5th

Instruction Manual

Optical fiber recoater

FSR115

Fujikura

Thank you for purchasing Fujikura's optical fiber recoater.
Please read this Instruction manual carefully before use.
Inquiries concerning products, please contact
Fujikura authorized distributors listed in the last page.

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.

Please consent beforehand.

The software equipped in recoater 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 the 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.

---Caution for Air Transport---

This product contains UV curable material.
When this product is shipped by airplane, please remove UV curable material from this product before shipping.
Please follow the direction of the transport company.

Caution for the Recoat-mold handling

This product is equipped with glass molds which is called Recoat-mold.
Please do not scrape the glass molds with a metal piece, a sharp or hard thing. Otherwise, the surface finishing may be damaged and may result in irregular recoating formations.

Please be sure to wipe off the UV curable material on the glass mold after recoating.
Please clean the glass molds with alcohol-impregnated lint-free tissue or gauze. Please do not use any liquid other than alcohol. Otherwise, it may cause deterioraton or breakage of this product.
Please do not put heavy things on the glass molds or push the glass mold strongly or pinch a fiber between the upper and lower glass molds. This may cause breakage of the glass mold or deterioraton of the surface finishing.

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This Recoater has been designed for recoating optical fibers using UV curable material. Recoating should not be done with anything other than an optical fiber with this product.

In this instruction manual, the items which should be observed in order to use this product safely are documented.

Follow all safety instructions

Read and understand all safety instructions.

Stop using it when it malfunctions

Ask our service centers for repair as soon as possible.

Instruction Manual

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

The following alert symbols are used in this instruction manual and machine to indicate warning 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 the plug!

WARNINGS!

	Disconnect the AC power cord from the AC adapter inlet or the wall socket (outlet) immediately if the user observes the following or if the Recoater or AC adapter receives the following faults: • *Fumes, bad smell, noise, or over-heating occurs.* • *Liquid or foreign matter falls into this product.* • *The Recoater or AC adapter is damaged or dropped.* *If they occur, ask our service center for repair. Leaving the Recoater or AC adapter in a damaged state may cause equipment failure, electric shock or fire and may result in personal injury, death or fire.*
	AC adapter supplied with this product is the only adapter approved for use. Using an improper AC power source may cause fuming, electric shock or equipment damage and may result in personal injury, death or fire.
	Connect AC power cord properly to the Recoater (inlet) and wall socket (outlet). When inserting the AC plug, make sure there is no dust or dirt on the terminals. Engage by pressing the female plug into the Recoater (inlet) and the male plug into the wall socket (outlet) until both plugs are fully seated. Incomplete engagement may cause fuming, electric shock or equipment damage and may result in personal injury, death or fire. *Disconnect the AC power cord when the Recoater is not in use.*
	Do not disassemble or modify the Recoater or the AC adapter. In particular, do not remove or bypass any electrical or mechanical parts (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.
	Using the supplied AC power cord. Do not place heavy objects on the AC power cord. Improper use of the cord, or a damaged cord may cause fuming, electric shock or equipment damage and may result in personal injury, death or fire.

WARNINGS!

	Never operate the Recoater in an environment where flammable liquids or vapors exist. Risk of dangerous fire or explosion could result. Do not place anything near this product that ignites easily.
	Do not open the upper cover of the Recoat Mold while curing UV curable material. UV light is irradiated outside and it may cause personal injury. Moreover, this may result in poor quality of the recoating operation since the curable material does not have time to cure properly.
	Safety glasses should always be worn during fiber preparation and recoating operation. Fiber fragments can be extremely dangerous if it comes into contact with the eye, skin, or is ingested.
	Do not touch the Recoater, AC power cord and AC plugs with wet hands. This may result in electric shock. *If the recoater is wet, do not turn the power on. After wiping off the water and drying the recoator, then turn the power on.*
	Do not operate the Recoater near hot objects, in hot temperature environments, in dusty / humid atmospheres or when water-condensation is present on the Recoater. This may result in electric shock, the recoater malfunction, or poor recoating performance. When water-condensation is present, do not turn on the Recoater and keep it about one day at room temperature to dry it.

CAUTIONS!

	Do not store the Recoater in any area where temperature and humidity are extremely high. Possible equipment failure may result.
	Be sure to clean the Recoat Molds with alcohol-impregnated lint-free tissue or gauze. Do not use any liquid other than alcohol. Otherwise, it may cause deterioraton or breakage of this product.
	Do not place the Recoater in an unstable or unbalanced position. The Recoater may shift or lose balance, causing the unit to fall. Possible personal injury or equipment damage may result.
	The Recoater is precision adjusted and aligned. Do not allow the unit to receive a strong shock or impact. Possible equipment failure may result. Use supplied box for transportation and storage. The box protects the Recoater from damage, moisture, vibration and shock during storage and transportation.
	Do not scrape the Recoat Molds with a metal piece, a sharp thing or a hard thing. Otherwise, the surface finish may be damaged and may result in irregular recoating formations.
	Do not pinch anything between the upper and lower Recoat Molds when the Recoat Mold is closed. It may cause breakage of the Recoat Mold or deterioraton of the surface finish and it may result in irregular recoating formations.
	The Recoater requires no lubrication. Oil or grease may degrade the recoating performance and damage the Recoater.
	Before use, read this instruction manual and understand how to operate the Recoater.
	The equipment must be repaired or adjusted by a qualified technician or engineer. Incorrect repair may cause fire or electric shock. Should any problems arise, please contact the authorized distributor.

CAUTIONS!

	Keep the Recoater free from sand or dust. They may degrade the quality of the recoating or may cause malfunction.
	Do not use the Recoater for other than recoating optical fibers. Using it for other purposes may damage the Recoater.
	Do not touch the UV curable material with bare hands. This may cause skin irritation. Wear gloves when working. Use water and soap to wash the skin area that comes in contact with the UV curable material.
	Wear a mask while using UV curable material. The UV curable material may cause headaches, dizziness or nausea. Ventilate the room and seek fresh air.
	Wear safety glasses while using UV curable material. If it gets in an eye, wash away with water immediately and seek medical attention. Moreover, in case of accidental ingestion, seek immediate medical attention.
	Keep the UV curable material away from a fire or any other heat source. The UV curable material may ignite and start a fire.
	Put soft tissue or gauze between the upper and lower Recoat Molds when the Recoater is stored or left unused to prevent the Recoat Molds from breaking.

RECYCLING and DISPOSAL

[Disposal]

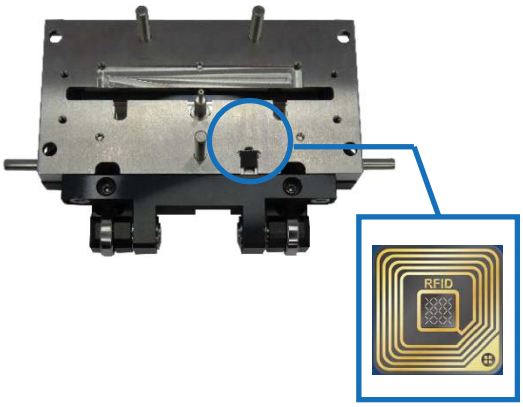
This product can be disposed of similar to the standard electric poroducts. Follow your local disposal regulations.

Introduction

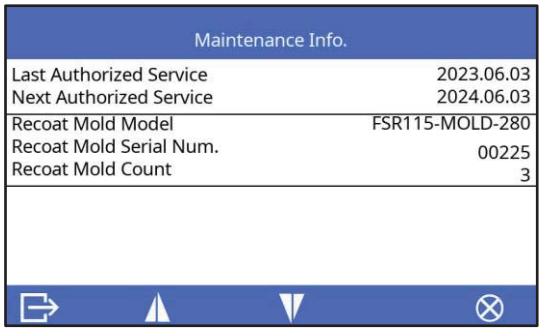
The optical fiber recoater can recoat the splicing point with UV curable material.
This Recoater FSR115 can recoat in short time and with high efficiency.
In order to master FSR115, please read this instruction manual.

∗Fujikura Ltd. Recommends using the "950Y200" UV curable material produced by Japan Fine Coatings Co., Ltd. or "PC-373LD" UV curable material produced by Luvantix ADM Ltd.
Please purchase the UV curing resin from UV curing resin local distributors. Fujikura doesn't sell UV curing resin.

The number of times used the recoat mold is stored in the RFID IC mounted on it. Even if the recoater body is changed, the correct usage count can be displayed.



RFID



<u>Note: LCD (Liquid Crystal Display) monitor</u>

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

Components

The standard equipment included is as following. Verify the equipment items listed are received.

Standard Package List

Model name: FSR115
Optical fiber Recoater [FSR115]

Common Items

AC adapter [ADC-21]	*AC cord* [ACC-**]	*Quick Reference Guide* [QRG-09-E]	*Warning and Caution* [WAC-03-E]
Fiber Height adjust Spacer set [SPA-FSR115-SET]	*Setscrew for Fiber Height Adjuster*	*Hexagonal Wrench* [HEX-04]	*USB Cable* [USB-01]

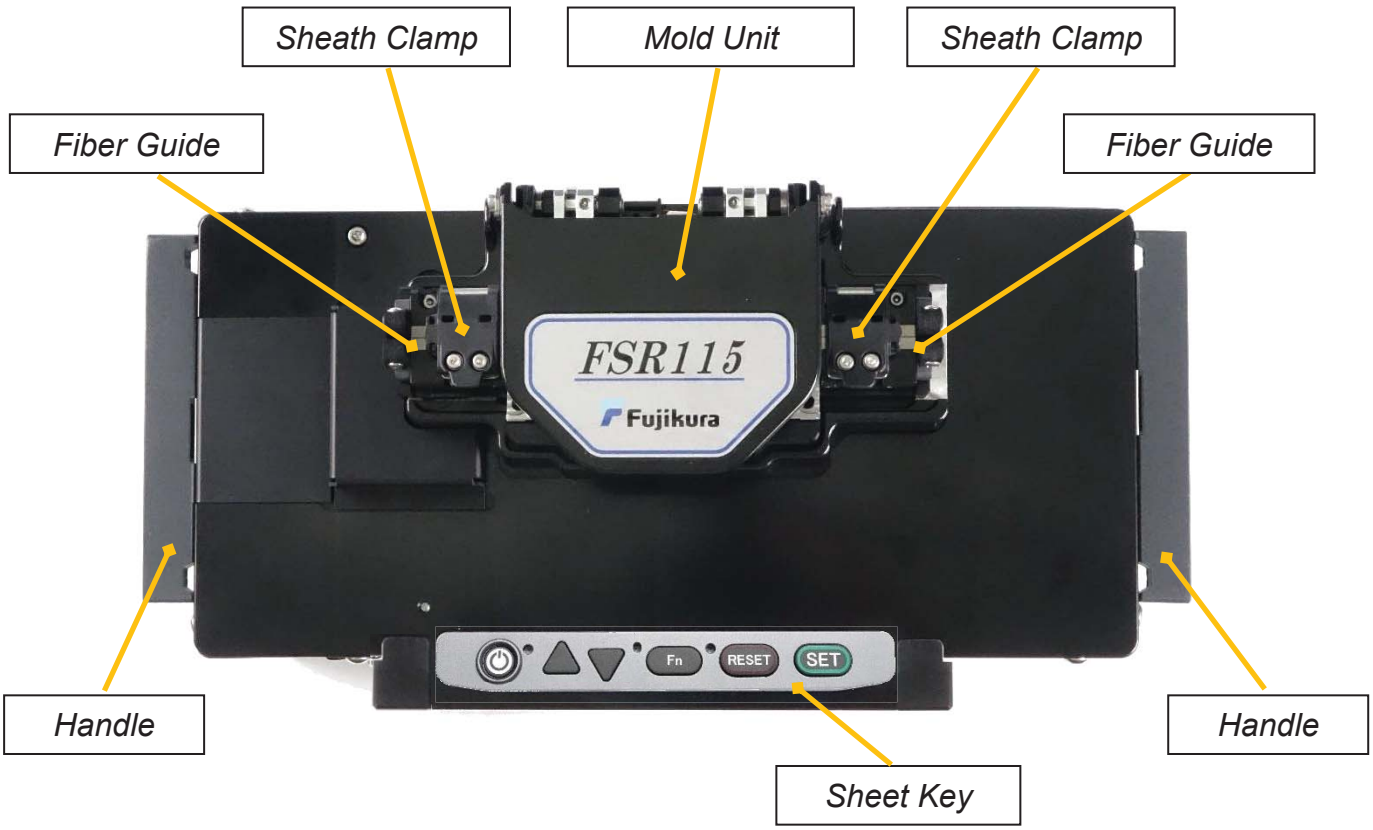
Optional item	Part. No.	Description
Recoat Mold	FSR115-MOLD-195	Recoat Dia. 195μm for 165μm coated fiber
	FSR115-MOLD-255	Recoat Dia. 255μm for 250μm coated fiber
	FSR115-MOLD-280	Recoat Dia. 280μm for 250μm coated fiber
	FSR115-MOLD-320	Recoat Dia. 320μm for 250μm coated fiber
	FSR115-MOLD-450	Recoat Dia. 450μm for 400μm coated fiber
	FSR115-MOLD-600	Recoat Dia. 600μm for 500μm coated fiber
	FSR115-MOLD-670	Recoat Dia. 670μm for 600μm coated fiber
	FSR115-MOLD-850	Recoat Dia. 850μm for 800μm coated fiber
	FSR115-MOLD-1000	Recoat Dia. 1000μm for 900μm coated fiber
	FSR115-MOLD-****	When you want another Dia. Recoat Mold, contact to the authorized distributor.
Fiber Height Adjuster	FSR115-HADJ-100	Fiber coating Dia. :φ90μm~φ110μm
	FSR115-HADJ-125	Fiber coating Dia. : φ110μm~φ140μm
	FSR115-HADJ-160	Fiber coating Dia. :φ140μm~φ180μm
	FSR115-HADJ-200	Fiber coating Dia. :φ180μm~φ225μm
	FSR115-HADJ-250	Fiber coating Dia. :φ225μm~φ275μm
	FSR115-HADJ-300	Fiber coating Dia. :φ250μm~φ350μm
	FSR115-HADJ-400	Fiber coating Dia. :φ350μm~φ450μm
	FSR115-HADJ-500	Fiber coating Dia. :φ450μm~φ550μm
	FSR115-HADJ-600	Fiber coating Dia. :φ540μm~φ660μm
	FSR115-HADJ-750	Fiber coating Dia. :φ660μm~φ810μm
	FSR115-HADJ-900	Fiber coating Dia. :φ810 μm~φ970 μm

Optional item	Part No.	Note
Setscrew for Fiber Height Adjuster	SCREW-CT-01	1 set=15pcs.

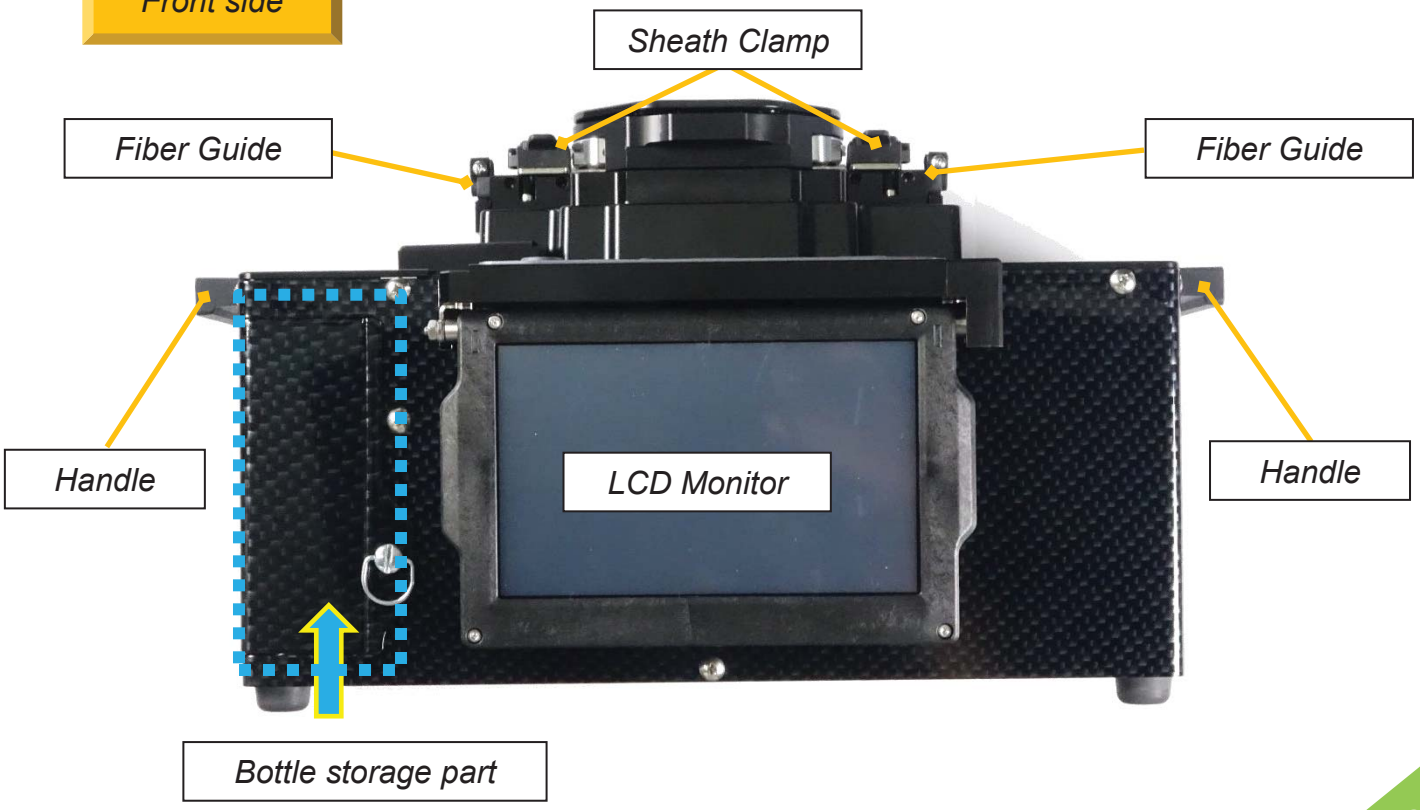
Description of Recoater

Part names

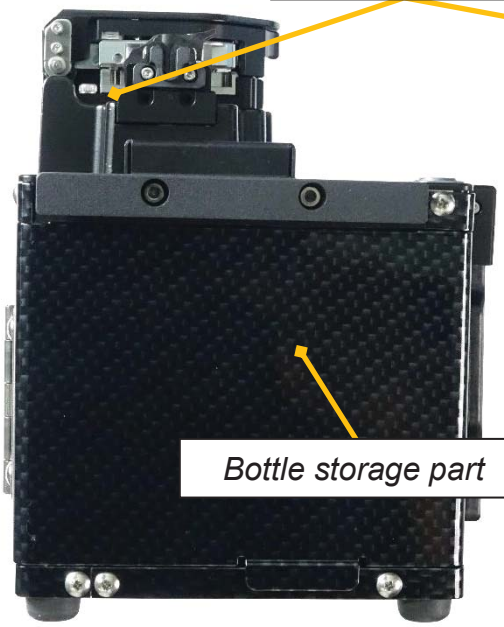
Top side

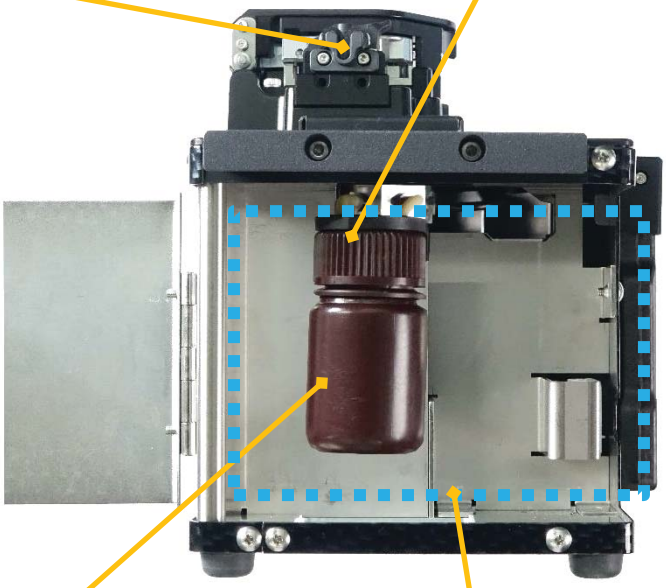


Front side



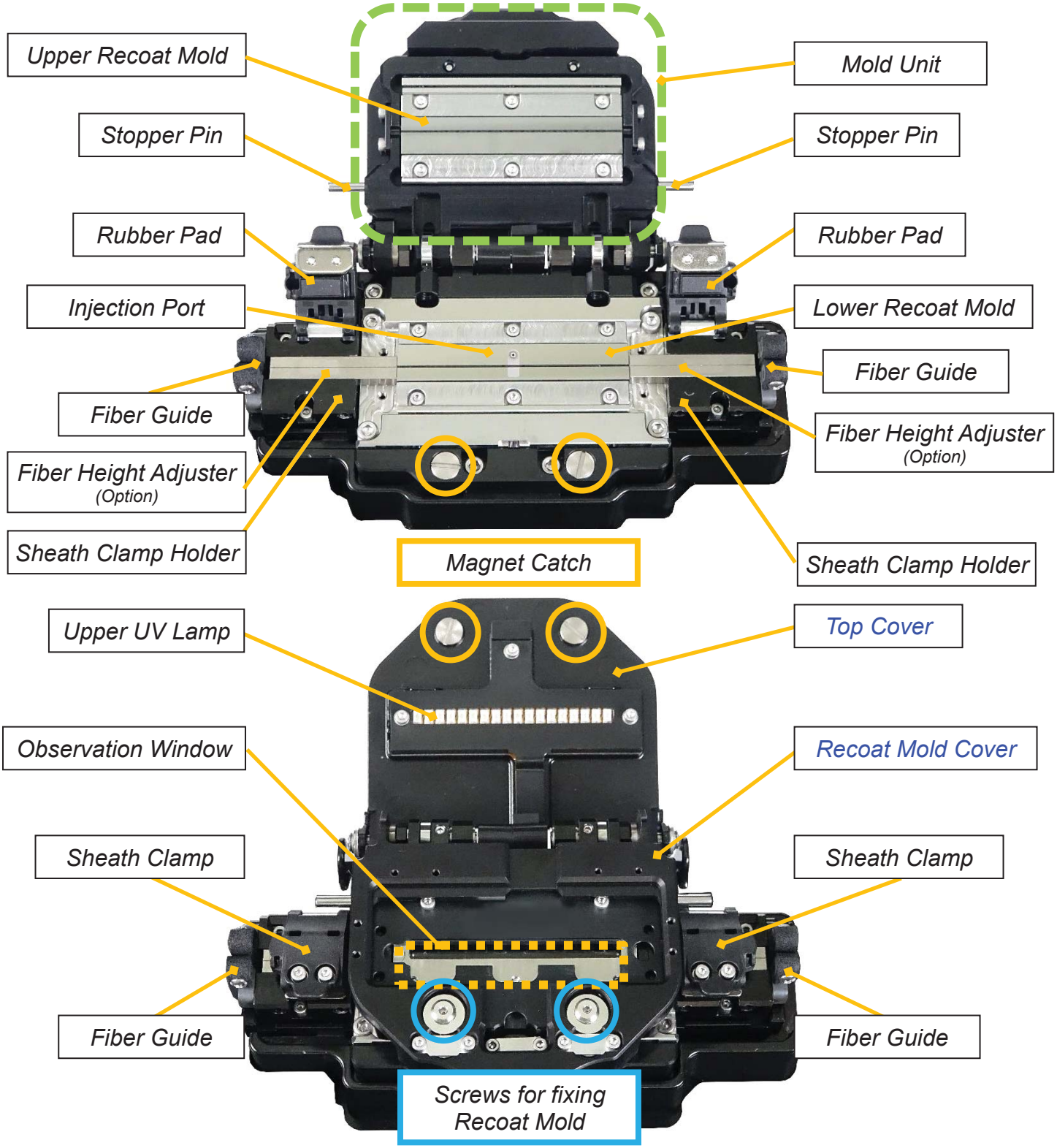
Left side



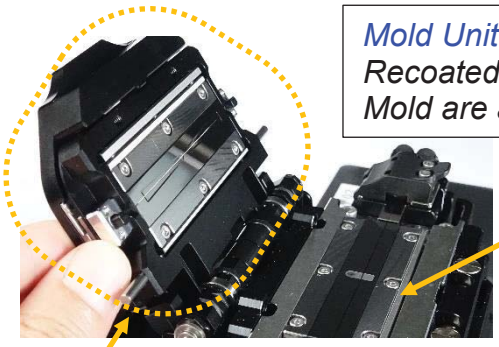


Right side

Recoat Mold Unit



Description of Recoat Mold Unit



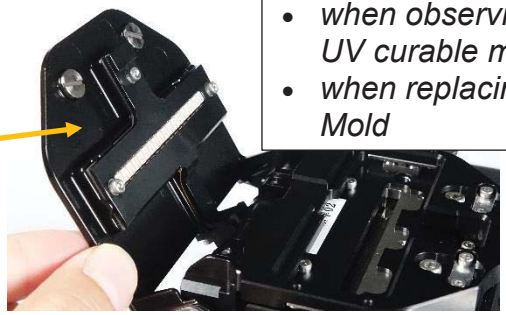
Mold Unit open:
Recoated Mold Cover and Upper Recoat Mold are attached (Normal operation)

Lower Recoat Mold

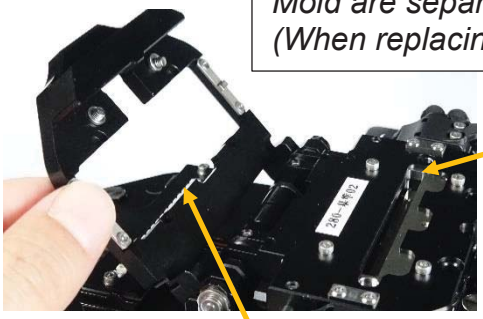
Mold Unit

Top Cover open:
- *when observing injected UV curable material*
- *when replacing Recoat Mold*

Top Cover



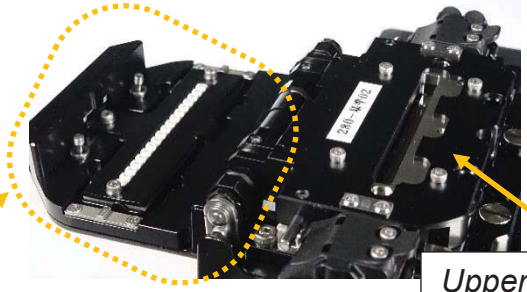
Recoat Cover open:
Recoat Cover and Upper Recoat Mold are separated.
(When replacing Recoat Mold)



Upper Recoat Mold

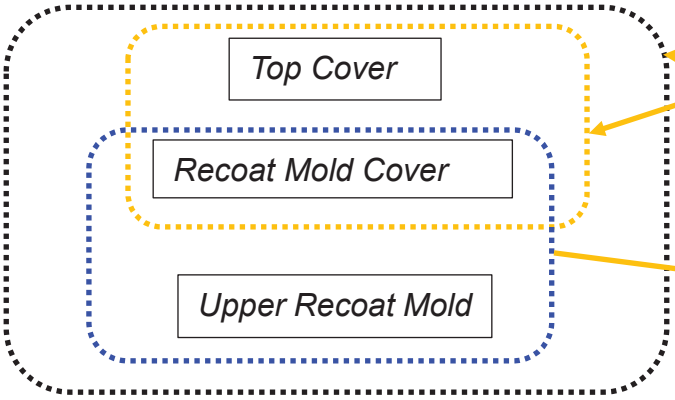
Recoat Mold Cover

Top Cover and Recoat Mold Cover open – separated:
(When replacing Recoat Mold)



Mold Unit

Upper Recoat Mold

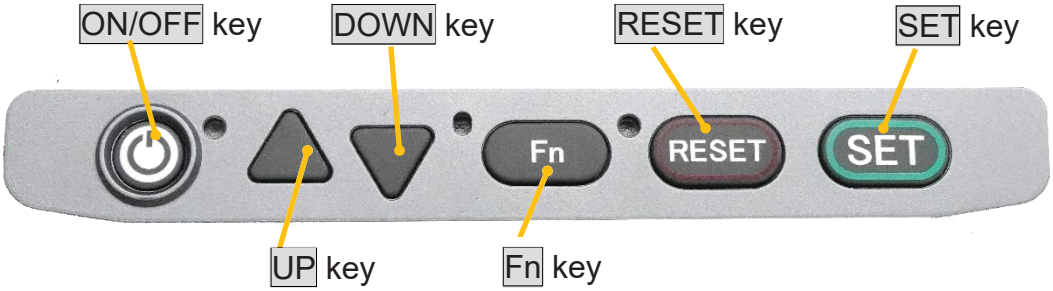


Mold Unit

Enable to connect or separate by using Cover Bolts

Functions and names of Sheet key

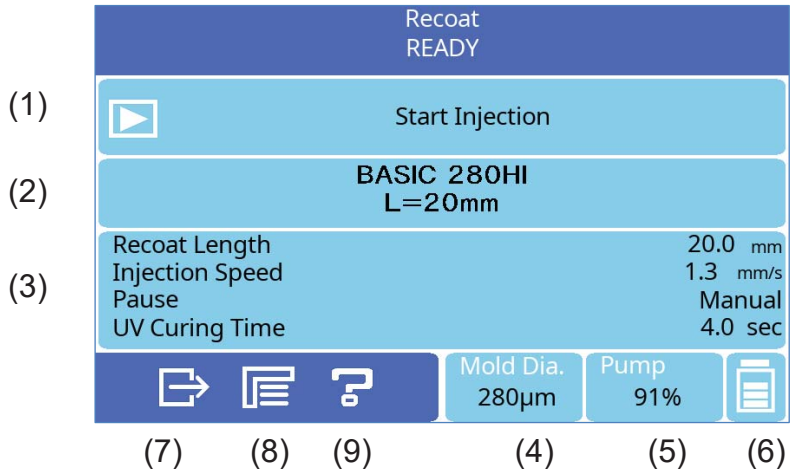
The function of the sheet keys on the top of the Recoator are described below.



Key name	Key Function
ON/OFF key	*Turns the power ON and OFF*
RESET key	*Returns to the "Ready" state from any other state except the Proof Test process. After pressing this key, the buzzer sounds and "Reset" is shown on the Monitor.*
SET key	*Starts the Recoating operation and turns on the UV lamp.* *The error of recoat, the reset after the end of recoat or returns from the sleep state.*
UP key	*Starts injection of the UV curable material by pressing UP key on the READY screen. Moves the cursor when selecting a command on the Menu screen.*
DOWN key	*Goes to MENU screen by pressing DOWN key on the READY screen. Moves the cursor when selecting a command on the Menu screen.*
Fn key *(Function key)*	*Goes to a setting menu that user can select.* *The factory settings are as "Machine Settings". You can set it by yourself from the menu screen.*

Touchscreen operation and function

The recoater has a monitor with touch screen.
After the power is turned on, the monitor can be operated as the touch screen.
Please check the following for the function of each icon on the READY screen.

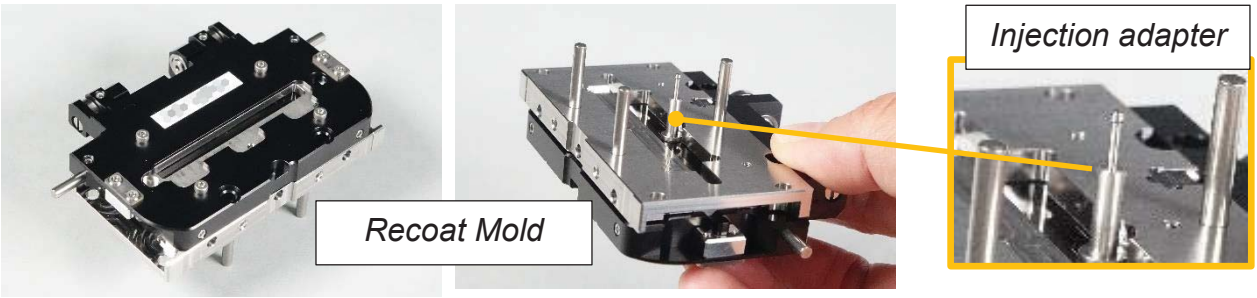


No.	Function
(1)	*Start, stop of recoating operation. Follow the messages shown on the screen.*
(2)	*Display the current recoating mode. Touching this area, it goes to the Editing setting mode. Various messages are displayed duraing recoating operation.*
(3)	*Display the current Recoat Settings. Touching this area, it goes to [Edit Recoat Mode].*
(4)	*Display the diameter of the Recoat Mold that is attached.*
(5)	*Display the amount of UV curable material in the pump.*
(6)	*Display the amount of UV curable material in the bottle.* *The remaining amount display is set to OFF at the time of shipment from the factory. The remaining amount display will be shown by setting ON from the "Menu" screen.*
(7)	*Touch this area to abort the recoating operation.*
(8)	*Go to "Menu" screen by touching this icon. Enable to change the machine settings.*
(9)	*Go to the "Operation procedure explanation" menu screen.*

Set up the Recoater

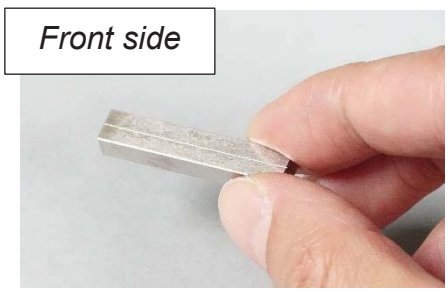
Please refer to the components in previous section and check that all items are included in the box. To start using the recoater, set up the Recoat Mold, attach the Fiber Height Adjuster, and the UV curable material in the bottle in advance.

Recoat Mold (Option)



Fiber Height Adjuster (Option)

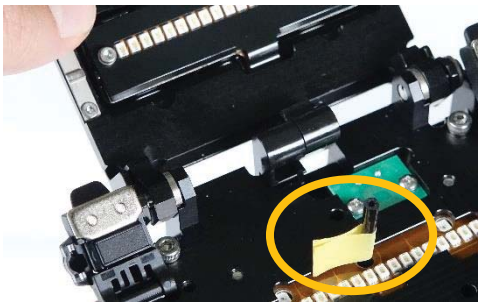
Standard item
Screws for fixing Fiber Height Adjuster.
[SCREW-CT-01]



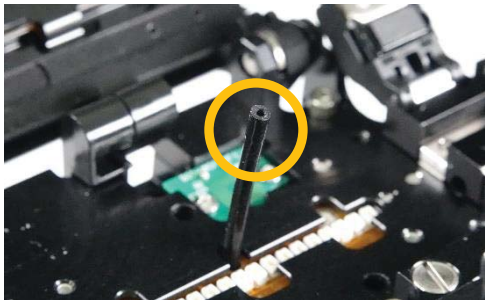
The surface wtith a groove is the front side. The rear side does not have a groove.

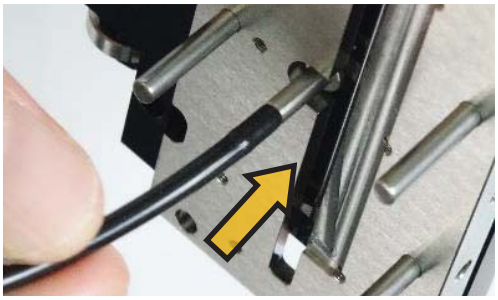
Attaching the Recoat Mold

1. *Prepare the Recoat Mold to be used. Open the Recoat Mold Lid and confirm the tube which comes out from the center of the Recoater. Remove the tape from the tube. (Do not drop the tube under the Recoater.)*

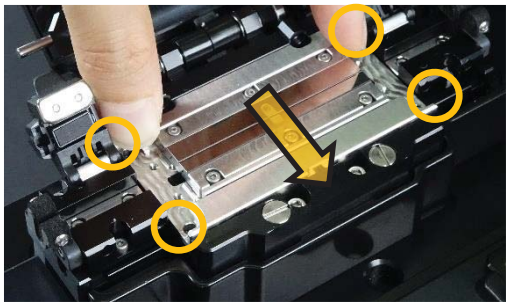


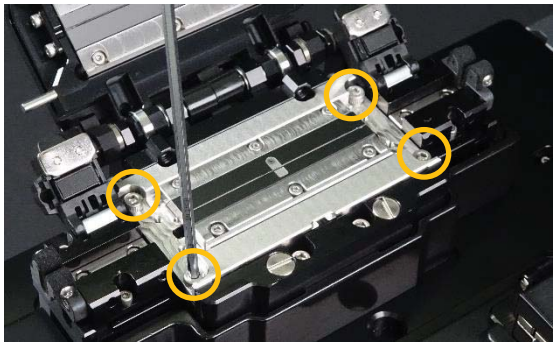
2. *Insert the tube into the injection adaptor of Recoat Mold. Do not pull the tube too much.*





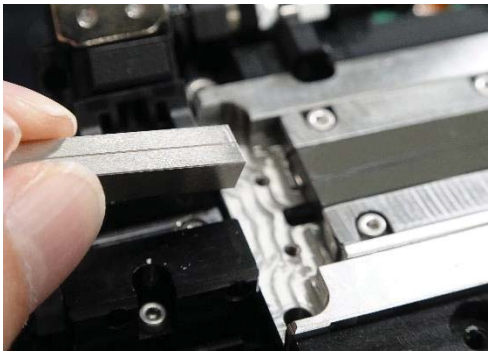
3. *Set the Recoat Mold so that the 3 shafts are inserted into the holes of the base under the Recoater. Tighten the 4 screws while pushing it in the direction of the arrow (tool size: 2.5mm Hex).*

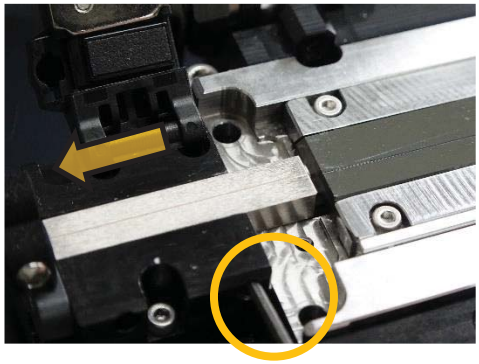




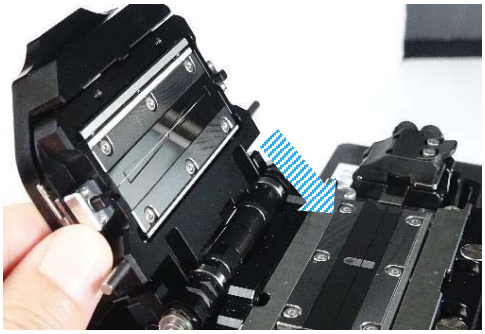
Attaching Fiber Height adjuster

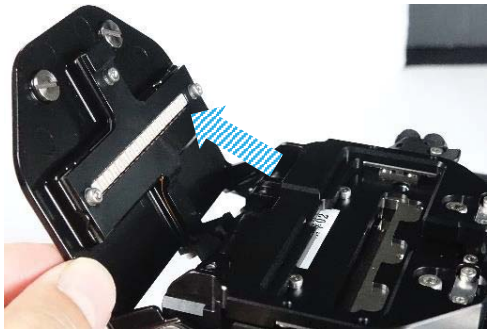
1. *Place the Fiber Height Adjuster on both the left and right sheath clamp holders. Tighten the screws while pushing the Fiber Height Adjuster in the outer direction. Do not tighten the screws too much.*



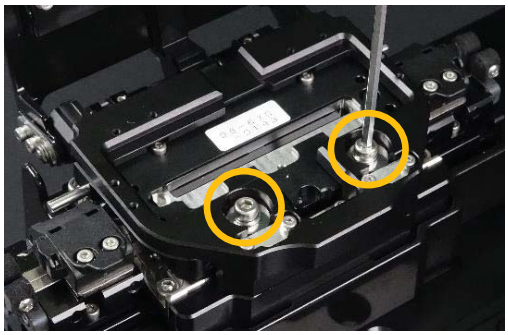


2. *After closed the Recoat Mold Lid, open the top cover only and fix the Recoat Mold Lid and Recoat Mold. If the Top Cover and the Upper Recoat Mold Unit are separated, the Upper Recoat Mold Unit closes unexpectedly and may break the Recoat Mold*





Only open the Top Cover after closing the Recoat Mold Unit



Tighten two screws

Filling the UV curable material into the Bottle

When using this product for the first time, the Bottle is empty. Please fill the UV curable material into the Bottle first.
When switching the type of the UV curable material, clean the inside of the bottle and pump before refilling the UV curable material. Please check the Maintenance section for cleaning.

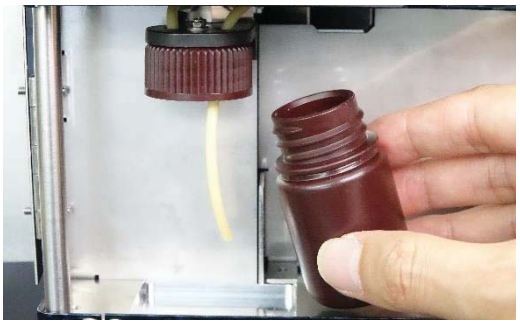
∗Fujikura Ltd. recommends using the "950Y200" UV curable material produced by Japan Fine Coatings Co., Ltd. or "PC-373LD" UV curable material produced by Luvantix ADM Ltd.
Please purchase the UV curing resin from UV curing resin local distributors. Fujikura doesn't sell UV curing resin.

Operation Procedure

1. *Open the cover of the Bottle storage part located in the left side of the recoater.*

Turn the knob to the left and pull it.

2. *Remove the inside bottle from the recoater.*



3. *Fill the removed bottle with the UV curable material, or replace the filled bottle.*
   Pour the UV curable material slowly into the Bottle. When you pour it quickly, bubbles may mix in the Bottle.

4. *Attach the Bottle and leave it until all bubbles in the UV curable material are gone.*
   Recommended hour is 24 hours.

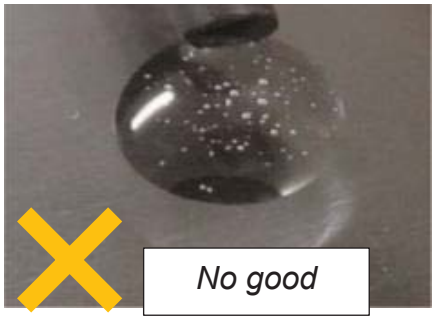
Injecting UV curable material

Before recoating operation, it is necessary to inject a small amount of the UV curable material to the Recoat Mold and confirm no bubbles are inside of the UV curable material.

Procedures

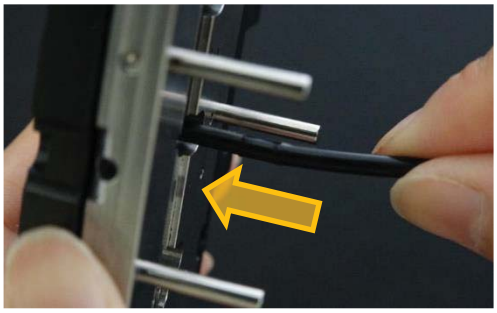
1. *Open the Recoat Mold and press* UP *key to run the Pump. Inject the UV curable material from the Bottle to the Recoat Mold.*

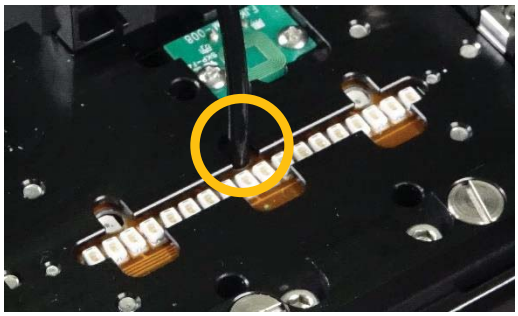
2. *Confirm there are no bubbles in the UV curable material.*
   If bubbles are in the UV curable material, recoat shape may be bad.
   Continue to inject until the UV curable material without any bubbles comes out.



- *Injection from the pump to the recoat mold takes time when using recoater for first time.*
- *Injection (purge) cycle can be modified in [Machine settings].*

- *When the UV curable material does not discharge even if press* UP *key, check the tube connection of the Pump and Bottle unit.*
- *Check the amount of the UV curable material in the Bottle.*
- *If the recoat mold is not open, the pump will not operate even if you press the* UP *key.*

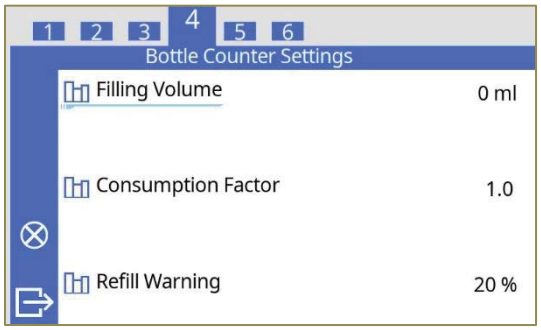




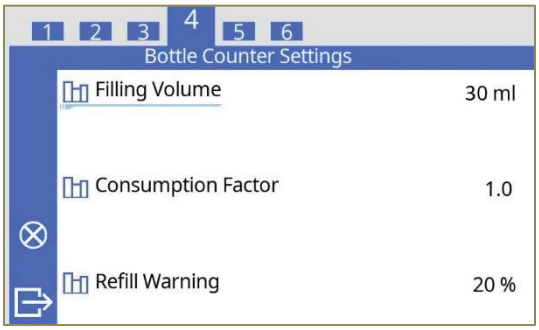
Remaining UV curable material and Expiration date

Bottle Counter Settings

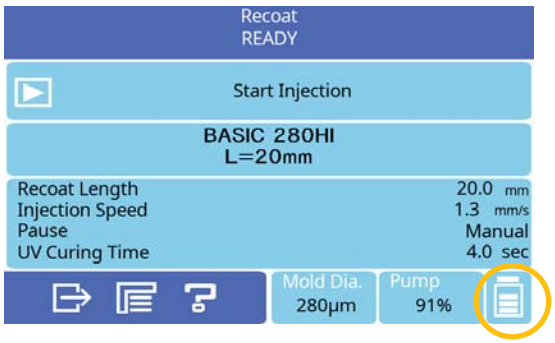
Enter [Machine Settings] in [Setting Menu] and select [Bottle Counter Settings]. Enter the amount of UV curable material in a bottle to [Filling Volume]. The factory default is zero. Therefore Bottle indicator is not displayed in READY screen before entering the value.
If the remaining amount reduces below the amount of [Refill Warning], the Bottle indicator turns red and the message shows up.



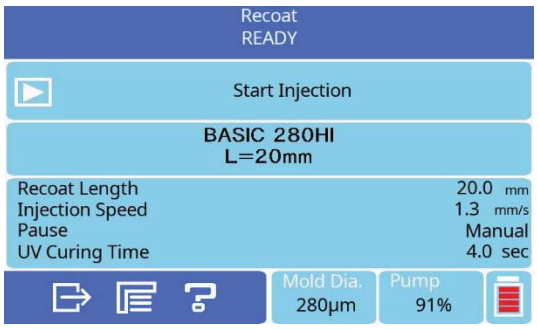
Factory default



Input Filling Volume



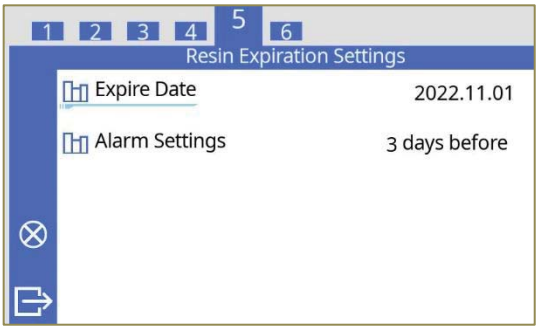
Bottle counter



Alarm message

Resin Expire Settings

Enter [Machine Settings] in [Setting Menu] and select [Resin Expiration Settings]. Enter the expiration date written on a bottle in [Expire Date]. Alarm message is displayed on the screen at the date entered in [Alarm Setting].
The factory default of this function is OFF. In order to use this function, enter [Expire Date] and set the alarm.



Recoat Mold handling

This product is used with Recoat Molds

Do not scrape the Recoat Mold with a metal piece, a sharp thing or a hard thing. Otherwise, the surface finish may be damaged and may result in irregular recoating formations.
Do not put heavy things on the Recoat Molds or push the Recoat Mold strongly or pinch a fiber between the upper and lower Recoat Molds. They may cause breakage of the Recoat Mold or deterioraton of the surface finish.

Be sure to wipe off the UV curable material on the Recoat Mold after recoating.

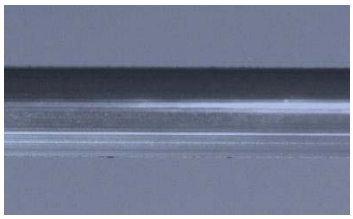
Clean the Recoat Mold with alcohol-impregnated lint-free tissue or gauze. Do not use any liquid other than alcohol. Otherwise, it may cause deterioration or breakage of this product.
To clean the groove, move an alcohol-impregnated cotton swab in the direction along the groove. Do not scrape the groove forcefully. Otherwise, it may cause breakage of the Recoat Mold. Insufficient cleaning may cause irregular recoating formations or insufficient injection amount.

Cleaning of the Recoat mold surface

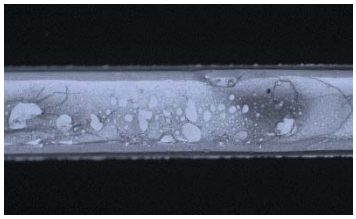
Cleaning of the groove

After injection UV curable material, be sure to clean the Recoat Mold like above photos.
After recoat operation, clean both the upper and lower Recoat Molds.

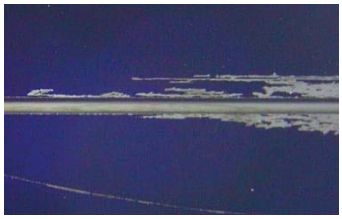
Groove/surface condition after cleaning



Groove condition: good



Groove condition: poor



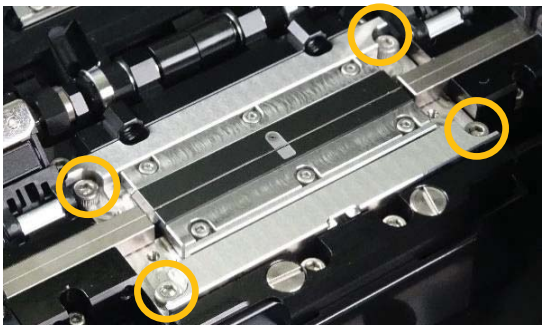
Scratches on the mold surface

Insufficient cleaning may cause irregular recoating formations or insufficient injection amount, also too much rubbing may cause breakage of the Recoat Mold.
Please handle them with care.

Replacing the Recoat Mold

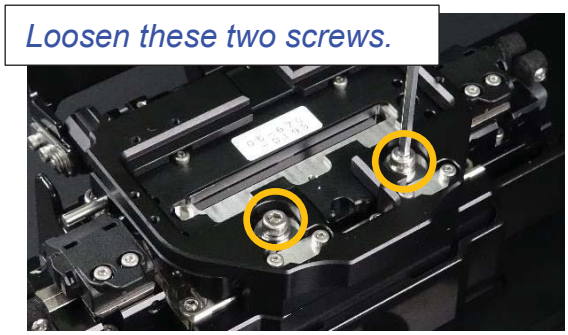
Removing the Recoat Mold

1. *Remove the Fiber Height Adjuster by loosing screws.*
2. *Remove 4 screws for fixing the Lower Recoat Mold unit (tool size: 2.5mm Hex). Be careful not to drop or lose these screws as they fix the replaced Recoat Mold.*



➢ *Be careful not to remove or loosen other screws.*

3. *Open the Top Cover and loosen 2 screws for fixing the Upper Mold unit (tool size: 2.5mm Hex). These screws have anti-drop mechanism.*



Be careful not to drop the Upper Mold unit on the lower glass mold after removing the screws. Put soft tissue or gauze between upper and lower glass molds.

4. *Pull up and remove the Recoat Mold upwards, and then remove the tube. Cover up the device with the tissue or gauze to prevent adhering of the UV curable material.*

Openiong and closing the Recoat Mold Cover

After untightening the cover bolts on the Upper Recoat Mold Unit, the Top Cover and the Upper Recoat Mold Unit are separated, the Upper Recoat Mold Unit closes unexpectedly and may break the Recoat Molds.

Please put soft tissue or gauze between upper and lower Recoat Molds, as the Top Cover and the Upper Recoat Mold Cover opens/closes individually.

- *Be careful not to drop the Upper Mold unit on the lower glass mold. Put soft tissue or gauze between upper and lower glass molds.*

Fiber height adjuster

Choosing the correct Fiber Height Adjuster

Please attach the correct fiber height adjuster which has the same diameter with the optical fiber of being recoated. If the unmatched Fiber height adjuster is selected, eccentricity will occur in the recoating area.

Fiber Height Adjuster

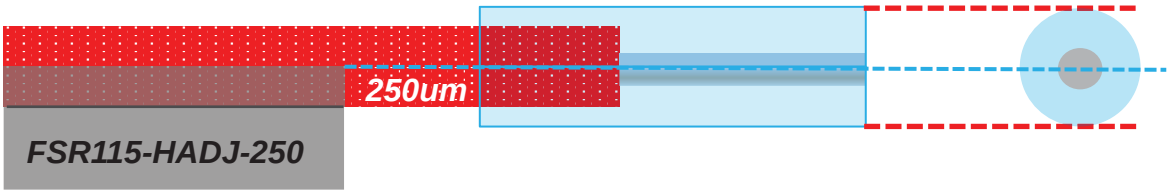
Mold Dia / Insert Dia	195	255	280	320	450	600	670	850	1000
Fiber height adjuster-100 for 90~110um coated fiber	✔								
Fiber height adjuster-125 for 113~137um coated fiber	✔	✔							
Fiber height adjuster-160 for 144~176um coated fiber		✔							
Fiber Height Adjuster - 200 for 180~225um coated fiber			✔						
Fiber height adjuster-250 for 225~275um coated fiber		250>		✔					
Fiber height adjuster-300 for 250~350um coated fiber				300>	✔				
Fiber height adjuster-400 for 350~450um coated fiber					400>	✔			
Fiber height adjuster-500 for 450~550um coated fiber						500>	✔		
Fiber height adjuster-600 for 540~660um coated fiber								✔	
Fiber Height Adjuster - 750 for 660~810um coated fiber									
Fiber height adjuster-900 for 810~990um coated fiber									

Marked ✔ shows recommended sizes for UV curable material coating when overlapping

How to use the Fiber Height Adjuster

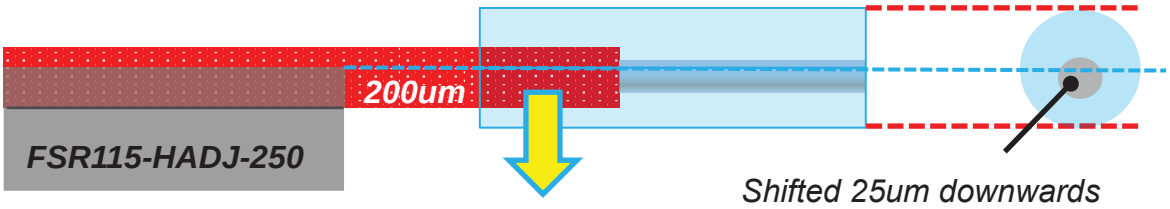
When the fiber coating and the Fiber Height Adjuster have the same diameter

Please check the combination with the mold diameter from the table in the previous page before use. The Fiber Height Adjuster smaller than the fiber coating cannot be used.



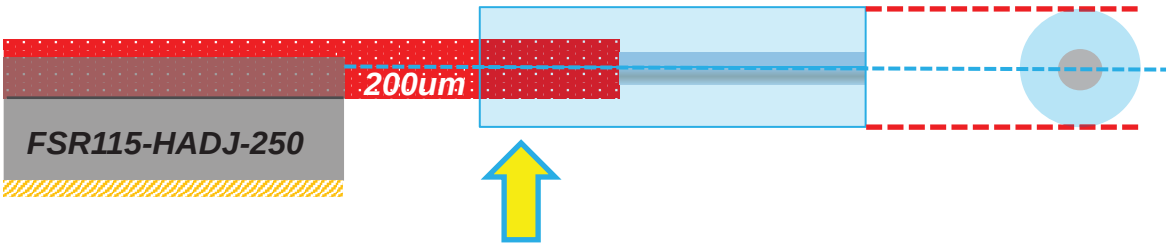
When the fiber coating and the Fiber Height Adjuster have the different diameter

Ex. 1) Fiber coating; 200um, Fiber Height Adjuster; 250um



The recoating center and the fiber center have misaligned recoat.

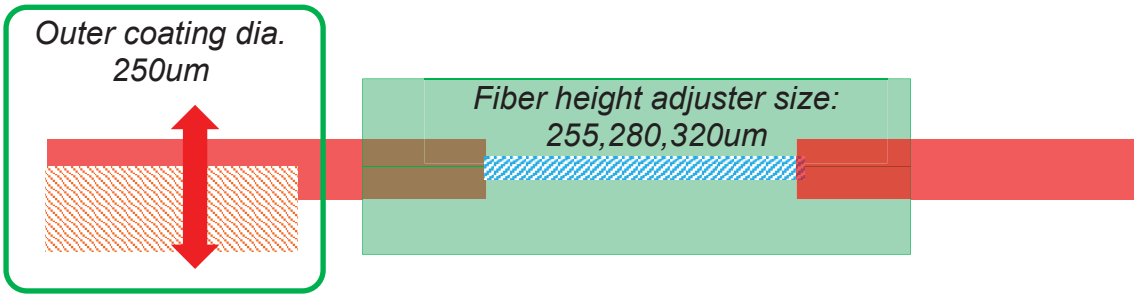
*Ex. 2) Fiber coating; 200um, Fiber Height Adjuster; 250um => **Vertical misalignment***



Insert the spacer which has the height of the shifted difference (25um)

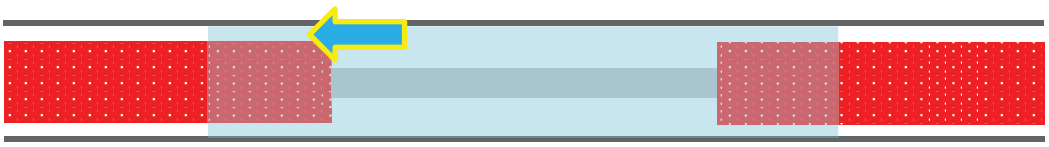
Overlapping the recoated part

Please use the Fiber height adjuster with the same size of the optical fiber you are going to recoat.



Fiber height adjuster size: 250um

When the difference between the fiber coating diameter and the mold diameter is small, overlap is difficult



If there is a difference between the fiber coating diameter and the mold diameter, it is easy to overlap. The larger the mold diameter, 320, 330um, the easier it is to fill the coating with UV curable material.

Adjust Fiber Height adjuster

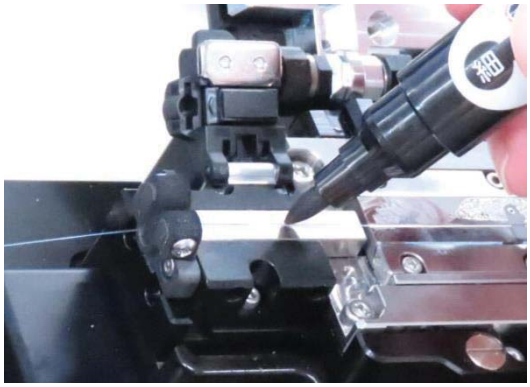
Set the fiber on the Fiber Guides.
If the bare fiber area does not come to the center, move the Fiber Height adjuster so that the center of the bare fiber area is on the center of the Recoat Mold.

- *The positon of the Fiber Height adjuster is adjusted in the factory before the shipment. Therefore it is not necessary to adjust the position normally.*
- *During shipping, some shock or vibration may change the position the fiber height adjuster. Therefore, please check and try to adjust the position.*
- *This adjustment can affect the recoat quality, be careful to check the positon before staring the adjustment.*

How to check the positon of the Fiber Height adjuster

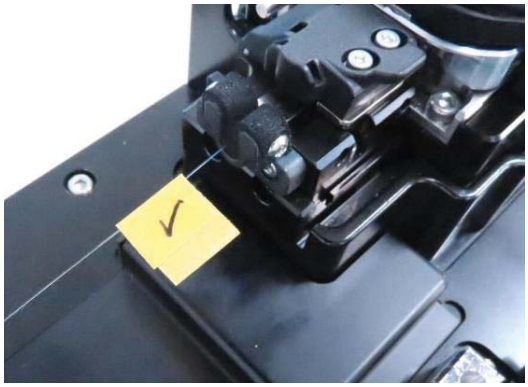
How to check the misalignment

1. *Strip the outer coating about 40mm in the center. Set the fiber on the Fiber Guides.*
2. *When you set the fiber, mark with a marker pen on the outer coating in order to not adjust the fiber in the wrong direction.*



Mark on the fiber directly

or

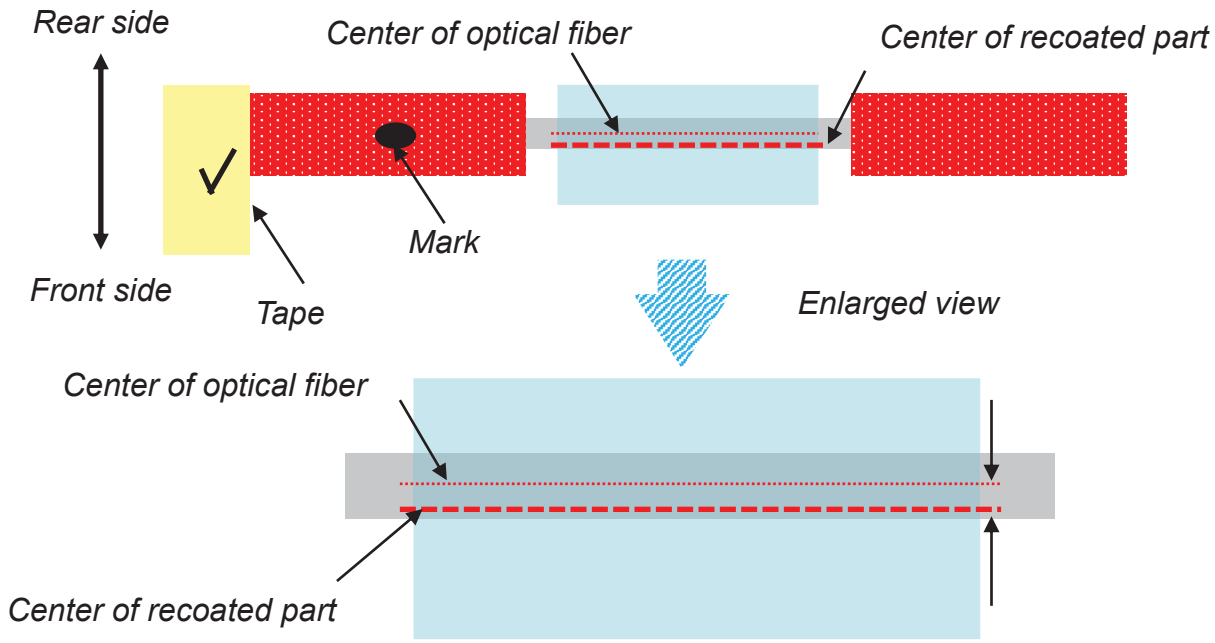


Apply tape to the fiber for marking

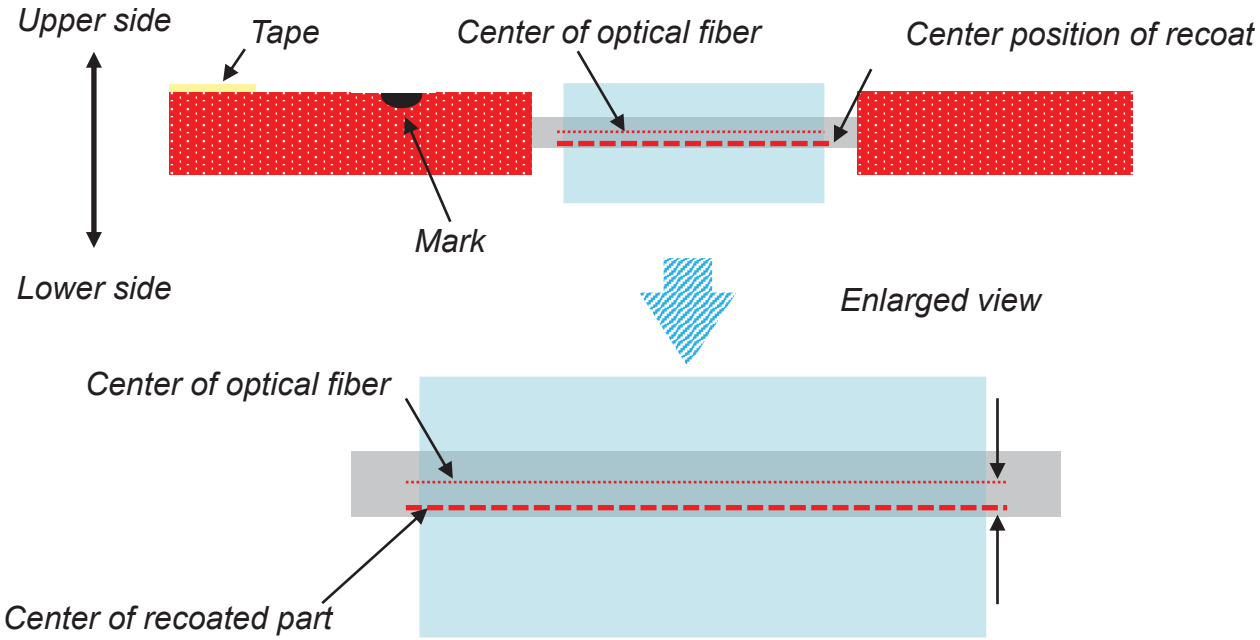
3. *Recoat for 20mm not to reach the end of the outer coating.*

4. *Carefully remove the recoated fiber out of the device so that you can see the front and back of the Recoator. Check the misalignment between the center position of the optical fiber cladding and the center position of the recoat with a microscope. Check the height orientation and the value to be adjusted.*

Ex) Upper view after recoated the optical fiber



Ex) Side view after recoated the optical fiber



How to adjust the positon of the Fiber Heigt adjuster

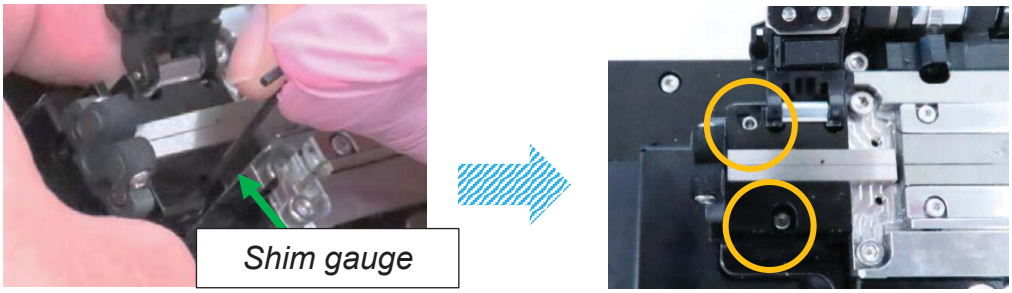
When the checks above indicate the adjustment of the Fiber Height adjuster is necessary, please adjust it by the following procedure.

Procedure

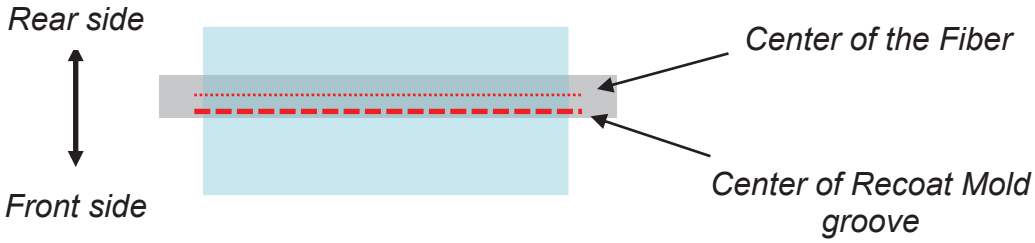
<Horizontal adjustment>

Align the center of the Fiber Height Adjuster groove and the Recoat Mold groove.

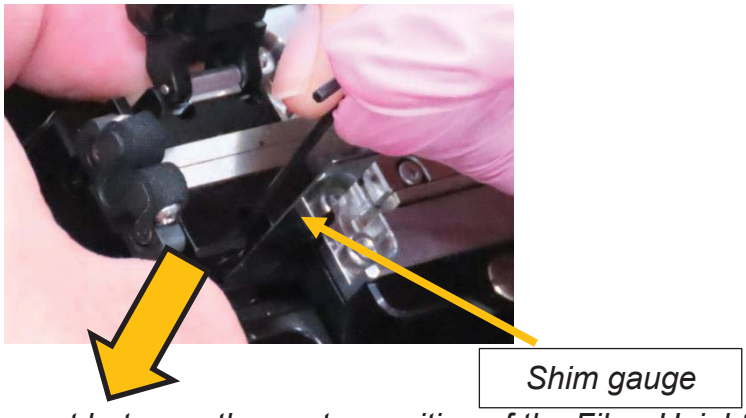
1. *There is a convex in front of the Clamp Unit Holder. After measuring the thickness of the Shim Gauge going into this part, loosen the two screws for fixing the Clamp Unit.*



2. *To align the center of the Fiber Height Adjuster groove and the Recoat Mold groove, adjust the thickness of the shim gauge.*
   If the recoat center is in front of the fiber optic center: Reduce the shim gauge thickness.
   If the recoat center is behind the fiber optic center: Increase the shim gauge thickness.



3. *Insert the shim gauge. Push the Clamp Unit to the yellow arrow direction while pushing the Clamp Unit to the front, and tighten the screws at the same time,*



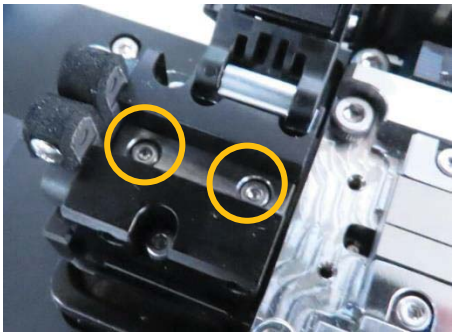
4. *Check the misalignment between the center position of the Fiber Height Adjuster groove and the center position of the Recoat Mold groove with a microscope.*

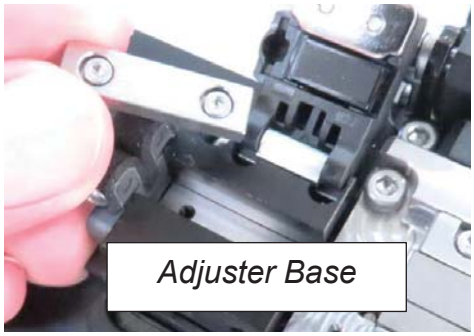
5. *Remove the Shim Gauge and recoat the fiber. Check the alignment of the groove the same way as the horizontal adjustment.*

<Vertical Height adjustment>

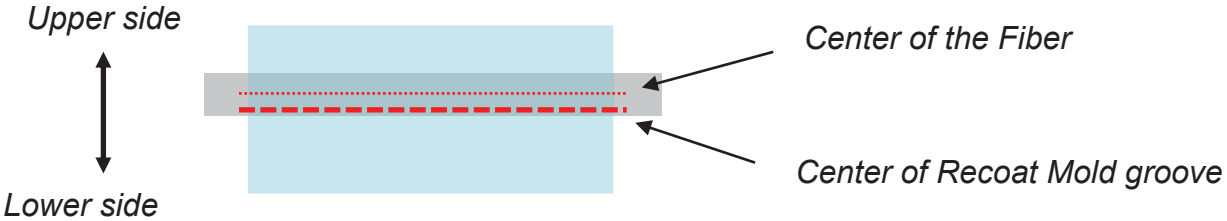
Adjust the height by changing the thickness of the spacer which is installed under the Fiber Height Adjuster.

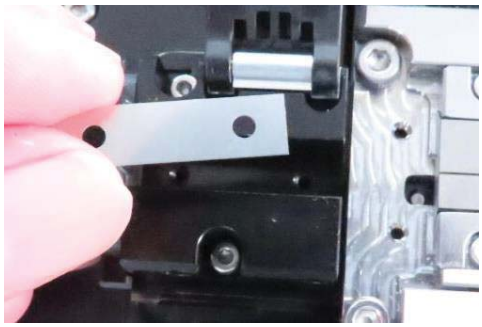
1. *Remove the Fiber Height Adjuster.*
2. *Remove the two screws located under the Fiber Height Adjuster.*





3. *Change the thickness of the spacer and fix the Adjuster Base with the screws.*
   If the height of the recoat center is lower than the fiber center, reduce the thickness of the spacer. If the height of the recoat center is higher than the fiber center, increase the thickness of the spacer.





4. *Attach the Fiber Height Adjuster and adjust the positon again.*

5. *Recoat the fiber and check the misalignment of vertical direction.*

Power-supply to the Recoater

1. *Use only proper AC adapter and AC power cord.*

AC adapter [ADC-21]

*AC cord [ACC-**]*

2. *Plug in the AC cord and insert the AC cord into the AC inlet of the AC adapter*

*Connect the ACC-**

To the outlet

To the Recoater

ADC-21

3. *Plug the supply terminal of the AC adapter into the power connector of the Recoater.*

Disconnect the AC power cord from the AC adapter inlet or the wall socket (outlet) immediately when abnormalities occur in the Recoter or AC adapter. Use the Recoater at the place which can pull out the cord promptly.

Turning power ON/OFF

Turn the power on

Press ON/OFF key and hold it until the green LED turns on.

The READY screen is displayed after all the motors are reset to their initial positions.

Power off

1. *After cleaning the Recoat Molds, close both the right and left Sheath Clamps and press RESET key.*

2. *Put soft tissue or gauze between the upper and lower Recoat Molds and close the Mold Cover.*

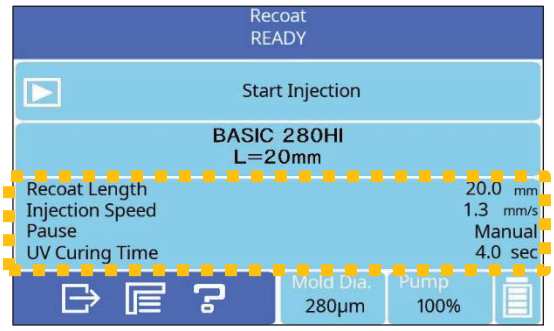
3. *Press and hold ON/OFF key until the red LED turns on. Pull out the power cord from the Recoater.*

Checking Recoat settings

Composition of the READY screen

Recoat parameter

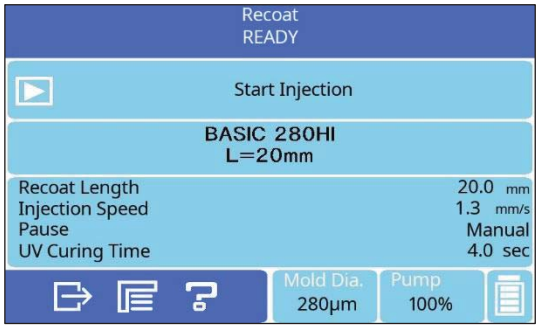
Selected Recoat Mode and parameters are shown on the right side of the READY screen. Check the parameters before recoat operation.



Monitor with Touchscreen and READY screen

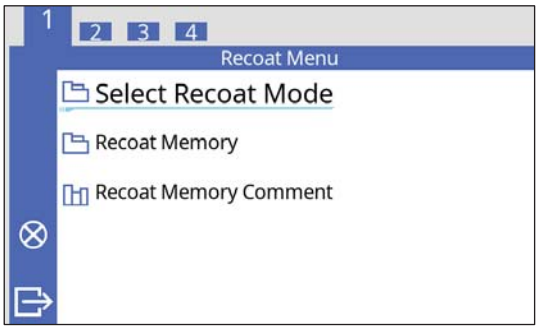
The recoater has a monitor with touchscreen.
After the power is turned on, the monitor can be operated as the touchscreen.
You can operate the setting menus or recoat operation by touching the [READY] screen.
To use the touchscreen, or press DOWN key to go to the [MENU] screen.
Please check the following for the function of each icon on the READY screen.

[READY] screen

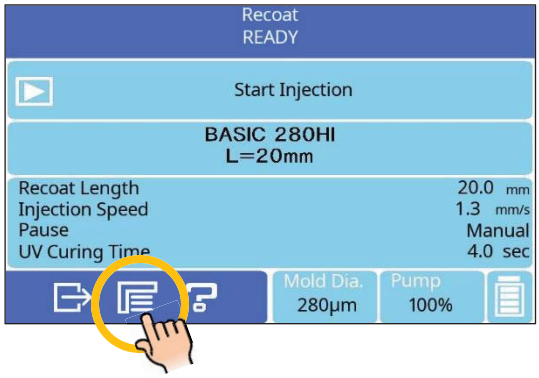


DOWN key

[MENU] screen



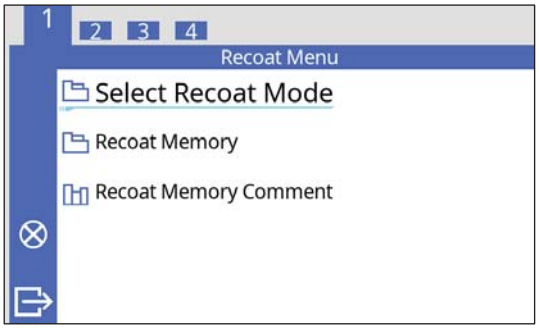
You can also go to the [MENU] screen by touching icon.



icon

or

DOWN key

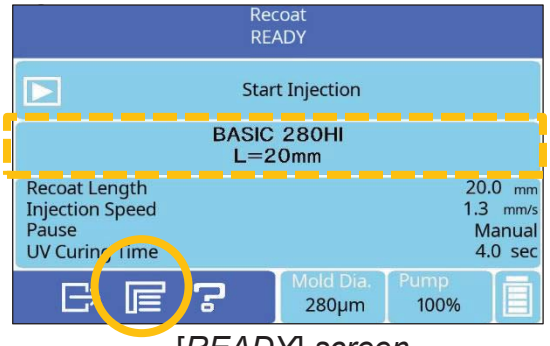


Selecting Recoat Mode

Using Touch Screen

Select appropriate Recoat Mode for the recoated optical fiber.

1. *Touch* *(Menu icon) in the READY screen, to open [Recoat Menu].*

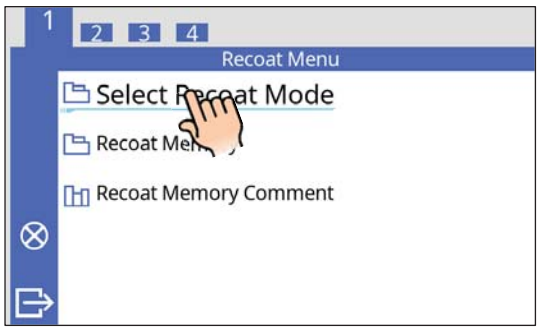


[READY] screen

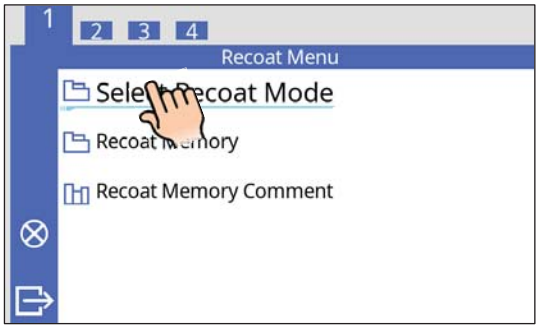
icon

or

DOWN key



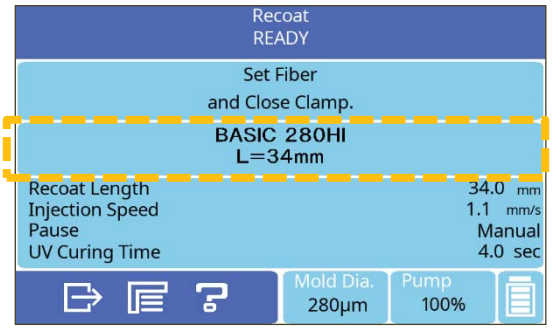
2. *Touch [Select Recoat Mode] and select the desired recoat mode.*
   **The recoat mode with grey text can be selected but it is not recommended.*



[Recoat Menu]

[Select Recoat Mode]

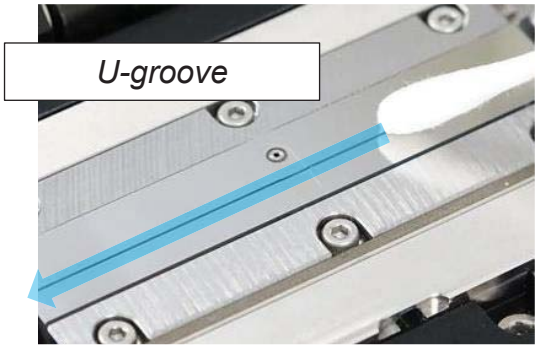
3. *The selected mode is shown in READY screen.*

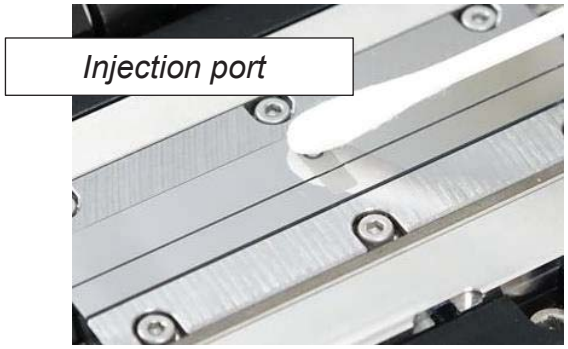


Preparation for Recoat operation

Recoat Mold

Confirm that there is no dust or residue from the UV curable material in the groove. If the cleaning in the groove or around the injection port is not sufficient, recoating performance may produce inferior results, causing irregular recoating formations or insufficient injection amount.
Clean the upper and lower Recoat Mold thoroughly with alcohol.

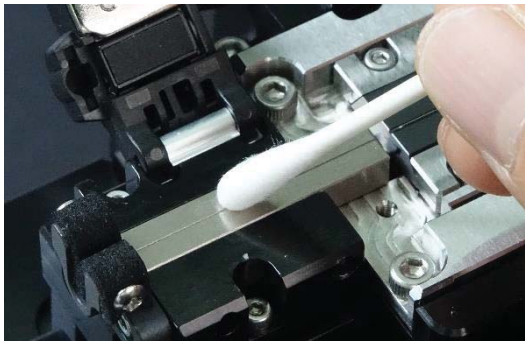


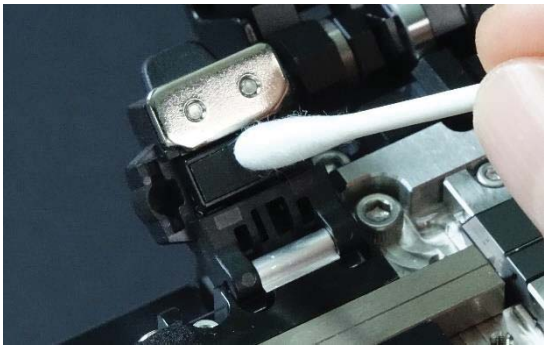


- *Clean the upper and lower Glass Molds by moving an alcohol-impregnated cotton swab in the direction along the groove. And clean the lower Glass Mold around the Injection Port.*
- *Use the alcohol of 99% or more of purity.*

Sheath Clamp

If rubber pads of the Sheath Clamps and Fiber Height Adjsuters are dirty, the sheath clamps may slip and cannot hold fiber nor apply tension to fibers. Clean both the right and left rubber pads with an alcohol-impregnated cotton swab or lint-free tissue or gauze before recoat operation.





- *Clean the rubber pads and Fiber Height Adjuster by moving an alcohol-impregnated cotton swab in only one direction.*
- *Use the alcohol of 99% or more of purity.*

Confirm bubbles in UV curable material (before operation)

If bubbles are mixed in the UV curable material, the result of recoating work may be poor. Please make sure that there are no bubbles inside, except running the recoating operation continuously. If there is abnormal move during continuous operation, please check the UV curable material.

Setting fiber in the Recoat Mold

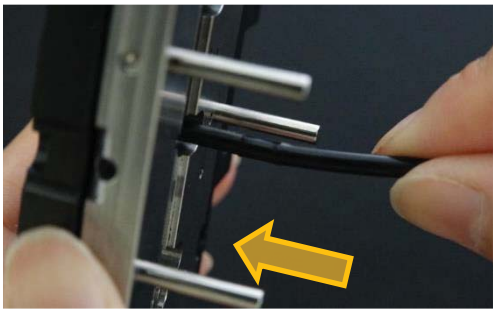
1. *Open the Recoat Mold and inject a small amount of the UV curable material by pressing UP key. Repeat press UP key until the UV curable material comes out. Pressing UP key while injecting stops the injection.*

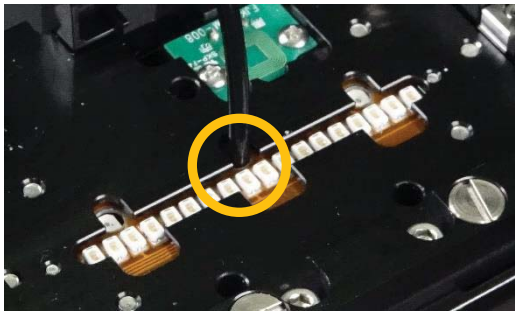
2. *Check the UV curable material injected onto the Recoat mold if there are no bubbles. If the bubbles are inside, repeat pressing UP key until no bubbles are recognized.*

3. *After confirmation that there are no bubbles, clean the upper and lower Recoat Molds.*

- *When using the Recoater for the first time, it takes long time to inject the UV curable material.*
- *Purge Cycle can change in [Recoater Settings] in [Machine settings] screen.*

- *If the UV curable material is not injected when UP key is pressed, check the connections of the tube under the Recoat Mold.*
- *Check the amount of remaining UV curable material in the bottle.*
- *The pump does not start even if press the UP key when the Recoat molds are closed.*

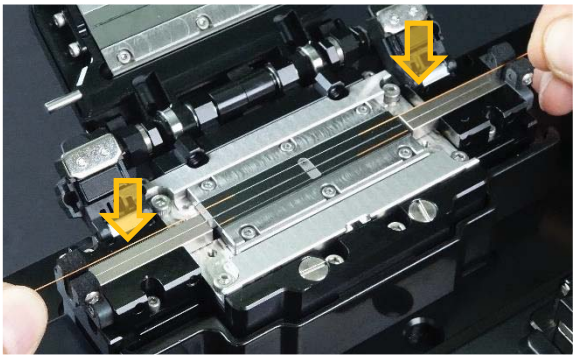


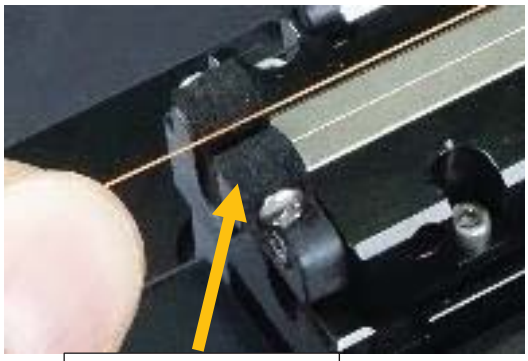


***Fujikura Ltd. recommends using the "950Y200" UV curable material produced by Japan Fine Coatings Co., Ltd. or "PC-373LD" UV curable material produced by Luvantix ADM Ltd.**
Please purchase the UV curing resin from UV curing resin local distributors. Fujikura doesn't sell UV curing resin.*

Setting fiber in the Recoat Mold

1. *Place the fiber in the groove while leaving both the sheath clamps open.*
   The fiber guides installed outside of the sheath clamp hold the fiber and fix it.

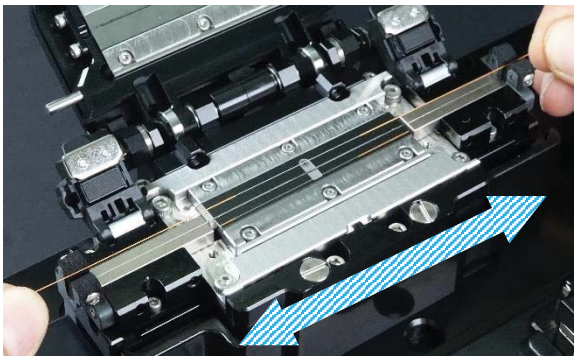


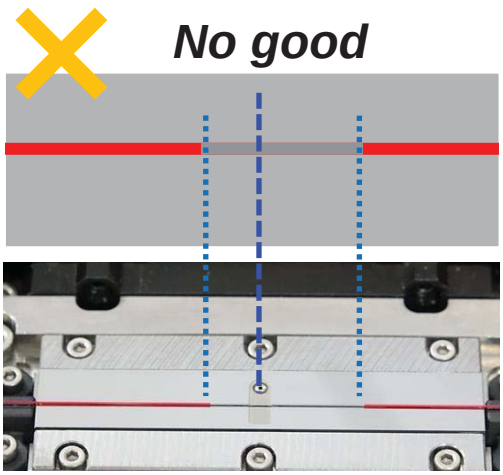


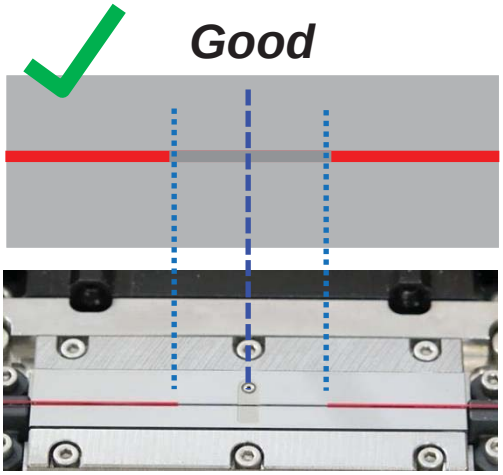
Fiber Guide

2. *Adjust the fiber position so that the center of the bare fiber part is on the center of the Recoat Mold.*

Move the fiber left and right to adjust the position







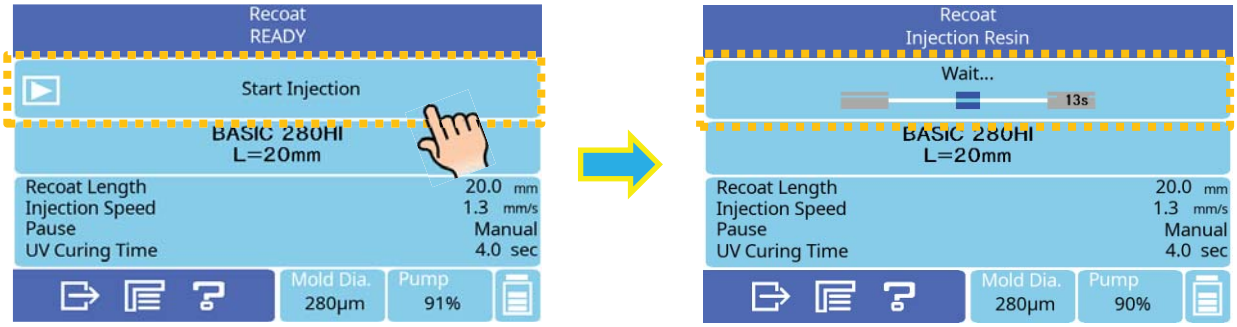
➢ *Confirm whether the fiber is aligned on the groove of the Glass Mold. Otherwise the Glass Mold may be broken by pinching the fiber when it is closed.*

3. *Close either sheath clamp to set the optical fiber.*
4. *Pull the optical fiber with a tension. Then close the opposite sheath clamp to set the optical fiber.*
5. *Check the optical fiber is set into the U groove of the recoat mold. If not, set it again.*
6. *Close the Recoat Mold gently. Be careful not to pinch foreign material.*

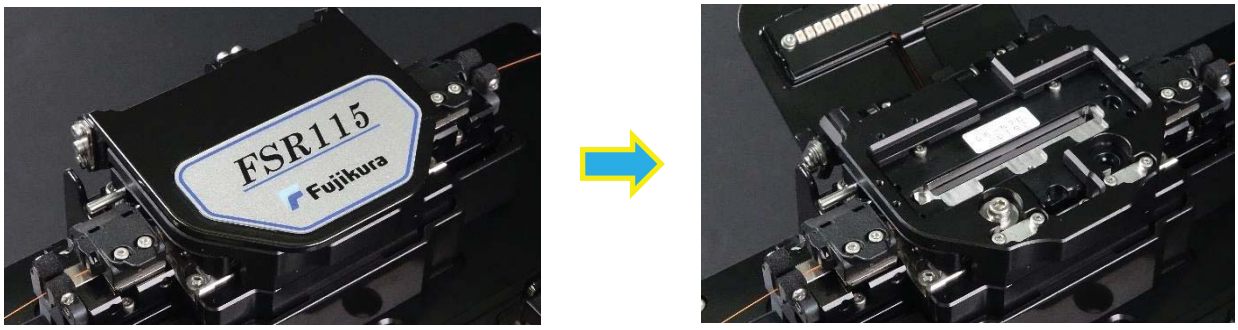
➢ *Please open and close the Recoat Mold gently. If you open and close roughly, the Recoat Mold may be cracked, damaged, or misaligned.*

Injecting UV curable material

1. *After closing the Recoat Mold, press* SET *key of the sheet key, or touch [Start Injection] part described below to start injection of the UV curable material.*



2. *After injecting the UV curable material, pause state is displayed. Open only the top cover, and confirm that the UV curable material recoats the fiber as you wanted. If [Pause After Injection] is set to "Pause OFF", the UV lamp irradiates immediately.*



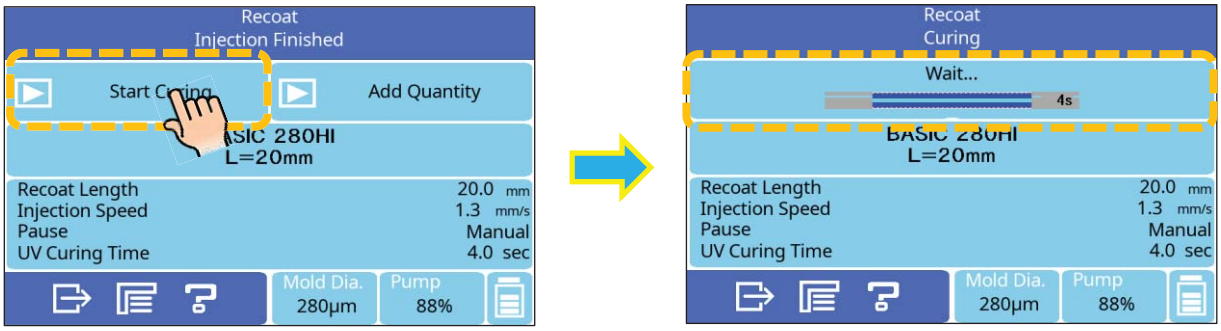
- *If you open the whole Recoat Mold after injecting the UV curable material, the material will leak outside of the groove. In that case, redo the operation.*
- *Be careful not to drop alcohol or UV curable material on the UV lamps in the Top Cover. Otherwise, clean it by using a dry gauze immediately.*

3. *If the amount of injection UV curable material is not enough, UP key until the UV curable material reaches the coating edge. Repeat pressing UP key to fill the amount.*

- *The amount of the injecting material by pressing UP key can be changed in [Recoat Settings].*

Irradiation of the UV lamp

1. *After confirming the UV curable material reaches the coating edge, close the Top Cover and press SET key or touch [Start Curing] to turn on the UV lamp.*

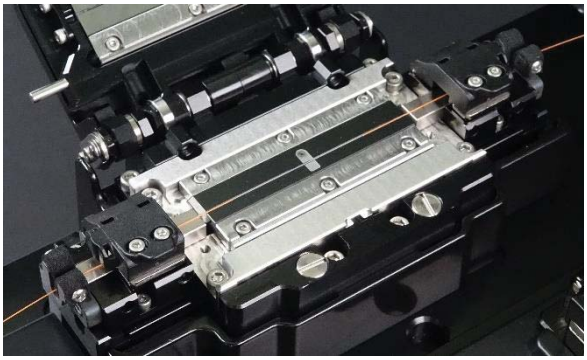


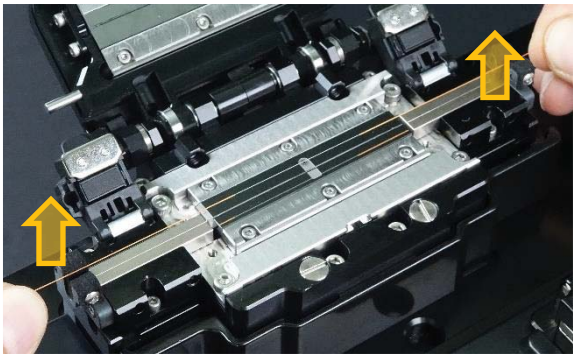
2. *After the UV curing time reaches the set time, the buzzer sounds to inform completion of the recoat operation.*

- *Do not open the Recoat Mold or the Top Cover while the UV lamp is turned on.*

Removing fiber

Open the Recoat Mold gently and then open the Sheath Clamps. Hold the fiber and lift it.





Cleaning Recoat Mold

Wipe the UV curable material off the Recoat Mold straight after the recoat operation.

- *If the discharged material is left on the Recoat Mold, it may cure by UV of a fluorescent light.*
- *When removing the cured material, the surface finish of the Recoat Mold may be damaged and may result in irregular recoating formations.*
- *If the Recoat Mold is closed and is left without wiping the UV curable material, the upper and lower Recoat Mold may stick and then the surface finish may be damaged.*

When operating continuously, return to the first procedure.
Put a soft tissue or gauze in between the upper and lower Recoat Molds when the Recoater is stored or left unused.

Storing recoat results

The recoater can store 5000 recoat results in the memory. The saved contents change depending on the recoat mode.
** The result of the special mode is not able to save.*

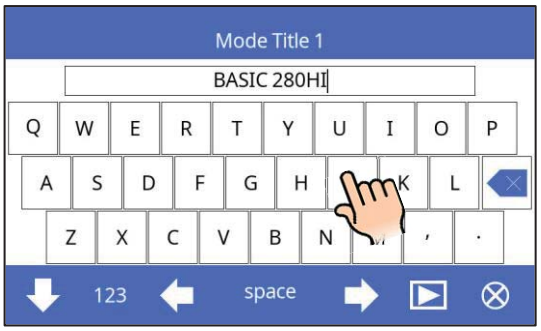
➢ *After the 5000th result is stored, 5001st recoat result is written over 1st result.*

How to input Mode title/Comment/Password

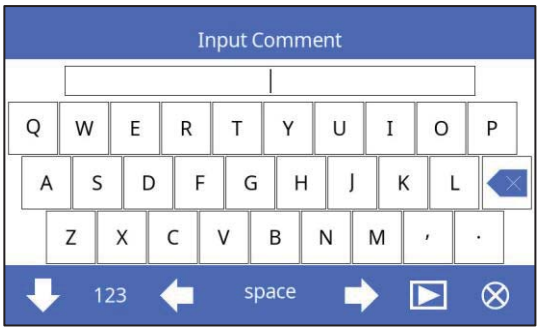
Select [Mode Tile/Comment/Password] and the screen turns to a keyboard as below.

1. *Touch the texts to enter.*
2. *After entering the texts, touch icon to execute.*

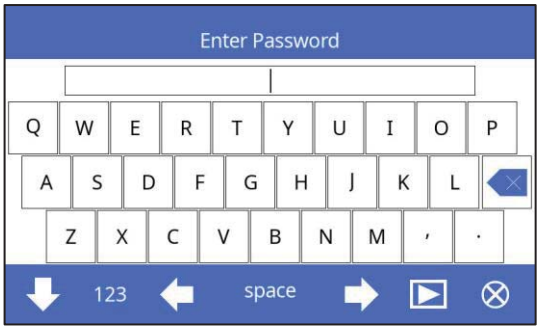
When entering password, the correct password goes to the next page. Wrong password returns to the previous page.



Mode Title 1 screen



Input Comment screen



Enter Password screen

Pre-operation Cleaning and Checking

It is possible to maintain the performance of the Recoater for a long time with proper cleaning and maintenance.

Cleaning of the Recoat Mold

Be sure to wipe off the UV curable material off the Recoat Mold after recoating.

Clean the Recoat Molds with alcohol-impregnated lint-free tissue or gauze. Do not use any liquid other than alcohol. Otherwise, it may cause deterioraton or breakage of this product.
To clean the groove, move an alcohol-impregnated cotton swab in the direction along the groove only. Do not scrape the groove forcefully. Otherwaise, it may cause breakage of the Recoat Mold. Insufficient cleaning may cause irregular recoating formations or insufficient injection amount.

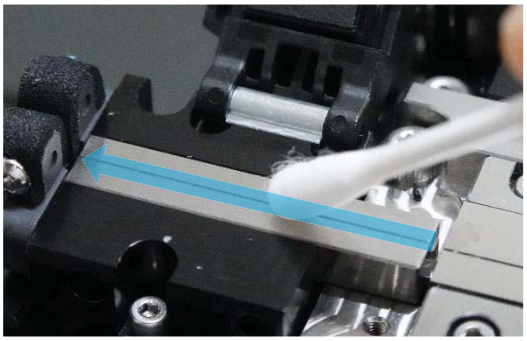
Cleaning of the Glass mold

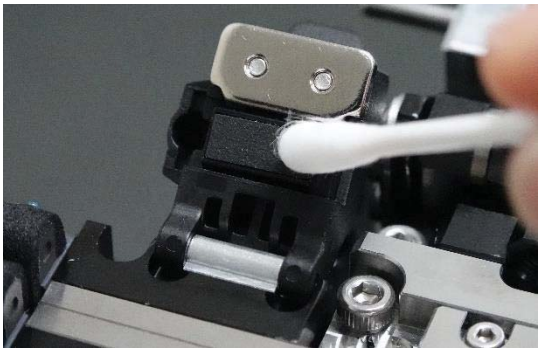
Cleaning of the U groove

- *After injecting UV curable material, be sure to clean the Glass Mold like above photos.*
- *After recoat operation, be sure to clean both the upper and lower Glass Molds.*
- *Use the alcohol of 99% or more of purity.*

Cleaning of the Fiber Height Adjuster

Clean the rubber pads on the Sheath clamp and surface of Fiber Height Adjuster otherwise the optical fiber cannot be held and slippage may occur. Please check and clean before operation. Do not use any liquid other than alcohol.

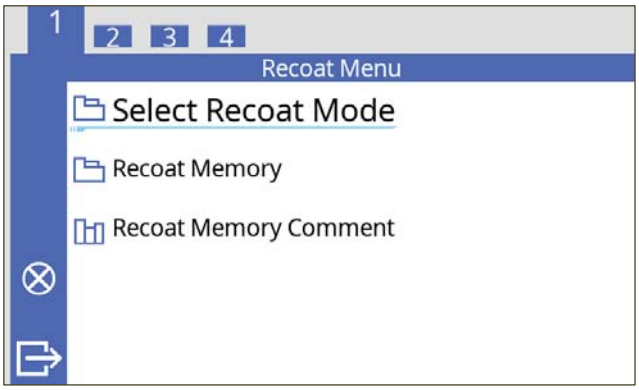




- *Clean the upper and lower rubber pads by moving an alcohol-impregnated cotton swab in one direction only.*
- *Use the alcohol of 99% or more of purity.*

Composition of Recoat Menu

Enable to edit recoat mode and check the recoat result saved in the memory.



Item	Description
Select Recoat Mode	*Recoat Mode can be selected according to fibers.* *Recoat Mode Parameter can be edited and set.*
Recoat Memory	*Past recoat results and the parameters can be checked.* **[Special settings] and [UV only] cannot be saved.*
Recoat Memory Comment	*The recoat result is automatically stored in memory. Once a commented is entered, the same comment is used for subsequent recoat results. At the time of shipment from factory, there is no comment inputted.*

Selecting Recoat Mode

It is necessary to setup the optimal recoating parameter for a particular UV material and select the suitable recoat mode. The main parameters stored in each mode are as follows.

- *Resin Injection Quantity*
  Recoat length [mm] or Recoat Volume [ul]
  The unit of the Resin injection Quantity can be changed in the [Indication Settings] of the [Machine Settings] in the [Setting Menu].
- *Resin Injection Speed[mm/s] [ul/s]*
- *Quntity Adjsut Ratio*
- *Add Quantity[%]*
- *UV Curing Time[sec]*
- *UV Lamp Power*

<u>How to set the parameters of Recoat Mode</u>

- *Recoat length [mm]*
  Change the value when you want to control recoating length.
- *Recoat Volume [ul]*
  Change the value when you want to control the quantity of the UV curable material.
- *Resin Injection Speed*
  The injection Speed can be changed.
- *Add Quantity*
  The quantity of additional injection of the UV curable material can be set.
- *UV Curing Time*
  Change the value depending on the type of the coating material of the recoated fiber or the refractive index of the UV curable material.
- *UV Lamp Power*
  The power of the UV Lamp can be set.

Operation for Recoat Mode

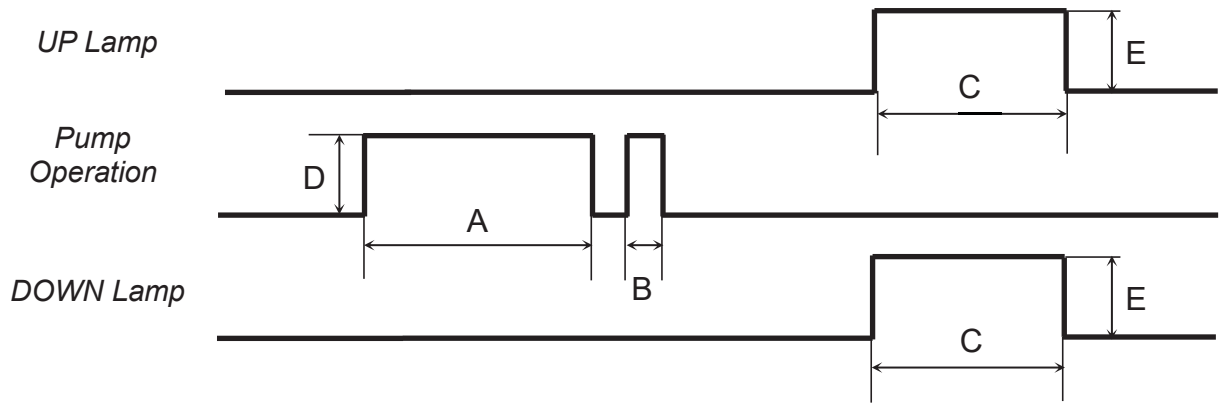
There are 4 modes for recoat mode as follows.
** [****] in the table below indicates the mold diameter.*

Name of Mode	Description
*BASIC **** HI*	*This mode is for high refractive index material.* *Optimal recoating for high refractive index material can be achieved by changing UV Lamp On time or UV Lamp Power in this mode.*
*BASIC **** LI*	*This mode is for low refractive index material. Default of the UV Lamp On time is 10 seconds.* *Optimal recoating for low refractive index material can be achieved by changing UV Lamp On time or UV Lamp Power in this mode.*
*SPECIAL *******	*This mode is to enable to change the injection quantity, speed, UV lamp power and time individually to stabilize the recoat shape.* *Set [Special Setting] on the 2nd page of the BASIC mode can set the same way.*
UV Only	*Enable to set the UV lamp only; use this mode when the manual recoat operation is executed.*

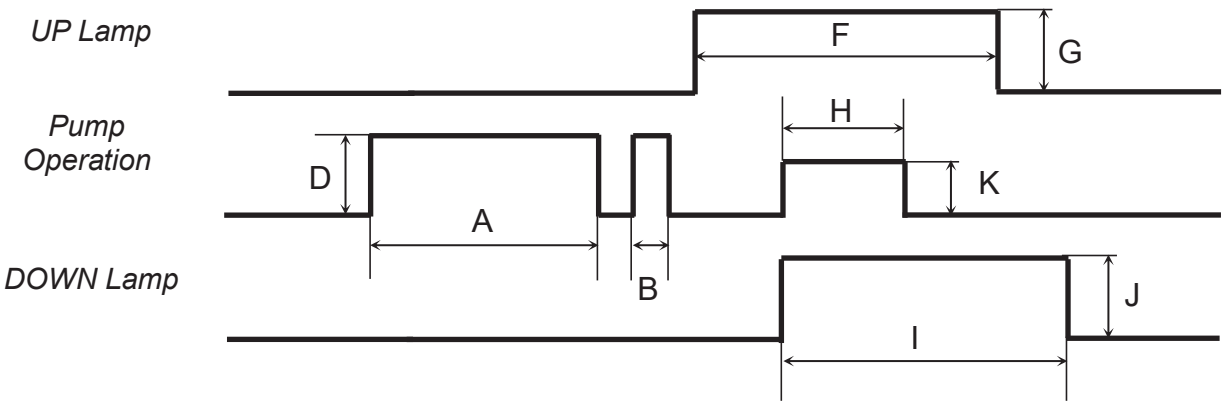
In according to the difference of the refractive index and the condition of curing, there are Hi and LI modes in BASIC mode in advance.
In these two modes, the initial settings of the UV curing time and the UV lamp power are different.
In both modes, the UV curing time and the UV lamp power need to change the parameter accordingly.

The movement outlines of BASIC mode and SPECIAL modes are as following.

≪BASIC≫ Mode



≪SPECIAL≫ Mode



*Total operation time of SPECIAL mode takes longer time than BASIC mode.

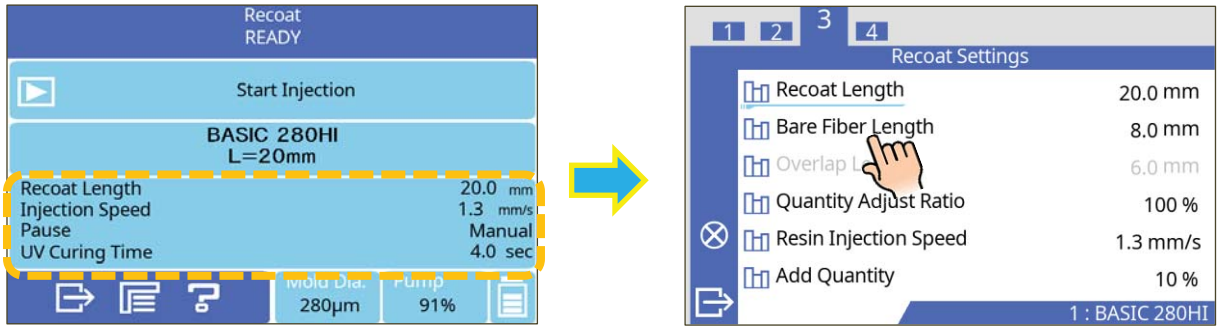
A: Resin Injection Quantity	B: Add Quantity	C: UV Lamp On Time
D: Resin Injection Rate	E: UV Lamp Power	F: UP Lamp On Time
G: UP Lamp Power	H: Re-Resin Injection Quantity	I: DOWN Lamp On Time
J: DOWN Lamp Power	K: Re-Resin Injection Rate	

Checking or editing Recoat Mode

Recoating parameters in each Recoat Mode can be modified. To edit parameters follow the steps below:

Check the edited mode

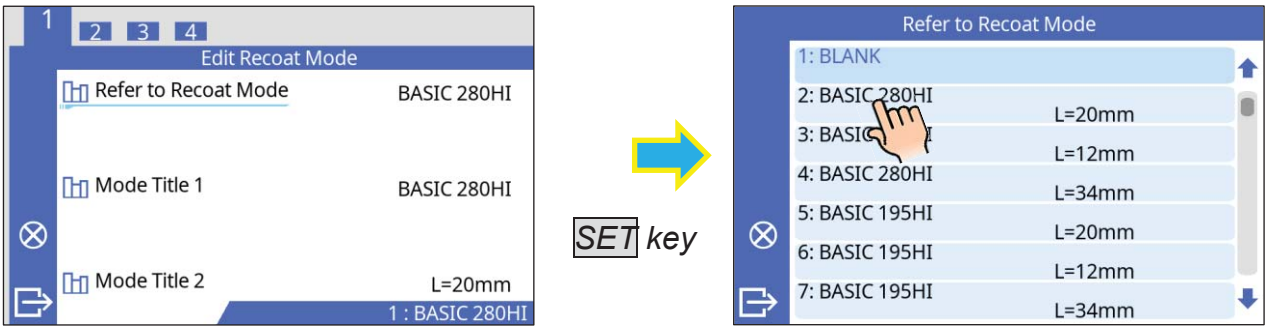
1. *Touch the part of the current mode in [Ready] screen.*
2. *Select the parameter which you wish to edit in [Recoat Settings].*
3. *Change the amount.*
4. *Touch icon to return to [Ready] screen.*



Initialization of the edited parameter

To return all parameters to the initial values after changing the values follow below steps:

1. *Touch the part of the current mode in [Ready] screen.*
2. *Select [Recoat Settings] in [Edit Recoat Mode].*
3. *Select the Recoat Mode you wish to edit in the list.*
4. *Press SET key after the message shows up.*
5. *The parameter starts to be initialized.*
6. *After editing, touch icon to return to [READY] screen.*

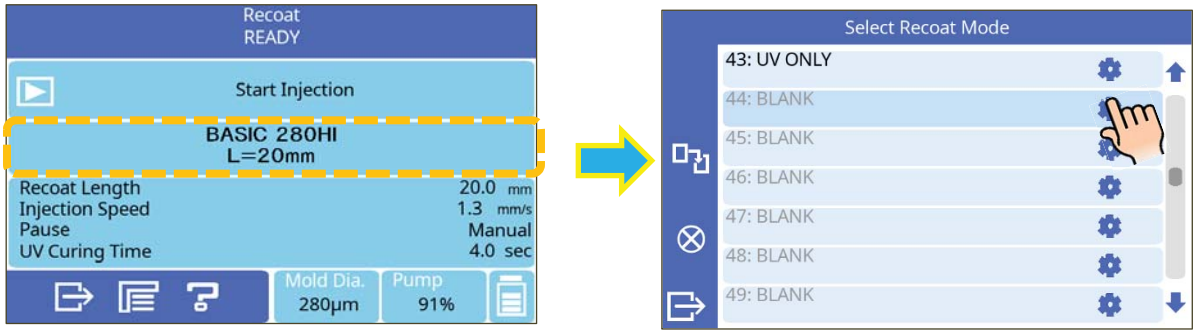


Creating or erasing recoat mode

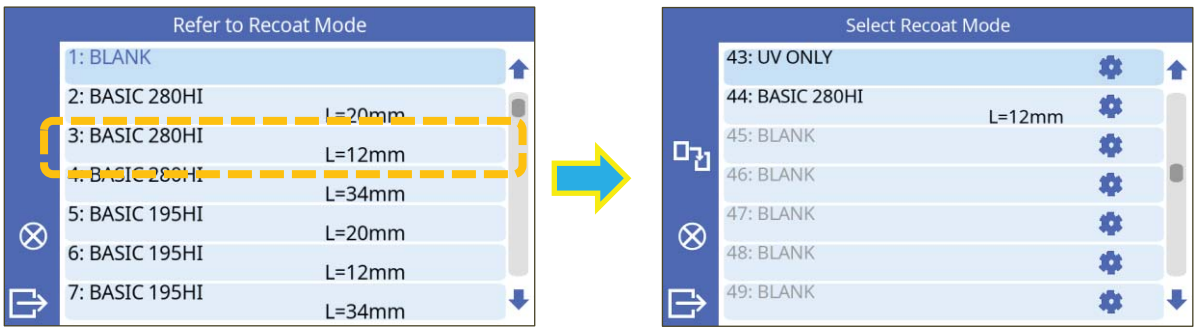
How to create recoat mode

Standard recoat modes are stored when the Recoater is delivered, and all the other modes are displayed as [BLANK]. Follow the procedures below to add a new mode. The Recoat mode can create up to 100 modes.

1. *Touch the Recoat mode part in [Ready] screen. The [Select Recoat Mode] shows up.*
2. *Touch icon of "BLANK" line in [Select Recoat Mode] screen.*



3. *A message shows up and press SET key or touch icon.*
4. *A new mode is displayed in the line you selected.*



How to delete a recoat mode

Recoat mode can be deleted. The "BLANK" is displayed in the line after you deleted the recoat mode.

1. *Select the recoat mode you wish to delete and touch icon to enter [Select Recoat Mode].*
2. *Select "BLANK".*
3. *A message shows up and press SET key or touch icon.*
4. *The recoat mode is deleted and "BLANK" is displayed instead.*

- *Mode No. 1 cannot be deleted.*
- *Mode No. 1 is automatically selected after deleting a recoat mode.*

Parameter of Recoat Mode

BASIC mode

There are 4 pages in the BASIC mode. The parameters are as follows.
Parameter of the BASIC mode

Parameter	Description
Fundamental settings	
Refer to Recoat Mode	List of recoat modes stored in database is displayed. A selected recoat mode stored in the database area is copied to a selected recoat mode in the user-programmable area.
Mode Title 1	Title for a recoat mode expressed in up to 11 characters.
Mode Title 2	Title for a recoat mode expressed in up to 11 characters. Title 2 is displayed under the Title 1 at the [READY] screen.
Mold Diameter	Displays the diameter of the Recoat Mold that is used.
Fiber Diameter	Enter the cladding diameter of recoat to be used. The cladding diameter of the optical fiber value needs to be changed when the optical fiber that has the different diameter to be recoated.
Cladding Diameter	Enter the cladding diameter of the fiber.
Special settings	Enable to turn ON/OFF the Special Settings. The initial setting is OFF. Set ON changes the display of the 3rd page and operates the same moves as the special mode. Refer to [Special Settings] for details.
Recoat settings	
Recoat Length[mm] Recoat Volume[ul]	Set the injection quantity of the UV curable material.
Bare Fiber Length[mm]	Enter the stripped length of the fiber coating. This length is used for calculation of the injection quantity.
Overlap length	This value is caliculated from recoat length and bare fiber length.
Quantity Adjust Ratio	Calibration value of the increase/decrease amount of the injection quantity affected by the temperate or humid. If the correction value was used, the recoating time may become longer.
Resin Injection Speed[mm] Resin Injection Speed[ul]	Set the speed of the injection. *Too high speed may cause bubbles in a recoated area.
Add Quantity	Set the additional injection amount of the UV curable material after injection. Or, set the additional injection amount of the UV curable material when pressing Up key or icon. * The setting value is the amount when [Resin injection amount] is set to100%.
Pause (After Injection)	Set wait time of the start of the UV lamp turn on after injecting the material. When "Manual" is selected, press SET key to turn on the UV lamp. It is recommended to select “Manual” to confirm the injection of the material.
UV curing time	Set the on time of the UV lamp.
UV lamp Power	Set the power of the UV lamp. If the UV lamp power is set to high, the curing time will be faster but the shape may become unstable.

UV curable material Injection Quantity

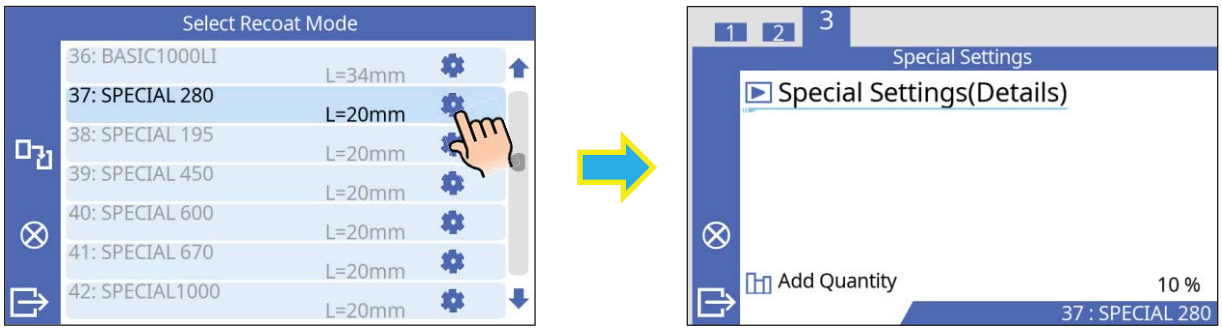
This recoater can change the injection quantity of UV curable material by [mm] or [ul] and adjust accordingly. However, the overlap amount is buried by the cleaning condition or the fiber coating diameter.
When conducting the recoat operation, please make sure to check the injection quantity is enough by observing from the top as the cover is opened.
Also enter the appropriate injection quantity if the filling amount is insufficient each time.

It is not easy to overlap when the difference between fiber coating dia. and Mold dia. is small.

It is easy to overlap when the difference between fiber coating dia. and Mold dia. is large.

SPECIAL mode

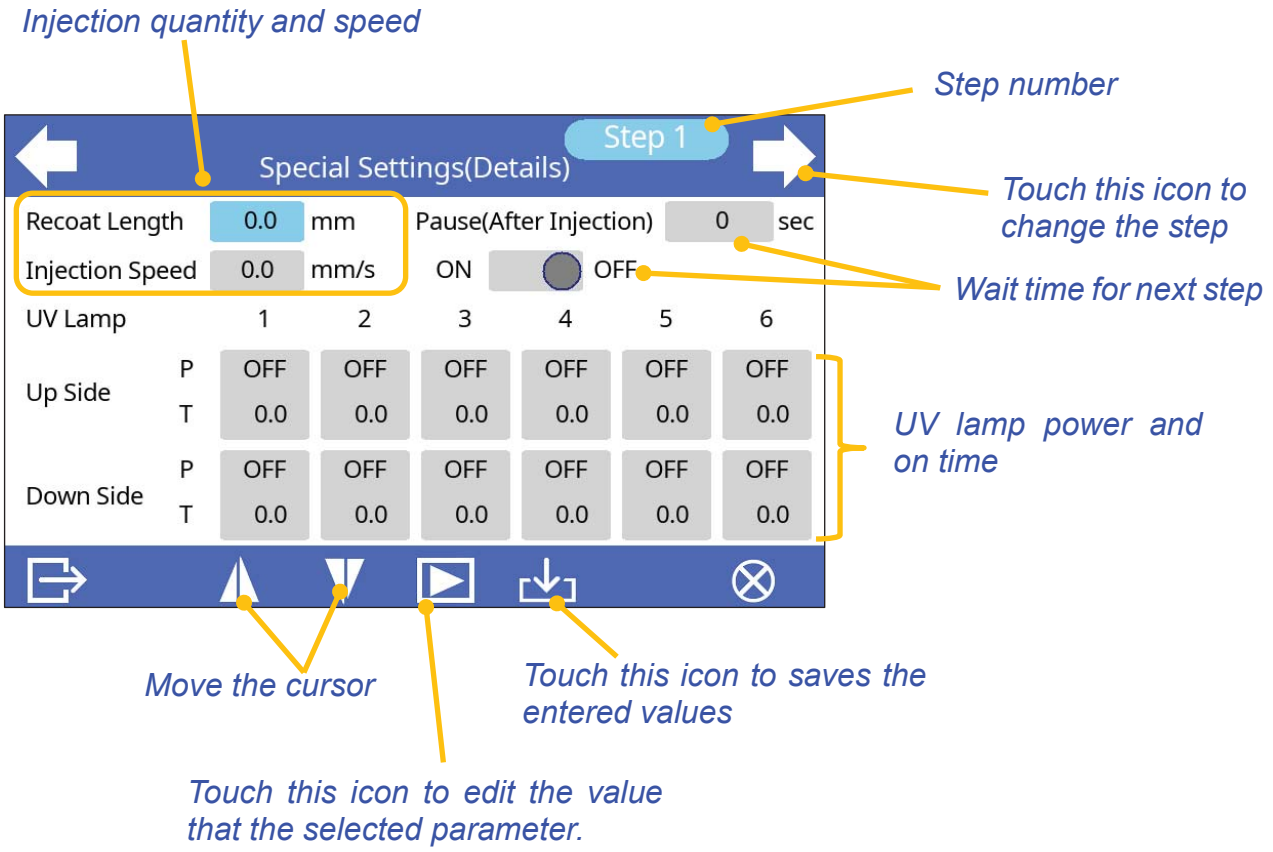
In SPECIAL mode you can set the injection quantity and rate or the specific UV lamp settings.



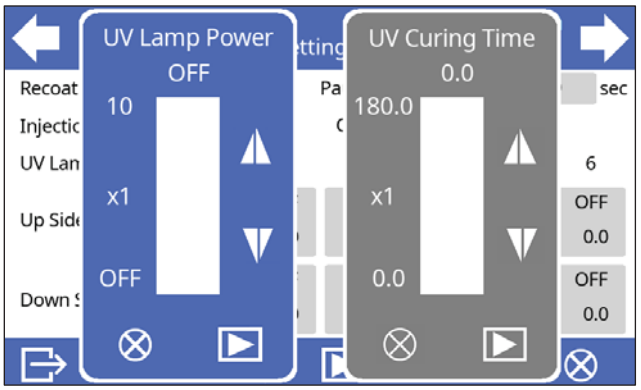
Parameter	Description
Fundamental settings	
The structure of the menu is the same as BASIC mode. Please refer to the BASIC mode for details.	
Special settings	
Special settings (Details)	*・Each operation of the UV curable material or UV lamp etc. is individually controlled from step 1 up to step 10. ・Control the irradiating position of the UV lamp individually, or control the on sequencing of the UV lamps or to inject the material in a step-by-step manner. Special Settings (Details) is on next page.*
Add Quantity	*Set the additional injection amount of the UV curable material after injection. Or, set the additional injection amount of the UV curable material when pressing Up key or touch icon. * The setting value is the amount when [Resin injection amount] is set to100%.*

The parameter of Special settings (Details)

Set the parameters at each step and conduct the continuous operation, while adjusting the settings to suit the user.
Tocuh icon to save all the settings after adjusting the settings at every STEP.



Touch each lamp on the screen, and then display the input secreen for UV lamp power and time as below screen. The blue frame is editable. The editable parameter can be changed by touching each frame.

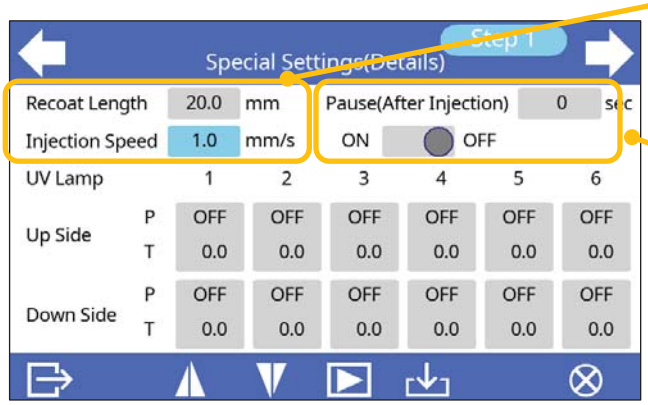


- *Injecting UV curable material and turning on UV lamp can be performed at the same time.*
- *UV lamp power can be set from 1 to 10 or OFF.*

Movement of Special Settings

It is possible to control various parameters by using Special Settings.

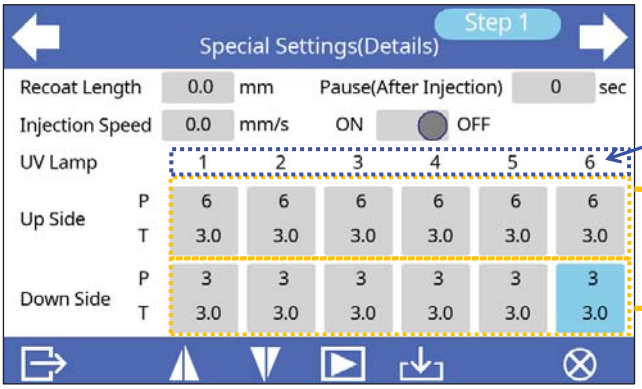
Injection settings



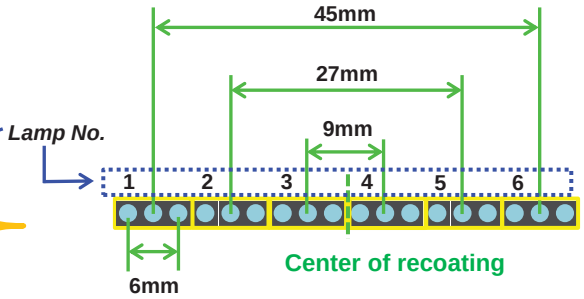
Enter the injection settings in this area.

Change to [MANUAL] when operators want to check the injection amount after injecting.

Settings of power and time of UV Lamps



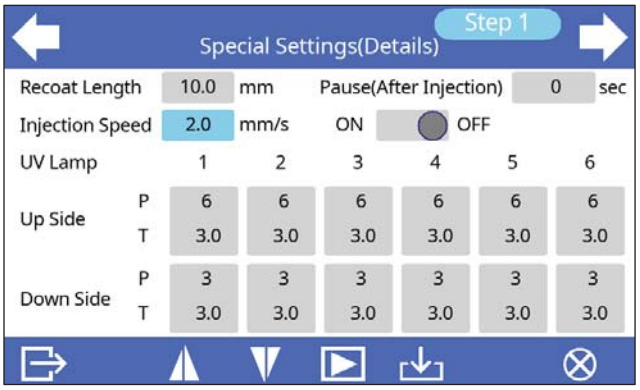
Position of UV Lamps



Lighting position of each UV Lamp

In above settings, power of all upper UV Lamps are [6] and on-time of all upper UV Lamps are [3.0] seconds.
It is possible to set different power from UV Lamp No.1 to UV Lamp No.6.
No.1 is the left UV Lamp most and No.6 is right UV Lamp most.

An example of Special settings



Injection and UV curing can be moved at the same time by entering both parameters.

In above settings, UV Lamps are lighted during injecting UV curable material.

Memory of recoat results

This Recoater stores up to 5,000 recoat results. Contents of data stored are different depending on recoat mode. The recoat mold used and the number of times what that mold have been used are also stored. The parameters of [Special settings] cannot be memorized.

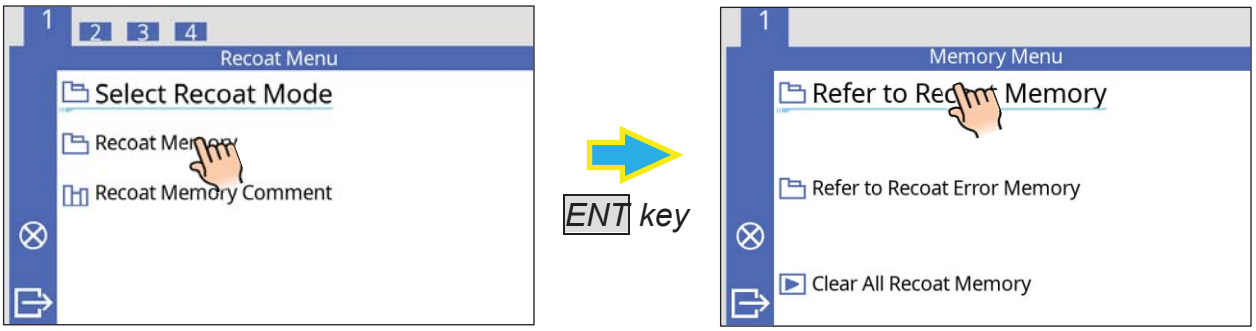
Reference or elimination of recoat results

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

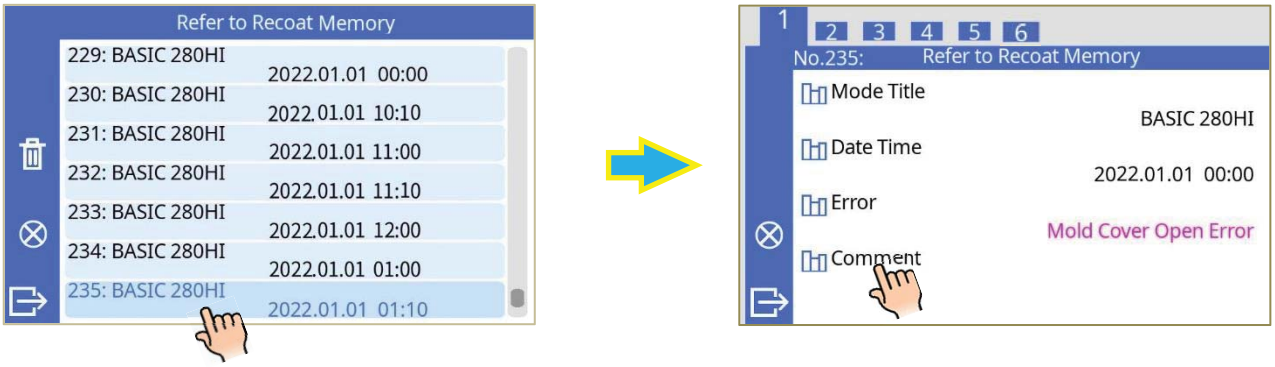
> ➢ *Memory data can be downloaded by USB. Refer to instruction manual of "Data Connection".*

How to display the recoat result data

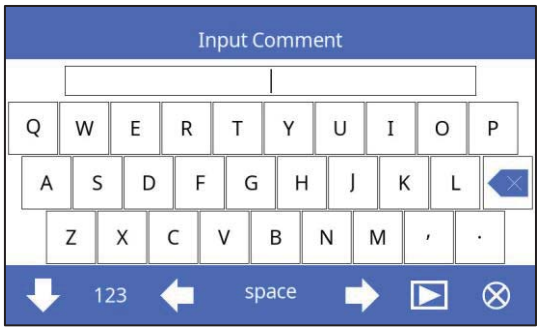
1. *Select [Recoat Memory] in [Recoat Menu] and select [Refer to Recoat Memory].*



2. *The list of recoat results is displayed. Select the memory you wish to check.*
3. *The memory you have chosen is displayed.*

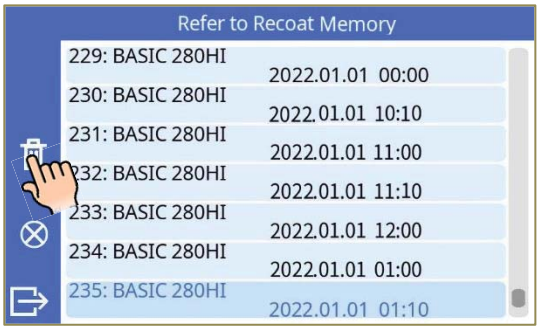


4. *Touching the screen or pressing the SET key to enter the keyboard screen for editing the comment.*



How to delete the recoat result data

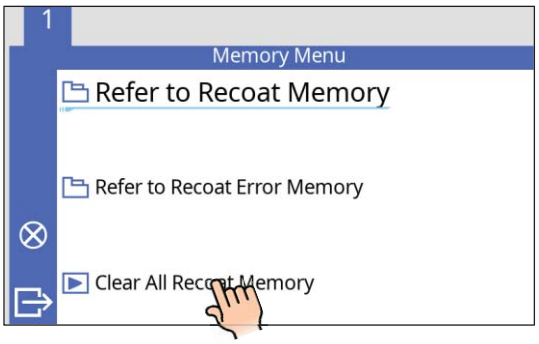
1. *Select the memory you wish to delete in [Refer to Recoat Memory].*
2. *Touch* *icon in the left.*
3. *A confirmation message shows up. Select "OK".*
4. *The memory you selected will be deleted.*

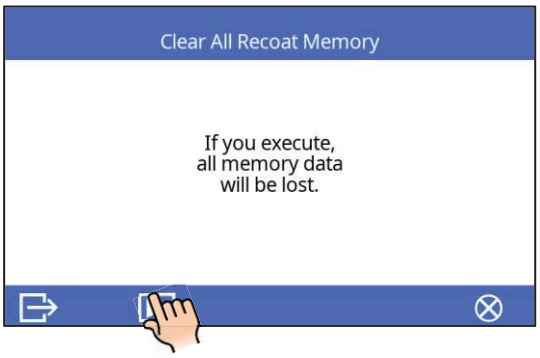


Clear all recoat result data

All recoat results can be cleared at once.

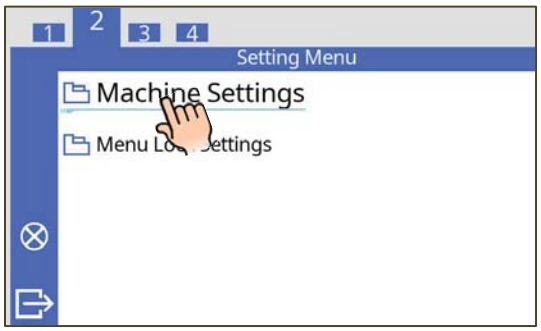
1. *Select [Clear All Recoat Memory] in [Memory Menu].*
2. *A confirmation message shows up. Touch* *icon to clear all recoat memories.*

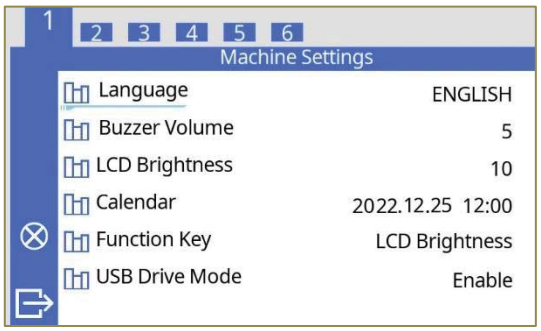




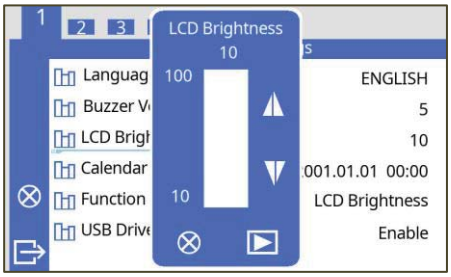
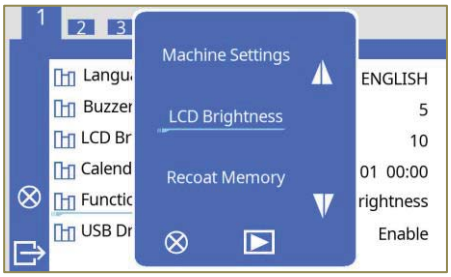
Machine Settings

Settings for the Recoator can be changed in [Machine settings].
Select [Machine Settings] in [Setting Menu].

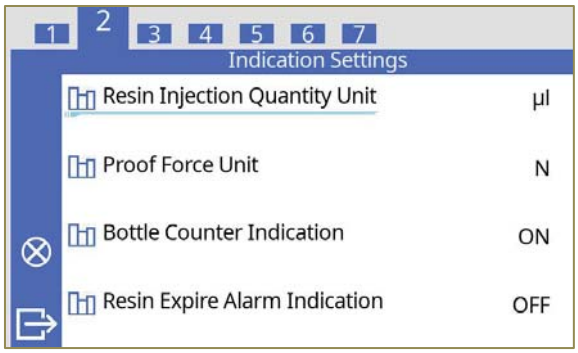




Machine Settings

Item	Description
Machine Settings	
Language	*Sets the Language to be displayed on the screen.*
Buzzer Volume	*Sets the sound volume of the buzzer.*
LCD Brightness	*Adjusts the brightness of the monitor.* 
Calendar	*Sets the time and date.*
Function Key (Fn key)	*Pressing the sheet key Fn opens the menus below.* *Machine Setting: Displays [Machine Setting] screen.* *LCD Brightness: Adjusts the brightness of the monitor.* *Recoat Memory: Displays the Recoat Memory.* *The factory settings is [Machine Settings].* 
USB Drive Mode	*Sets the USB Drive Mode enable or disable. If this mode is enabled and the Recoater and any PC are connected with a USB cable, the Recoater enters the USB Drive Mode.* *See Section [Install the instruction Manual and the Utility Software] in the quick reference guide.*

Item	Description
Indication Settings	
Resin Injection Quantity Unit	Sets the displayed unit of the resin injection quantity.
Bottle Counter Indication	Changes the indication of the Bottle Counter to ON or OFF.
Resin Expire Alarm Indication	Changes the indication of the alarm message to ON or OFF.
Recoater Settings	
Mold Diameter	Sets the diameter of the Recoat Mold size to the Recoator.
Purge Cycle	Sets the injection amount of the UV curable material when pressing UP key. The larger the number, the larger the injection amount.
Pump Reverse Cycle	Sets the pump cycle when reversing the UV curable material from the pump to the UV resin bottle. The larger the number, the longer the reversing time.
Auto Resin Replacement	Sets ON/OFF setting for automatically filling the UV curable material in the pump. When setting ON, the pump will be always filled with the UV curable material 100% automatically. The default setting is to be “OFF”. (Note) When setting “ON”, the pump may cause an unstable amount of the UV curable material inside of the pump.
Mold Light	Sets ON/OFF setting for LED light. When setting “ON”, the LED light near the Recoat mold lights up and makes the injection of the UV curable material to observe easier.
Bottle Counter Settings	
Filling Volume	Enter the amount of UV curable material filled in the Bottle.
Consumption Factor	Adjusts the consumption amount of UV curable material caused by viscosity change of the UV curable material by temperature, humidity, etc.
Refill Warning	Sets the amount to indicate the reduction alarm of the material.
Resin Expiration Settings	
Expire Date	Enter expire date on the bottle to be used.
Alarm Settings	Sets the expiration date to indicate the alarm.
Power Saving Timer	
Sleep	Sets Sleep time of the LCD monitor and sets the time of turning off the power of the Recoater.
Shut Down	



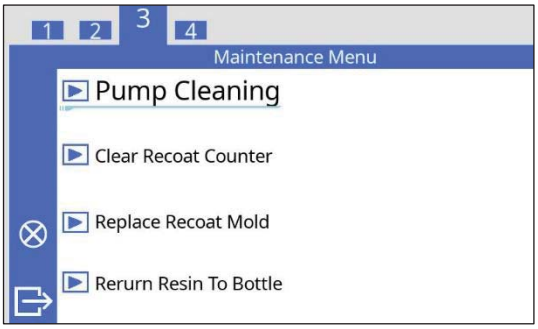
Menu Lock Settings

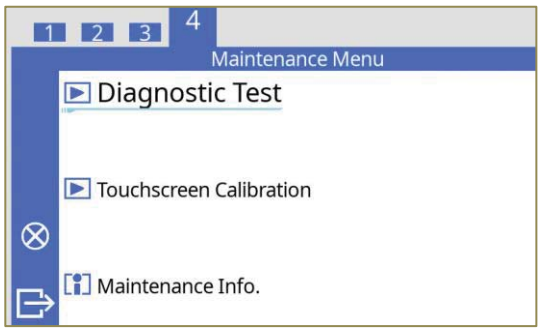
Supervisor can limit the function by [Menu Lock Settings].
When you enter the Menu Lock Settings, you need to enter the password.
The factory value is "0".

Item	Description
Password Setting	
Menu Lock Password	Changes the password to access the [Menu Lock Settings].
Recoat Mode	
Select Recoat Mode	Setting to "Disable" prevents unauthorized editing and selecting of recoat modes.
Edit Recoat Mode	
Memory	
Clear All Recoat Memory	Setting to "Disable" prevents unauthorized deleting of result data on the memory.
Machine Settings	
Machine Settings	Setting to "Disable" prevents unauthorized editing of the [Machine Settings] menu.
Indication Settings	
Recoater Settings	
Bottle Counter Settings	
Resin Expiration Settings	
Power Saving Timer Settings	
Maintenance	
Pump Cleaning	Setting to "Disable" prevents operation of various functions related to the [Maintenance Menu].
Clear Recoat Count	
Replace Recoat Mold	
Return Resin To Bottle	
Maintenance	
Diagnostic Test	Setting to "Disable" prevents operation of various functions related to the [Maintenance Menu].
Touch Screen Calibration	

Maintenance

The Recoater has the ability to perform routine maintenance. This section describes how to use the maintenance menu.





Item	Description
Maintenance Menu	
Pump Cleaning	*Clean and wash the UV curable material in the tubes of the Pump Head unit before transportation of the Recoater.* *Follow the instruction message displayed on the screen.*
Clear Recoat Count	*Set the Recoat Count "0". The actual count number is shown in the Maintenance Menu.*
Replace Recoat Mold	*Use this menu when replacing the Recoat Mold.* *Follow the instruction message displayed on the screen.*
Return Resin to Bottle	*Use this menu when returning the UV curable material from the pump to the UV resin bottle.*
Maintenance Menu	
Diagnostic Test	*Allows the operator to perform a simple check of the electric parts and Recoater performance.*
Touch Screen Calibration	Calibrates the touch screen. *Follow the instruction message displayed on the screen.*
Maintenance Info.	*Displays the Maintenance Information.*

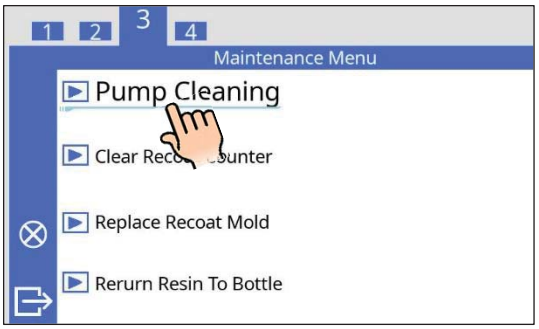
Pump Cleaning / Replace resin

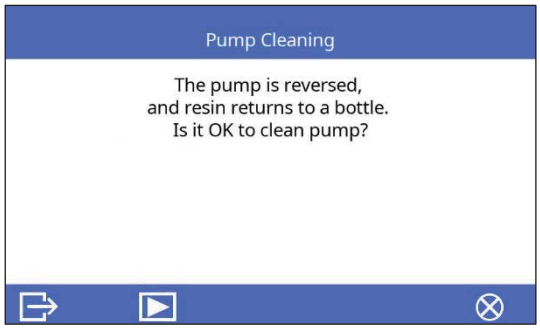
[Pump Cleaning] mode can clean and wash the UV curable material in the Pump and tubes unit before transportation of the Recoater, storing it for a long time or replace the type of the UV curable resin.

Operation procedure

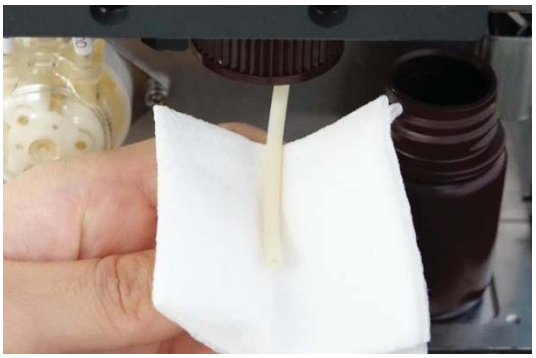
1. *Select [Pump Cleaning] in the [Maintenance Menu].*
2. *A confirmation message shows up. Touch* *icon to execute.*

   After running the Pump in reverse to return the UV curable material in the tubes to the Bottle, "Turn the power off" message is shown in the screen.
3. *Turn the power off as following the messages.*

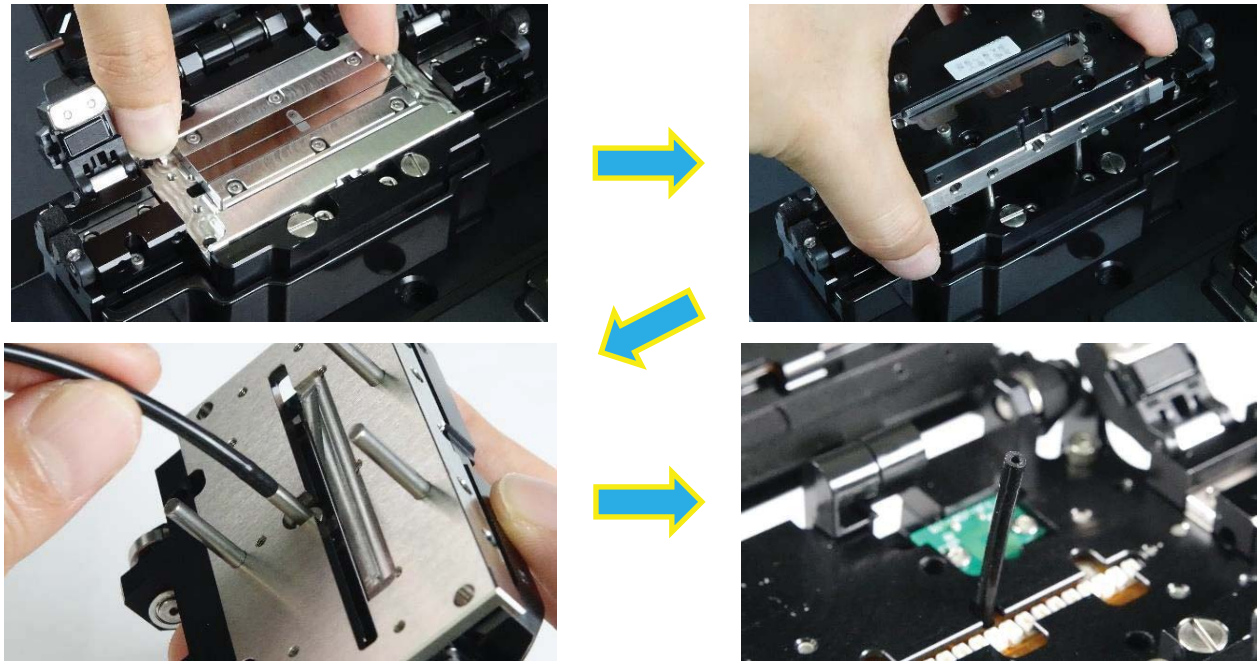




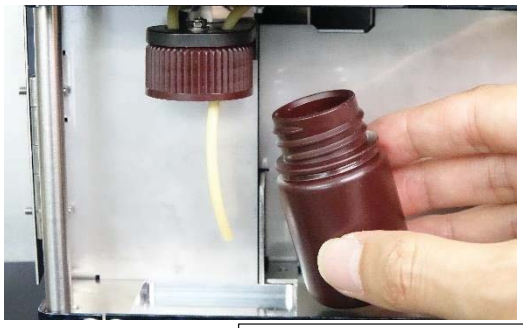
4. *Remove the UV resin bottle that is attached in the UV pump unit located in the left side.*
   Wipe off the UV curable material on the surface of tube.

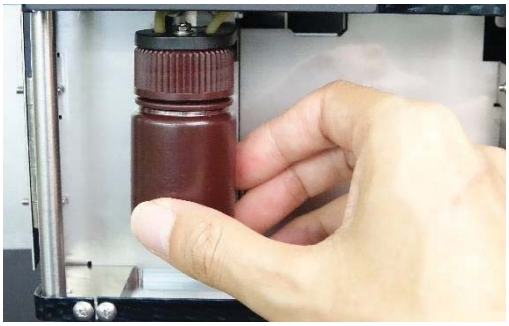


5. *To prevent the alcohol used during cleaning from entering the device, remove the Recoat Mold from the Recoator body and detach the tube*



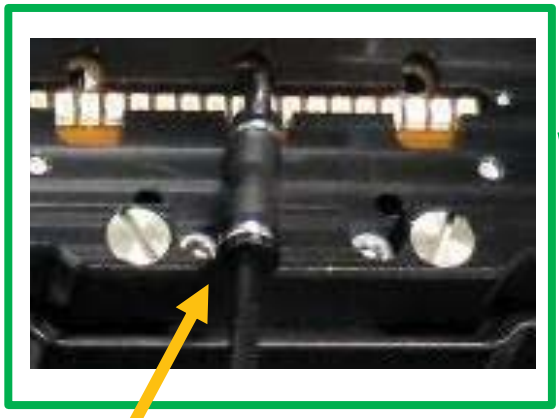
6. *Attach the bottle with alcohol.*

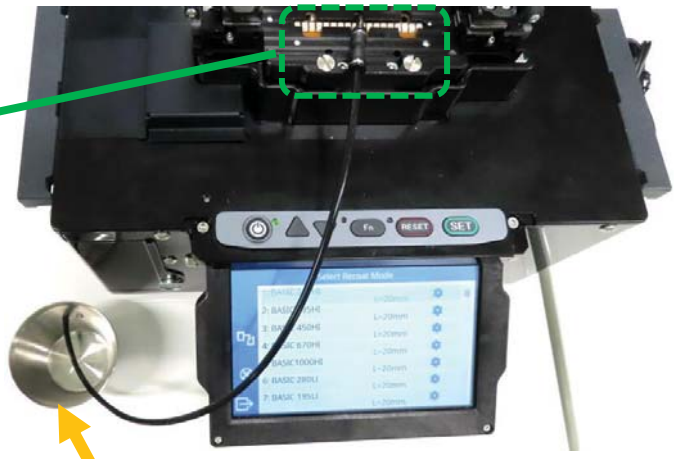




Alcohol for cleaning

7. *Prepare the adapter and the extension tube. Use an adapter is an applicable tube outer diameter of φ3. Fujikura recommend the PU3MEG manufactured by Pisco Ltd.*
8. *Attach an adapter and an extension tube to the tube from the Recoater. Place a bottle for a waste alcohol at the end of the extension tube.*



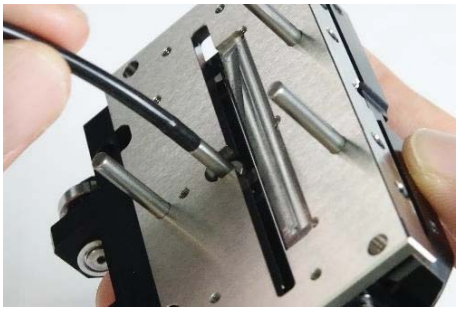


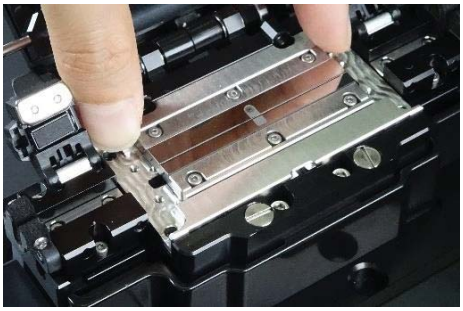
Adapter

Bottle for a waste alcohol

9. *Turn the Recoater power ON and follow the displayed instruction message on the screen.*
10. *After starting the cleaning, the alcohol will be discharged into the bottle.*
11. *Continue to clean until there is no contamination with UV curable material.*
    If the alcohol of cleaning is all gone, pause the cleaning, refill the alcohol, and restart the cleaning.
12. *If the wasted alcohol is no longer contaminated with the UV curable material, stop the cleaning and turn the Recoator power off.*

13. *Attach the Recoat Mold back to the Recoater body.*





14. *To clean the resin into the Injection adapter of Recoater mold, turn the Recoator power ON and then press UP key to discharge the UV curable material by injected alcohol.*

➢ *Be sure to wipe the discharged alcohol. Otherwise overflowing alcohol may cause machine failure.*

15. *Continue to inject the alcohol until there is no contamination of the UV curable material.*
16. *After confirming the UV curable material is no longer contaminated, return the alcohol inside the tube to the UV resin bottle by selecting [Return Resin To Bottle] menu.*
17. *Reset the recoat count.*
18. *Turn the Recoater power OFF.*
19. *Remove the bottle with cleaning alcohol, and then attach the empty bottle.*
20. *Leave the Recoater for more than 12 hours to dry alcohol off inside of the Reaoctor.*
21. *After that, put new UV resin into the bottle and inject it. Make sure the UV resin is transparent.*

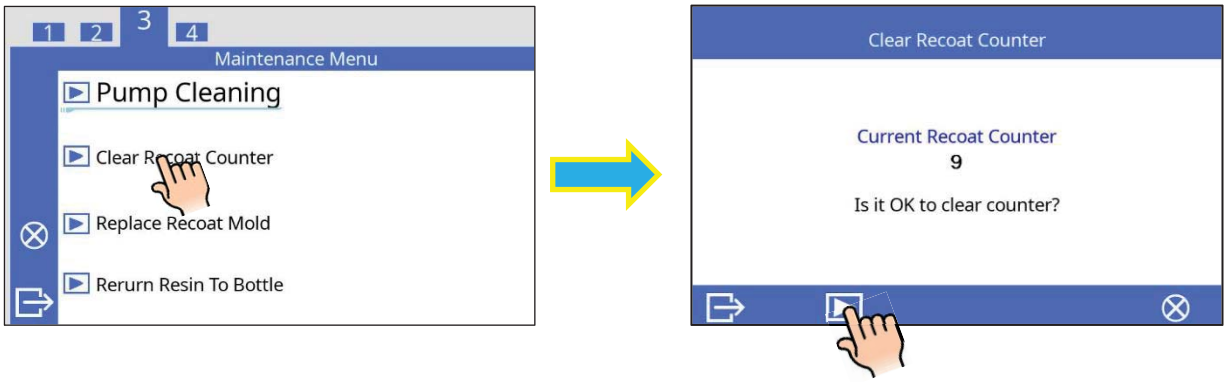
- ***Be sure to dry the pump for more than 12 hours after washing it.***

Clear Recoat Count

This function enables the stored number of recoat to be reset.
Use this function when replaced the UV curable material.

Operation procedure

1. *Select [Clear Recoat Counter] in Maintenance Menu.*
2. *A confirmation message shows up. After confirming, touch icon.*
3. *Initialize [Clear Recoat Counter] starts.*



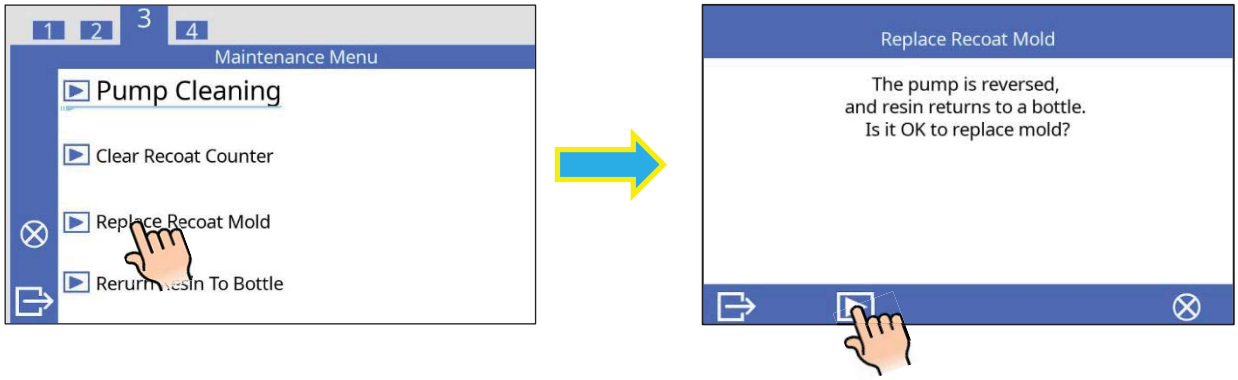
- *This function is included in the [Replace Mold] function.*
- *The number of recoat in the "Total Recoat Count" field displayed on the [Maintenance Info.] cannot be reset.*

Replace Recoat Mold

When the Recoat Mold is replaced, follow the procedures below.

Operation procedure

1. *Select [Replace Recoat Mold] in [Maintenance Menu].*
2. *A confirmation message shows up. After confirming, touch* *icon.*



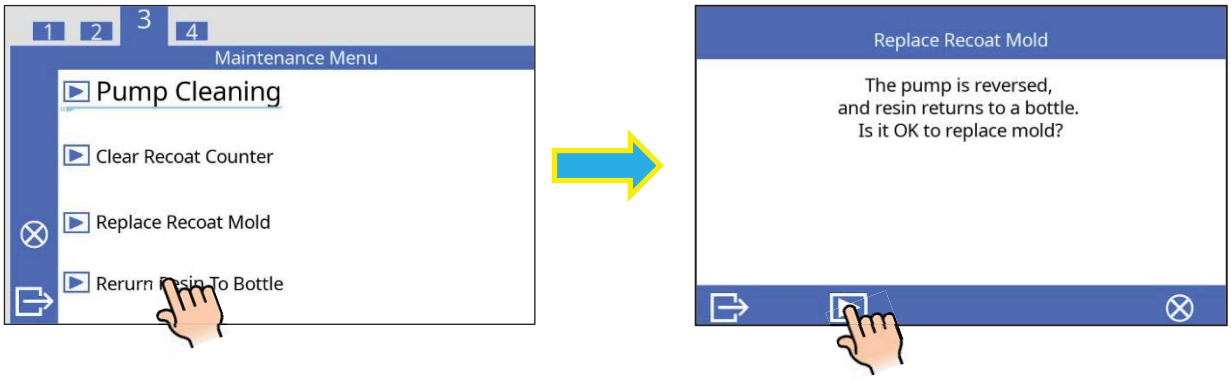
3. *After cleaning the tube, a message shows up and instruct to turn off the Recoater. Follow the message and turn the power off.*
4. *Remove the Recoat Mold and pull out the tube connected to the injection port.*
5. *Attach the tube to a new Recoat Mold and attach the Recoat Mold back to the body.*
6. *Turn on the Recoater and confirm the diameter of the Recoat Mold.*
7. *Initialize the recoat count.*

Return UV curable material to bottle

This function enables to return the UV curable material in the tubes and the pump to the built-in UV resin bottle.

Operation procedure

1. *Select [Return Resin To Bottle] in [Maintenance Menu].*
2. *A confirmation message shows up. After confirming, touch* *icon.*
3. *The recoater starts returning the UV curable material in the tubes and the pump to built-in UV resin bottle.*



Diagnostic Test

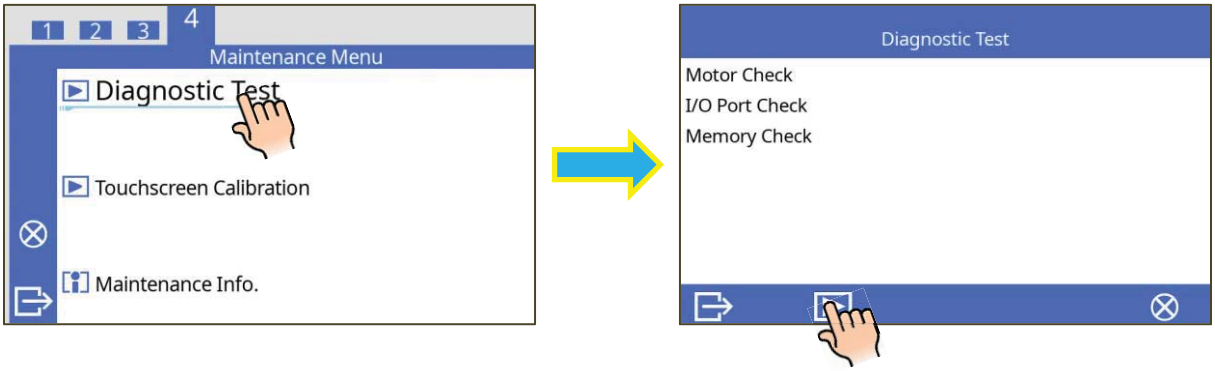
The Recoater has a built in diagnostic test feature that allows the operator to perform a simple check of the electric parts and Recoater performance.
The inspection items are as follows.

Inspection items for Diagnostic Test

Inspection Item	Description
Motor Check	*Check the Motor movement.*
I/O Port Check	*Checks for normal operation of the input and output terminals of the internal circuit.*
Memory Check	*Checks the memory of the internal circuit.*

Operation procedure

1. *Select [Diagnostic Test] in [Maintenance Menu].*
2. *Touch* ▶ *icon below and starts the diagnostic test.*



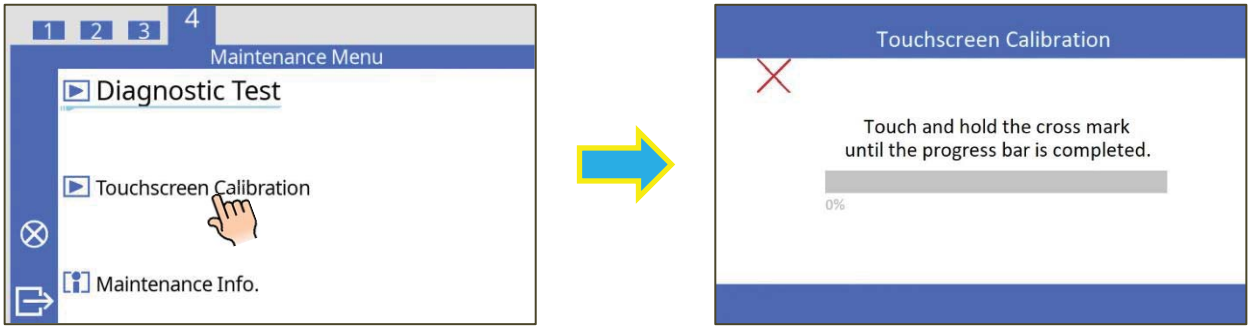
3. *After completing the [Memory Check], all the results are displayed on the screen.*

Touch screen Adjustment

This function enables to adjust the touch screen.
Try this function if the touch screen does not respond when you touch it.

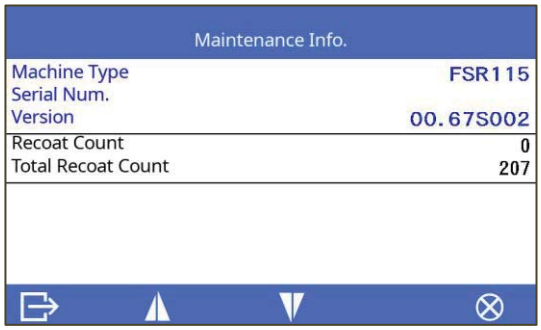
Operation procedure

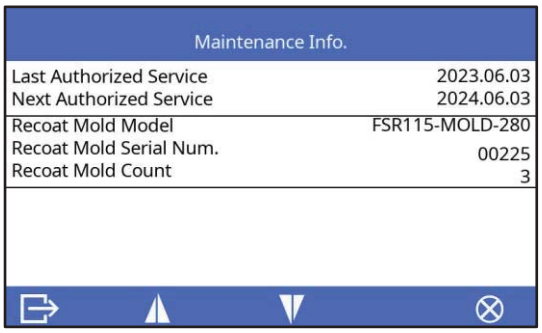
1. *Select [Touchscreen Calibration] in [Maintenance Menu].*
2. *The screen changes and shows the instruction messages. Please follow them.*



Maintenance Information

Enable to check the software version, the serial number, the status of use, and so on….
You can switch the screen with the icon at the bottom of the screen.





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

Item	Description
Machine type	*Model name of the Recoater*
Serial Number	*Serial number of the Recoater.*
Version	*Version number of the software.*
Recoat Count	*The number of recoat after the Recoat Mold replacement. Performing the function [Clear Recoat Count] resets this parameter to zero.*
Total Recoat Count	*The total number of recoat after the Recoater is shipped.*
Last Authorized Service	*The date of last authorized service.*
Next Authorized Service	*The scheduled date of next authorized service.*
Recoat Mold Model	*Display the Recoat Mold Model that attached.*
Recoat Mold Serial Number	*Serial Number of the Recoat Mold that attached.*
Recoat Mold Count	*Display how many times the attached mold has been used. If the power is not turned off in the proper procedure, the correct number of uses will not be stored.*

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

- *Model name*
- *Serial number*
- *Situation when the error occurs*

Error Message	Reason	Solution
Recoat Mold Cover Open Error	*・The Recoat Mold is opened.*	*・Do not open the Recoat Mold during recoat operation. Redo the recoat operation when this error happens.*

Power Supply

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

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

Recoat Operation

(1) Does not inject UV curable material.
- Check the amount of the material in the Bottle.
- Check all the connections of the tubes.
- When using the Recoater for the first time, it takes a long time to inject the UV curable material. Press UP key a several time in the READY screen to inject the UV curable material until the UV curable material comes out.

(2) UV curable material leaks a lot on the Recoat Mold.
- Clean the Recoat Molds with alcohol-impregnated lint-free tissue or gauze.
- Check the coating diameter of the fiber whether it is smaller than the diameter of the Recoat Mold.
- Check whether the fiber is in the groove of the Recoat Mold.

(3) Short of injection of the UV curable material.
- Clean the Recoat Molds with alcohol-impregnated lint-free tissue or gauze.
- Check the injection amount by opening the Top Cover after injecting. If the material does not reach the target position, press UP key for additional injecting.
- The injection amount changes depending on temperature or the viscosity of the UV curable material. Adjust [Resin Injection Quantity] in [Recoat Mode].

(4) The UV Curable material does not cure.
- Increase the curing time.
  If no effect after increasing the UV curing time, the UV lamp might be broken.

(5) There is a big fin on the recoated part.
- Confirm whether the Recoat Mold is closed completely. Confirm same things as item (2).
- UV Curing Time may be too long. Reduce the UV Curing Time.

Supervising

(1) *What functions can be disabled.*
・*See [Menu Lock Settings] section.*

(2) *Method to lock "selection" or "editing" of Recoat mode*
・*See [Menu Lock Settings] section.*

(3) *Method to set parameters of Recoat mode from a PC*
・*Refer to the communication software "Data Connection" included in the memory of the recoater.*

(4) *Forgot password*
・*Contact the authorized distributor.*

Other Functions

(1) *Increase the Add Quantity.*
・*Change the value of "Add Quantity" in [Recoat Settings].*

(2) *Excess UV curable material on waiting state.*
・*Some UV curable material may leak due to changes in temperature and atmospheric pressure. This is not a malfunction.*

(3) *The screen is dark.*
・*Adjust the brightness in [Machine Settings].*

(4) *Method to download recoat results from the Recoater to PC*
・*Refer to the instruction manual "Data Connection" included in the memory of the recoater. Contact the authorized distributor for further inquiries.*

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

The optical fiber recoater FSR115 uses RFID technology. Typical certification or regulations are below.

United States FCC

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.

Canada ISED

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 équipment 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 I' ISDE. Cet équipment doit être installé et utilisé en gardant une distance de 20 cm ou plus entre le tadiateur et le corps humain.*

※ Access to the information on the e-Label
The device is electronically labeled and the FCC ID/IC Number can be displayed via the "Maintenance Info." under the Setting menu.
Step1: Select "Menu" button
Step2: Select "Maintenance Info."
Step3: Push the down button to display "Certificate"

Guarantee

BEST QUALITY SERVICE
- SINCE 1978 -

Guarantee period and limits

If the Recoater 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 guarantee 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. *Trouble or damage of the Recoat Mold except first shipment from our factory.*
   **Take special precaution in protecting this machine when transporting it or when it is stored for a long time without use. In case of transporting or storing Recoater for a long time, insert a dry lint free tissue between the upper and lower Recoat Mold plates. Please affix the upper Recoat Mold plate with adhesive tape so that the Recoat Mold does not open easily.*

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

Necessary information needed for repair

Include documentation with the Recoater informing us of the details listed 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 Recoater.*
3. *Problems encountered*
   What problems did your Recoater get into and when?
   What is its present operational state?
   The state of the monitor and the contents of the relevant error message etc.

Transporting the Recoater

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

Before shipping the Recoater

Please consult the authorized distributor first.

Contact Address

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, SOUTH CAROLINA 29334
U.S.A.
General inquiries: +1-800-235-3423, Option 2
Service & support: +1-800-866-3602
P.O.Box 3127 Spartanburg, SC 29304-3127
URL https://www.aflglobal.com

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

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