

Instruction Manual

Advanced Optical Fiber Cleaver

CT110/111



Thank you for purchasing Fujikura's Advanced Optical Fiber Cleaver.

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 may be updates without notice.

Fujikura

Please consent beforehand.

The software equipped in the cleaver 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.

Moreover, without permission from our company, it cannot be used on the Copyright Act except when used as an individual.

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Safety Information

Thank you for purchasing Fujikura's Advanced Optical Fiber Cleaver. In this instruction manual, the processes and procedures are documented which should be observed in order to use this product safely.

This cleaver has been designed for cleaving glass optical fibers. Cleaving should not be attempted on anything other than a glass optical fiber with this product.

Follow all safety instructions

Read and understand all safety instructions.

Stop using it when it malfunctions

Ask our service centers for repair as soon as possible.

Instruction Manual

Read this instruction manual carefully before operating the machine.

Store this instruction manual in a safe place.

The following symbols are used in this instruction manual to indicate warning and caution for safe use. Learn and understand the meanings of these symbols.



WARNING! / CAUTION!

There is a possibility of death, serious injury, or physical loss if this indication is ignored. Ignoring this indication is an improper use of the machine.



PAY ATTENTION!

In general, a yellow triangle means the associated caution should be observed.

Example:

PAY ATTENTION to hot surface!



DO NOT ...!

Example:

DO NOT disassemble!



DO

A blue circle with a white graphic inside means the associated process is required for safe operation



Example:

You must disconnect the plug!

Safety Information

WARNING / CAUTION

Disconnect the AC power cord from the AC adapter plug or the wall outlet immediately if a user observes the following:



- Fumes, bad smell, noise, or over-heat occurs.
- Liquid or foreign matter falls into this product.
- The Cleaver or AC adapter is damaged or dropped.

If any of these occur, contact our service center for repair. Leaving the cleaver or AC adapter in a damaged state may cause equipment failure, electric shock, or fire and may result in personal injury or death.



The AC adapter supplied with this product is the only adapter approved for use with this product.

Using an improper AC power source may cause equipment damage, fumes, electric shock, or fire and may result in personal injury or death.



Do not disassemble or modify the cleaver or the AC adapter in any way. 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 electric shock, fire, personal injury, or death.,



Connect AC power cord properly to the AC Adapter and to the wall outlet. When inserting the AC plug, make sure there is no dust or dirt on the terminals. Insert the female plug into the AC Adapter and the male plug into the wall outlet until both plugs are fully seated. Incomplete engagement may cause fuming, electric shock, equipment damage, or fire and may result in personal injury or death. Disconnect the AC power cord when the cleaver is not being used.



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 equipment failure, electric shock, or fire and may result in personal injury or death.



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



Do not operate the cleaver near hot objects, in hot environments, in dusty / humid environments, or when water condensation is present on the unit. This may result in electric shock, cleaver malfunction, or poor cleaving performance. When water condensation is present, leave the cleaver powered off and allow to air-dry at room temperature for at least 24 hours.

Safety Information

WARNING / CAUTION



Do not store the cleaver in any place where temperature and/or humidity are extremely high. Such environments may cause damage to the cleaver.



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



The cleaver is a precisely adjusted and aligned instrument. Keep the unit away from strong mechanical shock or impact. Failure to do so will result in misalignment and lead to poor cleaving results. Use the supplied box for transportation and storage. The box will protect the cleaver from damage, moisture, vibration, and shock during storage and transportation.



Always set the cleaver blade to the correct position in the machine. Setting the blade to an incorrect position may cause serious damage to the machine.

If the cleaver blade is replaced, only use the manufacturer-specified part. Failure to do so will result in serious damage to the machine.



The cleaver requires no lubrication. Adding oil or grease may degrade the cleaving performance and damage the cleaver.



This equipment must be repaired or adjusted by a qualified technician or engineer. Incorrect repair may cause fire or electric shock. Please contact the authorized distributor if any problems occur on the machine.



Keep the cleaver free of contaminants. They will degrade the cleave quality and may cause the machine to malfunction.



Do not use the cleaver for anything other than cleaving optical fibers. Using it for any other purpose may damage the cleaver.

RECYCLING and DISPOSAL

In European Union



In accordance with the European Parliament Directive, electrical parts and materials that can be re-used and/or recycled have been identified in order that the use of new resources and the amount of waste going for landfill can be minimised.

In the European Union, do not discard this product as unsorted municipal waste. Contact your local authorities for further information.

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 same as the standard electric products. Follow your local disposal regulations.

General Information

Introduction

The CT110 / CT111 cleavers are designed for use with a single optical fiber. To master the CT110 and CT111, read this instruction manual prior to use.

CT110

The CT110 model is applicable for cleaving fibers having a cladding diameter of up to 250 μ m. This model does not have the angled cleaving unit.



CT111

The CT111 model is applicable for cleaving fibers having a cladding diameter of up to 250 μ m. Angled cleaving is possible using the rotation base.



FH110, FH-100, and FH-70* series fiber holder options are available for the CT110/111.

**Additional accessories required*

General Information

Components

The contents of the standard package are shown; please confirm all items are included.

Advanced Fiber Cleaver

CT110 (without angle cleaving base)		CT111 (with angle cleaving base)	
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Standard Components

Name	Item	Amount
AC Adapter	ADC-21	1pc
AC Cord	ACC-**	1pc
USB Cable	USB-01	1pc
Quick Reference Guide	QRG-11-E	1pc
1.5mm Hex Wrench	HEX-01	1pc
2.5mm Hex Wrench	HEX-02	1pc
Cleave test report	CR-CT110	1pc
Warning and Cautions	WAC-06-E	1pc

Additional Options

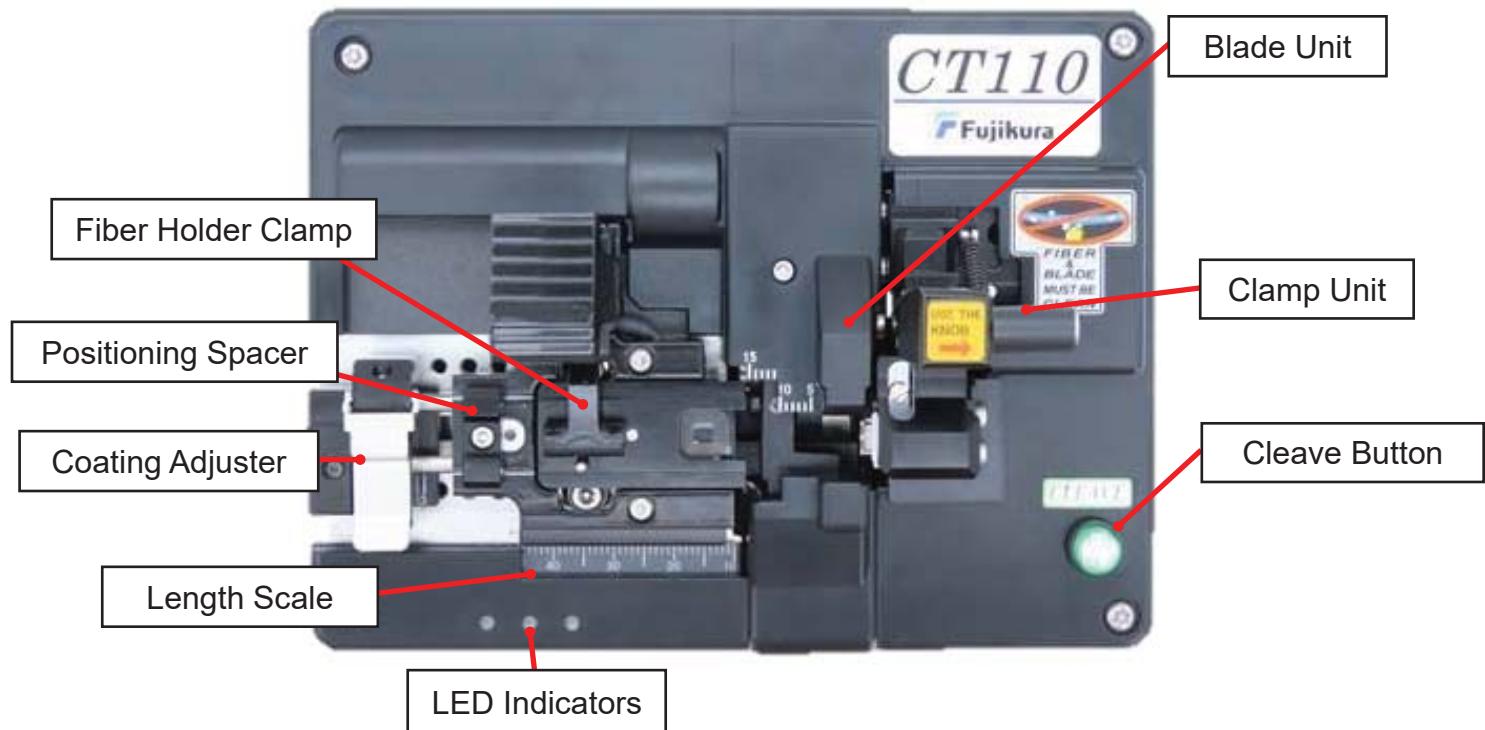
Name	Item	Remarks
Cleaver Blade	CB-06A	Replacement blade
Fiber Holder Adapter Plate	AD-CT110-FH70	Fiber Holder Adapter for FH-70
Fiber Holder	FH110-***	Each Sizes

General Information

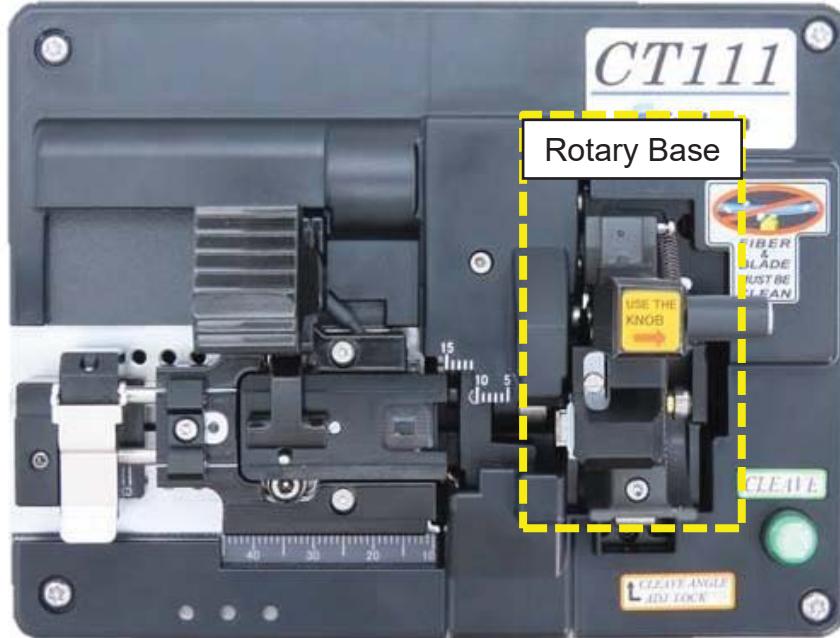
Description

Top

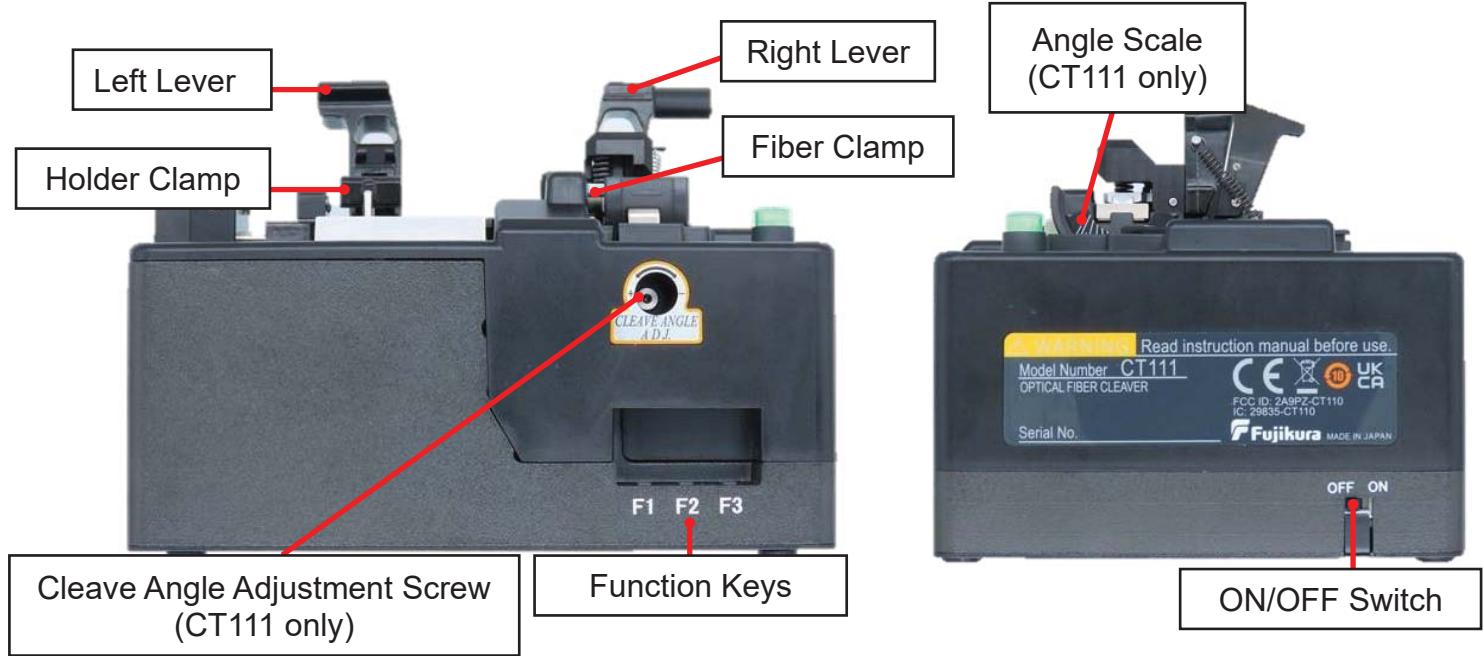
CT110



CT111

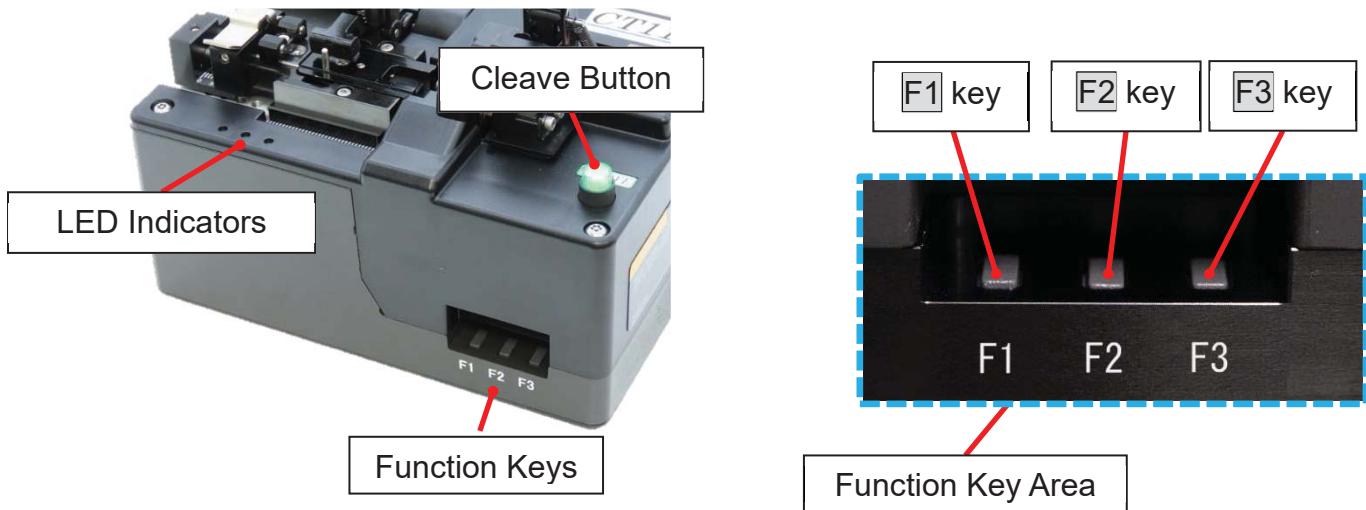


General Information



General Information

The device states can be confirmed using the Function keys and the LED Indicators.



Name	Description
Cleave Button	Starts the cleaving operation.
F1 key	Displays the current blade position. Hold the F1 key to enter “blade position change” mode.
F2 key	Displays the current cleave mode. Hold the F2 key to enter “cleave mode selection” mode.
F3 key	-

Cleaving Operation

Power Supply

AC adapter

1. Only use a genuine Fujikura AC adapter and AC power cord.
2. Plug the AC cord into the wall and plug the cord into the AC port of the adapter block.

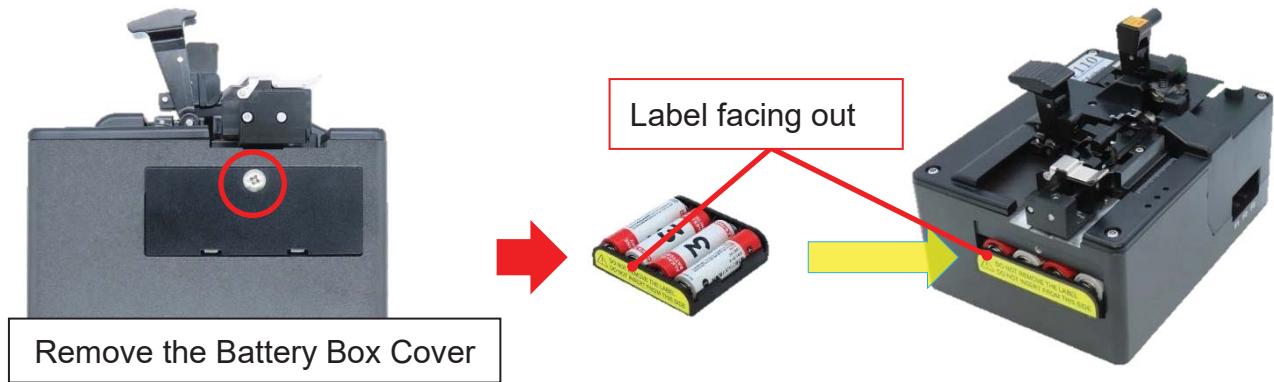


3. Plug the adapter cord into the DC power port of the cleaver.



Battery

1. Remove the battery box cover from the left side of the device.
2. Install 4 AA batteries into the battery carrier, observing polarity.
3. Insert the battery carrier into the device with the label facing outward.
4. Secure the battery box cover.



➤ Both alkaline and Ni-MH rechargeable batteries may be used.



➤ Remove batteries during transportation, storage, or when the unit is not used for an extended period of time.

Cleaving Operation

Power ON/OFF

1. Remove any fiber before powering on the cleaver.
2. Slide the power switch to ON.



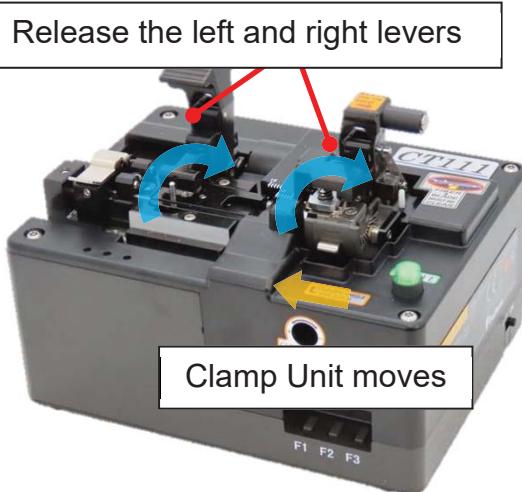
Cleaving Operation

How to Operate

Before cleaving, select an appropriate cleave mode. The 125 μ m cleave mode is selected from the factory.

Cleave the fiber (with fiber holder)

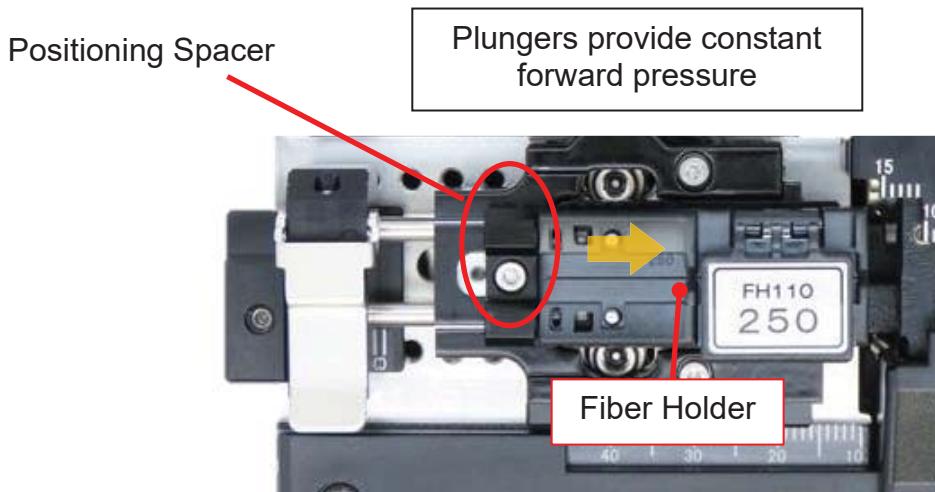
1. Load the fiber into the Fiber Holder, then strip and clean the fiber.
2. Confirm electrical power is supplied and fully release the Right-hand lever. The fiber clamp unit will move to its home position.
※ The fiber clamp unit will not move if it is already in its home position.



3. Fully release the Left-hand lever and set the fiber holder in place on the guide pins of the fiber holder plate.

Functions of the Positioning Spacer

- ① Provides a consistent total fiber length after cleaving by maintaining constant pressure toward the blade.
- ② After releasing the Left-hand lever, it can prevent the fiber holder from being picked up by the clamp pad.



Cleaving Operation

4. Close the Left-hand clamp to secure the Fiber Holder.
※ If the Fiber Holder can provide enough clamping force to hold the fiber at the cleaving tension, the left-hand fiber holder clamp is not necessary.

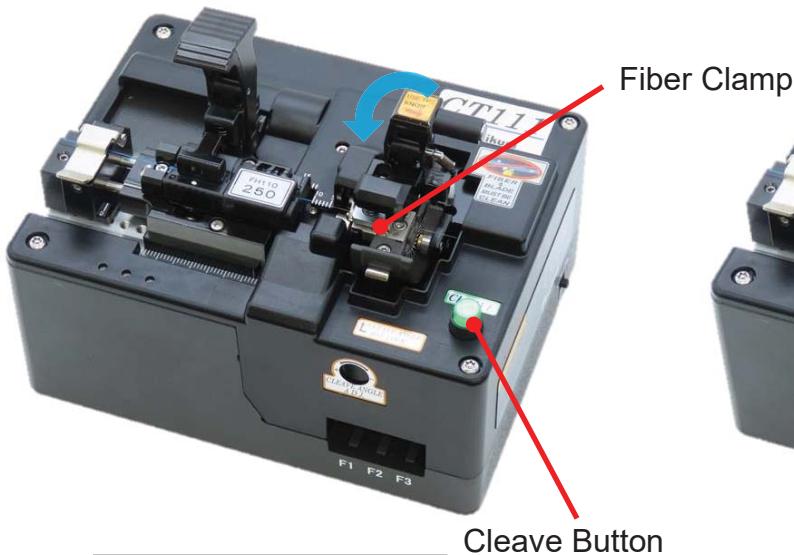
Fiber Holder Clamp



If the total fiber length after cleaving is 12mm, the stripping length must be greater than 27mm. The stripped portion of the optical fiber must fully extend over the V-groove.



5. Close the right-hand lever to clamp the optical fiber.
6. For angled cleaving, rotate the angled cleaving base counterclockwise to twist the optical fiber.



Clamp the optical fiber with the right clamp.



Rotate the Angled Cleaving Base counterclockwise for angled cleaving. (CT111 only)

Cleaving Operation

7. Press the [CLEAVE] button to cleave the fiber.



During the cleaving operation, LEDs will be displayed as shown in the table below.

LED 1	LED 2	LED 3	LED display
●	●	●	LED 2 is lit green: Cleaving.
●	●	●	LED 2 is flashing green: Cleaving successful.
●	●	●	LED2 is flashing red: Cleaving error.

8. After cleaving is complete, open the left-hand lever and remove the fiber holder.
9. If the rotary base is engaged (CT111), return to parallel.
10. Open the right-hand lever and dispose of the optical fiber waste.
When the right-hand lever is opened, the clamp unit will return to its home position.
If repeating the cleave operation, return to step 3.

Applicable fiber

Applicable cladding dia.	φ80 to 250μm
Applicable coating dia.	Φ81 to 2000μm
Fiber length	Total fiber length: 11mm to 44mm Cleave length: 3mm to 44mm

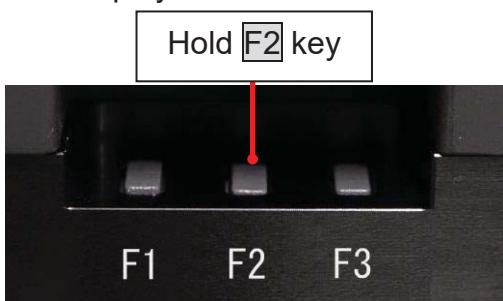
Cleaving Operation

Cleave Mode Selection

Selecting a Cleave Mode

80µm, 125µm and 250µm cleave modes are installed from the factory by default. It's possible to switch between the three primary cleave modes with the following steps:

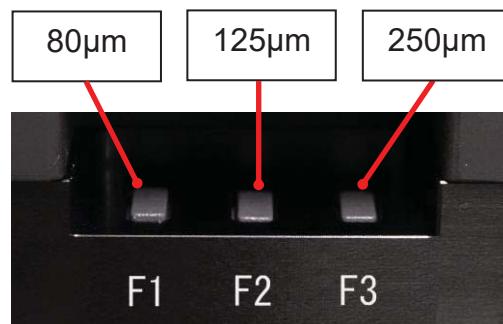
1. Hold the **F2** key to enter the cleave mode selection state. The current cleave mode will be displayed as shown the table below.



LED 1	LED 2	LED 3	LED display
●	●	●	LED 1 is lit green: 80µm cleave mode is selected.
●	●	●	LED 2 is lit green: 125µm cleave mode is selected.
●	●	●	LED 3 is lit green: 250µm cleave mode is selected.

2. While the LED is lit green, select the cleave mode from either **F1** : 80µm cleave mode, **F2** : 125µm cleave mode or **F3** : 250µm cleave mode by pressing the applicable "F-key."

When F1, F2, or F3 is pressed at this stage, the corresponding LED will blink 3 times to confirm the chosen cleave mode has been selected



Example:

LED 1	LED 2	LED 3	LED display
●	●	●	LED 1 flashes green 3 times: 80µm cleave mode is selected.
●	●	●	LED 2 flashes green 3 times: 125µm cleave mode is selected.
●	●	●	LED 3 flashes green 3 times: 250µm cleave mode is selected.

Within this device, different cleave modes can be added and edited using the Data Connection PC software. Refer to [Cleave Settings].

Cleaving Operation

Fiber Holders

The CT110/111 can be used with 3 types of fiber holders. Each fiber holder requires the fiber holder base to be set up accordingly.

Compatible Fiber Holders:



FH110

FH-100

FH-70

※Additional accessory required



Fiber Holder Adapter for FH-70
AD-CT110-FH70

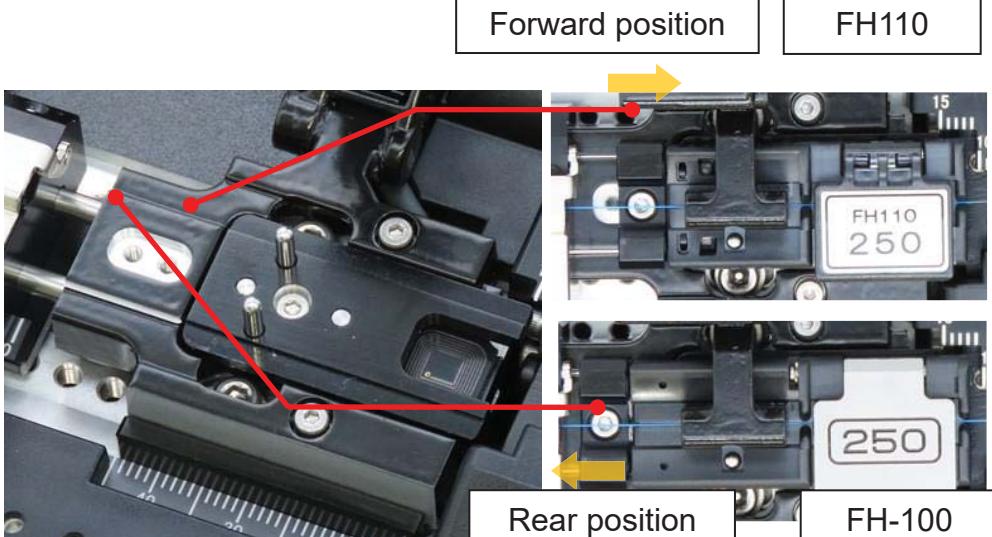
Adjusting the Position Spacer

Each fiber holder type requires the user to adjust the positioning spacer. The positioning spacer has two placement options - adjust as shown below.

Positioning Spacer



HEX-01
1.5mm Hex Wrench



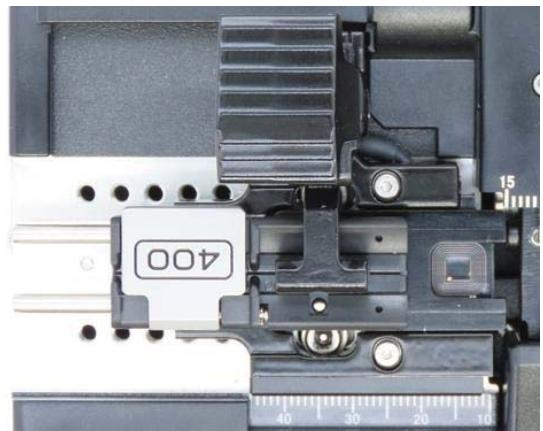
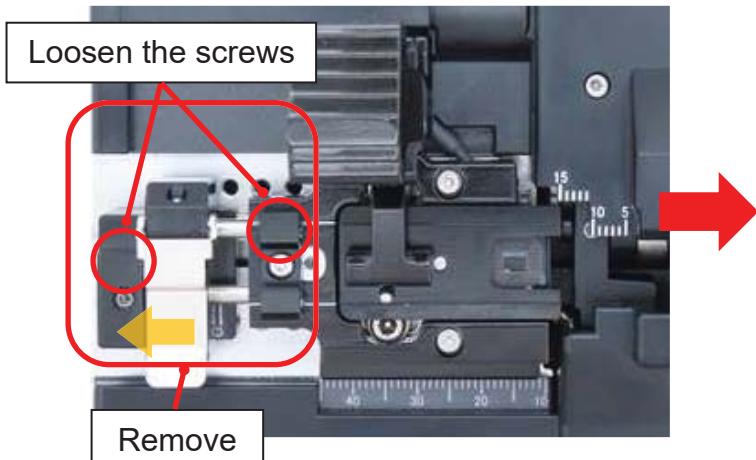
Forward position

FH110

Rear position

FH-100

When 250 μ m cladding diameter fiber is cleaved, the fiber holder must be loaded backward into the FSM-100M/P. The positioning spacer and the coating adjuster need to be removed when the fiber holder is loaded backward. In this case, fiber holder management cannot be used.



Cleaving Operation

Fiber Holder Management (FH110 series only)

Cleave modes can be assigned to each individual FH110 fiber holder. If a cleave mode is assigned to a FH110 fiber holder, the cleaver can be set to detect the fiber holder and retrieve the assigned cleave mode.

[For more information about registering with FH110 fiber holders, refer to the \[Fiber Holder Registration\] section.](#)



➤ Fiber holder management is unavailable when using battery power.

Cleaving Operation

Replacing the Fiber Holder Adapter

FH-70 series fiber holders can be used after replacing the factory fiber holder adapter with the FH-70 Series Fiber Holder Adapter.

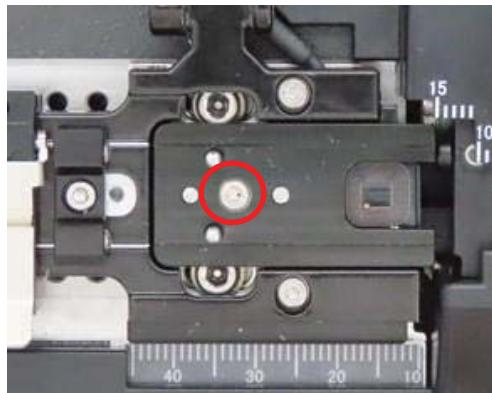
FH-70



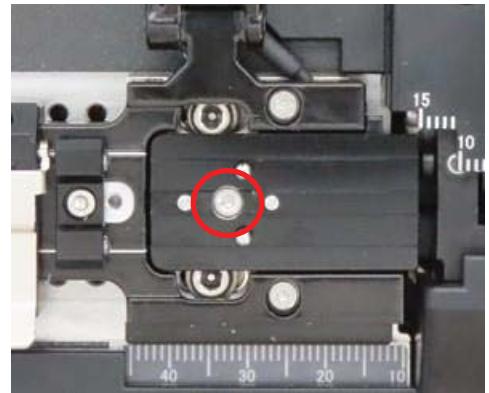
AD-CT110-FH70
Fiber Holder Adapter for FH-70



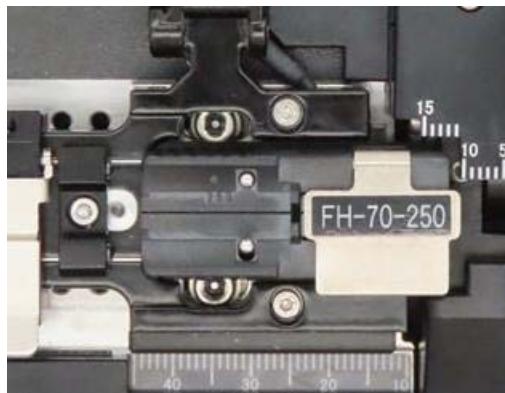
HEX-01
1.5mm Hex wrench



Loosen the screw, then remove the Fiber Holder Adapter.



Attach the Fiber Holder Adapter for FH-70.

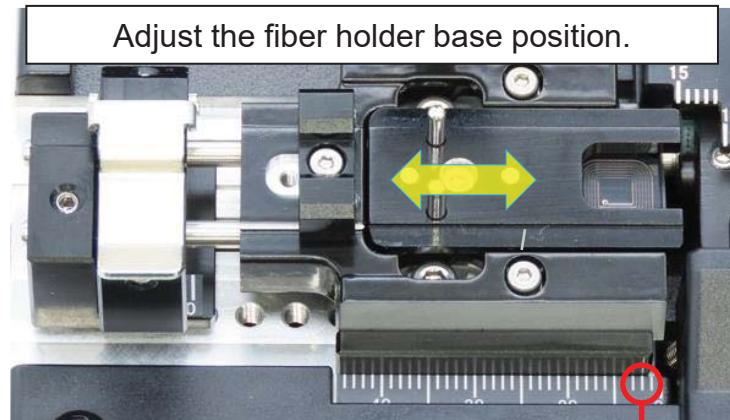
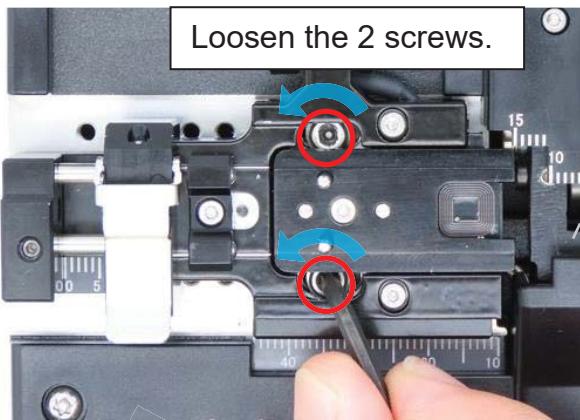


Cleaving Operation

Adjusting the Total Fiber Length

To change the total fiber length, follow the steps below:

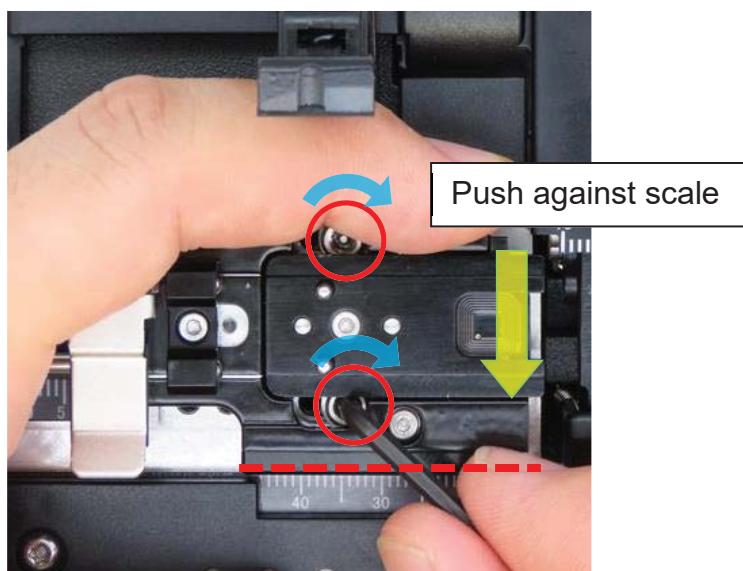
1. Loosen the 2 screws which attach the fiber holder base and align the fiber holder base position with the desired length, as indicated by the scale.



 HEX-02
2.5mm Hex Wrench

Scale

2. Secure the fiber holder base with the 2 screws, while pushing the scale direction.
 - The scale is an alignment reference to ensure correct placement of the base.



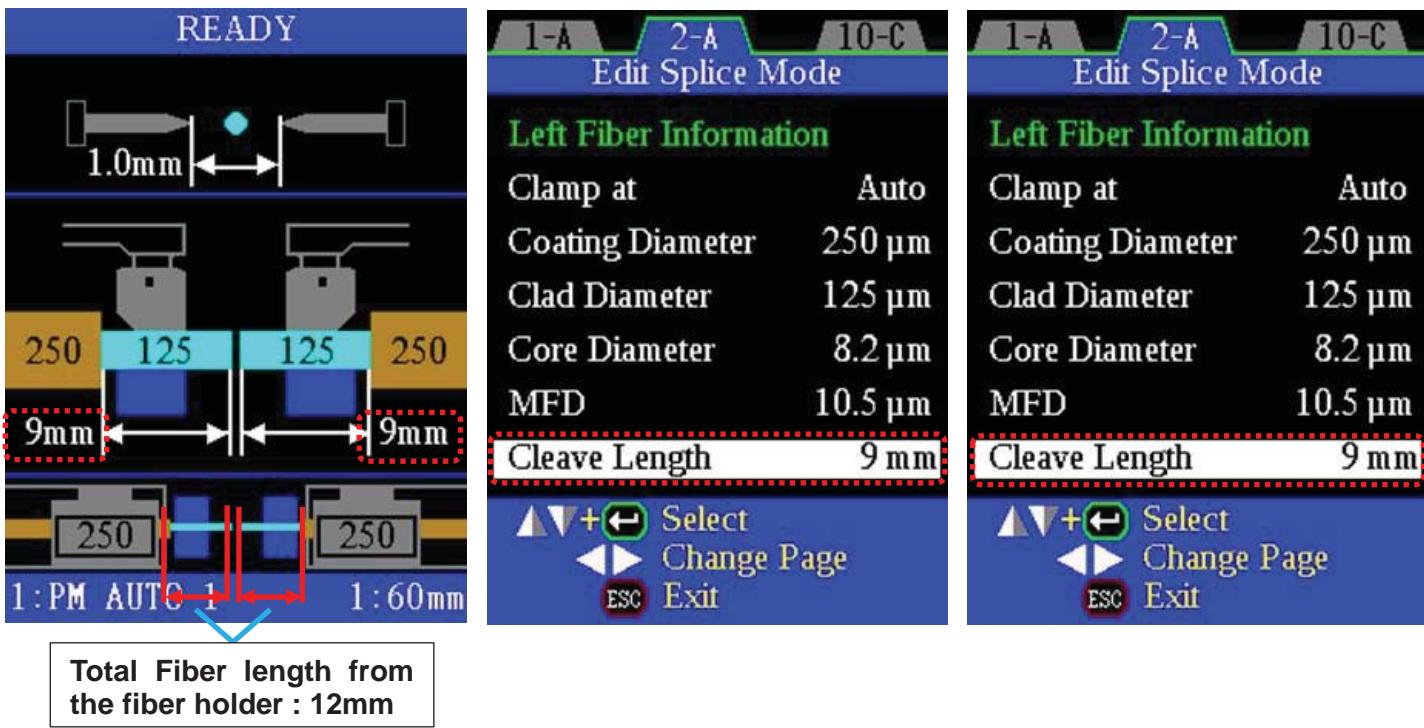
➤ Push the entire fiber holder base unit toward the scale. If not flush to the scale, the fiber holder base may not be parallel to the V-groove base. Poor cleaving results or fiber breakage may result.

Cleaving Operation

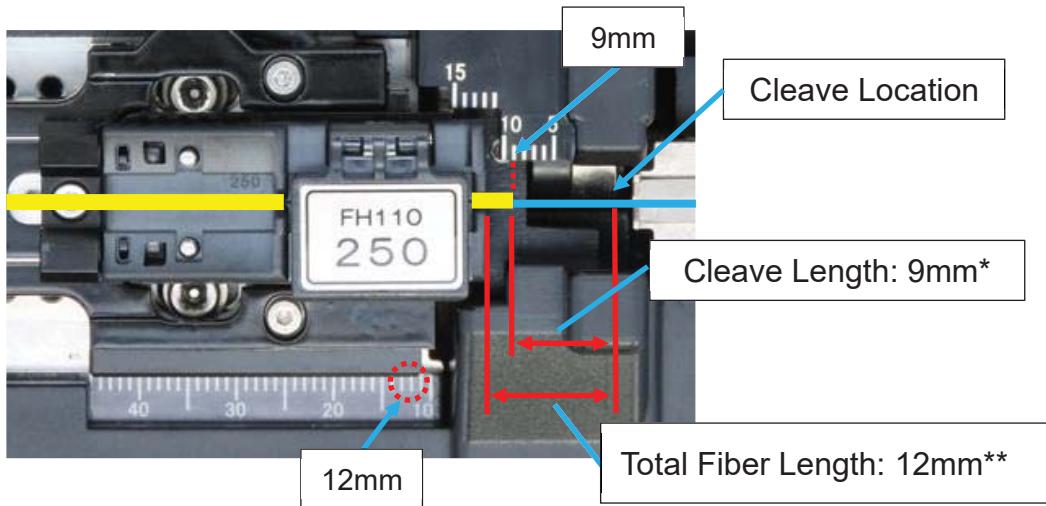
Adjusting the Fiber Holder Base Position

Align the fiber holder base position according to the splicer settings.

Example: Using an FSM-100 series splicer, the total fiber length from the fiber holder is 12mm by default, so the cleave length is set to 9mm.



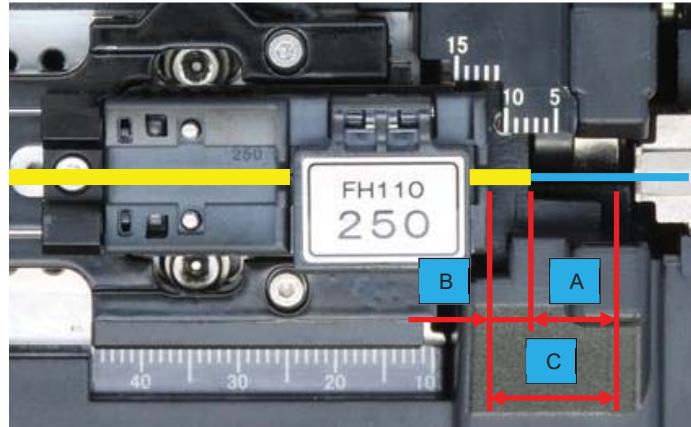
When an FSM-100 series splicer is used in the standard position, set the Holder Base position to 12mm as shown below. The scale on the Fiber Holder Adapter reflects the total fiber length from the fiber holder.



- * “Cleave Length” is defined as the distance between the cleave location and the edge of the fiber’s coating.
- ** “Total Fiber Length” is defined as the distance between the cleave point and the fiber holder’s edge.

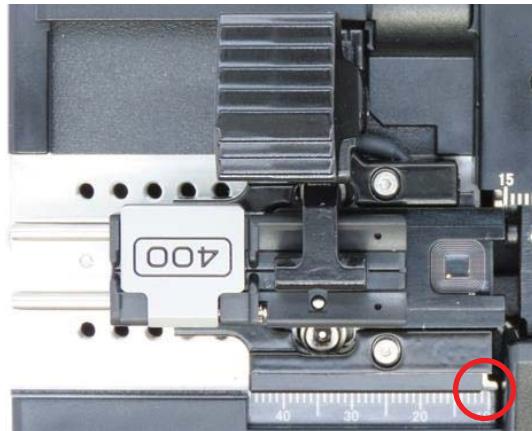
Cleaving Operation

Refer to the following table for cleave length options:



		A	B	C
		Cleave length	Coating length	Total fiber length
Standard	Glass clamp splicing	9mm	3mm	12mm
	Coating clamp splicing	4mm	8mm	
Optional	Glass clamp splicing	8mm	3mm	11mm
	Coating clamp splicing	3mm	8mm	
FH-70	Glass clamp splicing	10mm	3mm	13mm
Optional	Coating clamp splicing	5mm	8mm	

When a fiber holder is loaded backward, refer to the above table and align the fiber holder base according to the desired dimensions.



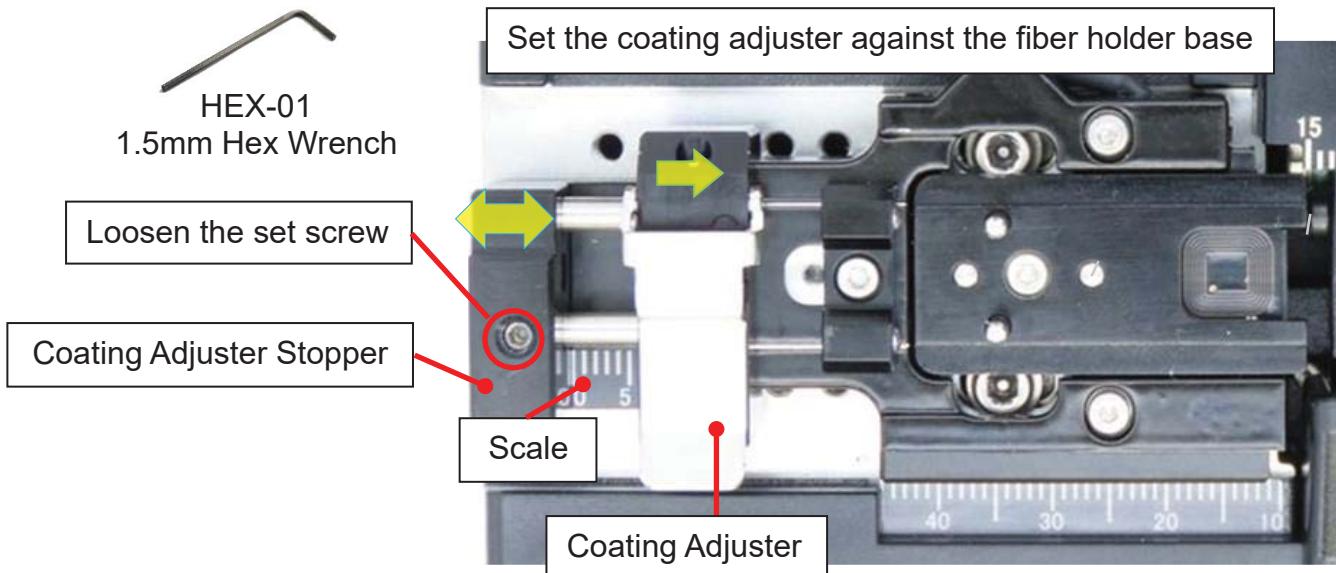
Example: When the total fiber length needs to be 12mm; even if the fiber holder is loaded backward, align the fiber holder base to the 12mm position.

Cleaving Operation

Using the Coating Adjuster

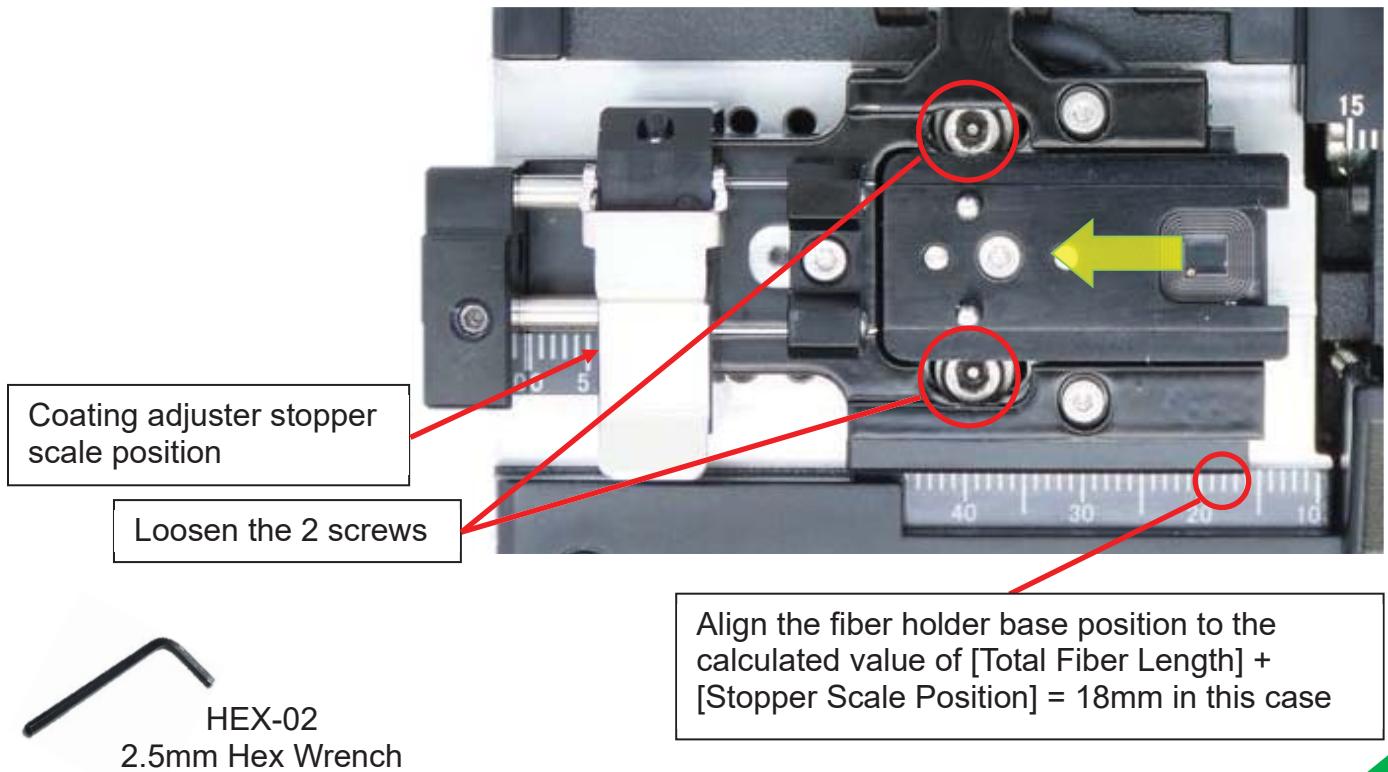
A longer distance from the cleave point to the fiber holder's edge tends to result in cleave angle improvement. By using the coating adjuster, the distance from the cleave point to the fiber holder's edge can be increased while maintaining the desired total fiber length.

1. With the coating adjuster against the fiber holder base, loosen the set screw on the coating adjuster stopper and align it with the scale position corresponding to the desired distance between the cleave and the fiber holder.



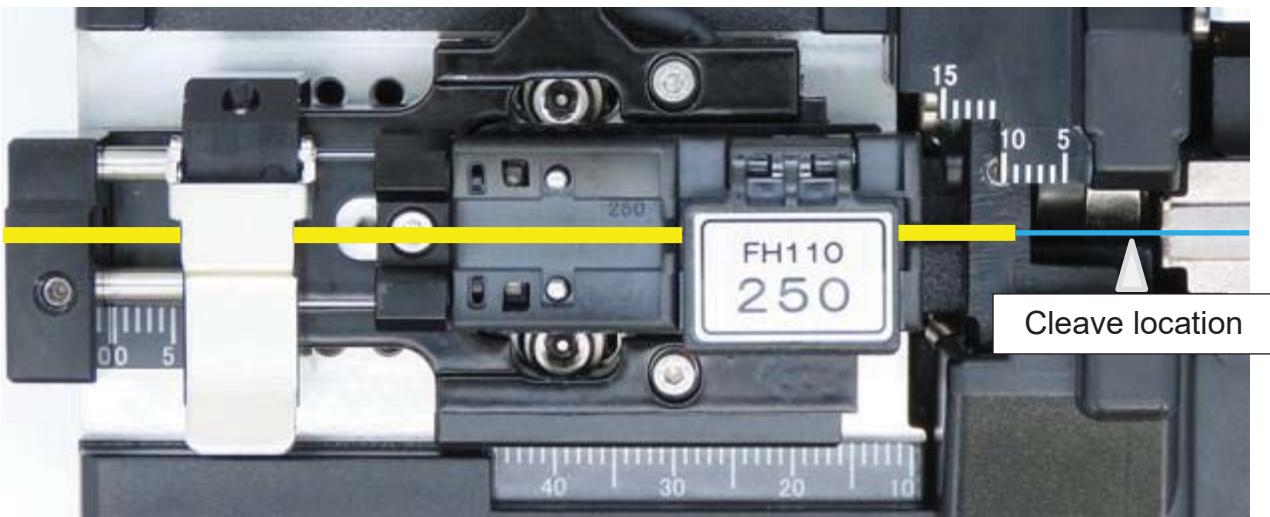
2. Align the fiber holder base position with the adjusted length value. To calculate the "adjusted length value," add [Total Fiber Length] + [Stopper Scale Position]

Example: If the total fiber length is 12mm, and the Coating Adjuster Stopper scale is set to 6mm, set the fiber holder base position to $12\text{mm} + 6\text{mm} = \underline{18\text{mm}}$.

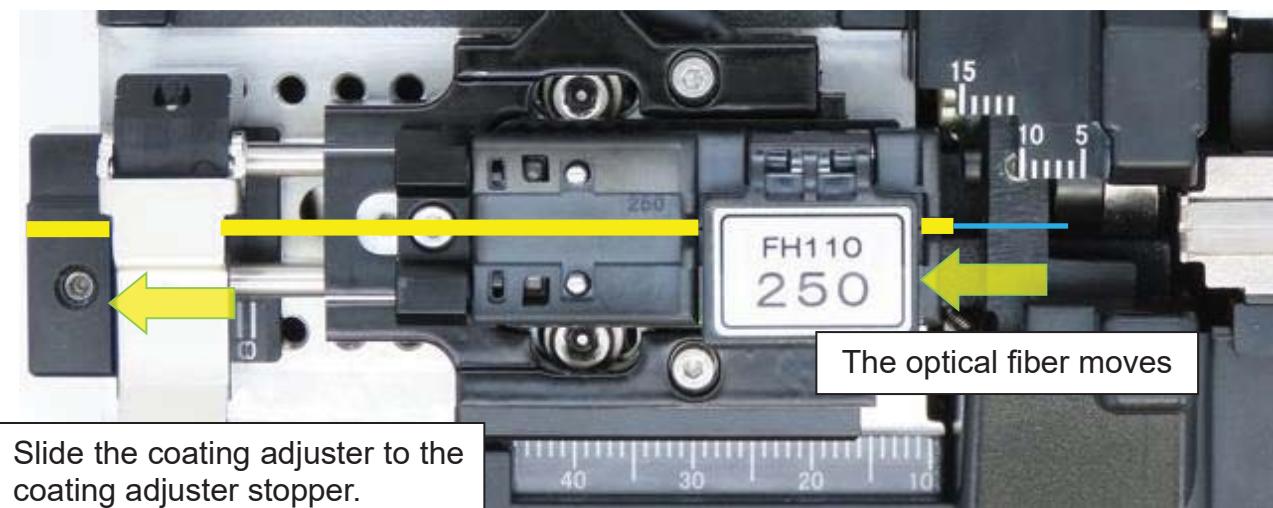


Cleaving Operation

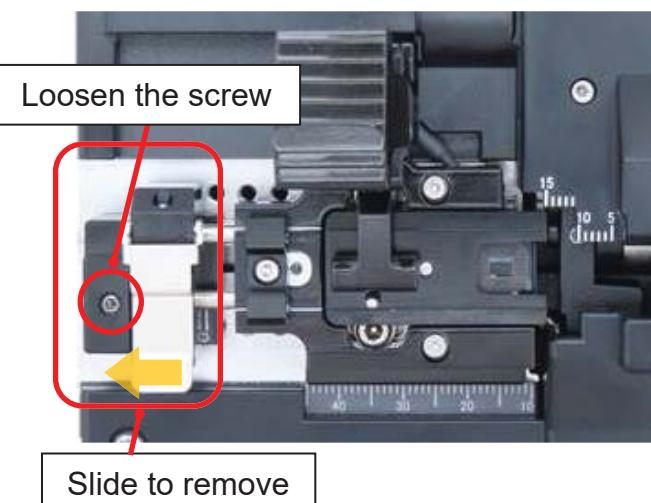
3. Load the fiber holder and cleave. Take care to load the fiber with the coating edge at the desired mark on the cleave length scale.



4. After cleaving, open the left-hand clamp and the fiber holder lid, then slide the coating adjuster to the coating adjuster stopper. Close the fiber holder lid and open the coating adjuster lid.



If there is no need to use the coating adjuster, it can be removed.

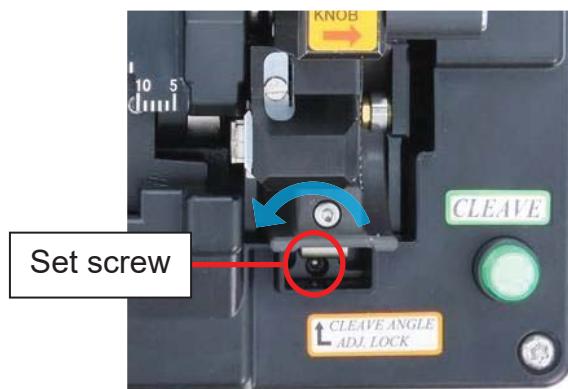


Cleaving Operation

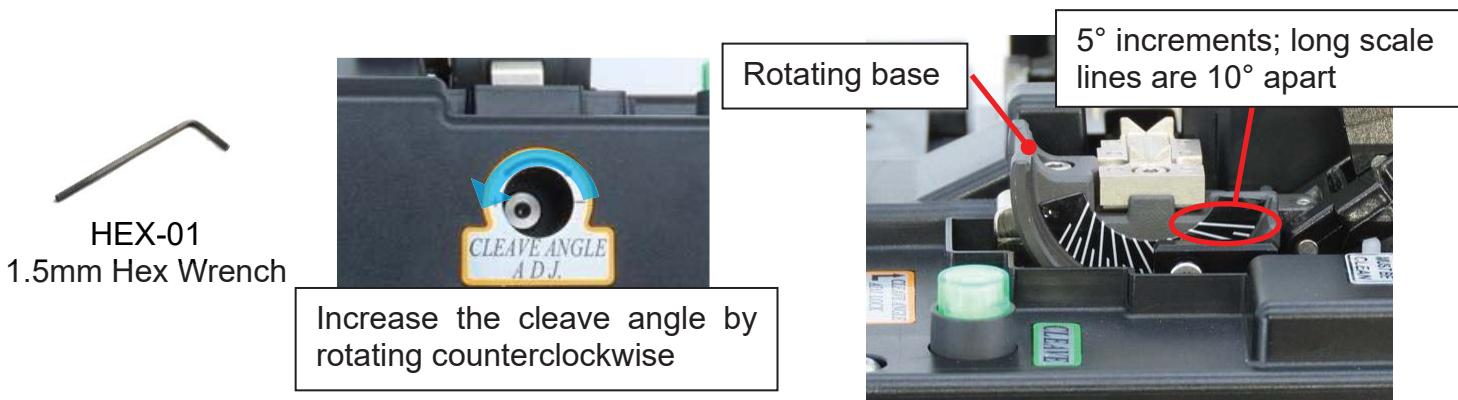
Adjustment for Angled Cleaving (CT111 only)

Observe the following procedure to adjust the cleave angle.

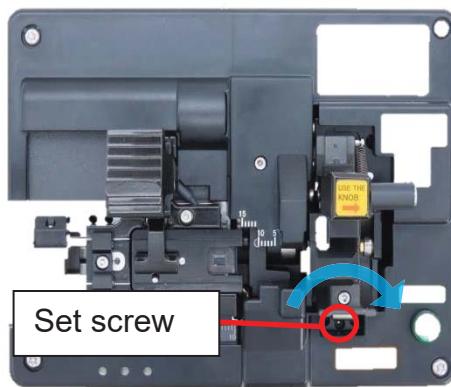
1. Loosen the set screw in front of the fiber clamp unit.



2. Turn the angle adjustment screw while referring to the scale on the side of the fiber clamp unit to set the twist angle. The scale is marked in 5-degree increments.



3. Tighten the set screw in front of the fiber clamp unit.



※ For normal cleaving (0°), tighten the adjustment screw all the way so that the clamp unit cannot rotate.



Cleaving Operation

Adjustment Reference Values

The table below shows the cleave angle target values as a function of fiber cladding diameter and twist angle.

Fiber cladding diameter (μm)	80			125			250		
Tension (gf)	120			230			660		
Cleave angle (degrees)	5	10	15	5	10	15	5	10	15
Twist angle (degrees)	16	33	52	8	17	26	3	6	10

※ The graph shows typical value for a total fiber length of 12 mm. As total fiber length increases, a greater twist angle is required to reach the same cleave angle.

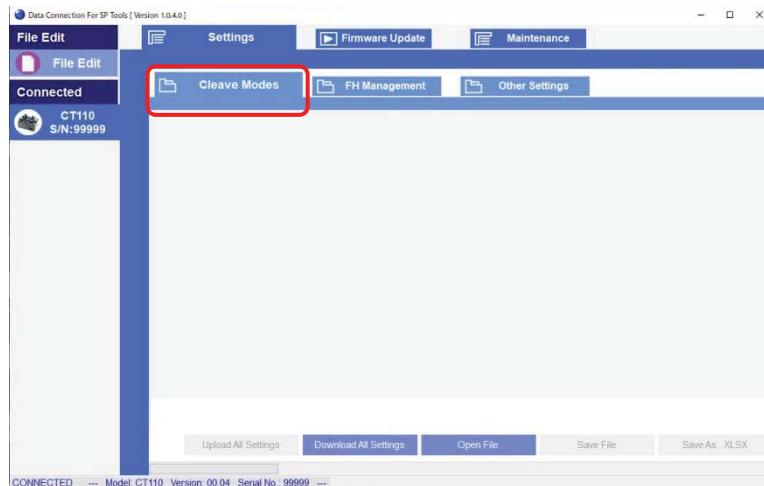
Settings

Cleave Settings

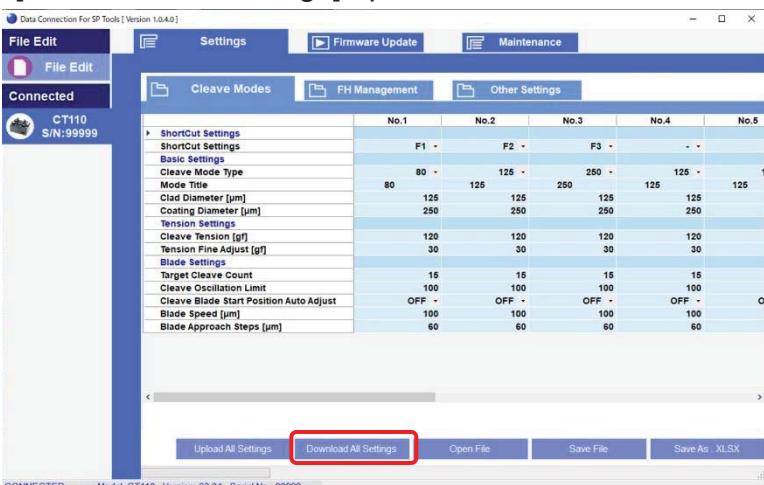
Installed cleave modes on the device can be changed and edited using the PC software.

Changing and editing cleave modes

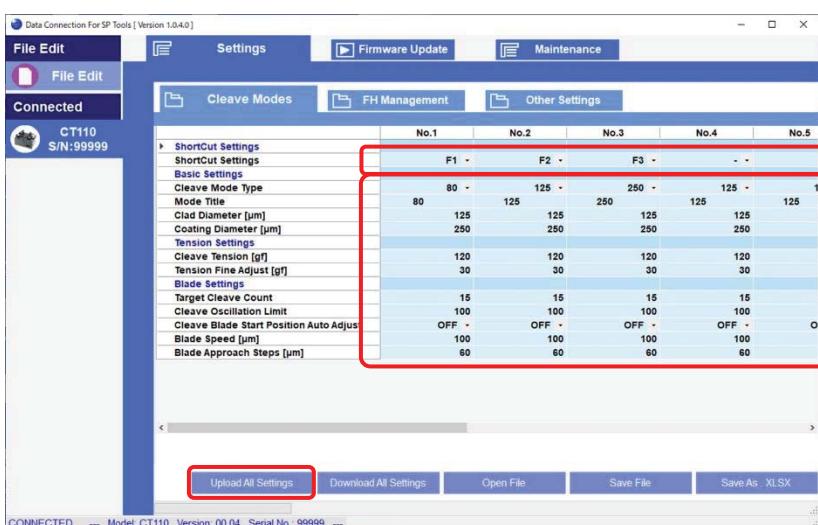
1. Connect the device to a PC via USB, open the “Data Connection for SP Tools” application, and select the [Cleave Modes] tab under [Settings].



2. Select the [Download All Settings] option.



3. Select a Cleave Mode and change the [Shortcut Settings] to F1, F2, or F3 – whichever is desired. Edit the cleave mode by entering any desired parameters under each cleave mode No. From the factory, No.1 is assigned F1, No.2 is assigned to F2, and No.3 is assigned to F3. Select [Upload All Settings] to send the cleave mode updates to the cleaver.



Settings

Fiber Holder Registration (FH110 series only)

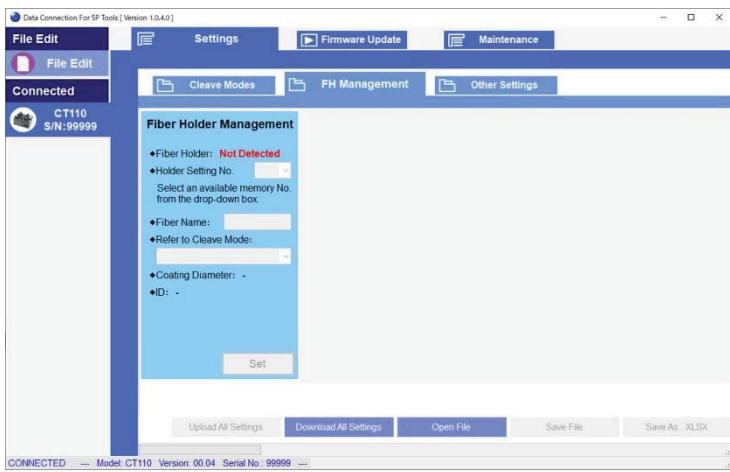
When using FH110 series fiber holders, register a fiber holder to the device to use the RFID cleave mode selection feature and the fiber holder management feature.



➤ Fiber Holder Management is unavailable when operating under battery power.

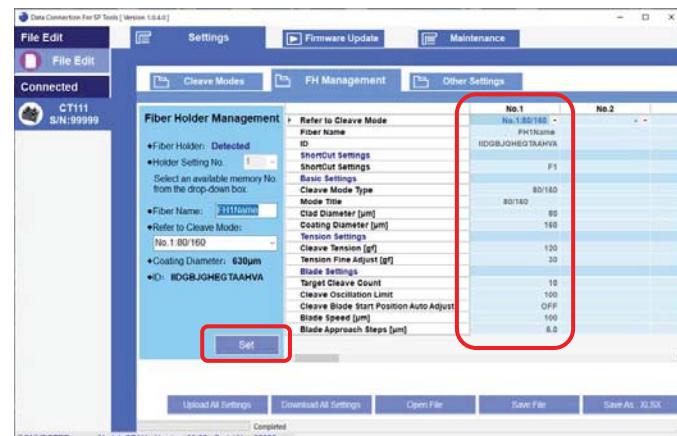
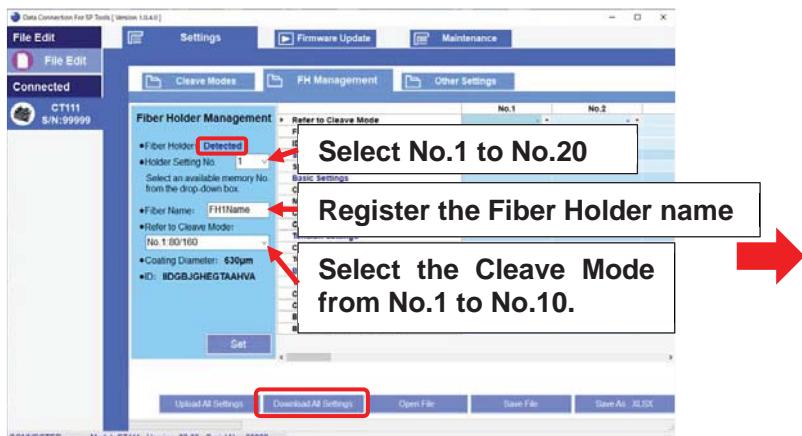
Registering a Fiber Holder

1. Connect the device to a PC, open the “Data Connection for SP Tools” program, and select the [FH Management] tab under [Settings]. Load the fiber holder to be registered into the fiber holder base.



2. Select [Download All Settings] to put the device in to the registration state. Fiber holders can be assigned to positions from No.1 up to No.20. This allows multiple fiber holders to reference the same stripping settings.

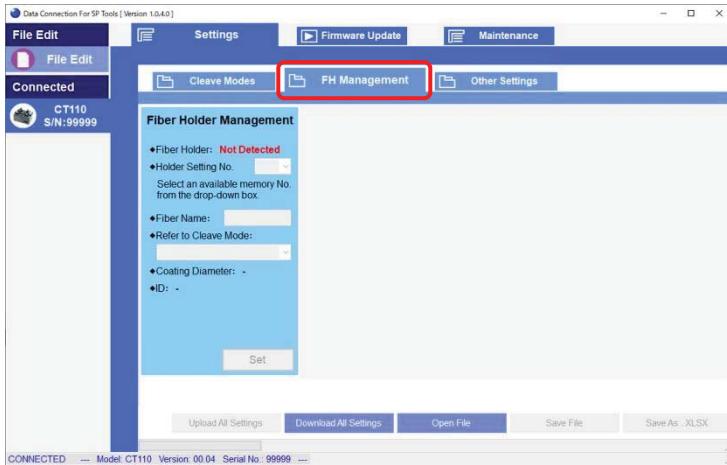
Name the fiber holder and select [Set] to complete registration.



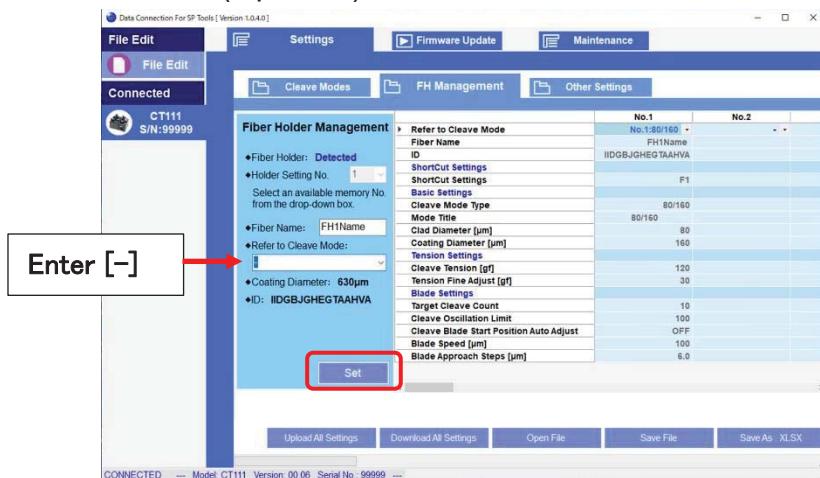
Settings

Cancelling Fiber Holder Registration

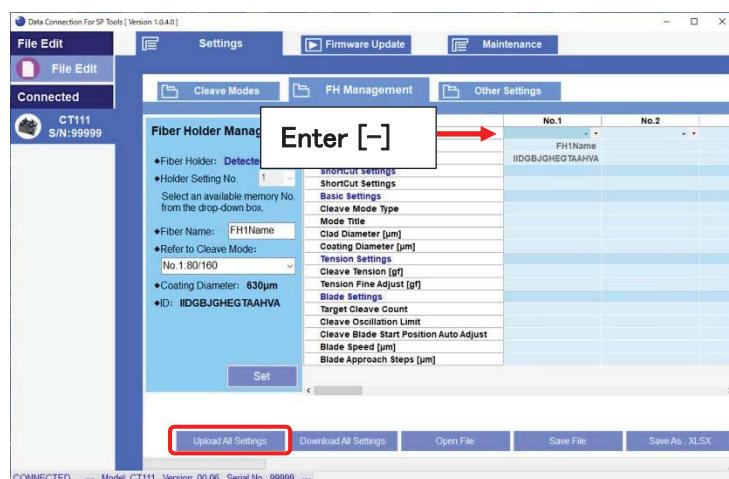
1. Connect the device to a PC, open the “Data Connection for SP Tools” application and select the [FH Management] tab under [Settings].



2. Select [Download All Settings] so the device will be ready to detect the fiber holder. Enter [-] in the [Refer to Cleave Mode] area (as shown below) and select [Set] to remove the memory of the loaded fiber holder. (Option 1)



3. Enter [-] in the [Refer to Cleave Mode] space (as shown below) while the fiber holder is detected on the cleaver. Select [Download All Settings] to update. (Option 2)



Settings

Using Registered Fiber Holders

When a registered fiber holder is placed on the cleaver, it will detect the registered fiber holder and automatically select the cleave mode assigned to the fiber holder.

When a fiber holder is placed on the device, LED3 will show the status as shown below:

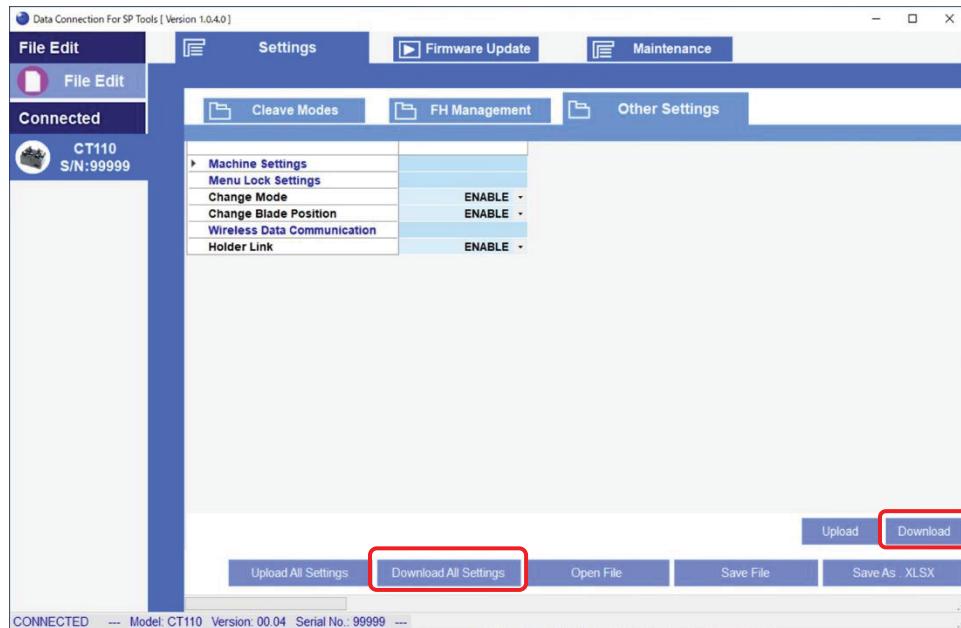
LED 1	LED 2	LED 3	LED display
			LED 3 is lit green when a registered FH110 fiber holder is placed.
			LED 3 is lit red when an unregistered FH110 fiber holder is placed
			All LEDs are OFF when a fiber holder other than an FH110 is placed.
			LED 3 remains lit green when the auto-link function is OFF.

Settings

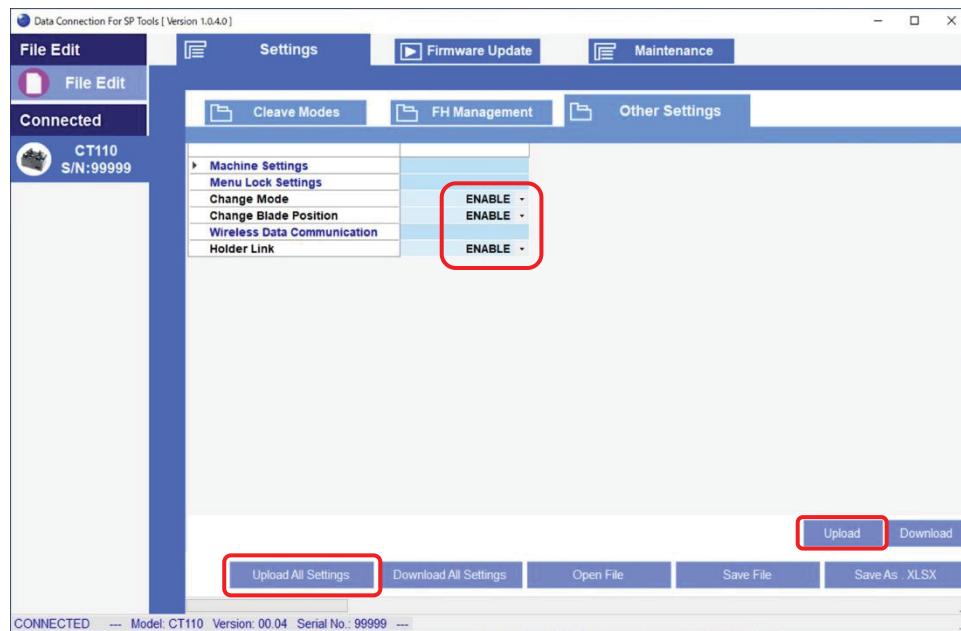
Other Settings

Supervisory settings can be enabled and disabled under [Other Settings].

1. Connect the device to a PC and open the “Data Connection for SP Tools” application. Select the [Other Settings] tab under [Settings] and select [Download] or [Download All Settings].



2. Select [DISABLE] to restrict a function and select [ENABLE] to allow a function. Select [Upload] or [Upload All Settings] to update the cleaver.



Settings

Blade Replacement

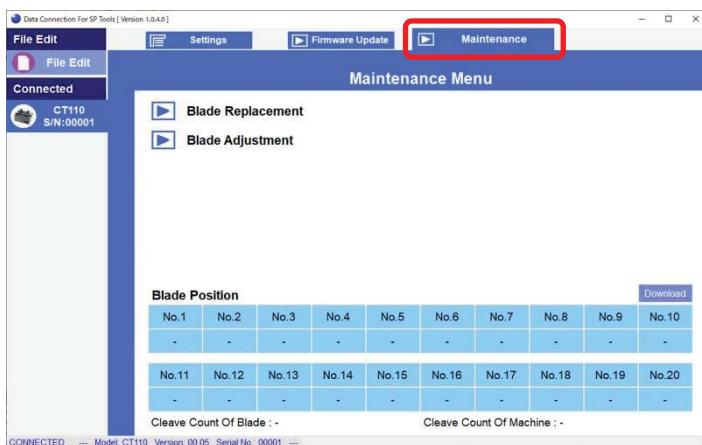
When all positions of the cleaver blade have been used, replace the cleaver blade by the following procedure:

Please use the included 1.5mm hex wrench (HEX-01) for this operation.



- Be careful not to injure hands or fingers with cleaver blade.
- Be careful not to drop anything inside the machine.
- Do not replace with anything other than a (CB-06A) cleaver blade.

1. Connect the device to a PC, open the “Data Connection for SP Tools” application, and select the [Maintenance] tab.



2. Select [Blade replacement] and begin to replace the cleaver blade, following the steps below.



3. Loosen the blade cover screw and remove the blade cover.



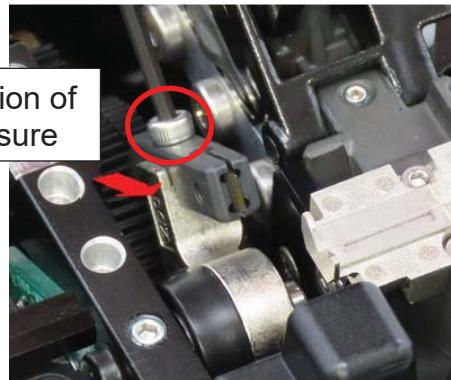
HEX-01
1.5mm Hex Wrench

Settings

4. Remove the cleaver blade.



5. Attach the new cleaver blade to the blade arm.



6. Install the blade cover and tighten the blade cover screw.



7. The [Blade Adjustment] function will show up automatically after replacing the cleaver blade.



Settings

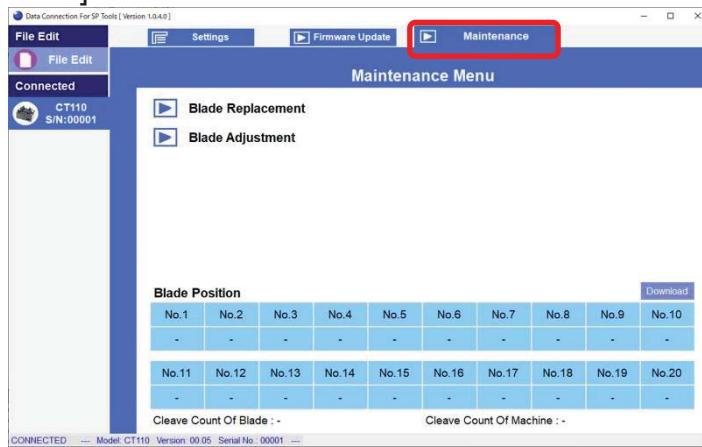
Blade Adjustment

This function is used to adjust the position of the cleaver blade. After the blade is replaced, perform this procedure to calibrate the blade to the correct home position.

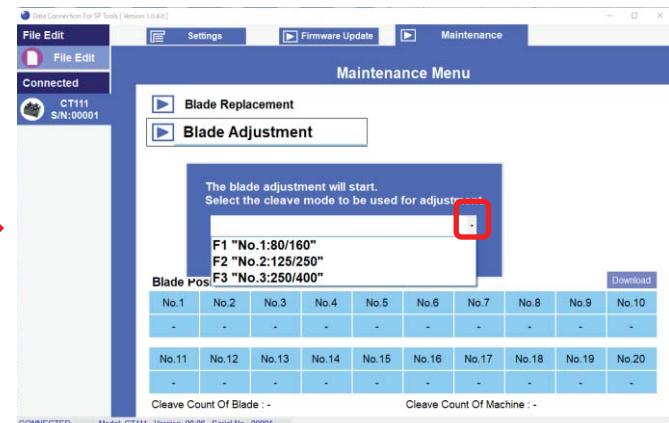
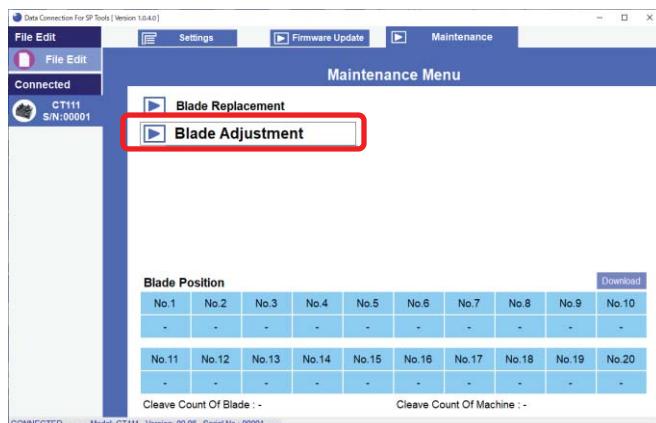


➤ This function is included in “Blade Replacement”.

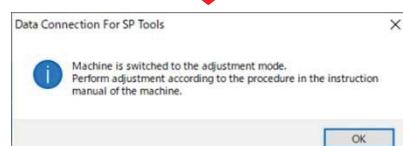
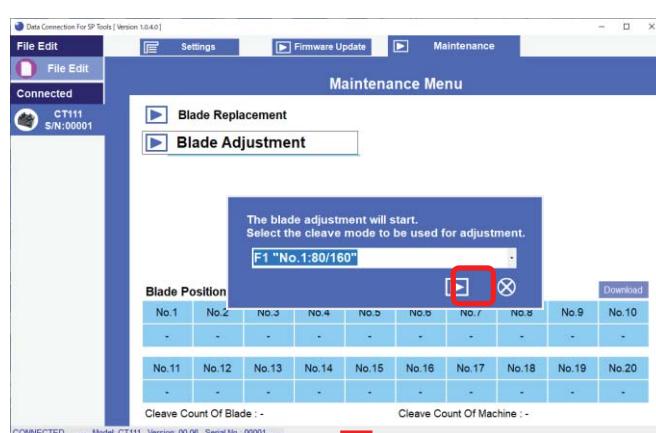
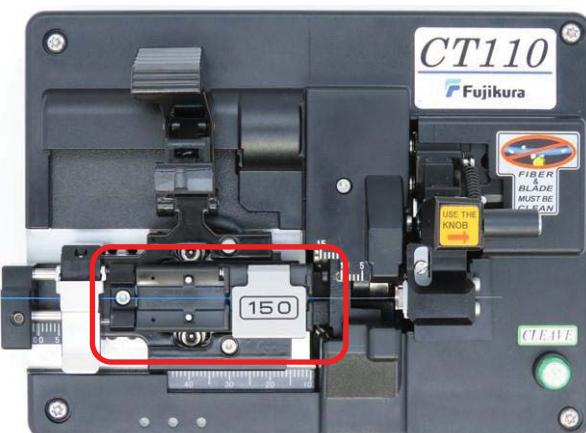
1. Connect the device to a PC, open the “Data Connection for SP Tools” application, and select the [Maintenance] tab.



2. Select [Blade Adjustment] and choose the appropriate cleave mode for adjustment.

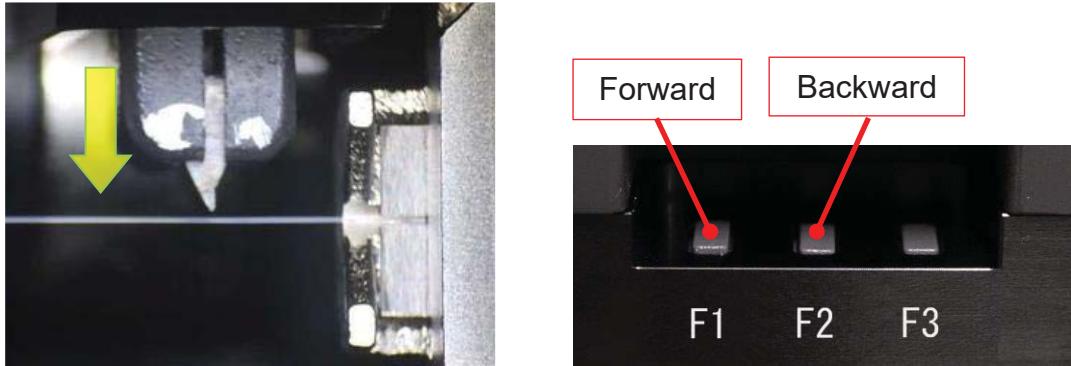


3. Load the fiber holder with a fiber to be cleaved and press the ➤ button to start the adjustment.



Settings

4. Move the blade motor using the **F1** and **F2** keys to be close to the cleaver blade. The final adjustment will be performed by the machine, so the initial blade position does not have to be very precise.



➤ The blade movement may require a long time depending on the start position of the cleaver blade.



➤ Make sure the cleaver blade does not touch the fiber during manual blade drive.

5. Push the [CLEAVE] button to start the adjustment. The blade position will be adjusted automatically by the cleaver.

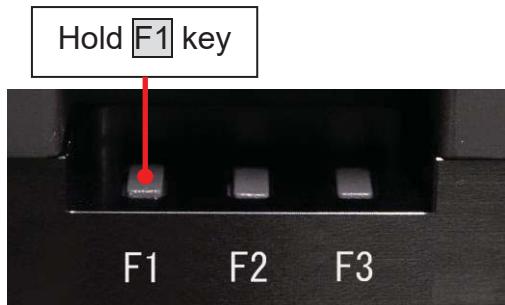
Settings

Blade Position Change

Cleaver blade position can be changed by the motor. Use the following procedure to change the position.

Changing the blade position (on the cleaver)

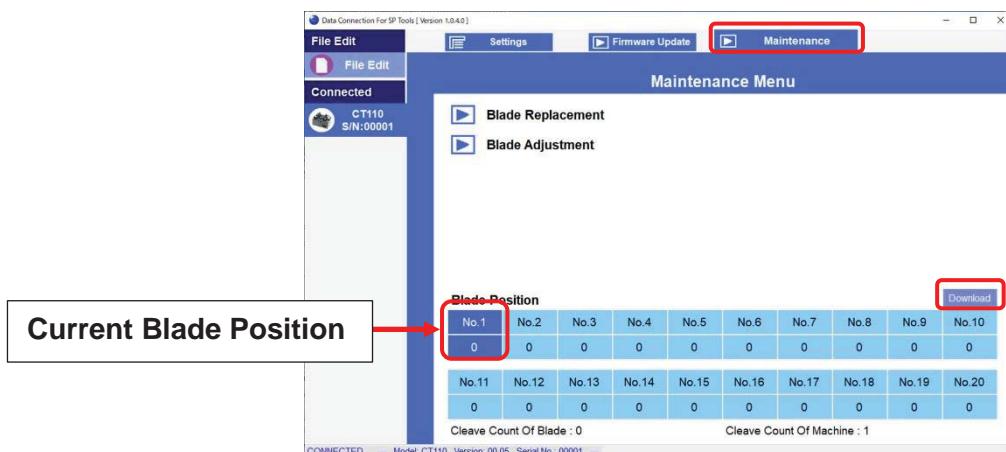
1. Hold the **F1** key, and the cleaver blade will move by 1 position.



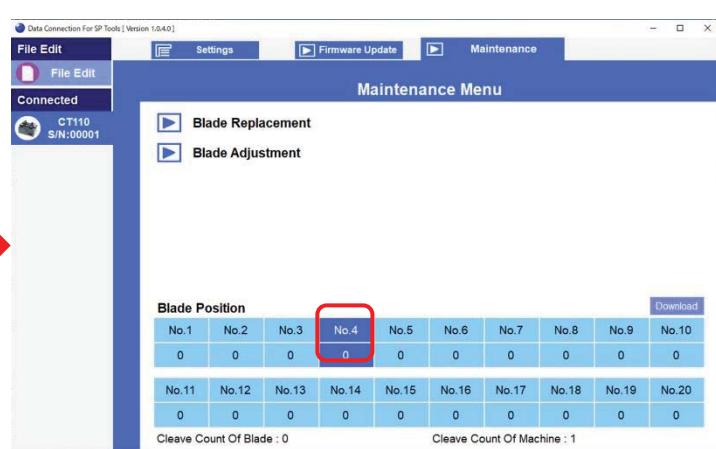
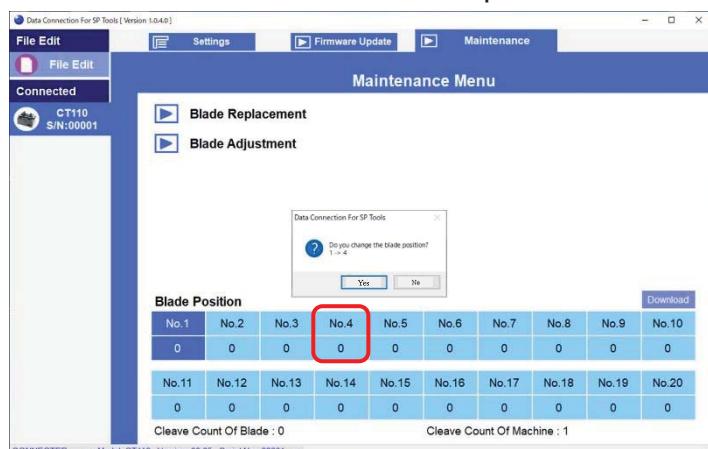
2. When holding the **F1** key at position 20, all LEDs flash red and the cleaver blade will go back to position 1.

Changing the blade position (using a PC)

1. Connect the device to a PC, open the “Data Connection for SP Tools” application, and select the [Maintenance] tab. Select [Download] to display the blade position.



2. Select the desired blade position.

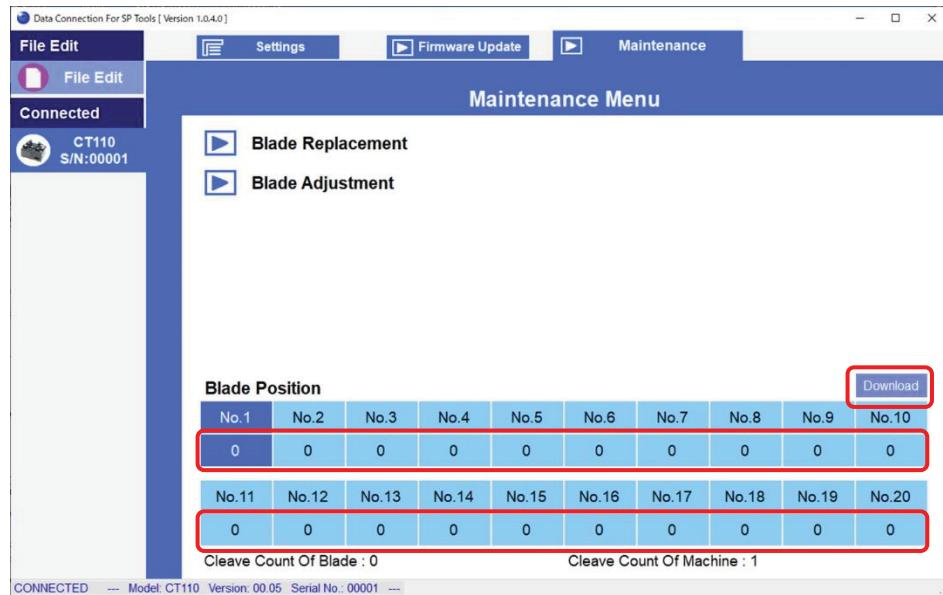


Settings

Cleave Count Display

To check the cleave count at each position, refer the following steps.

1. Connect the device to a PC, open the “Data Connection for SP Tools” application, and select [Download]. Each blade position’s cleave count can be confirmed.



LED Display Codes

The cleaver will communicate its current state by displaying a combination of flashing and/or steady LEDs. Use the following tables to read the unit's LED display codes.

Blade Position Display

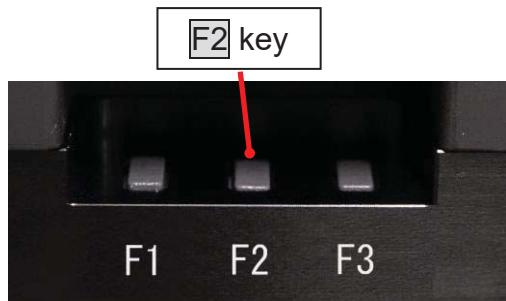
When the **F1** key is pressed, the cleaver blade position will be displayed by a combination of LEDs, as shown below:

LED1	LED2	LED3	LED display:
			LED1, 2, & 3 are lit green: Blade position: 1
			LEDs 1 & 2 are lit green and LED3 flashes in green 4 times: Blade position: 2
			LEDs 1 & 2 are lit green and LED 3 flashes in green 3 times: Blade position: 3
			LEDs 1 & 2 are lit green and LED 3 flashes in green 2 times: Blade position: 4
			LEDs 1 & 2 are lit green and LED 3 flashes in green 1 time: Blade position: 5
			LEDs 1 & 2 are lit green: Blade position: 6
			LED 1 is lit green and LED 2 flashes in green 4 times: Blade position: 7
			LED 1 is lit green and LED 2 flashes in green 3 times: Blade position: 8
			LED 1 is lit green and LED 2 flashes in green 2 times: Blade position: 9
			LED 1 is lit green and LED 2 flashes in green 1 time: Blade position: 10
			LED 1 is lit green: Blade position: 11
			LED 1 flashes in green 4 times: Blade position: 12
			LED 1 flashes in green 3 times: Blade position: 13
			LED 1 flashes in green 2 times: Blade position: 14
			LED 1 flashes in green 1 time: Blade position: 15
			LED 1 flashes in red 4 times: Blade position: 16
			LED 1 flashes in red 3 times: Blade position: 17
			LED 1 flashes in red 2 times: Blade position: 18
			LED 1 flashes in red 1 time: Blade position: 19
			LED 1 continually flashes in red: Blade position: 20

LED Display

Cleave Mode Display

When the **F2** key is pressed, the current cleave mode can be displayed.



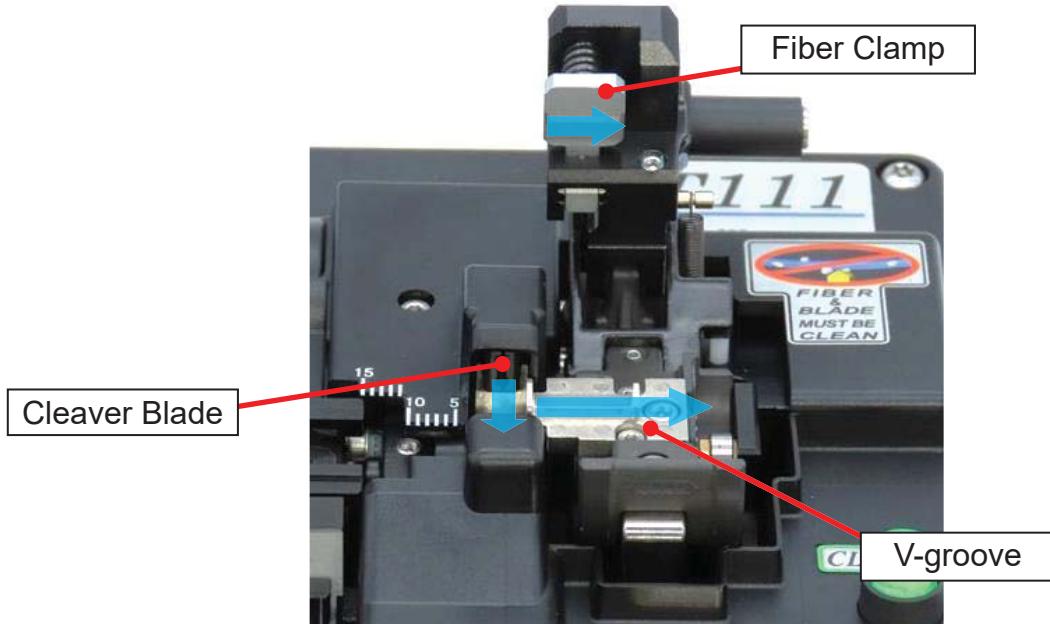
LED 1	LED 2	LED 3	LED display
			LED 1 is lit green: F1 cleave mode is selected.
			LED 2 is lit green: F2 cleave mode is selected.
			LED 3 is lit green: F3 cleave mode is selected.

Maintenace

Cleaning the Cleaver

Observe the following steps:

1. Clean the blade, the fiber clamp and V-groove with an alcohol-soaked cotton swab.
※ When cleaning those parts, follow the directional arrows shown below.



2. If the cleave quality is still poor after cleaning, change the blade by one position following the [Blade Position Change] procedure.
3. If all blade positions have been used, change the blade following the [Blade Replacement] procedure.

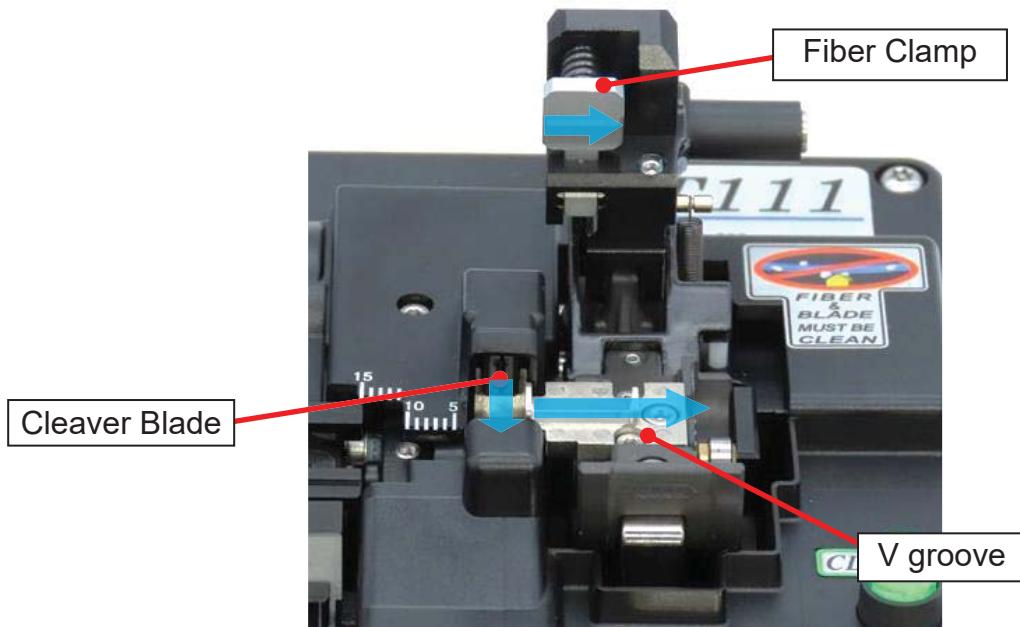
Maintenance

Fiber Breakage Prevention

Breakage under the Right-hand clamp:

Clean the blade, the fiber clamp, and V-groove. (Same steps as previous section.)

※ When cleaning those parts, follow the directional arrows.



- Remaining fiber debris can damage the clamping parts. If the clamping parts are damaged, the fiber can easily break and become unusable.
- Make sure the tension is suitable for the fiber you are using. If the tension is greater than the proper tension, the fiber may break.

Troubleshooting

Q & A

1. Nothing happens when the [CLEAVE] button has been pushed.

- Check if the power switch is ON.
- If using the AC adapter, ensure power is supplied correctly.
- If using batteries, ensure they are installed properly.
- If using batteries, make sure they are fresh.
- The fiber clamp unit may not be in its home position. Try closing and opening the right lever again to reset the clamp unit to its home position.
- There is a possibility that the right lever is not closed. If the right lever is not clamping the optical fiber, the cleaver will not start the cleaving process.

2. Device does not power on when the power switch is ON.

- If using AC adapter, ensure power is supplied correctly.
- If using batteries, ensure they are fresh and installed properly.

3. The right fiber clamp unit does not move to the home position after opening the Right-hand lever.

- Check if the power switch is ON.
- Ensure power is supplied correctly.
- If using batteries, ensure they are fresh and installed properly.
- The fiber clamp unit may already be in its home position.

4. Prevent the right fiber clamp unit from rotating while pulling the right lever

- For normal cleaving, fully tighten the adjustment screw. Refer to “Cleave Angle Adjustment”.
- For angled cleaving, pull the Right-hand lever using more downward force.

5. The fiber is broken somewhere during the cleave action

- Clean the fiber clamp unit and V-groove according to the [Fiber Breakage] section in this manual.
- Excessive tension. Confirm the appropriate tension and adjust it according to the procedure in the [Cleave Settings] section in this manual.

6. The fiber slips from the fiber clamp unit during the cleaving process

- Confirm the appropriate tension to use and adjust it according to the procedure in the [Cleave Settings] section of this manual.
- Clean the fiber clamp and V-groove.

Troubleshooting

7. Unable to cleave

- Inadequate tension. Confirm the appropriate tension and adjust it according to the procedure in the [Cleave Settings] section of this manual.
- There is a possibility of blade degradation. Change the blade position according to the procedure in the [Blade Position Change] section of this manual.

8. [CLEAVE] button LED is not ON

- There is possibility of cleaving failure.
- Change batteries or use AC adapter for power supply.

9. End face of the cleaved fiber is rough

- The tension may be too high. Confirm the appropriate tension and adjust it according to the procedure in the [Cleave Settings] section of this manual.
- If the issue remains, the blade may be worn. Change the blade position according to the procedure in the [Blade Position Change] section of this manual.

10. Fibers are cleaved too quickly because the blade touches the fibers after only a few oscillations

- Adjust cleave blade start position following the procedure in the [Blade Adjustment] section of this manual. If the oscillation count is few, the blade may be worn

11. Cleaving takes a long time

- Adjust cleave blade start position following the procedure in the [Blade Adjustment] section of this manual.

Troubleshooting

Error Display

When errors occur, error codes can be read on the LED display.

LED 1	LED 2	LED 3	LED display
			LED 2 is flashing in red: Battery is empty. Please replace the battery.
			LED 2 is flashing in red 2 times repeatedly: A blade motor error occurred. Ensure that the blade cover is attached properly. If the error persists, contact an authorized distributor.
			LED 2 flashes in red 3 times repeatedly: A tension motor error occurred. Contact an authorized distributor.
			LED 2 flashes in red 4 times repeatedly: A blade position motor error occurred. Contact an authorized distributor.
			LED 2 flashes in red 5 times repeatedly: A tension sensor error occurred. Contact an authorized distributor.

Compliance

FCC notices (U.S. only) and other regulation information

The optical fiber cleaver CT110, CT111 use RFID technology. Typical certification or regulations are below.

United States FCC

FCC ID: 2A9PZ-CT110

Contains FCC ID: QOQ-BGM220S2

This device complies with part 15 of the FCC Rules. Operation is subject to the following two conditions:

- (1) *This device may not cause harmful interference, and*
- (2) *This device must accept any interference received, including interference that may cause undesired operation.*

FCC CAUTION

Changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

Note: This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his own expense.

This equipment complies with FCC radiation exposure limits set forth for an uncontrolled environment and meets the FCC radio frequency (RF) Exposure Guidelines. This equipment should be installed and operated keeping the radiator at least 20cm or more away from person's body.

Compliance

Canada ISED

IC: 29835-CT110

Contains IC: 5123A-BGM220S2

This device contains licence-exempt transmitter(s)/receiver(s) that comply with Innovation, Science and Economic Development Canada's licence-exempt RSS(s). Operation is subject to the following two conditions:

- 1. This device may not cause interference.*
- 2. This device must accept any interference, including interference that may cause undesired operation of the device.*

This equipment complies with ISED radiation exposure limits set forth for an uncontrolled environment and meets RSS-102 of the ISED radio frequency (RF) Exposure rules. This equipment should be installed and operated keeping the radiator at least 20cm or more away from person's body.

L'émetteur/récepteur exempt de licence contenu dans le présent appareil est conforme aux CNR d'Innovation, Sciences et Développement économique Canada applicables aux appareils radio exempts de licence. L'exploitation.

est autorisée aux deux conditions suivantes :

- 1. L'appareil ne doit pas produire de brouillage;*
- 2. L'appareil doit accepter tout brouillage radioélectrique subi, même si le brouillage est susceptible d'en compromettre le fonctionnement.*

Cet équipement est conforme aux limites d'exposition aux rayonnements énoncées pour un environnement non contrôlé et respecte les règles d'exposition aux fréquences radioélectriques (RF) CNR-102 de l'ISDE. Cet équipement doit être installé et utilisé en gardant une distance de 20 cm ou plus entre le tadiateur et le corps humain.

Warranty



Warranty period and limits

If the cleaver becomes out of order within one year from the date of delivery, we will repair it free of charge. However, note that repairs will be charged for the following cases regardless of the warranty period:

1. Trouble or damage due to natural disaster.
2. Trouble or damage due to mishandling.
3. Trouble or damage due to handling in disregard of the operating procedures or instructions described in the instruction manual.
4. Consumable items (cleaving blade etc.)

Please note that memory contents such as cleave results may be lost depending on the kind of repair.

Necessary information needed for repair

Include all documentation with the cleaver, and inform us of the details below:

1. Your full name, section, division, company, address, phone number, fax number and e-mail address.
2. Model name and serial number of the cleaver.
3. Problems encountered
 - a. What problems does your cleaver exhibit and when?
 - b. What is its present operational state?
 - c. The state of the display and the contents of the relevant error message etc.

Transporting the cleaver

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

Before shipping the cleaver

Please consult an authorized distributor before shipping.

Warranty and Contact

Contact Addresses



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

Fujikura Europe Ltd.

C51 Barwell Business Park
Leatherhead Road, Chessington, Surrey KT9 2NY, UK

*General inquiries: +44-20-8240-2000
Service & support: +44-20-8240-2020
URL <https://www.fujikura.co.uk>*

AFL

110 Hidden Lake Circle,
Duncan, SC, 29334, U.S.A.
P.O.Box 3127 Spartanburg, SC 29304-3127

*URL <https://www.aflglobal.com>
General inquiries, Service & support: +1-800-235-3423, Opt. 3*

Fujikura Asia Ltd.

438A Alexandra Road, Block A, Alexandra Techno Park #08-03,
SINGAPORE, 119967

*General inquiries, service & support: +65-6-278-8955
URL <https://www.fujikura.com.sg>*

Fujikura Ltd.

1-5-1 Kiba, Koto-ku, Tokyo 135-8512, Japan

*General inquiries: +81-3-5606-1164
Service & support: +81-43-484-3962
URL <https://www.fujikura.com>*

Fujikura (CHINA) Co., Ltd.

7thFloor, Shanghai Hang Seng Bank Tower, 1000 Lujiazui Ring
Road, Pudong New Area, Shanghai 200120, CHINA

*General inquiries, Service & support: +86-21-6841-3636
URL <http://www.fujikura.com.cn>*