5th

Instruction Manual

Optical fiber recoater

FSR116/117

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.

Table of Contents

Safety Information 5

General information 6
- Introduction 6

Description of Product 7
- Components 7
- Description of Recoater 9
- Functions and names of Sheet key 13
- Monitor with Touchscreen and READY screen 14

Set up the Recoator 15
- Set up the Recoater 15
- Attaching the Recoat Mold 16
- Attaching Fiber Height adjuster 17
- Filling the UV curable material into the Bottle 18
- Injecting UV curable material 19
- Fiber Protection Cover 20

Basic Operation 21
- Remaining UV curable material and Expiration date 21
- Recoat Mold handling 22
- Replacing the Recoat Mold 23
- Fiber height adjuster 25
- Adjust Fiber Height adjuster 28

Recoat operation 32
- Power-supply to the Recoater 32
- Turning power ON/OFF 33
- Checking Recoat settings 34
- Monitor with Touchscreen and READY screen 34
- Selecting Recoat Mode 35
- Preparation for Recoat operation 36
- Confirm bubbles in UV curable material (before operation) 37
- Setting fiber in the Recoat Mold 38
- Injecting UV curable material 39
- Irradiation of the UV lamp 40
- Removing fiber 41
- Cleaning Recoat Mold 41
- Storing recoat results 42
- How to input Mode title/Comment/Password 42

Proof Test operation 43
Selecting Proof Test Mode 43
Fiber Protection Cover 44
Proof Test operation (FSR116) 45
Proof Test operation (FSR117) 48
Memory of proof test results 51

Maintenance of Quality 52
Pre-operation Cleaning and Checking 52

Recoat Menu 54
Composition of Recoat Menu 54
Selecting Recoat Mode 55
Recoat Mode ..... エラー! ブックマークが定義されていません。
Memory of recoat results 64

Proof Test Menu 66
Composition of Proof Test 66
Parameters of Proof Test Mode 66
Parameters of Proof Test Mode 71
Memory of proof test results 72

Setting Menu 74
Machine Settings 74
Menu Lock Settings 76

Maintenance Menu 77
Maintenance 77
Pump Cleaning 78
Clear Recoat Count 81
Clear Proof Test Counter 81
Replace Recoat Mold 82
Return UV curable material to bottle 82
Diagnostic Test 83
Proof Force Test/Adjustment 84
Proof Force Test 86
Proof Force Calibration 87
Touch screen Adjustment 88
Maintenance Information 89

Error Message List *90*

Questions and Troubleshooting *91*
- *Power Supply* *91*
- *Recoat Operation* *91*
- *Proof Test Operation* *92*
- *Supervising* *92*
- *Other Functions* *92*

Others *93*
- *FCC notices (U.S. only) and other regulation information* *93*

Guarantee and Contact Address *95*
- *Guarantee* *95*
- *Contact Address* *96*

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 only 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 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 FSR116 and FSR117 can recoat in short time and with high efficiency.
In order to master FSR116, 117 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.

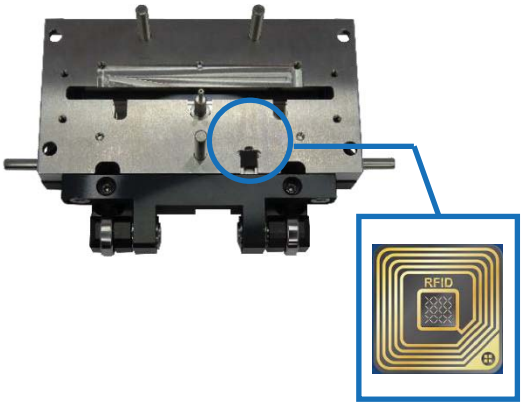
Model name: FSR116

This is a model which has recoating unit and fiber clamp type proof testing unit. The proof unit adopts a flat clamping method, makes checking the result of proof testing much easier.

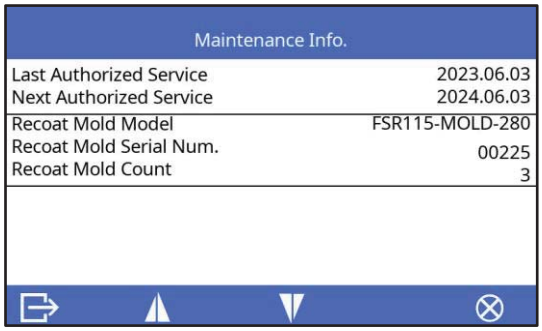
Model name: FSR117

This is a model which has recoating unit and mandrel type proof testing unit. The proof unit adopts a mandrel clamping method, makes checking the result of high strength of proof testing.

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



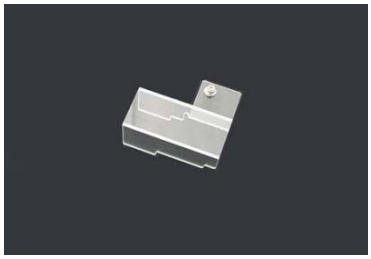
Note: *LCD (Liquid Crystal Display) monitor*

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

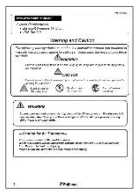
Model name: FSR116	Model name: FSR117
Optical fiber Recoater [FSR116]	*Optical fiber Recoater* [FSR117]
Fiber Protection Cover	
Fiber Protection Cover [PC-02] 	*Fiber Protection Cover* [PC-03]

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]

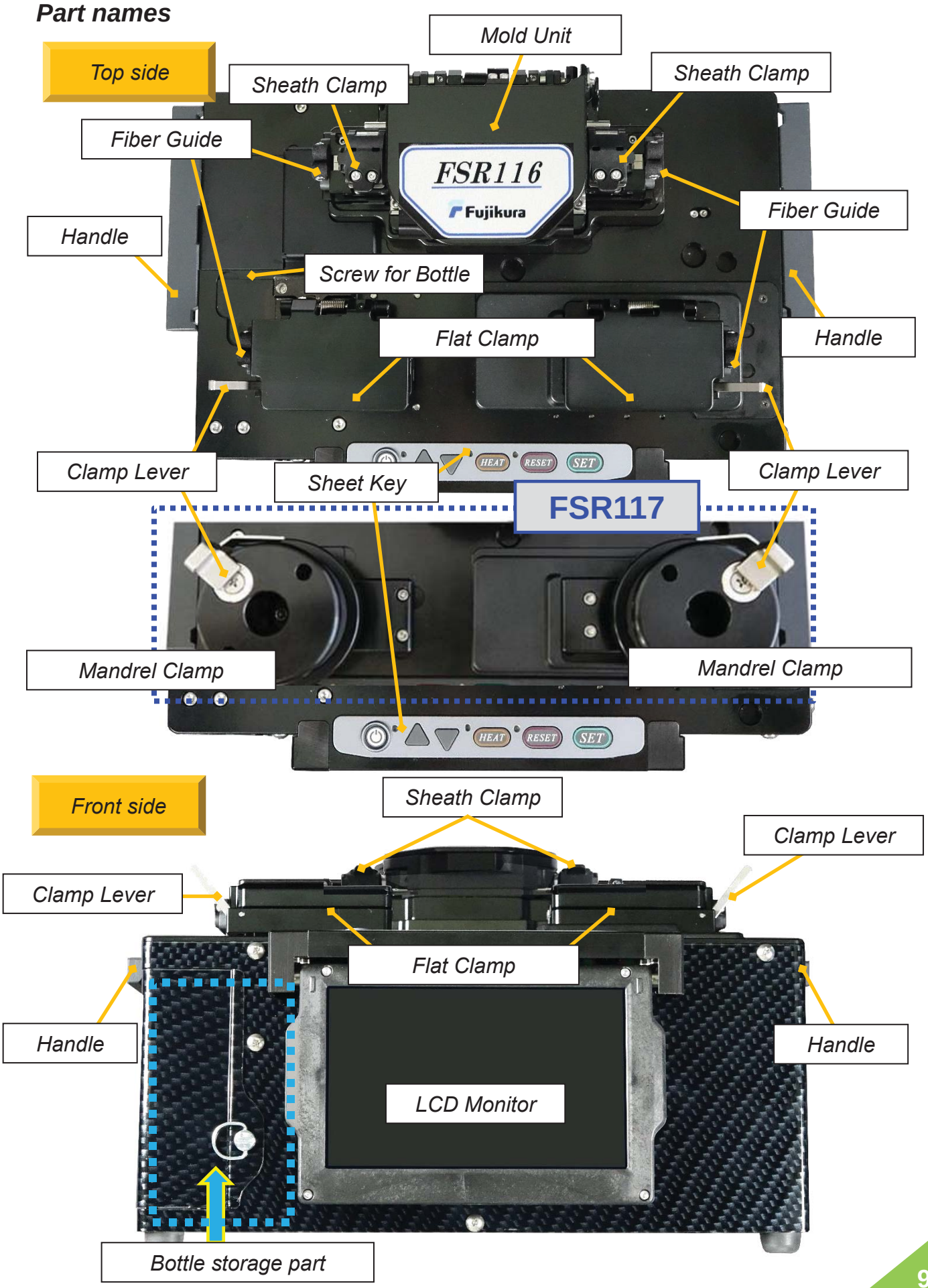
USB Cable [USB-01]

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

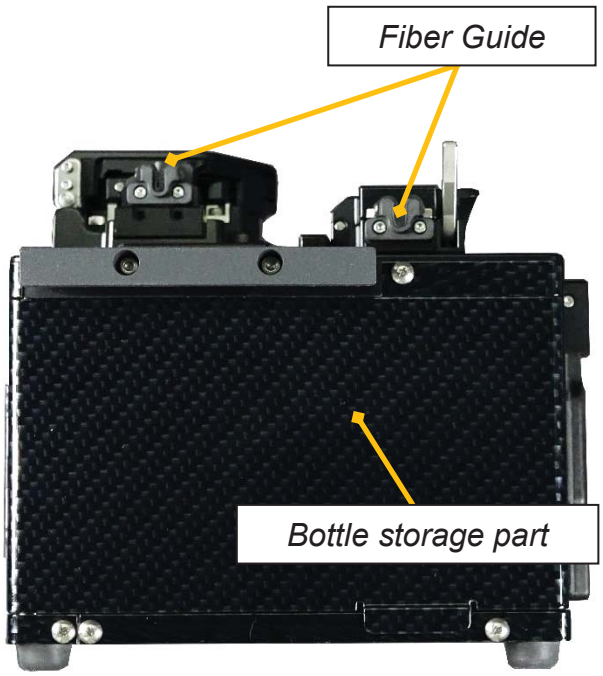
Optional item	Part No.	Note
Setscrew for Fiber Height Adjuster	SCREW-CT-01	1 set=15pcs.
Force Gauge Adapter	FGA-02	—

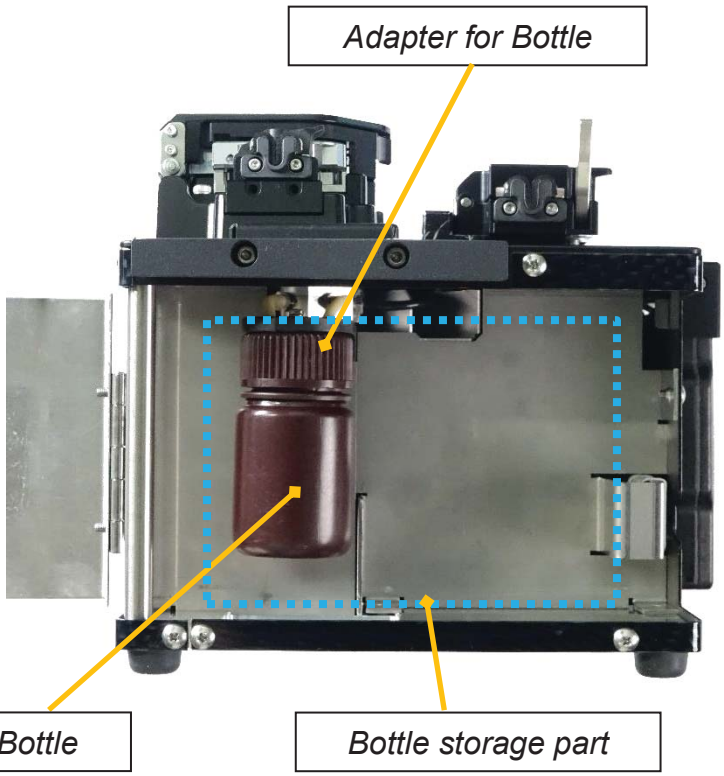
Description of Recoater

Part names

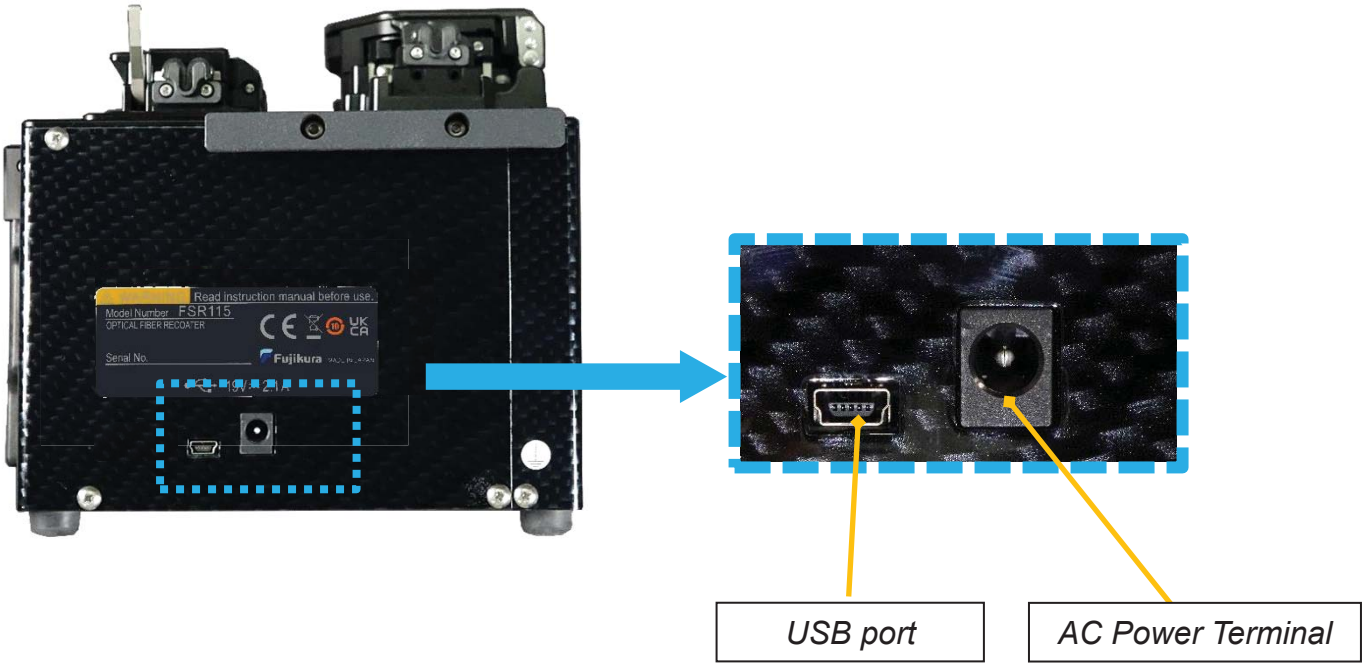


Left side

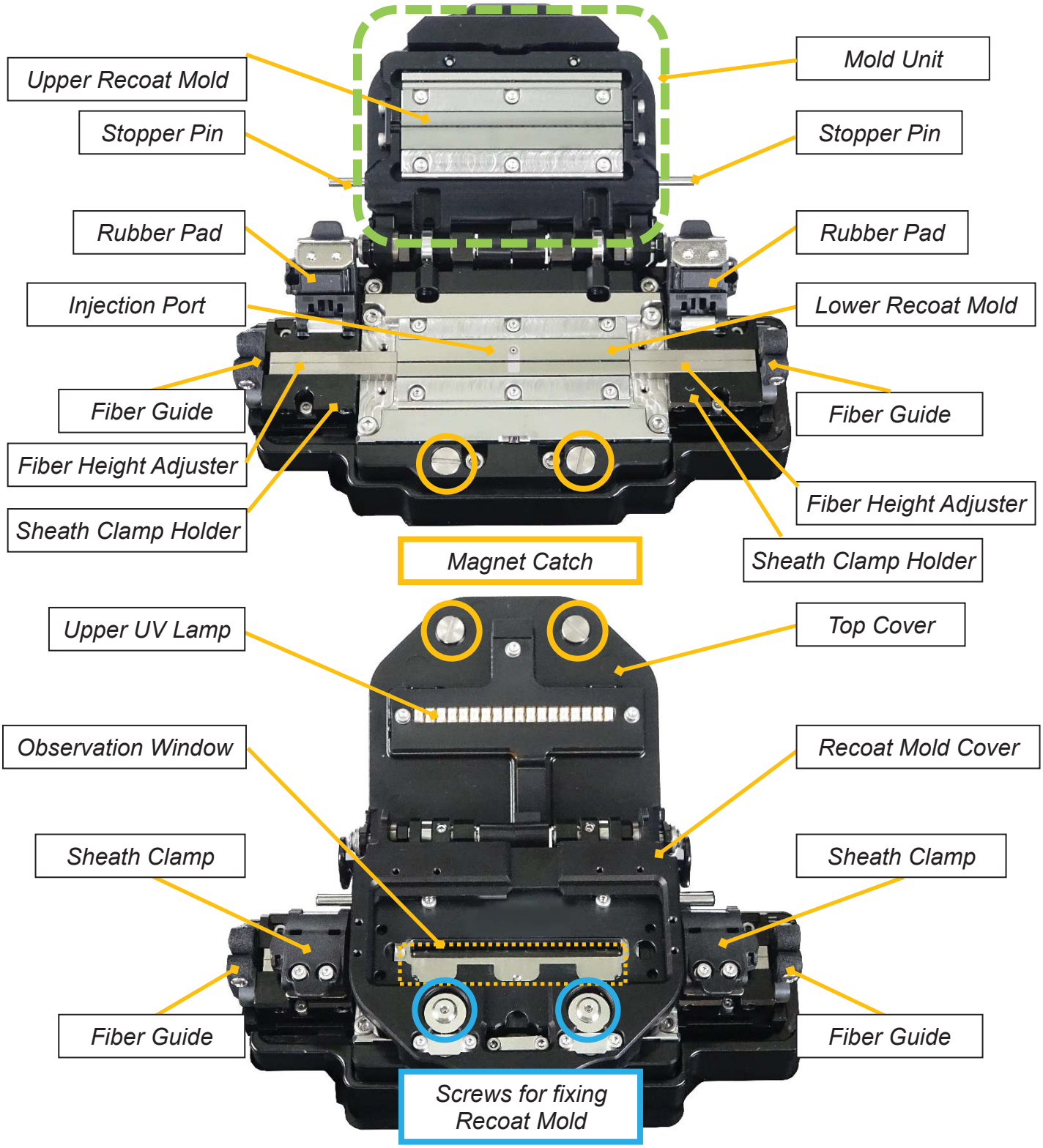




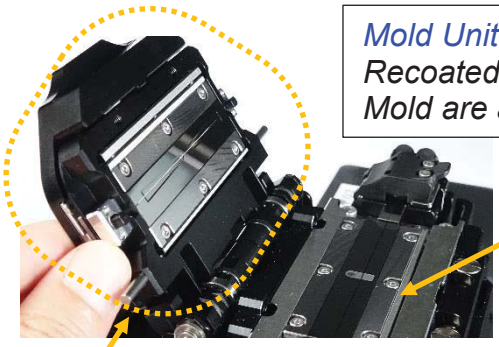
Right side



Recoat Mold Unit



Description of Recoat Mold Unit



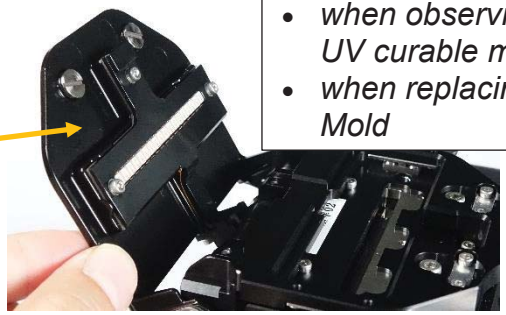
Mold Unit open:
Recoated Mold Cover and Upper Recoat Mold are attached (Normal operation)

Lower Recoat Mold

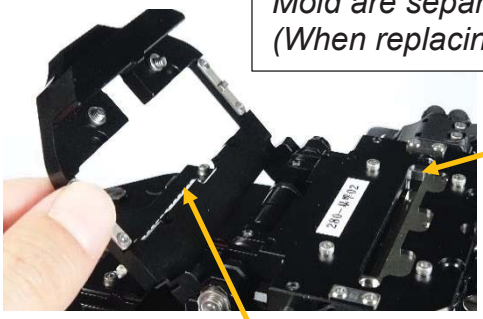
Mold Unit

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

Top Cover



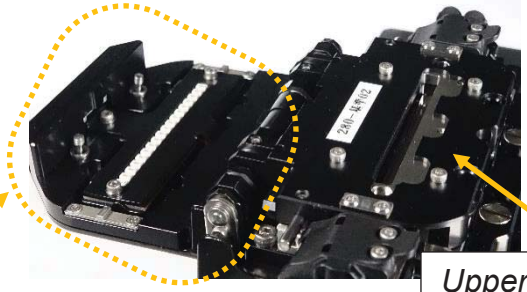
Recoat Cover open:
Recoat Cover and Upper Recoat Mold are separated.
(When replacing Recoat Mold)



Upper Recoat Mold

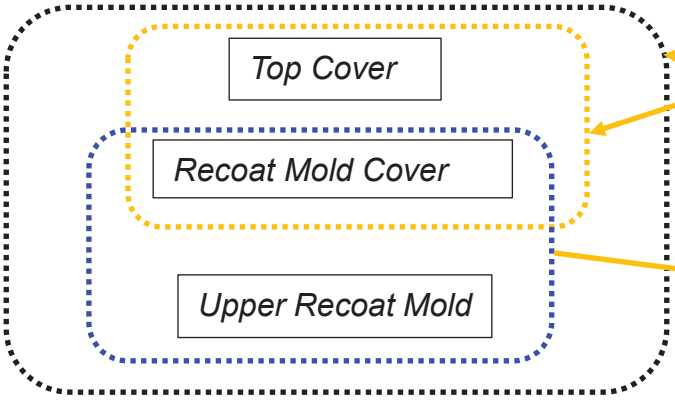
Recoat Mold Cover

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



Mold Unit

Upper Recoat Mold

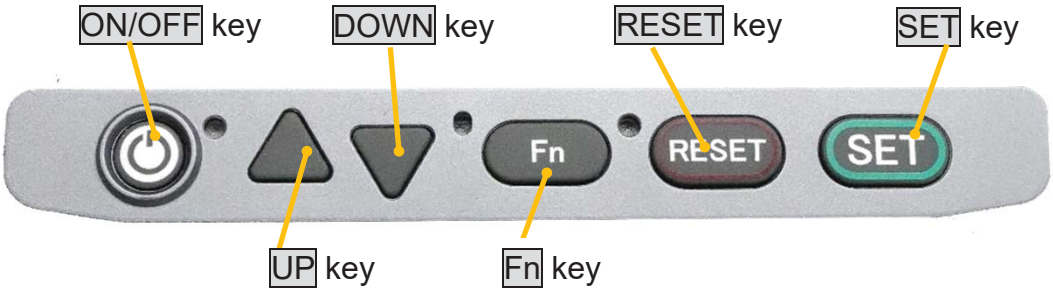


Mold Unit

Enable to connect or separate by using Cover Bolts

Functions and names of Sheet key

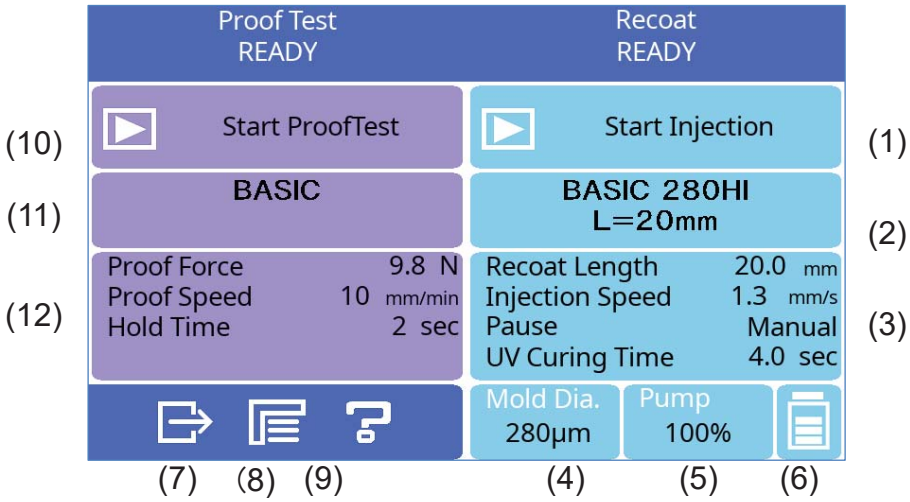
The function of the sheet keys on the top of the Recoator are described below.



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 "Proof Test Function". You can set it by yourself from the menu screen.

Monitor with Touchscreen and READY screen

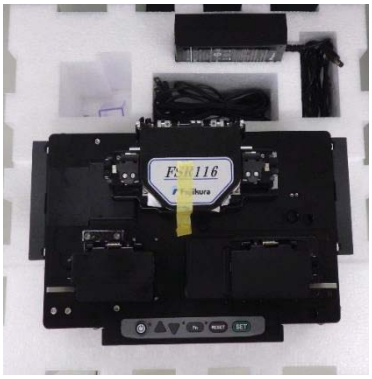
The recoater has a monitor with touch screen.
After the power is turned on, the monitor can be operated as the touch screen.
Please check the following for the function of each icon on the READY screen..



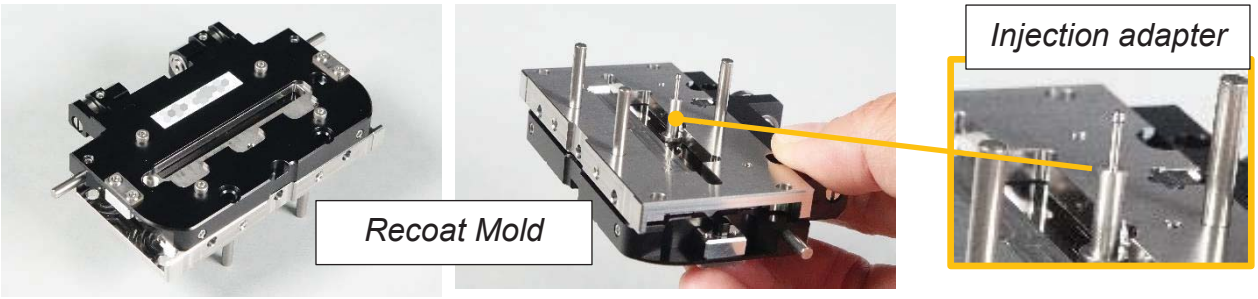
No.	Function
(1)	*Start, stop of recoating operation. Follow the messages shown on the screen.*
(2)	*Display the current recoating mode. Touching this area, it goes to the Editing setting mode. Various messages are displayed duraing recoating operation.*
(3)	*Display the current Recoat Settings. Touching 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 but the proof testing will not be aborted.*
(8)	*Go to "Menu" screen by touching this icon. Enable to change the machine settings.*
(9)	*Goes to the "Operation procedure explanation" menu screen.*
(10)	*Start, stop, restart of the proof testing. Follow the messages shown on the screen.*
(11)	*Display the current proof mode. Goes to Proof select screen by touching this area. Various messages are displayed during proof testing.*
(12)	*Display the current proof settings.* *Go to Proof setting screen by touching this icon.*

Set up the Recoater

Please refer to the components in previous part and check that the 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.

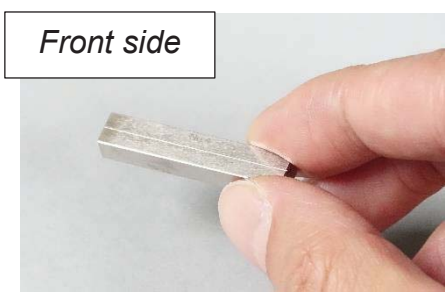


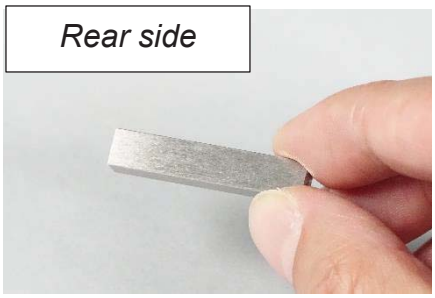
Recoat Mold (Option)



Fiber Height Adjuster (Option)

Standard item
Setscrew for Fiber Height Adjuster
[SCREW-CT-01]

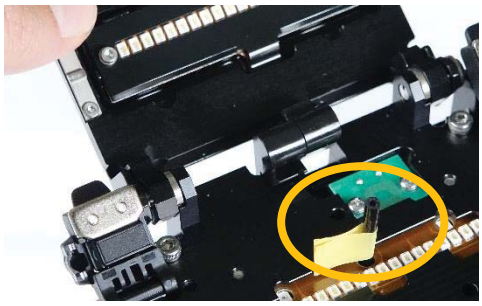




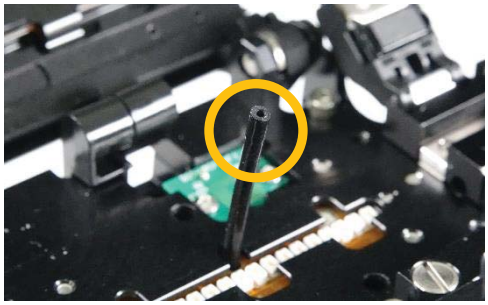
The surface with a groove is the front side. The rear side does not have a groove.

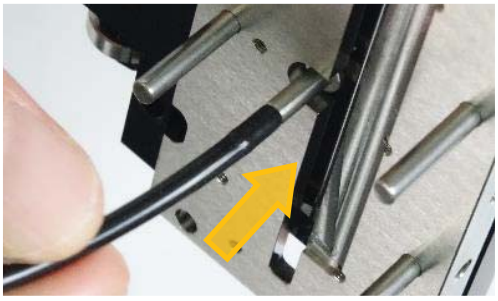
Attaching the Recoat Mold

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 Recoat Mold. Remove the tape from the tube. (Do not drop the tube under the Recoat Mold.)*

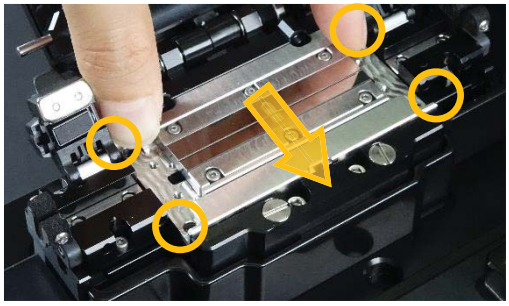


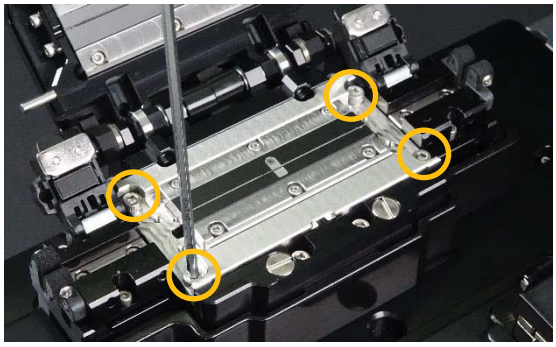
2. *Connect the tube to the Recoat Mold and insert the tube into the hole under the Lower Recoat Mold. Do not pull the tube too much.*





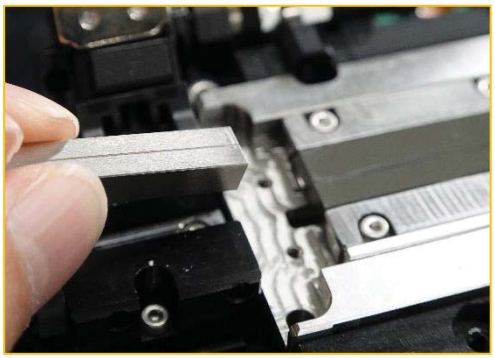
3. *Set the Recoat Mold so that the 3 shafts are inserted into the holes of the base under the Lower Recoat Mold. Tighten the 4 screws while pushing it in the direction of the arrow (tool size: 2.5mm Hex).*

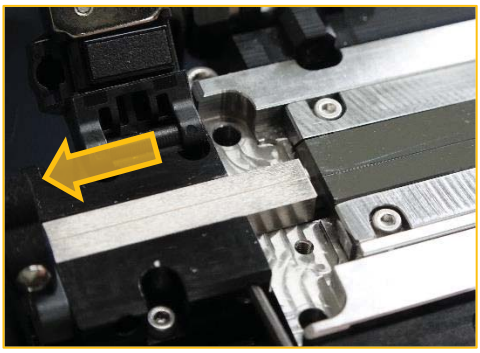




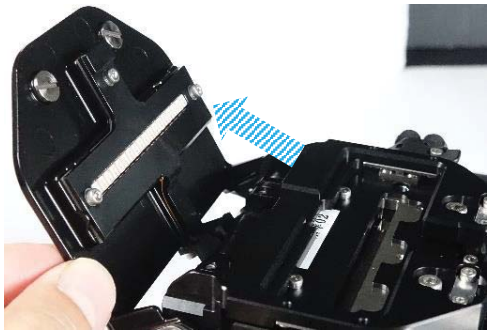
Attaching Fiber Height adjuster

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.*

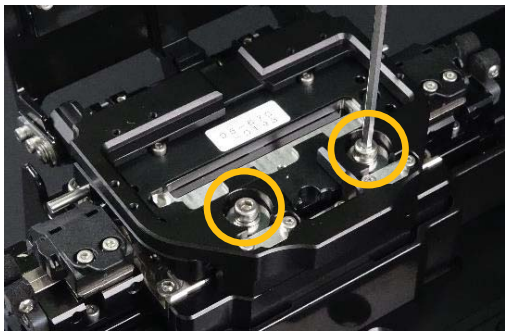




2. *After closing the Recoat Mold Lid, open the top cover only and fix the Recoat Mold Lid and Recoat Mold. If the Top Cover and the Upper Recoat Mold Unit are separated, the Upper Recoat Mold Unit closes unexpectedly and may break the Recoat Mold.*



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 before refilling the UV curable material. Please check the Maintenance section for cleaning.

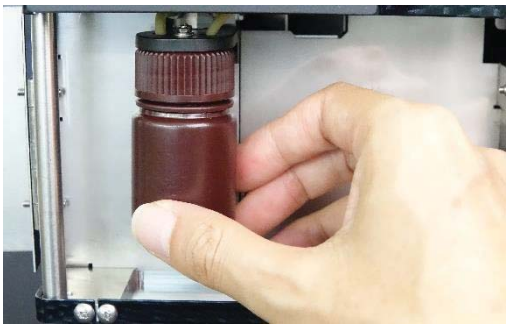
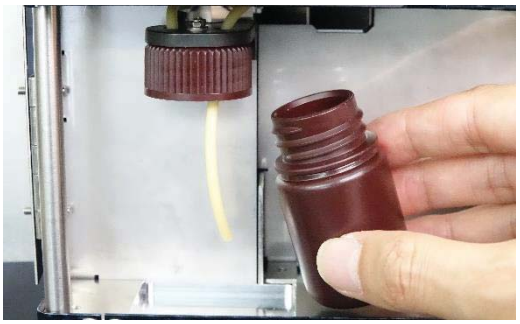
∗Fujikura Ltd. recommends using the "950Y200" UV curable material produced by Japan Fine Coatings Co., Ltd. or "PC-373LD" UV curable material produced by Luvantix ADM Ltd.
Please purchase the UV curing resin from UV curing resin local distributors. Fujikura doesn't sell UV curing resin.

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 bottle inside 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.

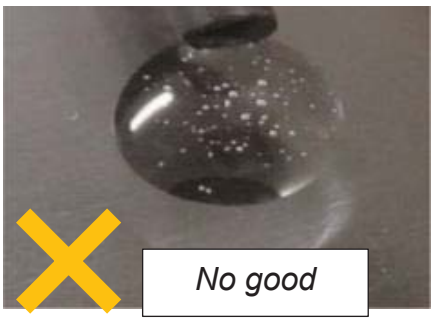
Injecting UV curable material

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

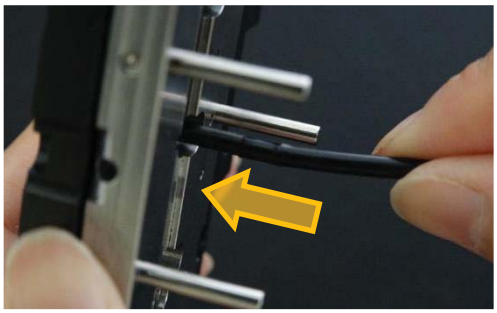
1. *Open the Recoat Mold and press UP key to run the Pump. Inject the UV curable material from the Bottle to the Recoat Mold.*

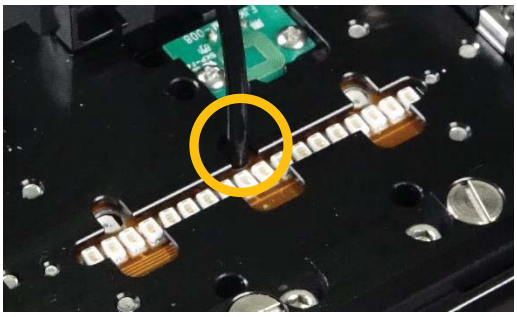
2. *Confirm there are no bubbles in the UV curable material.*
   If bubbles are in the UV curable material, recoat shape may be bad.
   Continue to inject until the UV curable material without any bubbles comes out.



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

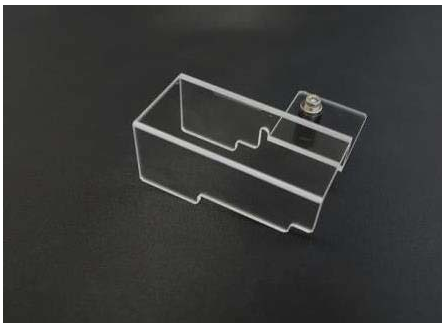
- *When the UV curable material does not discharge even if press UP key, check the tube connection of the Pump and Bottle unit.*
- *Check the amount of the UV curable material in the Bottle.*
- *If the recoat mold is not open, the pump will not operate even if you press the UP key.*





Fiber Protection Cover

Shipping from our factory, the default setting is that the proof test does not work without attaching the Fiber Protection Cover.
Please prepare the Fiber Protection Cover which applies to the Recoator.



Fiber Protection Cover for FSR116

Fiber Protection Cover for FSR117

Fiber-protection-cover sensor

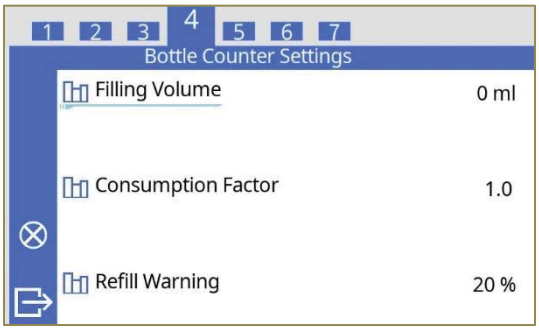
Proof test can be done without attaching the Fiber-Protection-Cover by setting [Fiber-Protection-Cover Sensor] from "Valid" to "Invalid" in [Machine settings].
However, when the proof force is set at 1.0 kgf or more, [Fiber-Protection-Cover Sensor] must be set to "Valid", otherwise fiber fragments by the fiber breaking may cause personal injury or physical loss.

- *Proof testing without the Fiber-Protection-Cover is very dangerous.*
  Please wear safety glasses when operating the proof testing function.
  Set [Fiber-Protection-Cover Sensor] to be "Valid".
- *Our companies do not take responsibility for any personal injury or physical loss in case [Fiber-Protection-Cover Sensor] is set at "Invalid".*

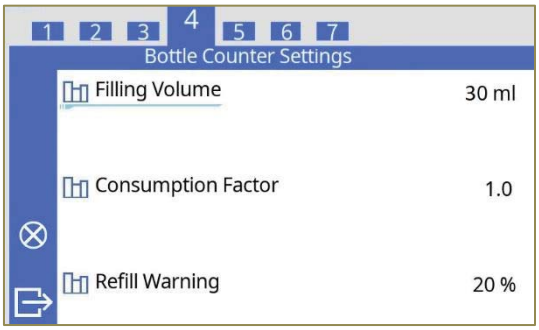
Remaining UV curable material and Expiration date

Bottle Counter Settings

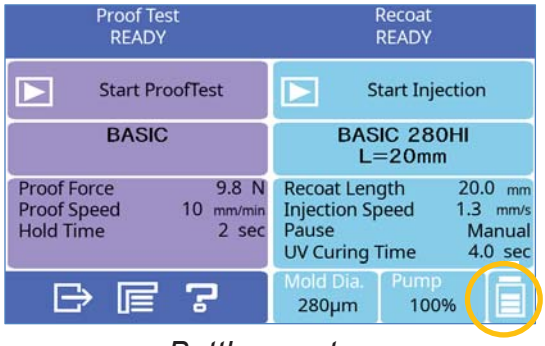
Enter [Machine Settings] in [Setting Menu] and select [Bottle Counter Settings]. Enter the amount of UV curable material in a bottle to [Filling Volume]. The factory default is zero. Therefore Bottle indicator is not displayed in READY screen before entering the value.
If the remaining amount reduces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



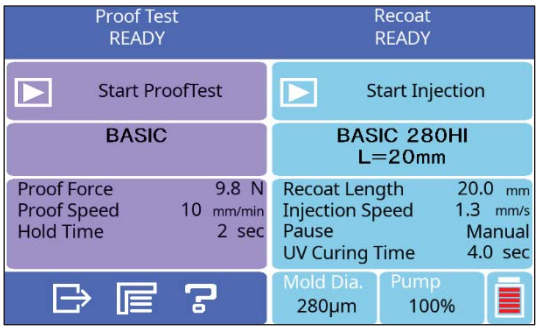
Factory default



Input Filling Volume



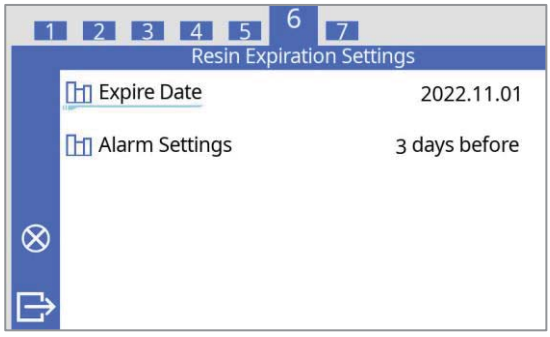
Bottle counter



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

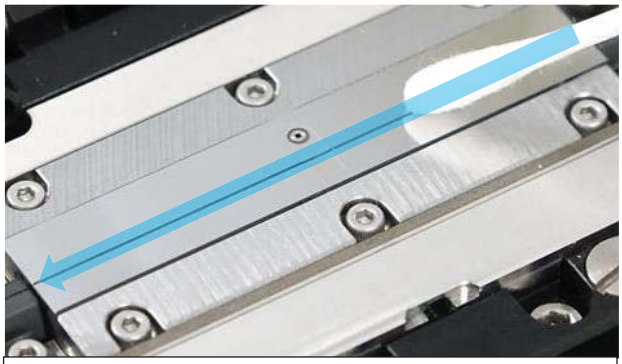
This product is equipped with Recoat Molds

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 deterioraton 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.

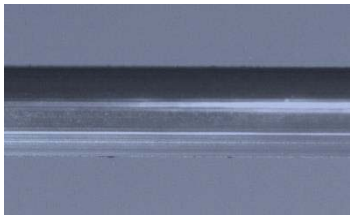
Cleaning of the Glass mold surface



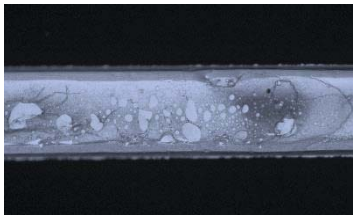
Cleaning of the groove

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

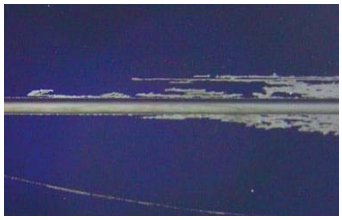
Groove/surface condition after cleaning



Groove condition: good



Groove condition: poor



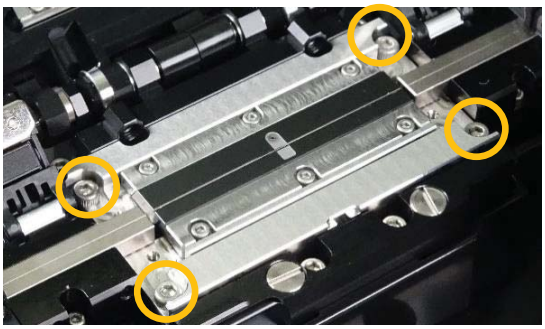
Scratches on the mold surface

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

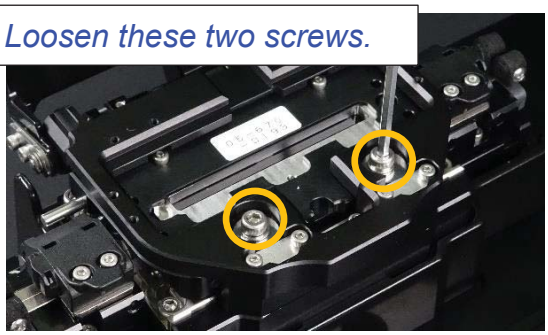
Removing the Recoat Mold

1. *Remove the Fiber Height Adjuster.*
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.



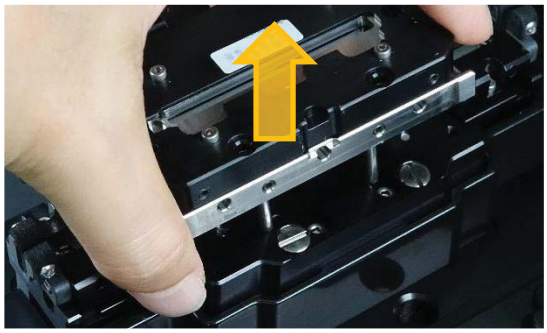
➢ *Be careful not to remove or loosen other screws.*

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 Recoator 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

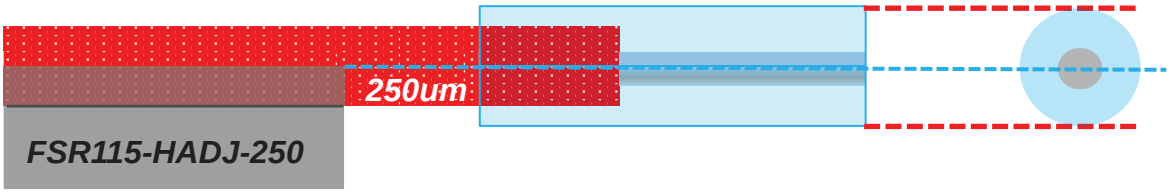
Mold Dia / Insert Dia	195	255	280	320	450	600	670	850	1000
Fiber height adjuster-100 for 90~110um coated fiber	✔								
Fiber height adjuster-125 for 113~137um coated fiber	✔	✔							
Fiber height adjuster-160 for 144~176um coated fiber		✔							
Fiber Height Adjuster - 200 for 180~225um coated fiber			✔						
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

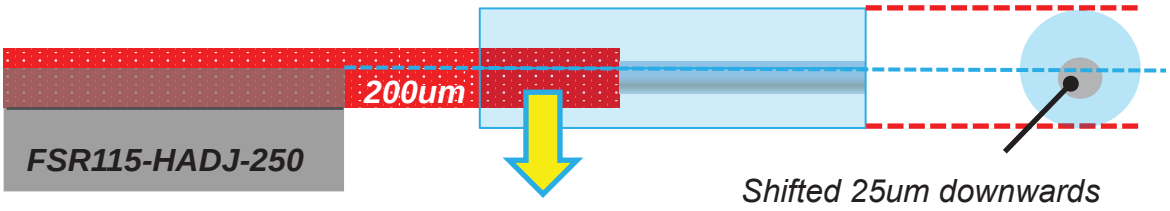
When the fiber coating and the Fiber Height Adjuster have the same diameter

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.



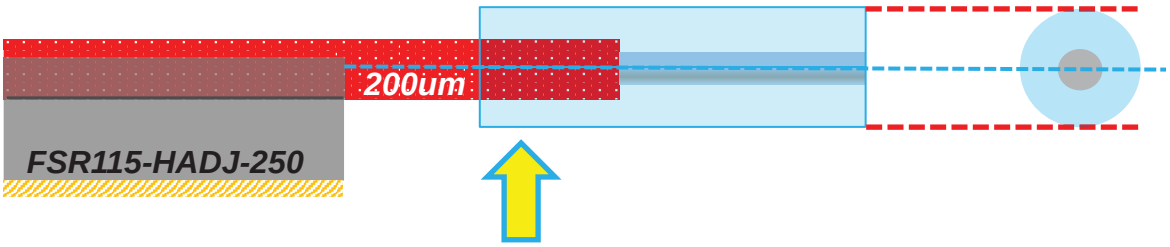
When the fiber coating and the Fiber Height Adjuster have the different diameter

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

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

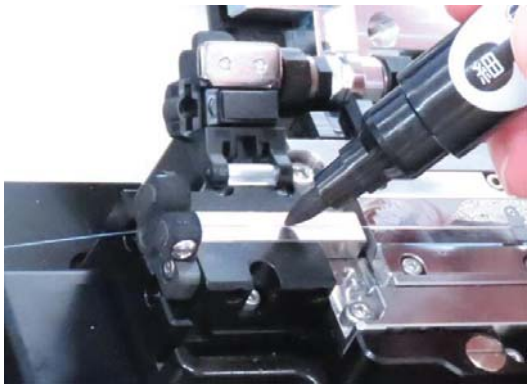
Set the fiber on the Fiber Guides.
If the bare fiber area does not come to the center, move the Fiber Height adjuster so that the center of the bare fiber area is on the center of the Recoat Mold.

- *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

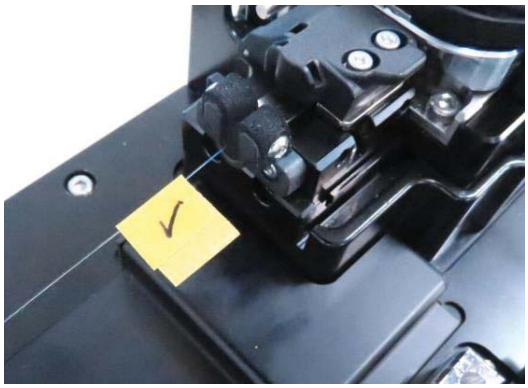
How to check the misalignment

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

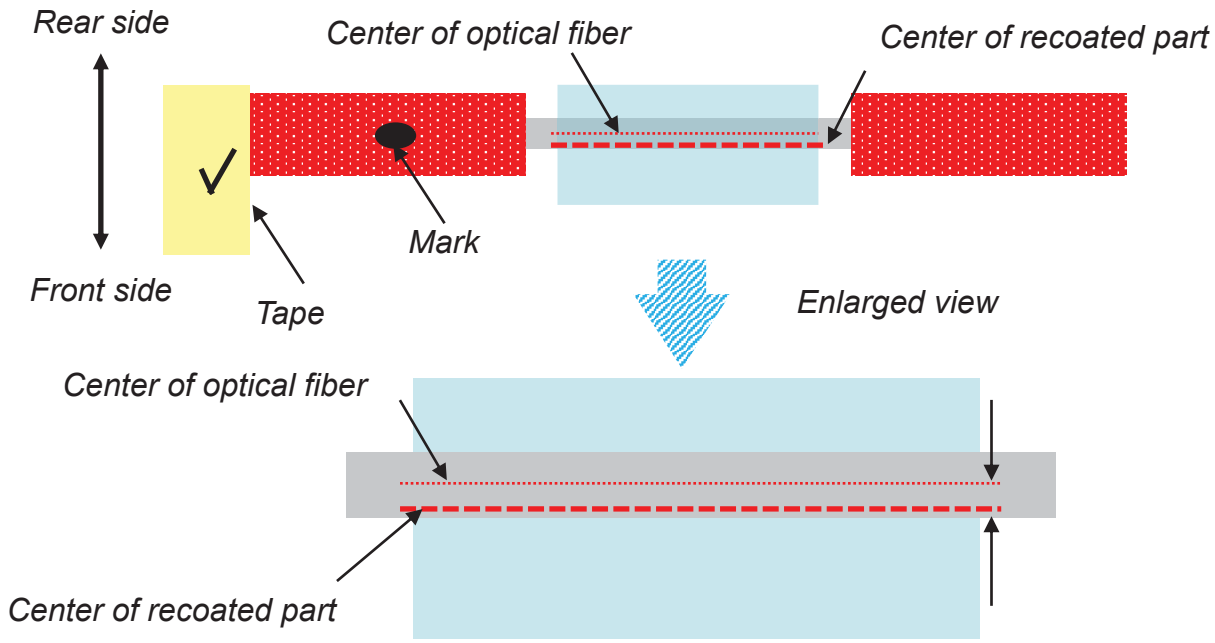


Apply tape to the fiber for marking

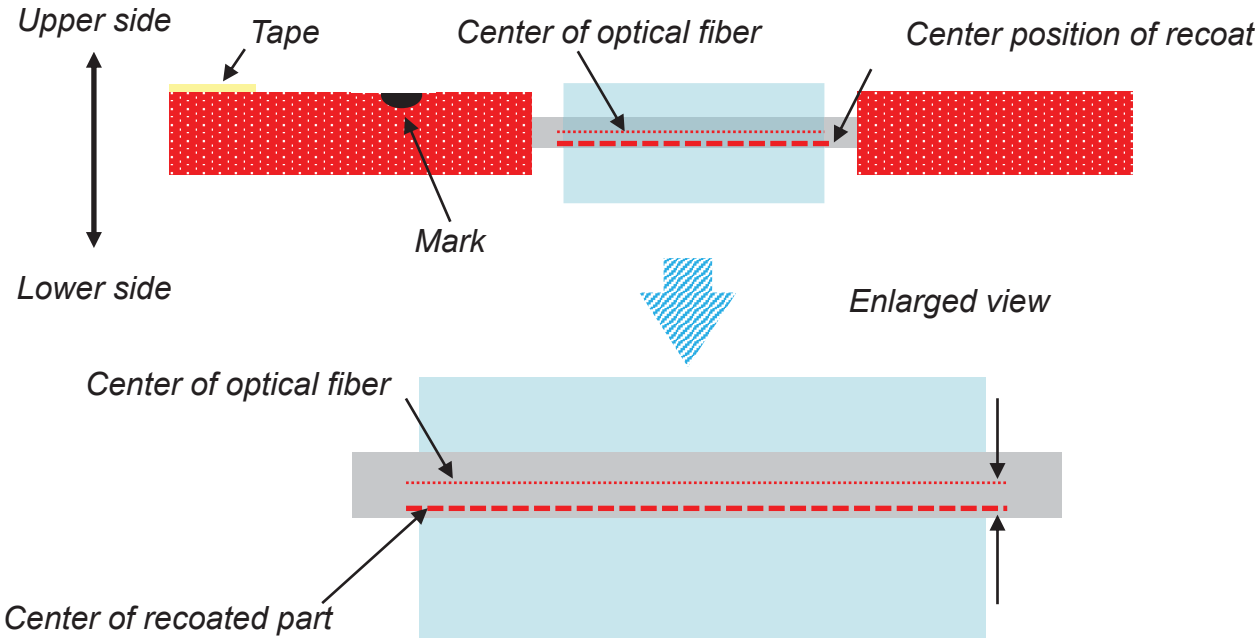
3. *Recoat for 20mm not to reach the end of the outer coating.*

4. *Carefully remove the recoated fiber out of the Recoator 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

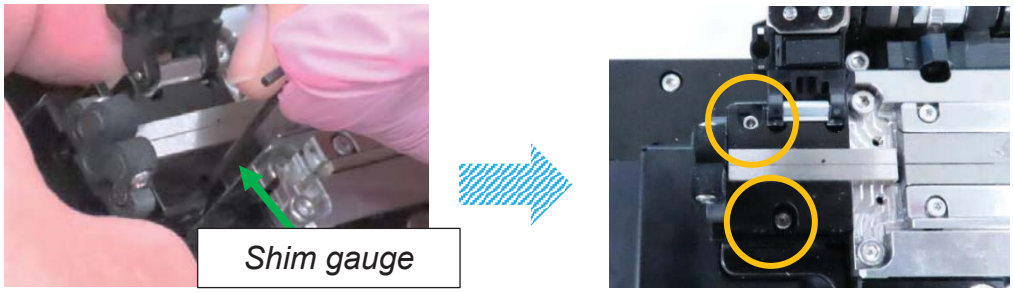
When the checks above indicate the adjustment of the Fiber Height adjuster is necessary, please adjust it by the following procedure.

Procedure

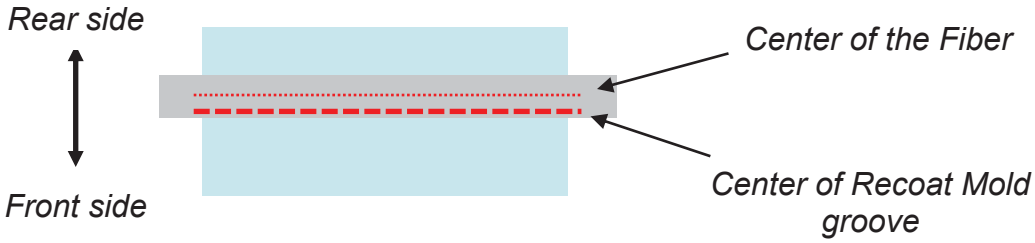
<Horizontal adjustment>

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

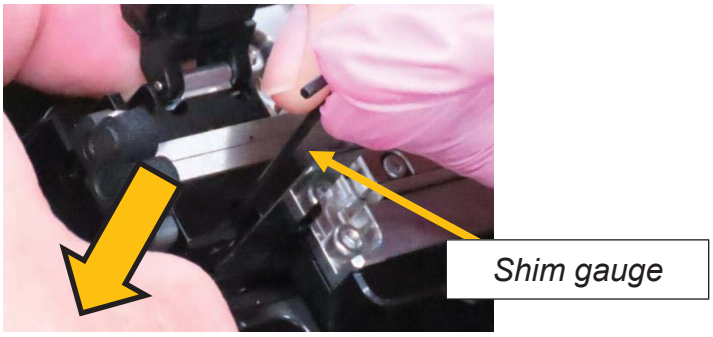
1. *There is a convex in front of the Clamp Unit Holder. After measuring the thickness of the Shim Gauge going into this part, loosen the two screws for fixing the Clamp Unit.*



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.*

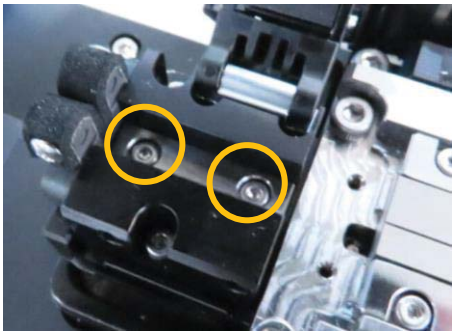


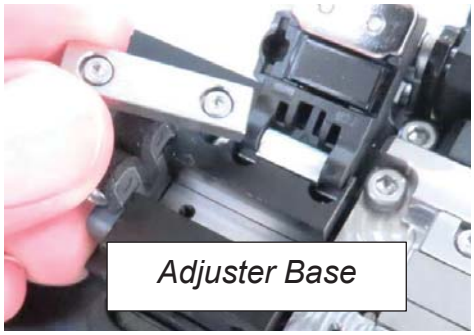
4. *Check the misalignment between the center position of the Fiber Height Adjuster groove and the center position of the Recoat Mold groove with a microscope.*
5. *Remove the Shim Gauge and recoat the fiber. Check the alignment of the groove the same way as the horizontal adjustment.*

<Vertical Height adjustment>

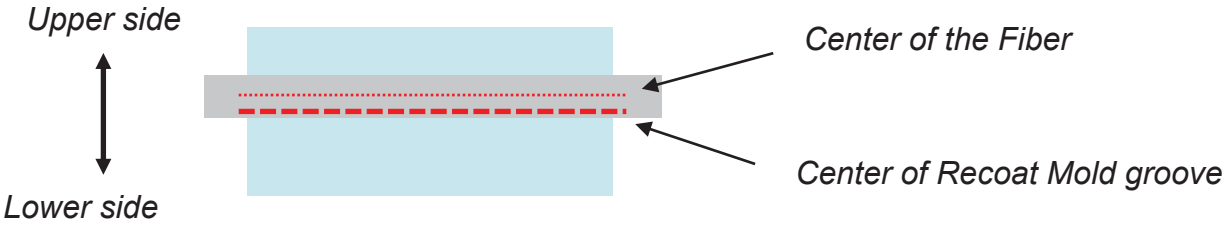
Adjust the height by changing the thickness of the spacer which is installed under the Fiber Height Adjuster.

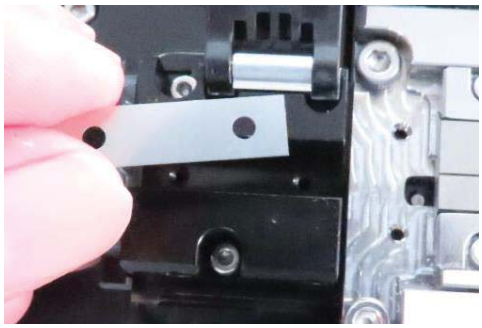
1. *Remove the Fiber Height Adjuster.*
2. *Remove the two screws located under the Fiber Height Adjuster.*





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.*

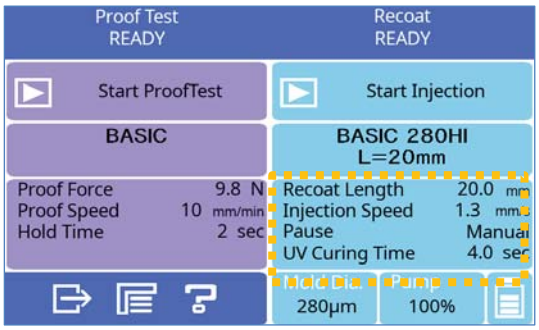
3. *Press and hold ON/OFF key until the red LED turns on. Pull out the power cord from the Recoater.*

Checking Recoat settings

Composition of the READY screen

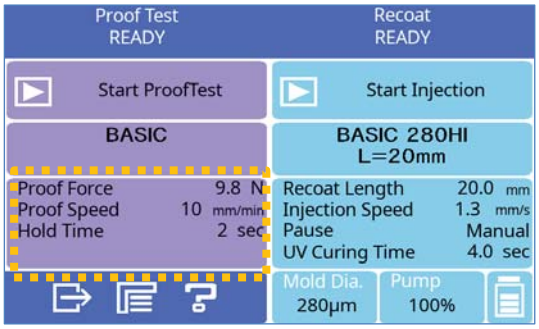
Recoat parameter

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



Proof Test parameter

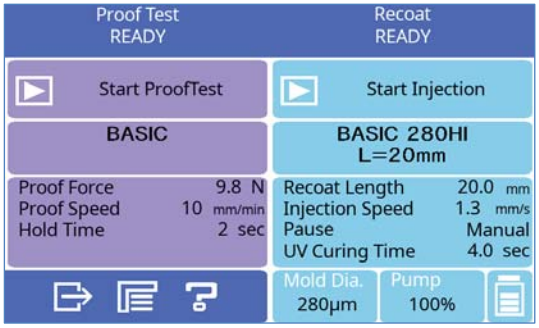
Selected Proof Test Mode and parameters are shown on the left side of the READY screen. Check the parameters before proof test operation.



Monitor with Touchscreen and READY screen

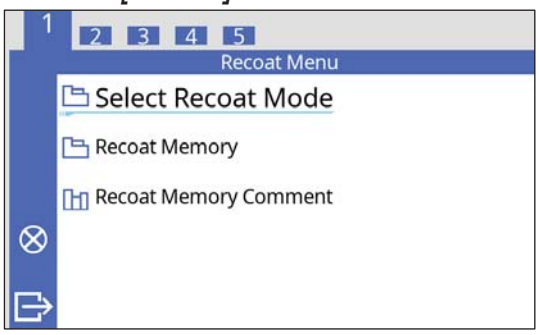
The recoater has a monitor with touchscreen.
After the power is turned on, the monitor can be operated as the touchscreen.
You can operate the setting menus or recoat operation by touching the [READY] screen.
To use the touchscreen, or press DOWN key to go to the [READY] screen.
Please check the following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

[READY] screen

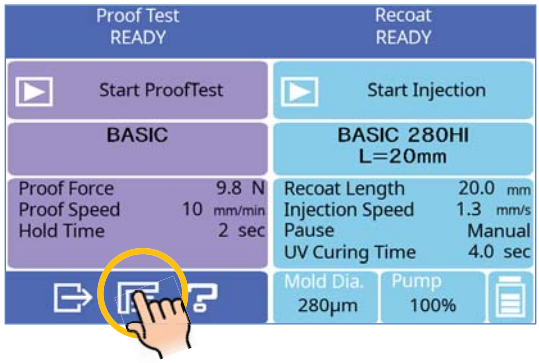


DOWN key

[MENU] screen



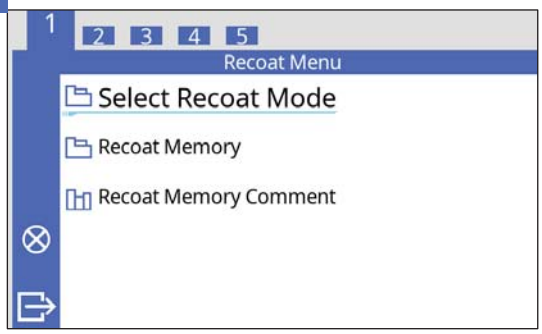
You can also go to the [MENU] screen by touching icon.



icon

or

DOWN key

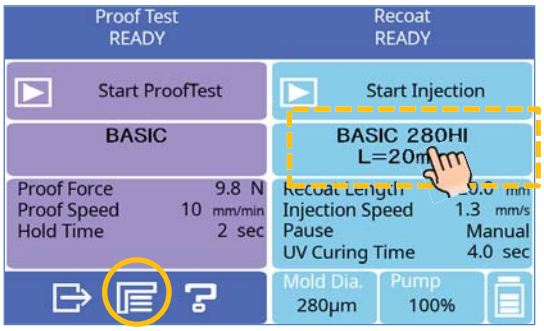


Selecting Recoat Mode

Using Touch Screen

Select appropriate Recoat Mode for the recoated optical fiber.

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

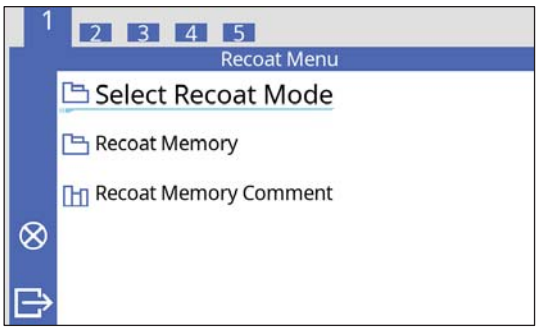


[*READY*] *screen*

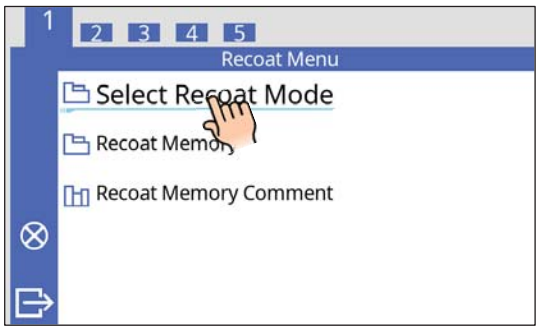
icon

or

DOWN *key*



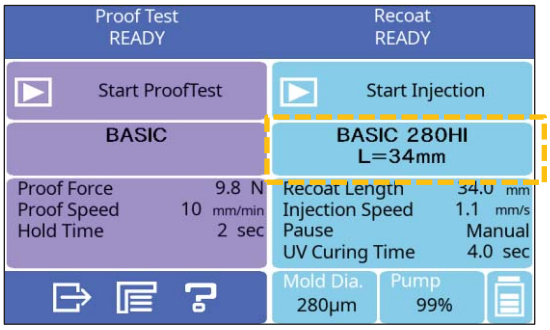
2. *Touch [Select Recoat Mode] and select the desired recoat mode.*
   **The recoat mode with grey text is not available.*



[*Recoat Menu*]

[*Select Recoat Mode*]

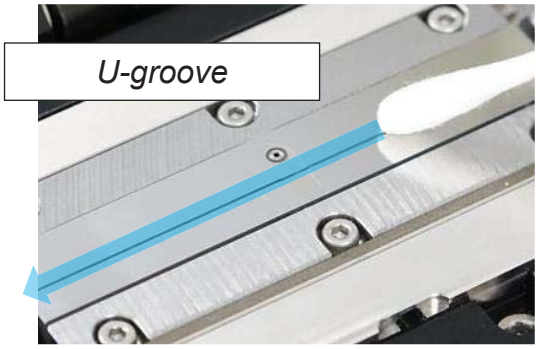
3. *The selected mode is shown in READY screen.*

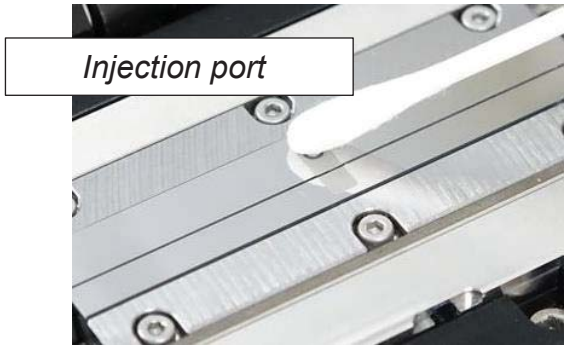


Preparation for Recoat operation

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.

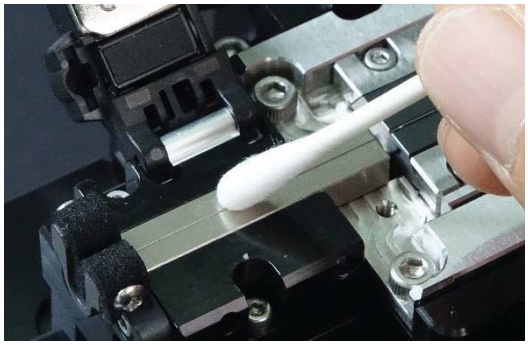


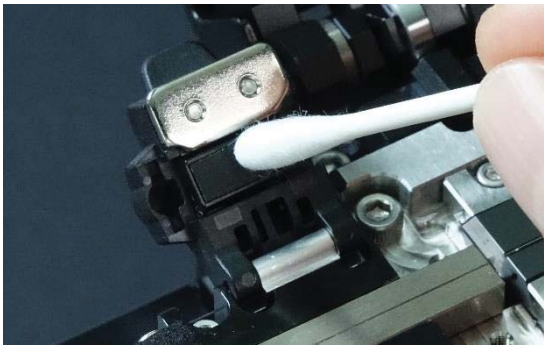


- *Clean the upper and lower Glass Molds by moving an alcohol-impregnated cotton swab in the direction along the groove. And clean the lower Glass Mold around the Injection Port.*
- *Use the alcohol of 99% or more of purity.*

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.

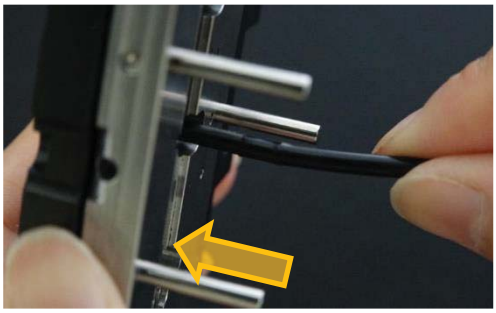
Setting fiber in the Recoat Mold

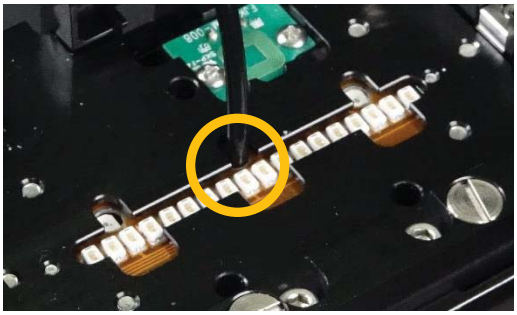
1. *Open the Recoat Mold and inject a small amount of the UV curable material by pressing UP key. Repeat press UP key until the UV curable material comes out. Pressing UP key while injecting stops the injection.*

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.*

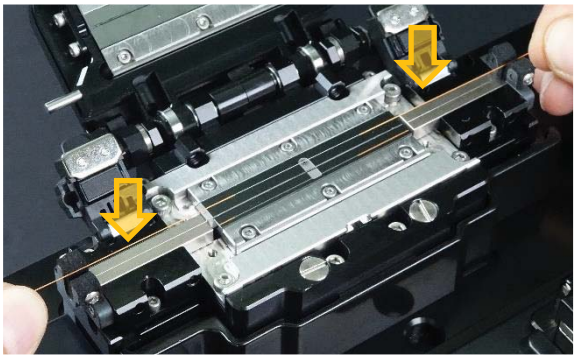


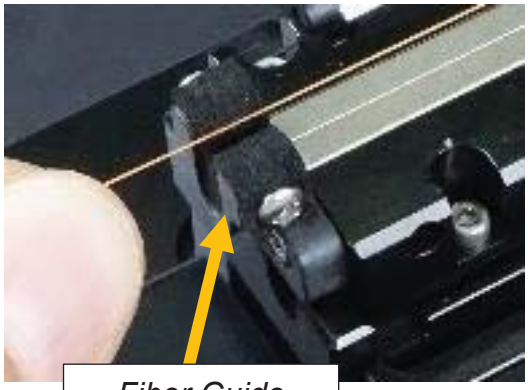


Fujikura Ltd. recommends using the "950Y200" UV curable material produced by Japan Fine Coatings Co., Ltd. or "PC-373LD" UV curable material produced by Luvantix ADM Ltd.
Please purchase the UV curing resin from UV curing resin local distributors. Fujikura doesn't sell UV curing resin.

Setting fiber in the Recoat Mold

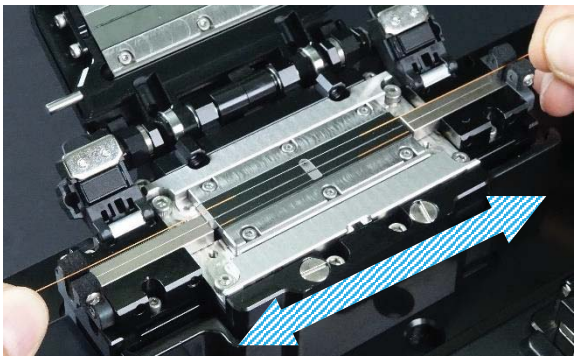
1. *Place the fiber in the groove while leaving both the sheath clamps open.*
   The fiber guides installed outside of the sheath clamp hold the fiber and fix it.

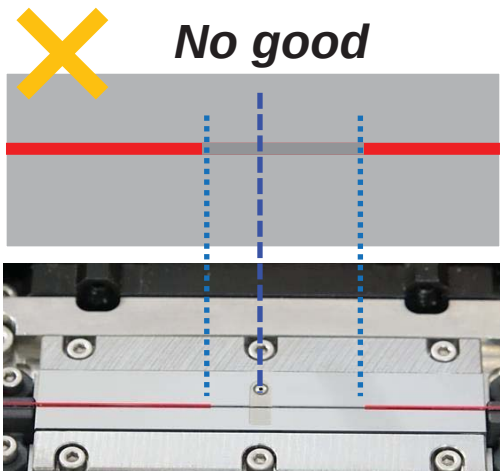


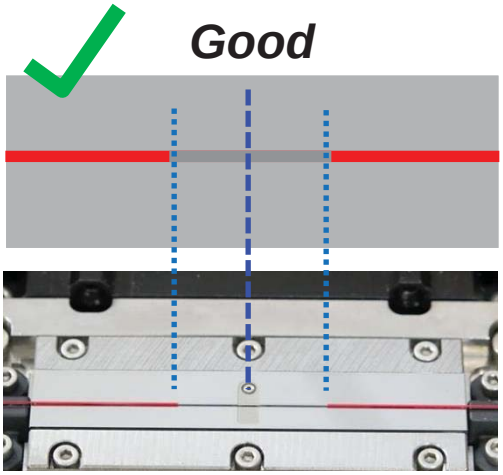


2. *Adjust the fiber position so that the center of the bare fiber part is on the center of the Recoat Mold.*

Move the fiber left and right to adjust the position







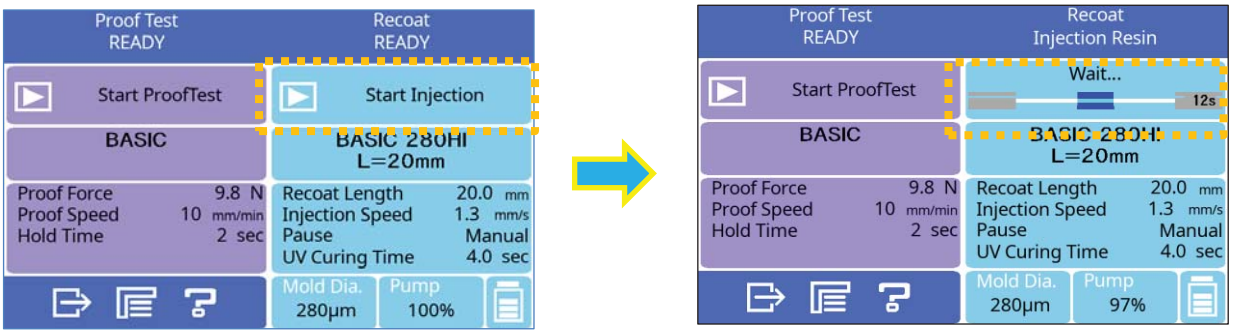
➢ *Confirm whether the fiber is aligned on the groove of the Glass Mold. Otherwise the Glass Mold may be broken by pinching the fiber when it is closed.*

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.*

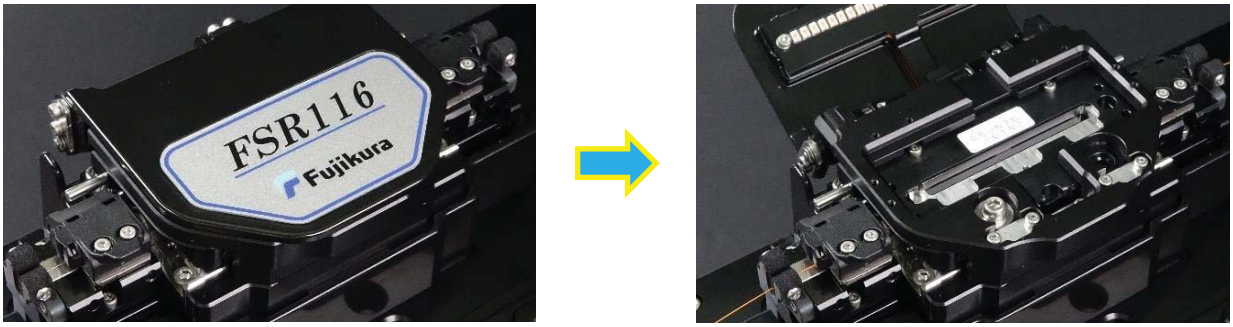
➢ *Please open and close the Recoat Mold gently. If you open and close roughly, the Recoat Mold may be cracked, damaged, or misaligned.*

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 wished. If [Pause After Injection] is set to Invalid, the UV lamp irradiates immediately.*



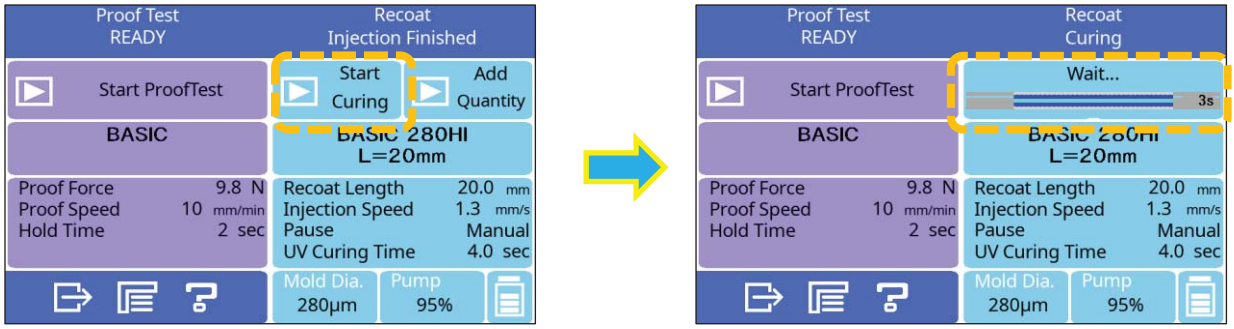
- *If you open the whole Recoat Mold after injecting the UV curable material, the material will leak outside of the groove. In that case, redo the operation.*
- *Be careful not to drop alcohol or UV curable material on the UV lamps in the Top Cover. Otherwise, clean it by using a dry gauze immediately.*

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] on the screen to turn on the UV lamp.*

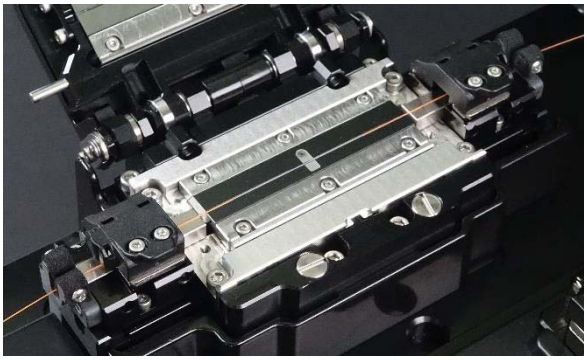


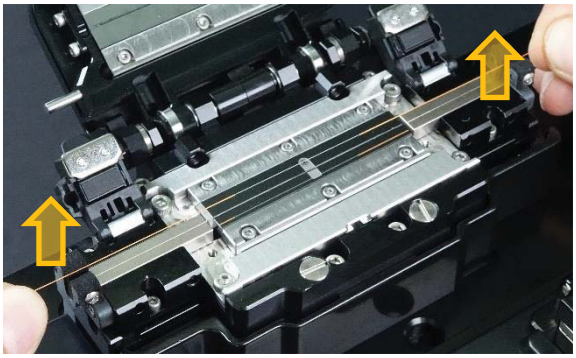
2. *After the UV curing time reaches the set time, the buzzer sounds to inform completion of the recoat operation.*

- *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.

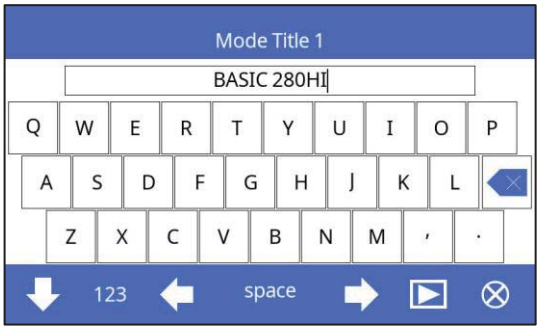
** The result of the special mode is not able to save.*

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

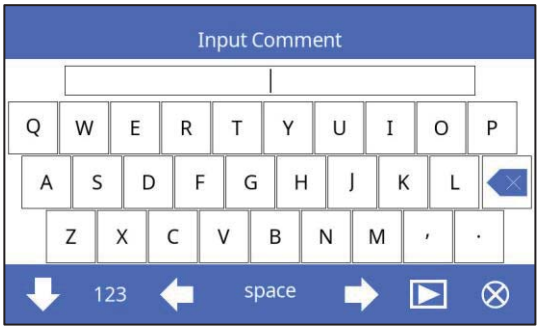
How to input Mode title/Comment/Password

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

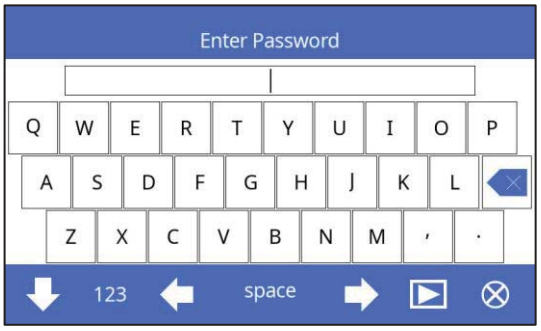
1. *Touch the texts to enter.*
2. *After entering the texts, touch icon to execute.*
   When entering password, the correct password goes to the next page. Wrong password returns to the previous page.



Mode Title 1 screen



Input Comment screen

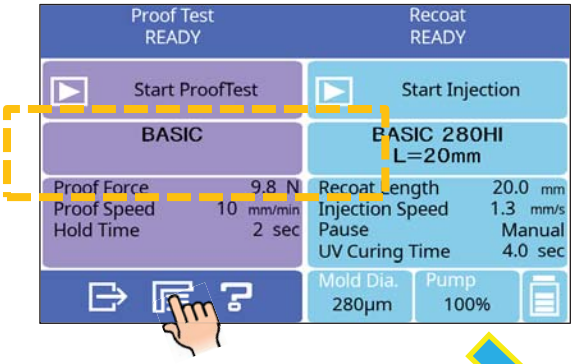


Enter Password screen

Selecting Proof Test Mode

Select appropriate Proof Test Mode.

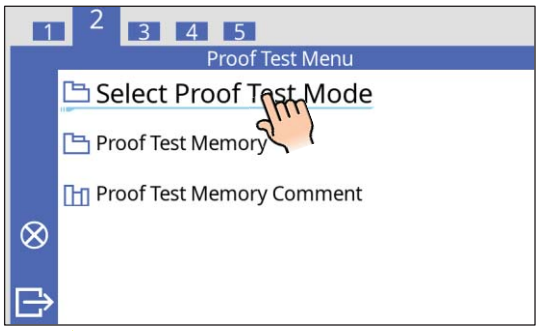
1. *Select [Select Proof Test Mode] in [Recoat Menu] screen. The [Select Proof Test Mode] screen shows up.*
2. *Select the mode you wish to use in [Select Proof Test Mode] screen. Select the mode by touching on the screen.*
3. *Check the condition of the selected mode by pressing the mode or in the [READY] screen.*



Touch in the orange

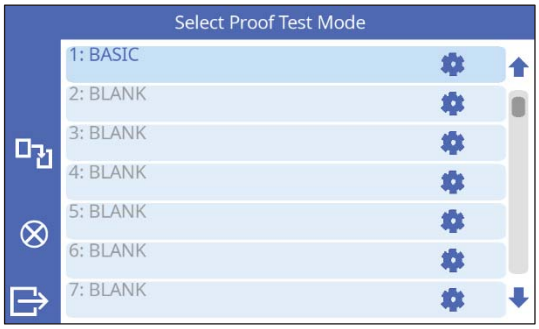
icon

DOWN key

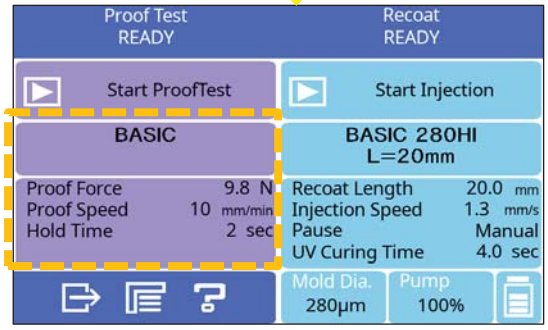


[Select Proof Test Mode]

Press SET key



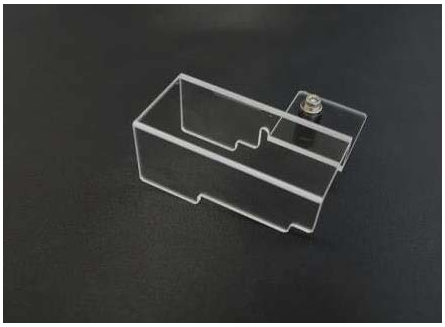
Select the Proof Test Mode



- *Settings in all "BASIC" Modes are same. Change the settings depending on operation.*
- *Proof Force may not reach the force set depending on the fiber coating or the fiber diameter.*

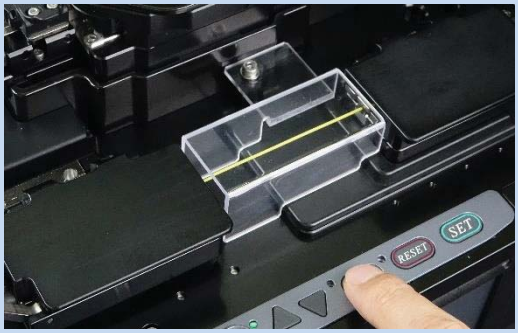
Fiber Protection Cover

Shipping from our factory, the default setting is that the proof test does not work without attaching the Fiber Protection Cover.
Please prepare the Fiber Protection Cover which applies to the Recoator.



Fiber Protection Cover for FSR116

Fiber Protection Cover for FSR117

Fiber Protection Cover

- *Set [Fiber-Protection-Cover Sensor] [Invalid], the proof test can be run without the fiber protection cover.*
- *Proof testing without the Fiber-Protection-Cover is very dangerous. Wear safety glasses when proof test is done. In normal use, [Fiber-Protection-Cover Sensor] must be "Valid".*
- *Our companies do not take responsibility for any personal injury or physical loss in case [Fiber-Protection-Cover Sensor] is set at "Invalid".*
- *Although the proof test can be run without the fiber protection cover, our companies do not take responsibility for any personal injury or physical loss in case [Fiber-Protection-Cover Sensor] is set at "Invalid".*