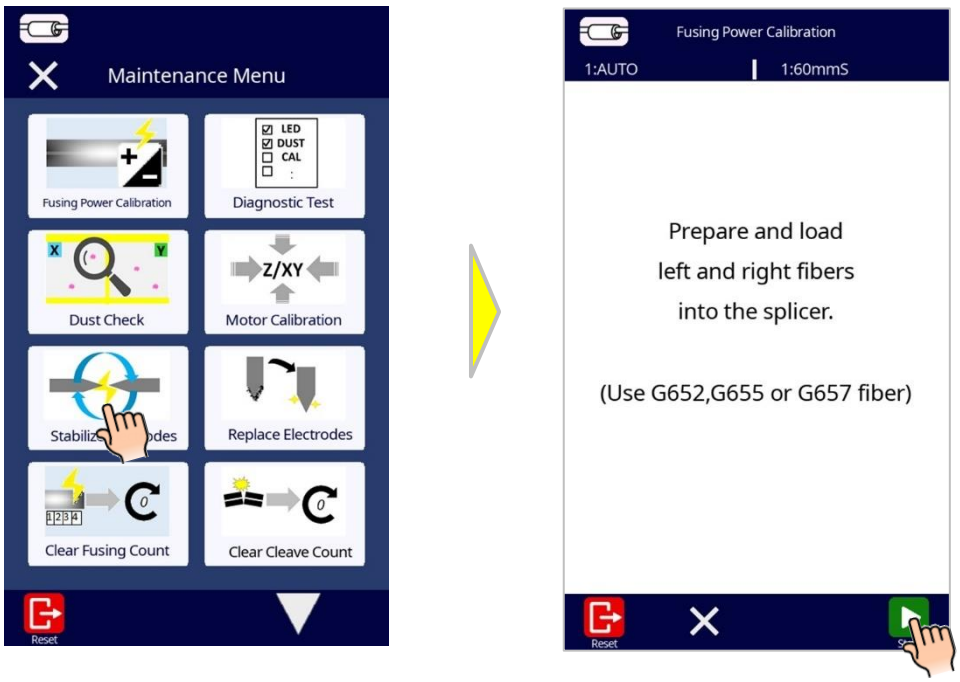
➢ Perform this function when a "Fat" or "Thin" error has occurred.

Stabilize Electrodes

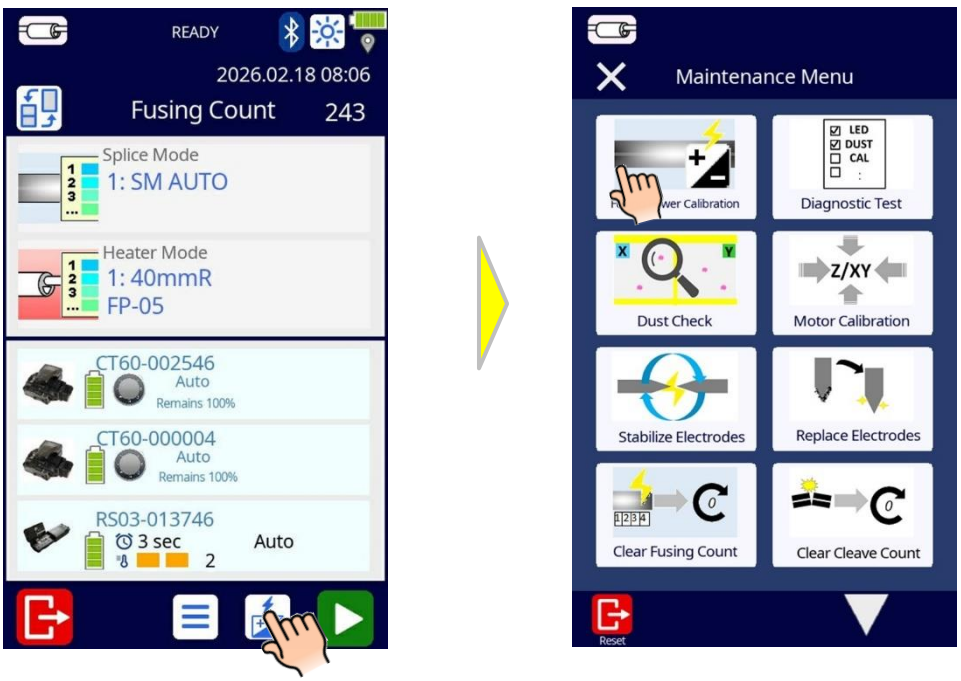
In the event of a sudden change in environmental conditions, etc., the fusing power may become unstable, resulting in higher splice loss. This is especially likely to happen when the splicer is moved from lower elevations to higher elevations. Over time, the fusing power will eventually stabilize; however, this process can be expedited by stabilizing the electrodes. This function can also be used in the case where many fusing power calibrations are required to get a “Test OK” message during the [Fusing Power Calibration] process.

Operation Procedure

1. Select the [Stabilize Electrodes] on the [Main Menu] screen.



2. Lord the prepared fibers into the splicer.
3. Tap  icon to perform the fusion power calibration, then begin continuous discharging to stabilize the electrodes
4. After completing stabilization, always perform an additional [Fusing Power Calibration].

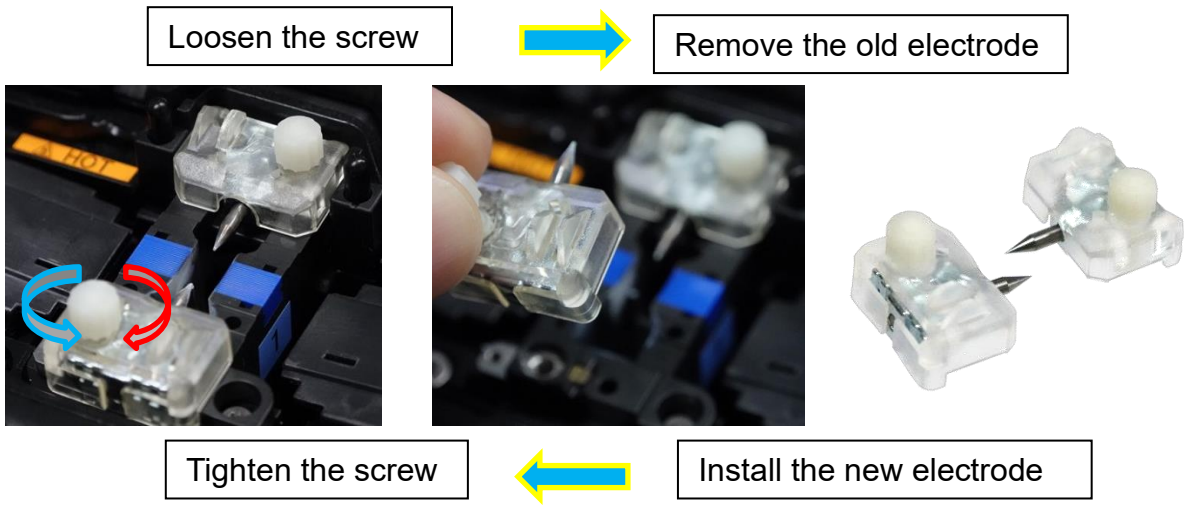


Replace Electrodes

When the number of fusing reaches the setting value, a message prompting to replace the electrodes is displayed immediately after turning on the power. Using the worn electrodes will result in greater splice loss and reduced splice strength.

Replacement Procedure

1. Tap the [Replace Electrodes] in [Maintenance Menu].
2. Instruction messages will appear on the screen to turn off the power. Tap OK icon.
3. Loosen screw located on electrode by manual.
4. Take the old electrode out.
5. Install the new electrodes with care; do not touch the electrode tips.
6. Tighten screw by manual.



7. Turn on the power, prepare and load the prepared fibers into the splicer and tap Start icon. After executing the fusing power calibration, the splicer will repeat fusing 30 times in succession to stabilize the electrodes.
8. Upon completion of repeated fusing, the splicer executes a fusing power calibration again. The operator should repeat fusing power calibration until the “Test Finish” message appears. For details of the fusing power calibration process, see section [Fusing Power Calibration].

- Do not bump the tip of the electrodes during replacement..
- After replacing the electrode rod, ensure it is securely installed.
- Do not overtighten the electrode screws..

Clear Fusing Count

This function enables the stored number of fusing to be reset.

1. Select the [Clear Fusing Count].
2. When the confirmation screen “Is it OK to clear?” appears, tap OK icon to clear.

- This function is included in the [Replace Electrodes] function.
- The number of fusing in the “Total Fusing Count” field displayed on the [Maintenance Info.] screen cannot be reset.

Clear Cleaver Counter

This function resets the number of cleaves stored in [Cleaver Counter].

1. Select the [Clear Cleaver Counter] in the [Maintenance] screen.
2. When the confirmation screen “Is it OK to clear?” appears, select OK to clear.

Parameter	Descriptions
Cleave Count	The number of times of cleave is displayed.
Blade Position	The position of a blade is displayed.

This function must be performed after the cleaver is adjusted.

Battery Discharge

The battery pack (BTR-09) uses Li-ion cells. If the battery is repeatedly charged, the battery indicator may become different from the actual battery capacity. If such a phenomenon occurs, execute [Battery Discharge] to reduce the actual remaining capacity and the battery indicator to zero. Then, recharge the battery pack.

Operation Procedure

1. Insert the battery pack inside the splicer that is intended to discharge completely and turn on the power.
2. Change the screen from [Main Menu] to [Maintenance Menu] and execute [Battery Discharge].
3. The [Battery Discharge] screen is displayed, and the remaining battery voltage is indicated.
4. Upon completion of full discharge, the buzzer sounds and the power turn off.
5. Recharge the battery pack.

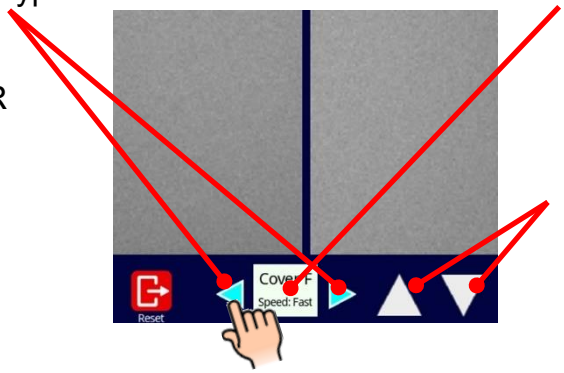
Motor Drive

Some motors in a splicer can carry out manual operation separately. In the course of splicing, the motors can also be operated by calling this menu in the [PAUSE], or [FINISH] state.

1. When the splice starts, the left and right fibers advance to the splice position and pause temporarily..
2. Tap the ◀ or ▶ icons to switch the motor type and select the motor speed. I), ii)
3. Tap the △ or ▽ icons to move the fiber position using the selected motor. Iii)

i) Switching Motor type

ZL、ZR
ZSL、ZSR
CL
Cover F/R

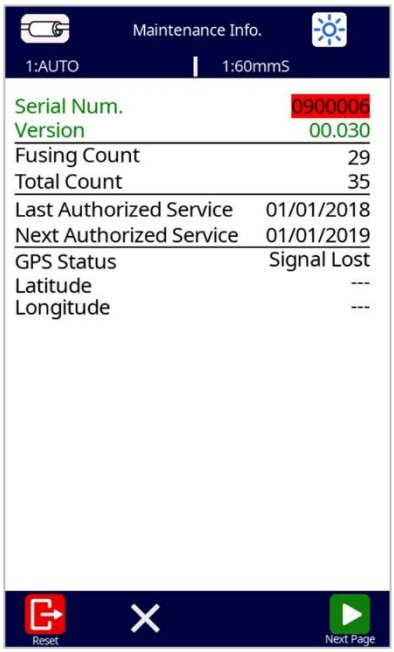


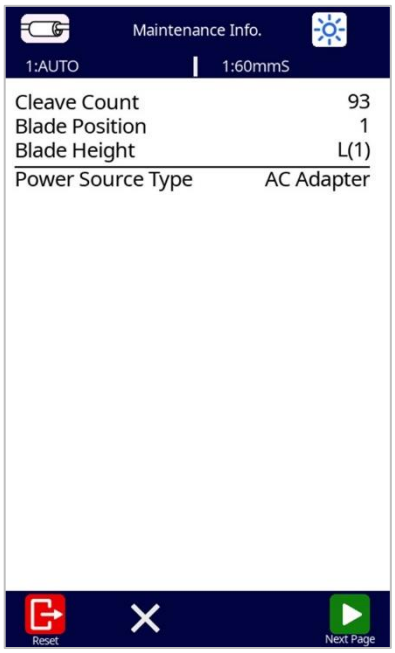
ii) Changing Motor speed
Slow
Fast

iii) Fiber motion driven by motor

Motor	Up Arrow key	Down Arrow key
ZL/ZR	Forward	Backward
ZSL/ZSR	Upward.	Downward.
CL	Lift the clamp.	Lower the clamp.
Cover F/R	Open the Wind Protector.	Close the Wind Protector.

Maintenance Info





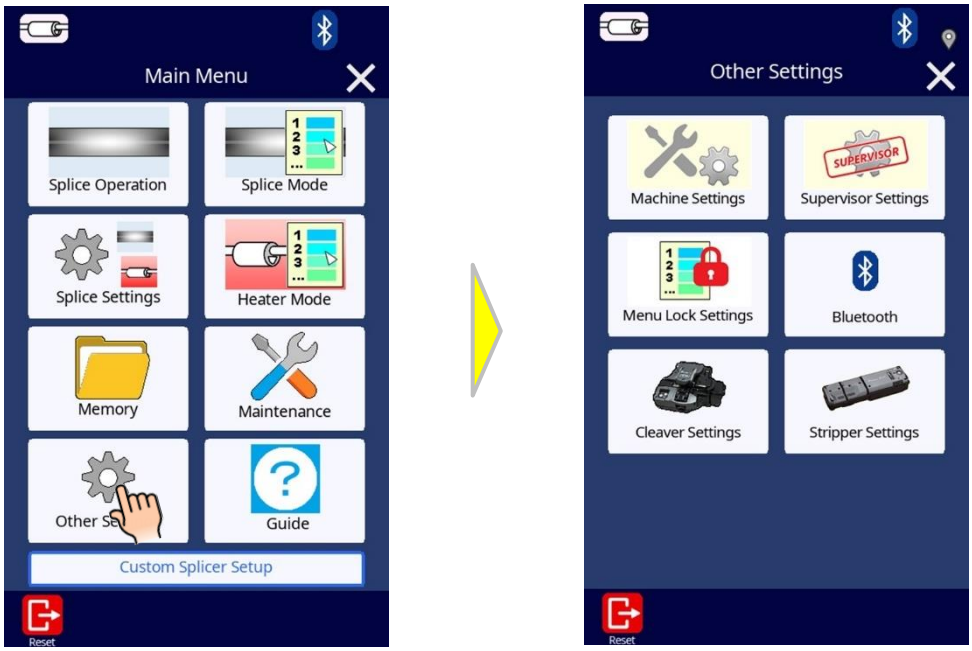


Select the [Maintenance Info] in the [Maintenance Menu].

Parameter	Description
Serial No.	Displays the serial number of the splicer.
Version No.	Displays the version number of the software.
Fusing Count	Displays the number of Fusing discharges after electrode replacement. Performing the function [Replacements Electrode] or [Clear Fusing Count] resets this parameter to zero.
Total Count	Displays the total number of Fusing discharges since shipment.
Last Authorized Service	Displays the date of the last authorized service.
Next Authorized Service	Displays the scheduled date of next authorized service.
GPS information	If GPS is ON and data is received, latitude and longitude are displayed.
Power type	Displays the type of power source in use.
Model (right, left)	Paired cutter model: CT50/CT60
Serial No (right, left)	Serial No. of optical fiber cleaver
Version No (right, left)	Version of optical fiber cleaver software
Remaining battery (right, left)	Displays the remaining battery level
Cleave count (right, left)	Displays the total number of cleaves
Blade position (right, left)	Displays the current blade position

Other Settings

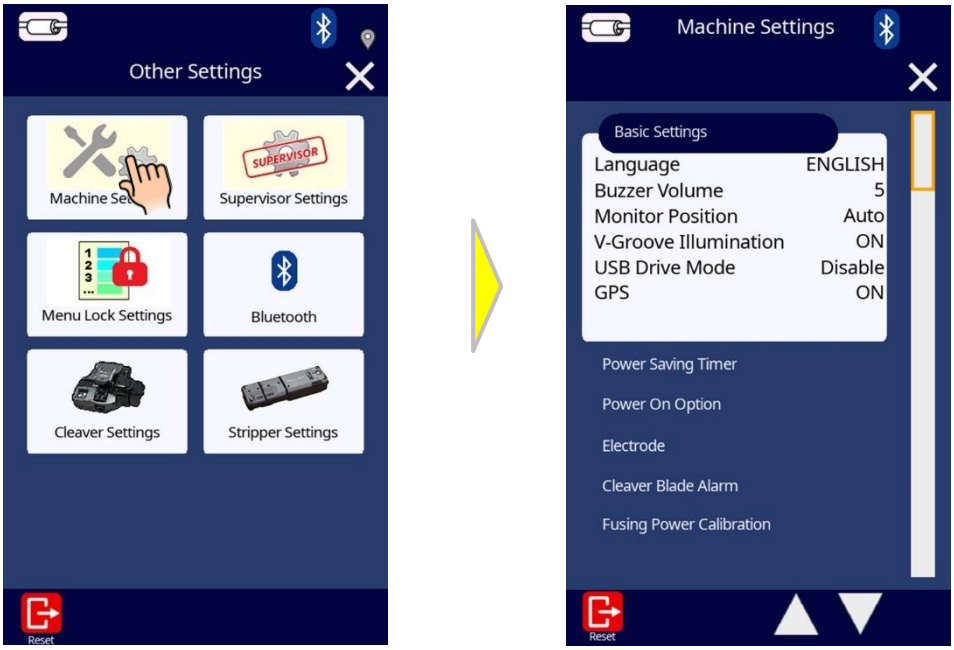
Various settings related to device configuration can be changed in the Other Settings screen.
Select [Other Settings] in the [Main Menu].



Parameter	Description
Machine Settings	Settings for various device functions. Check the Machine Settings section.
Supervisor Setting	Settings such as the calendar and the password for device startup can be configured. Check the Machine Settings section. The initial password is “0(zero)”.
Menu Lock Settings	Setting to restrict changes to various settings Check the Menu Lock Settings section. The initial password is “0(zero)”.
Bluetooth	Wireless connection to the fiber cleaver can be set via Bluetooth. Check the Bluetooth section.
Cleaver Settings	Paired optical fiber cleaver settings can be changed. Check the Cleaver Settings section.
Stripper Settings	Check the Stripper Settings section.

Machine Settings

Basic device settings, such as warning messages, can be changed.
Select [Machine setting] on the [Other Settings] menu.



Parameters list of the machine setting menu

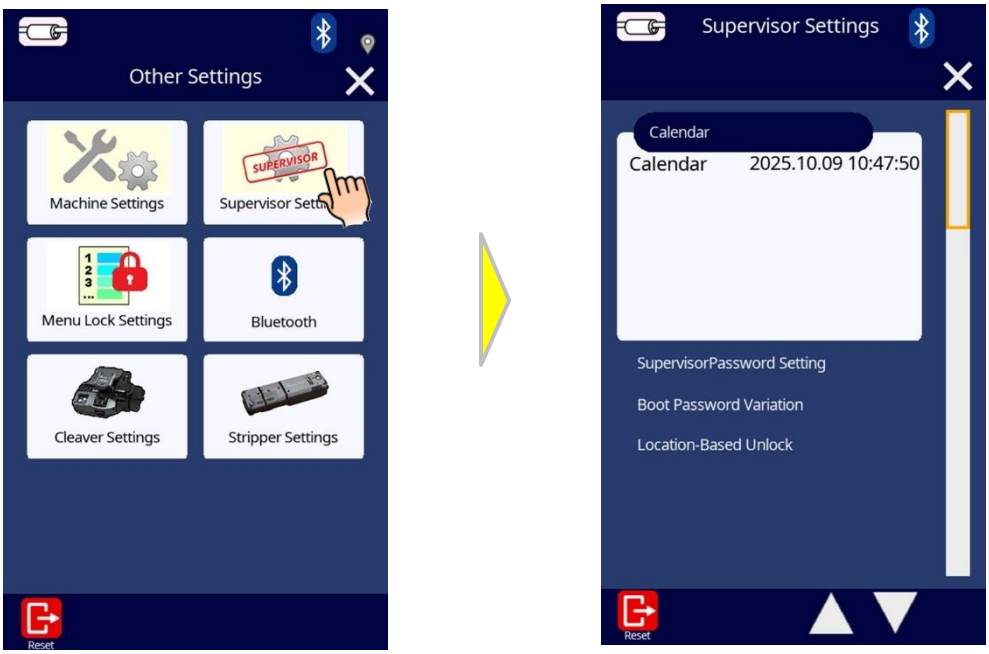
Parameter	Description
Basic Settings	
Language	Select the language displayed on the screen. The language that can be displayed is controlled by the software version and region code.
Buzzer Volume	Sets the buzzer volume level.
Monitor Position	Sets the operational direction of splicer. [Front] is for front monitor operation. [Rear] is for rear monitor operation. [Auto] is switched to front monitor operation or rear monitor operation automatically.
V-groove illumination	ON/OFF setup of V-groove illumination when the wind protector opened.
USB Drive Mode	The USB memory mode can be enabled or disabled. When set to 'Enabled,' connecting the device to a Windows PC via USB cable will activate USB memory mode, allowing access to utility software and the user manual. Check the Bluetooth section.
GPS	This feature obtains the device's location information. Please set it to 'ON' if you want to attach location data to the splice result memory or use location-based locking. *Note: When set to "OFF," the fusion splicer will not obtain location information
Cover Soft Close	CL motor clamp sliding is disabled when turned OFF. Releasing the clamp lever allows you to set the fiber manually.

A continuation of machine settings parameter list

Parameter	Description
Power Saving Timer	
Dimming	Setting this function dims the brightness of the LCD monitor if the Splicer is idle for a specific period of time. Due to its high energy-saving effect, this setting is recommended during battery use.
Sleep	Setting this function turns off the power supply to the LCD monitor if the splicer is idle a specific period of time. Due to its high energy-saving effect, this setting is recommended during battery use.
Shut Down	Automatically turns off the power supply to the splicer if it is idle a certain period of time. The function serves to prevent the battery running low if the splicer is left on for an extended period of time.
Power On Option	
Opening Title 1	Sets the message to be displayed when the splicer power is turned on. Max. number of characters: 15(Opening Title 1, 2)
Opening Title 2	
Authorized Service Reminder	If set to “ON”, the splicer displays a message when the next Authorized Service date approaches.
Fusing Power Calibration reminder	If set to “ON”, a message prompting the Fusing Power Calibration will be displayed.
Electrode	
Electrode Caution	The number of times splices can be made with a Caution displayed. If the value is exceeded, an alarm will be displayed.
Electrode Warning	The number of times splices can be made with a Warning displayed. If the value is exceeded, an alarm will be displayed.
Alarm Display during Reset	ON/OFF setup to display the above message when the splicer returns to the ready state.
Cleaver Blade Alarm	
Machine Type	Select the optical fiber cleaver (CT50/CT60) to be used.
Blade Position Change	You can set the cleaver counter warning ON/OFF. When OFF, no warning will be displayed on the screen. *This warning setting will be OFF when the optical fiber cleaver and wireless communication functions are enabled.
Blade Height Change	
Blade Replacement	
Fusing Power Calibration	
Cleave Limit	The threshold of the cleave angle error in the [Fusing Power Calibration].
Max Number of Tests	The maximum number of tests to finish the [Fusing Power Calibration] with “Test Finished” message.

Supervisor Settings

Supervisor Settings: Used by an Administrator to limit operators from selecting or changing certain functions.



Parameter	Description
Calendar	
Calendar	This function sets the date and time in the splicer calendar.
Supervisor password Setting	
Supervisor Password	Change the password to access the [Supervisor Menu]. The default password is set to "0" when the splicer is delivered.
Boot Password	Change the [Boot password] to access the system. The default password is set to "0" when the splicer is delivered.
Password Boot Lock From	Enables setting a date after which a password is required at splicer boot-up to operate the splicer.
Boot Lock Message 1	Sets the messages displayed on the boot password entry screen. NOTE: The max number of message characters is 15
Boot Lock Message 2	
Boot Password Variation	
Boot Password 1~12	This function enables switching up to 12 "Boot Password" depending upon the date of splicer operation. For more details, refer to [About "Boot Password Variation"] on the following page.
Password Boot Lock From 1~12	

A continuation of the supervisor settings parameter list

Location-Based Lock	
Enable Location-Based Lock	When set to 'ON,' the device can be activated without entering a password within the specified location range. Outside this range, a password is required. *If GPS is unavailable (e.g., underground, indoors), a password is required.
Secure Zone Center	Set the center point (latitude and longitude) of the allowed activation range.
Secure Zone Radius	Set the allowable radius (in kilometers) from the central position. Within this range, password entry at startup will be omitted.
Location Unlock Password	Set the password required when unlocking to be disabled when location information is available, or when outside the designated range or GPS signal is not received.
Lock When GPS Is Unavailable	When set to 'ON,' the device requires password entry if the GPS signal is lost. When set to 'OFF,' the device does not lock when GPS signal is lost. However, if GPS confirms the device is outside the Secure Zone, a password is required.

About "Boot Password Variation"

"Boot Password 1"..."Boot Password 12"

Initial default password settings are all "0".

"Boot Password Lock From 1"..." Boot Password Lock From 12"

May be selected as "OFF" or dates entered to activate the password lock functions. Initial default date settings for all Boot Passwords are "OFF".

Example

Boot Password	**AA**	Boot Password Lock From	**2015.05.01**
Boot Password 1	**BB**	Boot Password Lock From 1	**2015.06.01**
Boot Password 2	**CC**	Boot Password Lock From 2	**2015.07.01**
Boot Password 3	**DD**	Boot Password Lock From 3	**2015.08.01**
Boot Password 4	**EE**	Boot Password Lock From 4	**2015.09.01**
Boot Password 5	**FF**	Boot Password Lock From 5	**2015.10.01**
Boot Password 6	**GG**	Boot Password Lock From 6	**2015.11.01**
Boot Password 7	**HH**	Boot Password Lock From 7	**2016.01.01**
Boot Password 8	**II**	Boot Password Lock From 8	**2015.12.01**
Boot Password 9	**JJ**	Boot Password Lock From 9	**2016.02.01**
Boot Password 10	**KK**	Boot Password Lock From 10	**2016.02.01**
Boot Password 11	**LL**	Boot Password Lock From 11	**2016.03.01**
Boot Password 12	**MM**	Boot Password Lock From 12	**2016.04.01**



NOTE1

NOTE2

If the present date (date of splicer operation) is between "2015.09.01" and "2015.9.30", the splicer displays "Enter Boot Password 4" at boot-up. Inputting "EE" unlocks the splicer in this case.

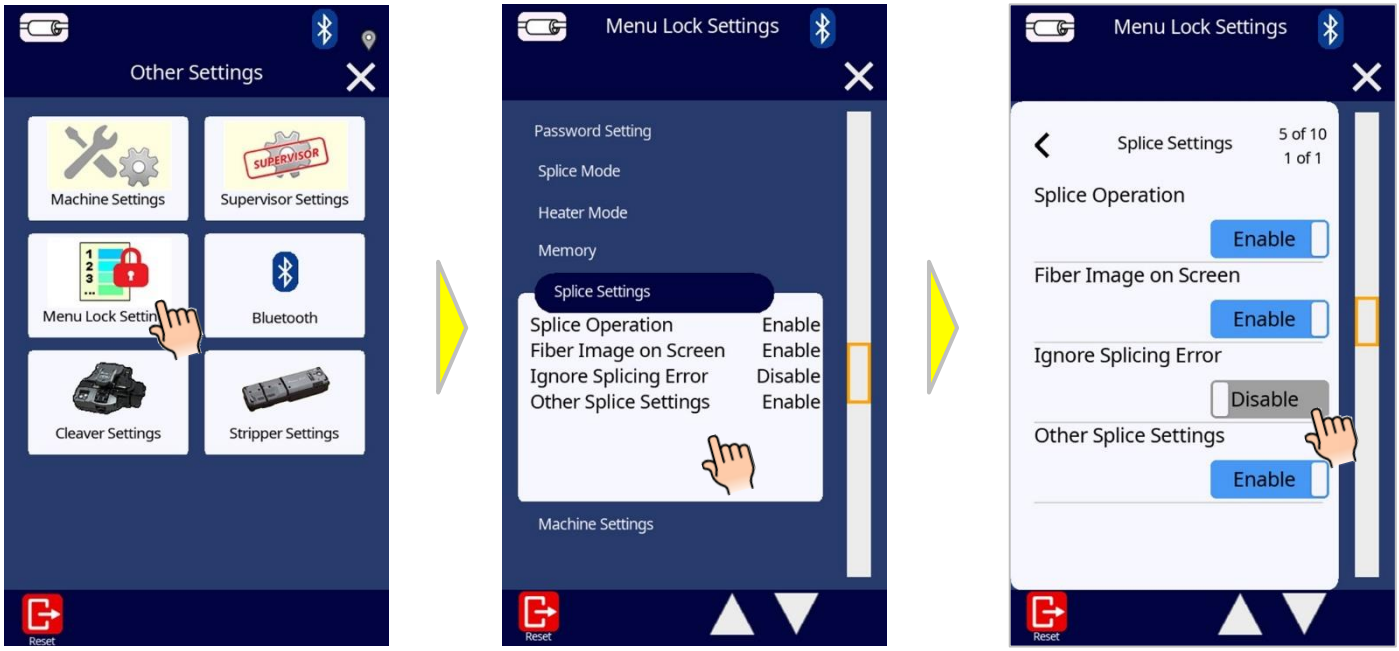
NOTE 1

It is not necessary to input dates in order. The splicer sorts the passwords by date. In this example, the splicer uses "Boot Password 8" before "Boot Password 7".

NOTE 2

If two or more date settings are the same, the splicer uses the password with the smallest suffix number. In this example, if the current date (date of splicer operation) falls between "2016.02.01" and "2016.02.29", the splicer uses "Boot Password 9" as the boot password and ignores "Boot Password 10".

Menu Lock Settings



The list of Menu Lock Settings parameters

Parameter	Descriptions
Password Setting	
Menu Lock Password	Change the password to access the [Menu Lock Settings]. :The password is set to "0" when the splicer is delivered.
Splice Mode	
Select Splice Mode	Setting to “Disable” prevents unauthorized editing and selecting of splice modes.
Edit Splice Mode	
Heater Mode	
Select Heater Mode	Setting to “Disable” prevents unauthorized editing and selecting of heater modes.
Edit Heater Mode	
Memory	
Clear All Splice Results	Setting to “Disable” prevents unauthorized erasure of splice result data on memory erasure.
Splice Settings	
Splice Operation	Setting to “Disable” prohibits editing or selecting Splice settings.
Fiber Image on Screen	
Ignore Splicing Error	
Others Splice Settings	

A continuation of the Menu Lock Settings parameter list

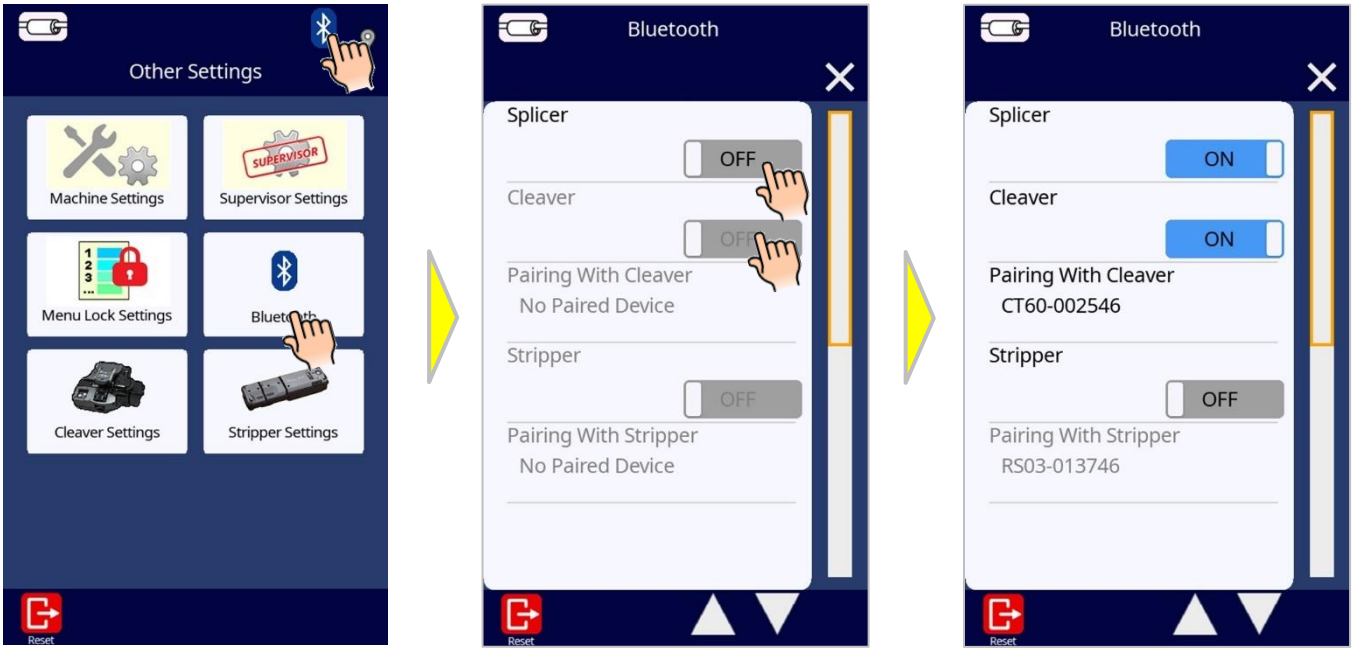
Parameter	Descriptions
Machine Settings	
Basic Settings	Setting to “Disable” prevents unauthorized editing of the [Machine Settings] menu.
Power Saving Timer	
Power On Option	
Electrode	
Cleaver Blade Alarm	
Fusing Power Calibration	
Stripper＆Cleaver	
Stripper Settings	Setting to “Disable” prevents unauthorized changes to the [Stripper Settings] menu.
Cleaver Settings	Setting to “Disable” prevents unauthorized changes to the [Cleaver Settings] menu.
Maintenance Menu	
Replace Electrodes	Setting to “Disable” prevents operation of different functions in the [Maintenance Menu].
Stabilize Electrodes	
Clear Fusing Count	
Clear Cleaver Counter	
Battery Discharge	
Motor Drive	
Diagnostic Test	
Dust Check	
Fusing Power Calibration	
Motor Calibration	

Bluetooth

Parameters related to Bluetooth connections between devices can be changed. Once the fusion splicer and the optical fiber cleaver are paired, they will automatically pair with each other; they will automatically pair again the next time they are used. If wireless communication does not start, perform steps below.

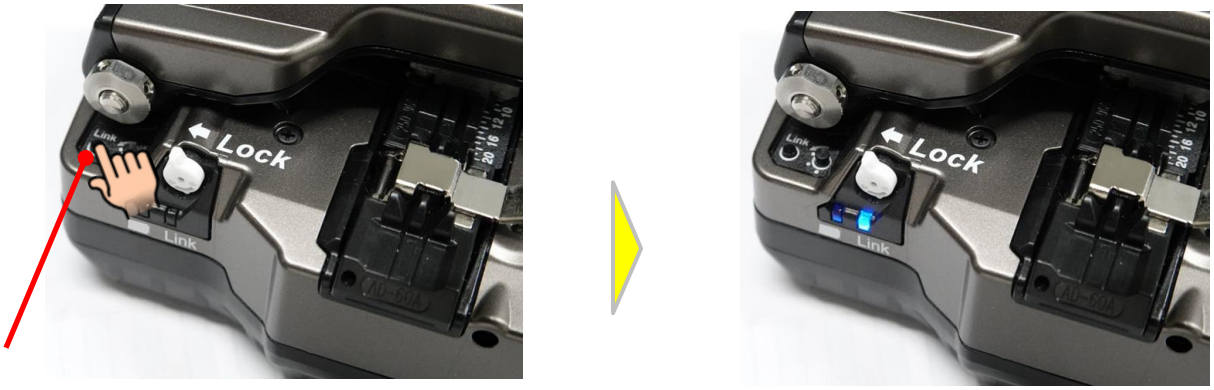


1. Turn on the splicer.
2. Insert the battery into the optical fiber cleaver to power it on.
3. Tap the [Bluetooth] icon to open the menu, then turn ON the [Fusion Splicer] and [Cleaver].



Steps to Link the CT60

Hold the optical fiber cutter's LINK button for 6 seconds to enter pairing mode.

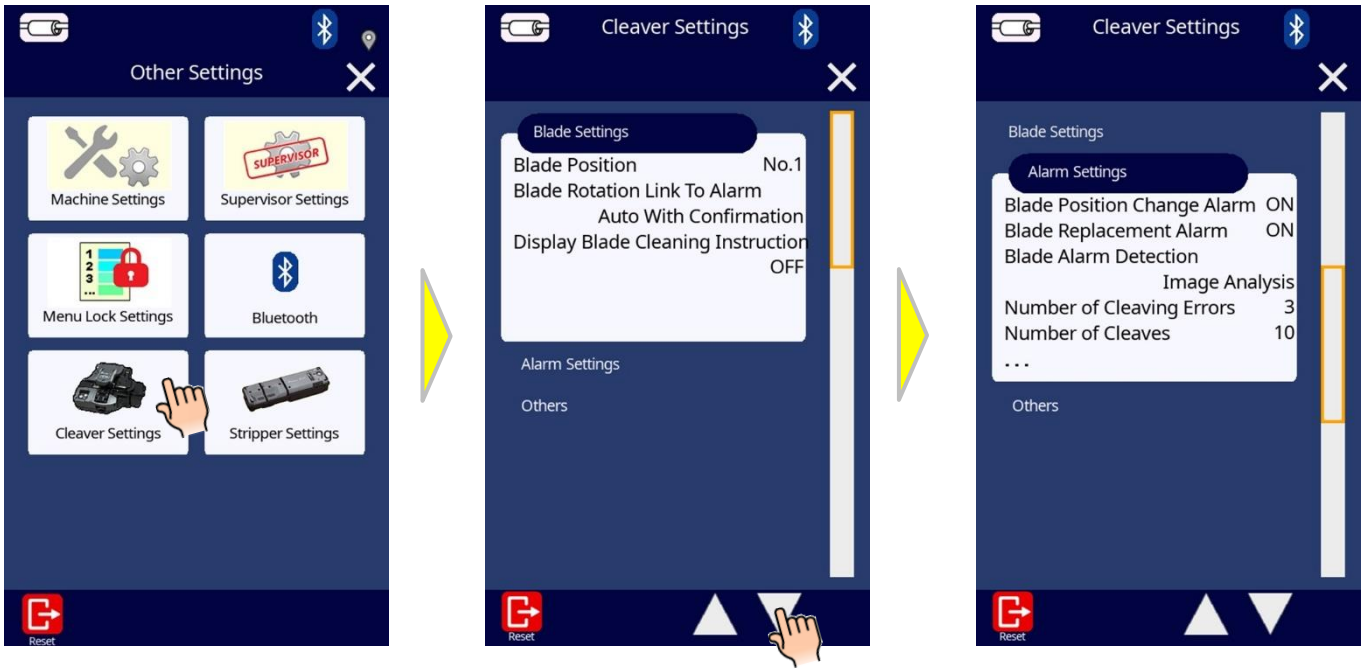


Link button

For details, see the Bluetooth paragraph in the "Ready" section.

Cleaver Setting Menu

Settings of the optical fiber cleaver connected via wireless communication can be changed.



List of the Cleaver Settings parameters

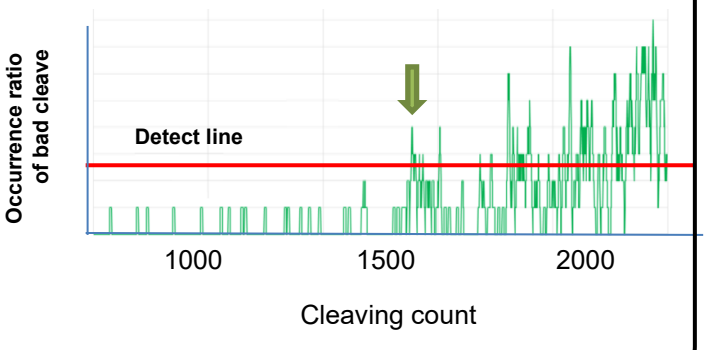
Parameter	Description
Blade Settings	
Blade Position	Shows the cleaved fiber count at all blade positions of the cleaver (48 positions) while the splicer is connected to the cleaver.
Blade Rotation Link to Alarm	Determines the splicer's response when it detects that a cleaver blade position is worn. There are three options: "Auto Without Confirmation": The splicer rotates the cleaver blade automatically without notifying or seeking confirmation from the operator. "Auto With Confirmation": Displays the message "Cleaver blade is worn. Rotate to new position?" If the operator selects [Yes], the splicer will rotate The cleaver blade. If the operator selects [No], the splicer will not rotate The cleaver blade. "OFF": The splicer does not rotate the blade.
Display Blade Cleaning Instruction	Switches the display of blade cleaning instruction on and off. "ON" Displays the blade cleaning instruction before automatic rotation. "OFF" The cleaning instruction does not show before automatic rotation.

A continuous list of the Cleaver Settings parameters

Parameter	Description
Alarm Settings	
Blade Position Change	ON/OFF setting enables or disables display of each warning message for cleaver blade wear. If “OFF” is selected for an alarm, no warning is indicated on the READY screen. If “ON” is selected, the alarm will be displayed for the operator when required.
Blade Replacement	
Blade Alarm Detection	Selects the judgment criteria for the cleaver blade wear and blade rotation alarm according to the following three options: “Cleaving Count”: Rotation alarm is based on the number of cleaved fibers at the current blade position. “Image Analysis”: Rotation alarm is based on the number of cleaning errors that occur during the specified number of splices. “OFF”: Does not execute Blade Alarm Detection.
Number of Cleaving Errors	These parameters set the criteria for the cleaver blade alarm. Example: If the “Number of Cleaving Errors” is set to 3 and the “Number of Splices” is set to 10, the cleaver blade alarm window will be displayed if 3 cleaving errors occur with the most recent 10 splices.
Threshold Cleaving Count	
Number of cleaving	When the [Blade Wear Detection Method] is set to “Cleaving Count,” this will be displayed. According to the set threshold, the fusion splicer will show an alarm.
Incorrect Blade Position	ON/OFF setting enables or disables the warning that the cleaver blade height is wrong. If “OFF” is selected, no warning is displayed.
Low Battery	Sets the value for remaining cleaver battery capacity before replacement. The splicer communicates with the cleaver to monitor the battery status and inform the operator of the need for cleaver battery replacement.
Others	
Error Indicator on Cleaver	ON/OFF setup of the display of cleaver error warnings on the cleaver. If “OFF” is selected, no warning is displayed on the cleaver.
Device Name	Assign names to paired cleavers.

*1 The wear of blade

The right figure shows the occurrence rate of bad cleaving.
According to the graph, the rate is increases gradually.
The recommended threshold value for determining an expanded position is below.
- Number of Cleaving Errors: 3 times
- Number of Cleavers: 10 times



Stripper Settings

The stripper's heating temperature is automatically updated via wireless link when you switch fiber types on the splicer.

Parameter	Description
Heat Settings	
Heat Parameter Control	Selectable Heating Control Modes: "Splice Mode" or "Stripper" Splice Mode The RS03 strips the fiber coating using the specific values configured in the [Splice Mode] of the fusion splicer. In this mode, all buttons on the RS03—except for the Power button—will be disabled. Stripper The RS03 heats the fiber using the pre-set values stored directly in the device. In this mode, any changes to the settings must be made using the buttons on the RS03.
Heat Temperature Level	You can adjust the heating temperature level from 1 (Low) to 4 (High).
Heat Finish Time	You can set the heating time up to a maximum of 60 seconds.
ECO Settings	
ECO Mode Control	Select which device controls the power-saving features (Eco Mode).
ECO Mode	Use this setting to turn the power-saving feature (Eco Mode) on or off.
Temperature Keeping	Set the pre-heating time before Eco Mode starts.
Buzzer Settings	
Buzzer Volume	Adjust the buzzer volume and define the specific conditions under which the alarm will sound.
Power ON	
Power OFF	
Heat Finish	
AUTO Shut Down	
End Of Charging	
Alarm Settings	
Blade Replacement	To maintain stripping quality, set the Blade Replacement Counter. When the usage exceeds the limit, the "Stripper" indicator changes color to alert the operator.
Low Battery	When the battery falls below the set level, the text "Stripper" on the Ready screen will change color to notify you that charging is necessary.
Others	
Auto Shut Down Time	To extend battery life, the RS03 includes an Auto Power Off function. You can adjust the time setting to ensure the device shuts down automatically during periods of inactivity.
Device Name	Assign a Name to the RS03

- When [Heating Control] is set to ON, all buttons on the stripper—except for the Power button—will be disabled.
- It is recommended to use Power-Saving Mode when operating the device on battery power.

Guide

The splicer has a built-in instruction manual, which shows basic operation of the splicer.

Item	Descriptions
New Features Introduction	
Intelligent Alignment Control	This section introduces the new features included in this product.
Mobile Battery Charging	
Splice Coach	
Custom Splicer Setup	
GPS feature	
Features Introduction	
Auto Mode	Introduces the features equipped on this machine and describes the splicer operation in each Operation Mode
Normal Mode	
Customized Mode	
Auto Tube Heater	
Replaceable V-groove	
Splice on Connector	
Power Supply	
Power Supply Setting	Describes how to supply power to the splicer and how to use battery.
AC Power Supply	
DC Power Supply	
Battery Power Supply	
Battery Level	
Battery Charge	
Splice & Heater Mode	
Splice Mode Selection	Describes how to select and set parameters of the splice or heater modes.
Splice Condition Setting	
Heater Mode Selection	
Heater Condition Setting	
Ribbon fiber splice	
Necessary items	Describes the tools and procedure of splicing and tube-heating with sheath clamp.
Preparation	
Splicing operation	
Protecting Splice Point	

A continuation of instruction list

Item	Descriptions
Single fiber splice	
Necessary items	Describes the tools and procedure of splicing and tube-heating with fiber holder.
Preparation	
Splicing operation	
Protecting Splice Point	
Daily Check	
Fusion Splicer	Describes how to check and clean the splicer and tools.
Optical Fiber Cleaver	
Blade Rotation	
Blade Hight Adjustment	
Ribbon Fiber Stripper	
Single Fiber Stripper	
Maintenance Menu	
Diagnostic Test	Describes how to perform tasks on the Maintenance Menu
Dust Check	
Replace Electrodes	
Fusing Power Calibration	
Stabilize Electrodes	
Setting Menu	
Splice Settings	Describes the settings of the splicer and how to reference stored splice results.
Motion of Wind-Protector	
Brightness / Monitor Angle	
Power saving	
Data Storage	
Others	
Instruction Manual: PDF file	Describes the other settings of the fusion splicer
Wireless Func. CT60	
Wireless Func. RS02/03	
With a smartphone	
PC communication	

If there is an " i " icon on the error display screen, please press it.
Details about the error will be displayed on the monitor.

When an error is in the list below, the fusion splicer repeats the alignment when the operator presses the SET key.

- L-Too Long Fiber
- R-Too Long Fiber
- LR-Too Long Fiber
- L-Too Dusty Fiber
- R-Too Dusty Fiber
- ZL Motor Overrun (Forward)
- ZR Motor Overrun (Forward)
- ZL Motor Overrun (Backward)
- ZSL motor Overrun
- ZSR Motor Overrun
- CL Motor Overrun
- L/R-Bad Fiber Position

When an error is in the list below, the splicer carries out operation which changes with preset values of “Ignore Splicing Error”, when the operator presses the SET key.
See Section [Splice Settings].

- Large Cleave Angle
- Large Fiber Angle
- Cleave Shape NG
- Thin
- Fat
- Bubble
- Dust Burned
- High Loss Estimated

Follow the solution precisely as shown in the list below. If it is not possible to eliminate the problem, the splicer may require service by a qualified service center. Consult the authorized distributor with the following information:

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

Error Message	Reason	Solution
L-Too Long Fiber R-Too Long Fiber LR-Too Long Fiber	・The cleave length (bare fiber part) is too long. ・Dust or dirt is on the objective lens.	・Confirm the setting position of the stripped fiber end on the fiber cleaver. Check the cleave length. ・Execute the [Dust Check]. Clean the lens when dust or dirt exists.
X-Dark Background Y-Dark Background	・Dust or dirt is on the objective lens. ・The LED or Camera might be damaged.	・Execute the [Dust Check]. Clean the lens when dust or dirt exists. ・Consult your distributor.
L-Too Dusty Fiber R-Too Dusty Fiber	・Dust or dirt is on the fiber surface. ・Dust or dirt is on the objective lens. ・[Cleaning Fuse] time is too short or “OFF.”	・Completely prepare the fiber again (strip, clean, and cleave). ・Execute the [Dust Check]. Clean the lens if dust or dirt exists. ・Set the [Cleaning Fuse] time to “150ms”. When splicing carbon-coated fibers, set to “200ms”.

Error Message	Reason	Solution
ZL Motor Overrun (Forward) ZR Motor Overrun (Forward)	・The fiber is not set correctly at the bottom of the V-groove. The fiber is not located in the Camera's field of view. ・The cleave length (bare fiber part) is too short.	・Press RESET key, and set the fiber again to seat it correctly at the bottom of the V-groove. ・Confirm the setting position of the stripped fiber end on the fiber cleaver. Check the cleave length.
ZL Motor Overrun (Backward)	・The taper speed or taper time is set too high.	・Adjust the taper parameters in the splice mode.
ZR Motor Overrun (Backward)	・Only occurs in manual motor operation.	
ZSL motor Overrun ZSR Motor Overrun	・Fiber displacement exceeds sliding travel range.	・Press RESET key and re-position the fiber again to seat it correctly at the bottom of the V-groove.
CL Motor Overrun	・Motor might be damaged.	・Consult the authorized distributor.
Cover Opened	・The wind-protector is opened during the splicing operation.	・Press the RESET key after closing the wind-protector.
ZL/R ZSL/R CL Cover F/R Heater Motor trouble	・Motor might be damaged.	・Consult the authorized distributor.

Error Message	Reason	Solution
Strong Fusing Power	・Unable to calibrate due to a strong fusing.	・Replace the electrodes by using the [Replace Electrodes] function. If this does not eliminate the problem, consult the authorized distributor.
Weak Fusing Power	・Unable to calibrate due to weak fusing.	
Too Left /Right Fusing	・Unable to calibrate due to poor fusing field position (too far left or Right).	
Fiber Separation	・The fiber amount is insufficient.	・Execute the [Motor Calibration] function. If using other splice modes, check the [Overlap] setting in the splice mode.
	・The pre-fuse power or pre-fuse time is set too high.	・Check the [Pre fuse Power] and [Pre fuse Time] settings in the splice mode.
L/R-Bad Fiber Position	・The fiber is not set correctly at the bottom of the V-groove.	・Press the RESET key, and re-position the fiber again to seat it correctly at the bottom of the V-groove.
No Fusing Discharge	・Fusing Discharge did not occur.	・Assure the electrodes are in proper position. ・Replace the electrodes. ・Consult the authorized distributor.
Large Cleave Angle	・Bad fiber end-face.	・Check the condition of the fiber cleaver. If the blade is worn, rotate the blade to a new position.
	・[Cleave Limit] is set too low.	・Increase the [Cleave Limit] to an adequate limit.

Error Message	Reason	Solution
Cleave Shape NG	・Bad fiber end-face.	・Check the condition of the fiber cleaver. If the blade is worn, rotate the blade to a new position.
Fusing Discharge Delayed	・Fusing Discharge is delayed	・Assure the electrodes are in proper position. ・Execute the [Stabilize Electrode] function. ・Replace the electrodes.
Thin Fiber	・Inadequate fusing power	・Calibrate the fusing power with the [Fusing Power Calibration] function.
	・Pre-fuse power or time is set too high	・If using the Special mode, adjust or initialize [Pre fuse Power] or [Pre fuse Time] settings. In normal splice mode, the pre-fuse is fixed and cannot be adjusted.
	・Insufficient [Overlap] setting	・If using the Special mode, adjust or initialize [Overlap] setting. For normal splice mode, the overlap is fixed and cannot be adjusted. ・Execute [Motor Calibration] function in the maintenance menu to calibrate the stuff amount.
Fat Fiber	・Too much [Overlap] setting	
Too Tapering Fiber	・Too much fiber taper.	・If using the taper splice function, the error message may appear, meaning the fiber is tapered too much.
Bubble	・Bad fiber end-face.	・Check the condition of fiber cleaver. When the blade is worn, rotate the blade.
	・Pre fuse・ power or time is set too low	・If using the Special mode, adjust or initialize [Prefuse Power] or [Prefuse Time] settings. For normal splice mode, the prefuse is fixed and cannot be adjusted.
Large Dust Burn	・Bad fiber end-face.	・Check the condition of the fiber cleaver. If the blade is worn, rotate the blade to a new position.
	・[Cleaning Fuse] time is too short or “OFF.”	・Dust is still present after cleaning the fiber or the fuse. Clean fiber thoroughly or increase [Cleaning Fuse Time]
Large Fiber Offset	・[Offset Limit]is too strict	・Check the discharge condition settings.
	・Fiber is not seated in V-groove	・Reposition the fiber holder.
	・V-groove is dirty	・Clean the V-groove and reset the fiber.
	・Fiber surface is dirty	・Re-strip, clean, and cleave the fiber.

Error Message	Reason	Solution
High Estimated Loss	・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.
	・Bad fiber end-face.	・Check the condition of the 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	・Execute the [Dust Check]. If dust or dirt exists, clean the lenses.
	・Bad electrode condition.	・Replace the electrodes if they appear worn (rounded tip shape), dirty, or bent.
	・Inadequate fusing power.	・Calibrate the fusing power with the [Fusing Power 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.
	・Inadequate fusing parameters in special mode	・Confirm the fusing parameters are adequate to splice the fibers.
	・Inadequate estimating parameters in special 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”.

Error Message	Reason	Solution
There is dust after executing the Dust Check function	・Dirt or dust exists in the optical path.	・Clean the objective lenses by referring to section [Cleaning of Objective Lens]. ・When the above processes cannot remove the dirt or dust, consult the authorized distributor.
X Camera Y Camera Trouble	・The Camera may be damaged.	・Consult the authorized distributor.
Heater Oven Trouble	・The ・Heater does not heat.	・Consult the authorized distributor.
Communication error	・Broken the internal device	・Consult the authorized distributor.
Temperature Sensor NG	・Temperature Sensor may be damaged.	・Consult the authorized distributor.
Cover Trouble	・Cannot Open and Close the cover	・Confirm obstructions and fibers are not around the cover. ・Confirm fiber holders are correctly set.

Power Supply

(1) Power does not turn on when pressing ON/OFF key
- The battery may not be charged. Charge is performed.

(2) Power does not turn off when pressing ON/OFF key
- Press and hold the key until the LED color changes from green to red.

(3) Few splices can be made with a fully charged battery pack
- If the power saving function is not enabled, battery power degrades quicker. Always enable it to conserve power usage.
- The battery pack has reached the end of its service life. Install a new battery pack.
- The battery pack uses a chemical reaction. The capacity decreases at low temperatures below 0 °C.
- At high altitude, the fusing discharge current is increased. In this condition, battery power degrades more quickly due to high power consumption.

(4) "CHARGE" LED blinks during battery recharge
- The battery pack has a fault or has reached the end of its service life. Install a new battery pack. If the LED blinks again after installation, contact the authorized distributor. Battery pack has been used in environments where temperatures are high (especially 40 degrees C or more) or where direct sunlight is present.

(5) Method to change the power saving function settings
- Refer to the [Machine Settings] function.

(6) Battery indicator is not displayed.
- At the time of AC adaptor use, a battery indicator is not displayed on the screen.

Splicing Operation

(1) Error message appears on the monitor
- Refer to [Error Message List] function.
- Tap the I icon if it is displayed on the screen to view the troubleshooting methods.

(2) Inconsistent splice loss / High splice loss
- Clean the V-grooves, fiber clamps, and objective lenses. Refer to the [Dust Check] section.
- Replace the electrodes.
- "High Estimated Loss" error message section in the [Error Message List].
- If the fiber has curl or bend memory, position the fiber so the crown (curve) of the memory is turned downward.
- The splice loss varies according to the cleave angle, fusing conditions, and fiber cleanliness.

If the splice loss is still too high or inconsistent after performing the above-mentioned remedies, contact the authorized distributor Regular service (at least once a year) is recommended to maintain high splicing quality.

(3) Confirmation of splicing procedures
・Refer to [Basic Operation] function.

(4) :The monitor suddenly turned off
・The power saving function is automatically enabled when using a battery pack. The splicer switches to the power-saving state after an extended period of inactivity. Press any key to return to the normal state. To change the time before the splicer switches to the power-saving state, refer to the [Machine Settings] function.

(5) Splicer power suddenly turned off without the “Low Battery” message
・The power saving function is automatically enabled when using a battery pack. The splicer turns the splicer power off after an extended period of splicer inactivity. Press the ON/OFF key to turn the splicer back on. To change the time before the splicer turns its power off, section its power off, select the [Machine Settings] function.

(6) Method to initialize the fusing condition of the Splice mode
・Refer to [Initialization in the edited parameter] in [Splice Menu].

(7) Method to change the limits of the end-face angle and splice loss.
・See Section [Referring or editing splice mode].

(8) Allow splice to proceed despite various errors.
・See Section [Splice settings].

(9) Unable to change splicing time and power
・Unable to change splicing time or power when in [SM AUTO] / [SWR AUTO] / [NZ AUTO] / [DS AUTO] / [MM AUTO] mode.
・Performing fusion splicing calibration optimizes splicing power.
・Try Auto mode. If changes are blocked in non-AUTO modes, settings may be locked..

(10) How to set “pause”
・See Section [Splice Menu].

(11) Estimated splice loss does not match actual loss
・The estimated loss is a calculated reference value.
・Clean the objective lenses.

Tube-heating Operation

(1) :The fiber protection sleeve does not shrink completely
- ·Fiber protection sleeve might not be set to the tube heater properly.
- ·Fiber protection sleeve might not be set to the tube heater correctly.
  - ·When setting the fiber to the heater, do not remove your hands from the fiber until the heater cover closes and the buzzer sounds. If releasing hands from the fiber rapidly, the protection sleeve may not be set to the heatable position.
  - ·If the protection sleeve is not centered between the yellow lines, the protection sleeve might not shrink completely.
- ·Extend the heating time.
  - ·Refer to [Heater Mode].

(2) Heater LED on panel keyboard blinks
- ·Pressing the HEAT key during heating causes the LED to blink. The tube heater is turned off if the HEAT key is pressed again. If, after 2 seconds without pressing the HEAT key again, the LED stays on continuously and the heater returns to its normal state. The LED will turn off when the heat cycle is completed.
- ·If the heating temperature does not reach its input setting, the LED blinks and the alarm sounds. If this happens, contact the authorized distributor.

(3) Fiber protection sleeve adhered to the heating plate after shrinking
- ·Use a cotton swab or a similar soft-tipped object to push and remove the sleeve. If the black coating is removed, contact your authorized distributor.

(4) Method to initialize the heating condition of the Heater mode
- ·See Section [Referring to or editing Heater Mode].

(5) Method to cancel the heating process
- ·RESET key does not cancel the heater. Press the HEAT key twice to cancel the heating process.

Supervising

(1) What functions can be disabled
- ·See Section [Menu Lock Settings].

(2) Method to lock “selection” or “editing” of Splice or Heater mode
- ·See Section [Menu Lock Settings].

(3) Method to set parameters of Splice or Heater mode from a PC
- ·Refer to the communication software “Data Connection” included in the CD-ROM.

(4) Forgot password
- ·Contact the authorized distributor.

Other Functions

(1) Method to hide messages on [READY] screen

・Change the fiber image from X/Y view to X magnified view or Y magnified view by pressing X/Y

(2) Too many repetitions until “Test Finish” indicated in [Fusing Power Calibration]

・The splicer needs to repeat the fusing power calibration after replacing the electrodes or when the environmental conditions change drastically. The number of fusing power calibrations can be set to a specific amount. When the splicer completes the set amount of calibrations, it indicates “Test Finish”. However, this does not mean it is completely calibrated.
The [Fusing Power Calibration] of [Machine Settings] is referred to.

(3) “Test Finish” is never indicated after many repetitions in [Fusing Power Calibration]

・Execute [Stabilize Electrodes] function in [Maintenance Menu]. If the splicer still does not indicate “Test Finish”, replace the electrodes. See section [Replace Electrodes] function.

(4) No fusion power change after [Fusion Power Calibration]

・An internal factor is calibrated and adjusted for the specific fusing power selected. The displayed fusing power in each splice mode does not change.
・The calibration results affect all splice modes.

(5) Method to input different comments after each splice in splice results data

・See section [Splice Memory Comment].Method to check radio frequency regulatory information

・Contact the authorized distributor for further inquiries.

(6) Method to download splice results from splicer to PC

・Refer to the instruction manual “Data Connection” included in the splicer.
Press [F1] key after installing the software to display the instruction manual.
Contact the authorized distributor for further inquiries.

Warranty

1. Warranty period

Please ask the Fujikura authorized distributor of your country about the warranty period of this product.

2. Warranty item coverage

The warrantee covers the Splicer's and Accessories' standard package except for consumables like batteries or electrodes.

3. Not covered by the warranty

Warranty is NOT covered in the following cases:

a. Failures or damages caused by improper conditions, environment, handling, or usage not described in the instruction manual.
b. Damage or malfunction due to modification, disassembly, repairing by not Authorized Fujikura distributor.
c. Damage or malfunction caused by the usage of consumable, accessory, product not approved by Fujikura.
d. Damage or malfunction caused by fires, earthquakes, floods, lighting or other natural disasters, or inappropriate voltage.
e. Consumables such as electrode, battery, blade, rubber, sponge rubber, etc. (Excluding damage or malfunctioning before using just after purchased.)
f. Damage or malfunction caused by drop, dust, dewing, exposure to water.
g. Crack, discoloration, grime at external appearance after using.
h. Serial number is incorrect or not recorded serial number at Fujikura.
i. Travel expenses for a trip of repair requested by customer.
j. Shipping cost for repairing products.
k. In case this product was resold, leased or transported outside the country where the authorized Fujikura distributor sold it.

Please note that during repairs, the memory contents such as splice results and splice settings may be erased.

4. Information required for repair request

Please contact our authorized dealer through the website below.

- https://www.fusionsplicer.fujikura.com/service/index.html

Please include the following information with the item for repair.

(1) Your full name, company, address, phone number, and e-mail address.
(2) Model name and serial number of the splicer.
(3) Problems encountered
- What problems did your splicer encounter and when?
- What is its present operational state?
- Observations, files, images, error messages, etc. relating to the problem.

5. Transporting the splicer

Since the splicer is a high-precision machine, always use the original carrying case for transportation and storage in order to protect it against humidity, vibration and shock. When requesting splicer repair, please send it, along with its accessories, to its original carrying case.

Contact Address

Inquiries concerning products should be made to the authorized distributor or one of the following:

Fujikura Ltd.
1-5-1, Kiba, Koto-ku, Tokyo 135-8512, Japan
General inquiries : +81-3-5606-1164
Service & support : +81-43-484-3962
https://www.fujikura.com

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