

# FSR-115, FSR-116 and FSR-117

## Optical Fiber Recoaters

AFL offers a complete lineup of high-quality optical fiber recoaters to reconstitute the primary coating of an optical fiber. In applications with flexible packaging requirements, high strength and high reliability splices, softer coatings for gyroscope splices, low-index coatings for power delivery and more.

The latest recoaters from Fujikura improve on their respective predecessors in numerous ways. The time to inject recoat material has been reduced by over 50% due to an improved pumping mechanism and new glass mold design. While still utilizing quartz glass, the new mold design improves both pump time and recoat length accuracy, especially for longer recoats, by improving the flow rate of material across the entire mold. The mold also features a unique RFID capability, enabling the FSR to automatically limit selectable recoat modes in the UI, based on mold size installed and recoat mode parameters. This feature speeds up application changeover and can serve as a production control measure. Further enabling ease of changeover, this FSR series includes user exchangeable inserts for different sizes and combinations of fiber coating and mold. To maintain concentricity of the fiber relative to the mold, the height of the fiber must change in the clamping system outside of the mold. This process is a simple exchange of metal inserts in the fiber clamps. For fine-tuned height adjustments, spare shims are included in every recoater shipment. Like their predecessors, the FSR-115 has no proof tension, the FSR-116 has a linear proof tester up to 2 kgf, and the FSR-117 has mandrel wraps for up to 10 kgf of tension or proof to failure for most fibers.

This generation of recoaters brings exciting benefits to the specialty fiber optic industry. Fujikura continues to lead with innovation and value in the quality solutions they develop. Put our recoaters to the test by contacting us at 1-800-235-3423.

### Features

- RFID mold identification for simple recoat mode selection
- Easy user exchangeable mold, inserts and shims for precise concentricity in any application
- Consistent, accurate recoat lengths
- Fast pumping mechanism for cycle time reduction
- Laser light illumination of recoat mold for ease of viewing during injection
- 2 kgf or 10 kgf proof tension depending on model
- Touchscreen graphical UI



FSR-115



FSR-116



FSR-117

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# FSR-115, FSR-116 and FSR-117 Optical Fiber Recoaters

## Specifications

Parameter	FSR-115	FSR-116	FSR-117
Applicable optical fiber	Single Fiber		
Applicable fiber coating diameters	90-970 $\mu\text{m}$		
Recoat diameters	195 $\mu\text{m}$ , 255 $\mu\text{m}$ , 280 $\mu\text{m}$ , 320 $\mu\text{m}$ , 330 $\mu\text{m}$ , 450 $\mu\text{m}$ , 600 $\mu\text{m}$ , 660 $\mu\text{m}$ , 670 $\mu\text{m}$ , 850 $\mu\text{m}$ , 1000 $\mu\text{m}$ Custom sizes available		
Recoat length	4 to 50 mm <sup>1</sup>		
Resin injection time	Recoat Length Accuracy $\pm 20\%$ <sup>2</sup> DSM 950-200: Injection 17 sec. <sup>2</sup> PC-373LD: 20 sec. <sup>2</sup>		
Resin curing time	DSM 950-200: 4 sec. <sup>2</sup> PC-373LD: 10 sec. <sup>2</sup>		
UV LEDs	UV LEDs are placed on top and bottom. Individual control of light emitting position, intensity and time are possible. UV Center Emission Wavelength Approx: 365 nm		
Mold material	Quartz		
Load application and mechanism	—	Linear Flat Clamp	Mandrel Wrap
Tension	—	0.2-2.0 kgf (1.96 N-19.61 N)	0.2-10.0 kgf (1.96 N-98.07 N)
Dimensions	252 mm (W) x 135 mm (D) x 169 mm (H)	252 mm (W) x 175 mm (D) x 169 mm (H)	
Weight	3.3 kg	4.8 kg	5.0 kg
Storage conditions	-40°C to 80°C, 0 to 95% RH non-condensing		
Operating conditions	10°C to 30°C, 0 to 95% RH non-condensing		
AC Adapter	Input power	AC 100 V to 240 V, 50/60 Hz Max, 1.5 A (ADC-21A)	
	Output power	DC 19 V, Max 2.1 A	
LCD monitor	TFT 4.95" touchscreen		
PC interface	USB 2.0 Type B mini		
Firmware update	Firmware downloaded from Fujikura servers via "Data Connection" PC Software		
Data storage	Recoating	100 programmable modes 5000 finished recoats	
	Proof testing	—	30 programmable modes 5000 finished proof test results
Wireless communication	RFID, ISO 15693 compliant		
Proof test calibration	—	Requires FGA-02 and FGP-20 force gauge <sup>3</sup>	

- Exact recoat length dependent on combination of recoat diameter, fiber coating, ambient temperature, and other environmental factors.
- Test Conditions
  - UV recoat resin: DSM 950-200 or Luvantix ADM Ltd. PC-373LD
  - Recoat diameter: 280  $\mu\text{m}$
  - Recoat length: 20 mm
  - Fiber: 125  $\mu\text{m}$  cladding with transparent UV acrylate 250  $\mu\text{m}$  coating diameter, strip length 16 mm
  - Temperature: 25°C
- FGP-20 is manufactured by Nidec-Shimpo Co. Ltd. and not provided by AFL.

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# FSR-115, FSR-116 and FSR-117 Optical Fiber Recoaters

## Ordering Information — Recoaters

For a fully operable recoater, required components are: FSR-115/116/117 recoater body (1), FSR-115/116/117 mold (1) and FSR-115/116/117 insert pair (1).

Part numbers below with “Kit” in the description include all three components.

Description	AFL No.
<b>FSR-115 Recoater Body</b> Includes: FSR-115, ADC-21 AC adapter, ACC-09 AC power cord, FSR-115/116/117 insert shim set, FSR-115/116/117 insert set screws, HEX-04 hex wrench, USB-01 USB Cable, QRG-08-E quick reference guide, and One year factory warranty	S018142
<b>FSR-116 Recoater Body</b> Includes: FSR-116, ADC-21 AC adapter, ACC-09 AC power cord, PC-02 protection cover, FSR-115/116/117 insert shim set, FSR-115/116/117 insert set screws, HEX-04 hex wrench, USB-01 USB Cable, QRG-08-E quick reference guide, and One year factory warranty	S018143
<b>FSR-117 Recoater Body</b> Includes: FSR-117, ADC-21 AC adapter, ACC-09 AC power cord, PC-03 protection cover, FSR-115/116/117 insert shim set, FSR-115/116/117 insert set screws, HEX-04 hex wrench, USB-01 USB Cable, QRG-08-E quick reference guide, and One year factory warranty	S018144
<b>FSR-115 Kit with 280 µm mold and 225-275 µm inserts</b> Includes: FSR-115, 280 µm mold, 225-275 µm inserts, ADC-21 AC adapter, ACC-09 AC power cord, FSR-115/116/117 insert shim set, FSR-115/116/117 insert set screws, HEX-04 hex wrench, USB-01 USB Cable, QRG-08-E quick reference guide, and One year factory warranty	S018170
<b>FSR-116 Kit with 280 µm mold and 225-275 µm inserts</b> Includes: FSR-116, 280 µm mold, 225-275 µm inserts, ADC-21 AC adapter, ACC-09 AC power cord, PC-02 protection cover, FSR-115/116/117 insert shim set, FSR-115/116/117 insert set screws, HEX-04 hex wrench, USB-01 USB Cable, QRG-08-E quick reference guide, and One year factory warranty	S018171
<b>FSR-117 Kit with 280 µm mold and 225-275 µm inserts</b> Includes: FSR-117, 280 µm mold, 225-275 µm inserts, ADC-21 AC adapter, ACC-09 AC power cord, PC-03 protection cover, FSR-115/116/117 insert shim set, FSR-115/116/117 insert set screws, HEX-04 hex wrench, USB-01 USB Cable, QRG-08-E quick reference guide, and One year factory warranty	S018172

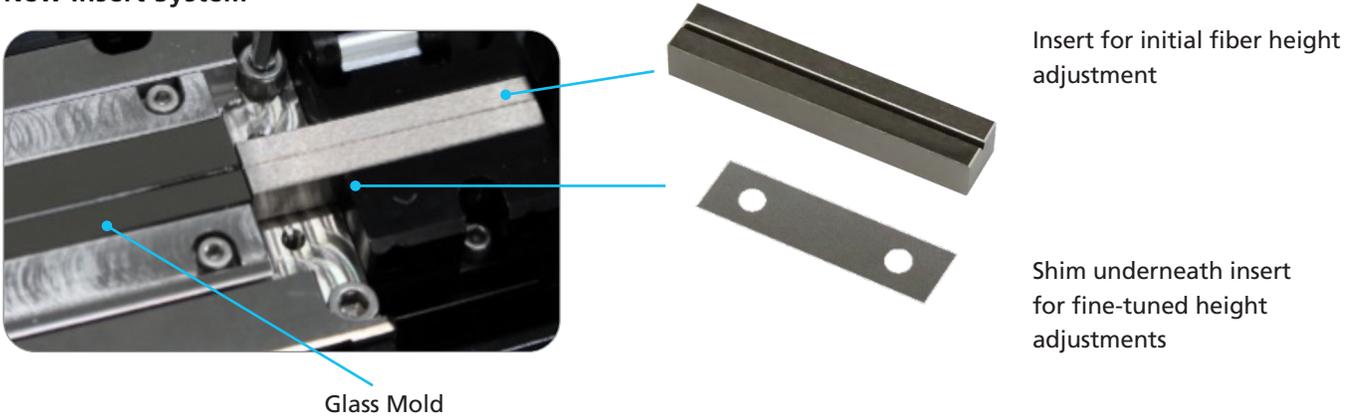
## Accessories

Description	AFL No.	Description	AFL No.
<b>MOLDS</b>		<b>MISCELLANEOUS</b>	
FSR-115/116/117 195 µm Mold	S018146	Protection cover for FSR-116: PC-02	S016107
FSR-115/116/117 255 µm Mold	S018147	Protection cover for FSR-117: PC-03	S016108
FSR-115/116/117 280 µm Mold	S018145	FSR-115/116/117 Insert Set Screws (QTY: 5)	S018169
FSR-115/116/117 320 µm Mold	S018148	FSR-115/116/117 Insert Shim Set	S018167
FSR-115/116/117 330 µm Mold	S018149	UV resin bottle: FSR-05-BTL-01	S016112
FSR-115/116/117 450 µm Mold	S018150	Force gauge adaptor: FGA-02	S016113
FSR-115/116/117 600 µm Mold	S018151	AC adapter ADC-21	S018168
FSR-115/116/117 650 µm Mold	S018152	AC power cord ACC-09	S014390
FSR-115/116/117 670 µm Mold	S018153		
FSR-115/116/117 850 µm Mold	S018154		
FSR-115/116/117 1000 µm Mold	S018155		
<b>INSERTS</b>			
FSR-115/116/117 Inserts (90-110 µm fiber coating)	S018156		
FSR-115/116/117 Inserts (110-140 µm fiber coating)	S018157		
FSR-115/116/117 Inserts (140-180 µm fiber coating)	S018158		
FSR-115/116/117 Inserts (180-225 µm fiber coating)	S018159		
FSR-115/116/117 Inserts (225-275 µm fiber coating)	S018160		
FSR-115/116/117 Inserts (250-350 µm fiber coating)	S018161		
FSR-115/116/117 Inserts (350-450 µm fiber coating)	S018162		
FSR-115/116/117 Inserts (450-550 µm fiber coating)	S018163		
FSR-115/116/117 Inserts (540-660 µm fiber coating)	S018164		
FSR-115/116/117 Inserts (660-810 µm fiber coating)	S018165		
FSR-115/116/117 Inserts (810-970 µm fiber coating)	S018166		

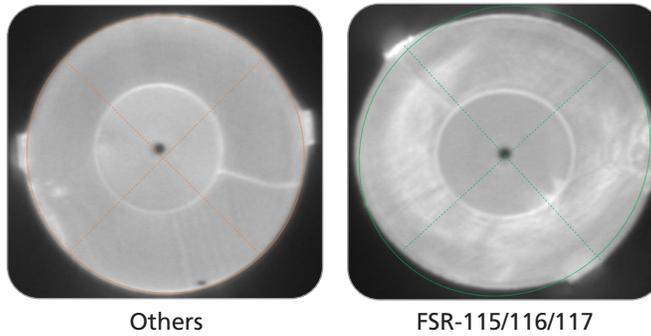
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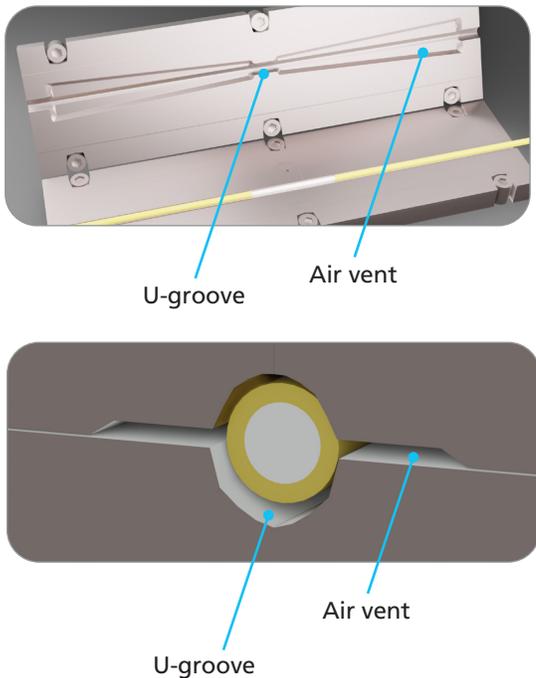
## New Insert System



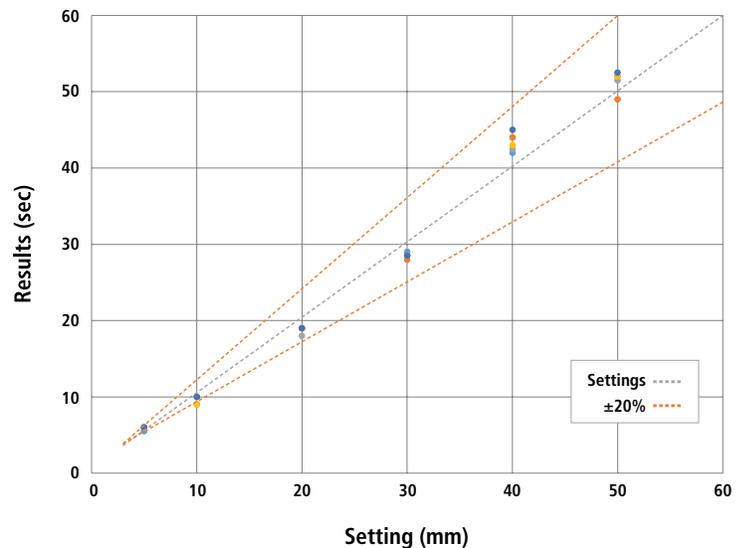
Simple. Repeatable. Concentric.



## Improved Mold Design



## Comparison Recoat Length Settings vs. Results<sup>1</sup>

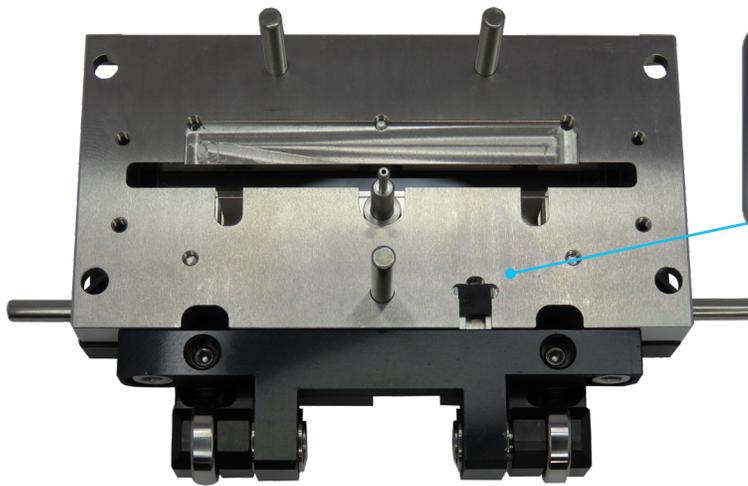


1. The table does not guarantee the recoat length accuracy. Test conditions: (1) UV recoat Resin: Japan Fine Coatings Co., Ltd. 950Y200; (2) Recoat diameter: 280  $\mu$ m; (3) Recoat Length: 10-50 mm; (4) Fiber: Clad Diameter 125  $\mu$ m/Transparent UV 250  $\mu$ m Coating Diameter, Coating Stripping length 60 mm; and (5) Environmental Condition: 25°C

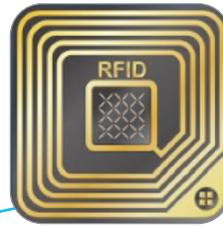
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# FSR-115, FSR-116 and FSR-117 Optical Fiber Recoaters

RFID for Mold Identification by the FSR



Underside of Mold

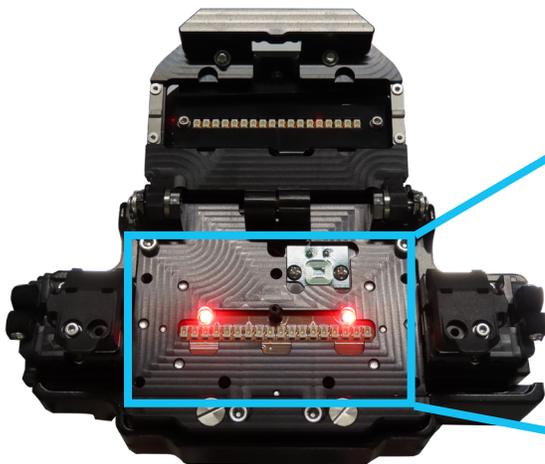


RFID Chip

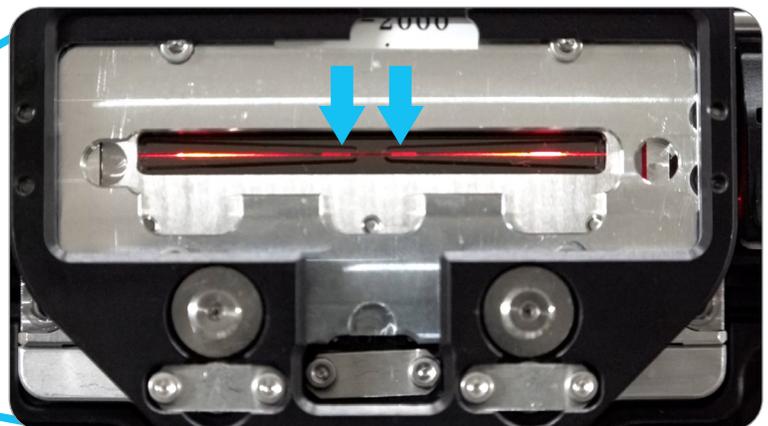
Select Recoat Mode		
19: BASIC 280HI	L=20mm	⚙️
20: SPECIAL 280	L=20mm	⚙️
21: BASIC 280LI	L=20mm	⚙️
22: BASIC 450HI	L=20mm	⚙️
23: BASIC 450HI	L=34mm	⚙️
24: BASIC 450HI	L=12mm	⚙️
25: BASIC 450LI	L=34mm	⚙️

Suggests suitable programs

## Improved Viewing During Injection



Mold Removed



Mold Viewing Window