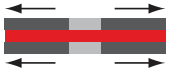
Recoat / Proof Test

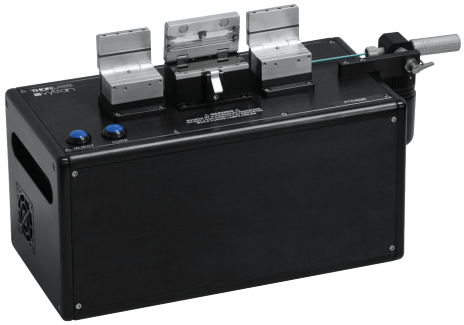
PTR302
Rotary Proof Tester

Capabilities

Recoat



Proof Test



PTR403B
Recoater for Manual Mold Assembly, 50 mm Recoat Length

VYT300C
Handset Controller Included with All Systems

PTR308
Recoater with Automatic Mold Assembly and Linear Proof Tester

vytran® Fiber Recoaters and Proof Testers with UV LEDs

Thorlabs offers recoating and proof testing solutions for R&D and manufacturing applications. Our fiber recoaters apply a protective coating to fusion-spliced optical fiber, offering more flexibility than a splice sleeve. Proof testers are designed to apply a set load to a fusion-spliced optical fiber in order to test the strength of the spliced fiber. We also offer combination workstations that combine recoaters and proof testers in order to minimize transport of fiber across multiple stations.

These workstations are available from stock with a variety of options such as automatic or manual mold assemblies and rotary or linear proof testers. The recoaters and proof testers can be used with single mode, multimode, polarization-maintaining, or other specialty fibers.

THORLABS

Product Line at a Glance

Recoaters

PTR404B
100 mm Manual Recoater with Manual Recoat Injector
(Mold Assembly Sold Separately)

PTR305
50 mm Automatic Recoater with Automatic Recoat Injector

Features

- Curing LEDs Offer Lower Cost of Operation than Lamp Curing Systems
- Recoat Offers Greater Flexibility Than Splice Sleeve
- Can Restore Spliced Fiber to Near-Original Condition
- Recoat with UV-Curable Acrylate Coating
- Quartz Mold Plates Support >10,000 Recoats
- Fully Programmable with Push-Button Operation and VYT300C Handset Controller

Fiber Recoaters restore the coating of a fusion-spliced fiber by UV curing an acrylate coating over the spliced region. Compared to using a splice sleeve, recoating the fiber offers increased flexibility and durability that nearly matches the performance of the original fiber. Because of this, fiber recoaters are ideal for manufacturing high-stress or sensitive fibers such as undersea optical fiber cables, submarine communication cabling, fiber lasers or distributed Bragg reflector (DBR) lasers. Four models of recoaters are available as seen in the table below.

Recoater Selection Guide

Item #	Mold Assembly	Recoat Injector	Recoat Length
PTR305	Automatic	Automatic	50 mm
PTR403	Manual	Automatic	50 mm
PTR403B		Manual	50 mm
PTR404B			100 mm

Systems with automatic injection should be used only with high-index recoat material. Other materials may reduce the injection pump lifetime.

Proof Testers

PTR301
Linear Proof Tester

PTR302
Rotary Proof Tester

Features

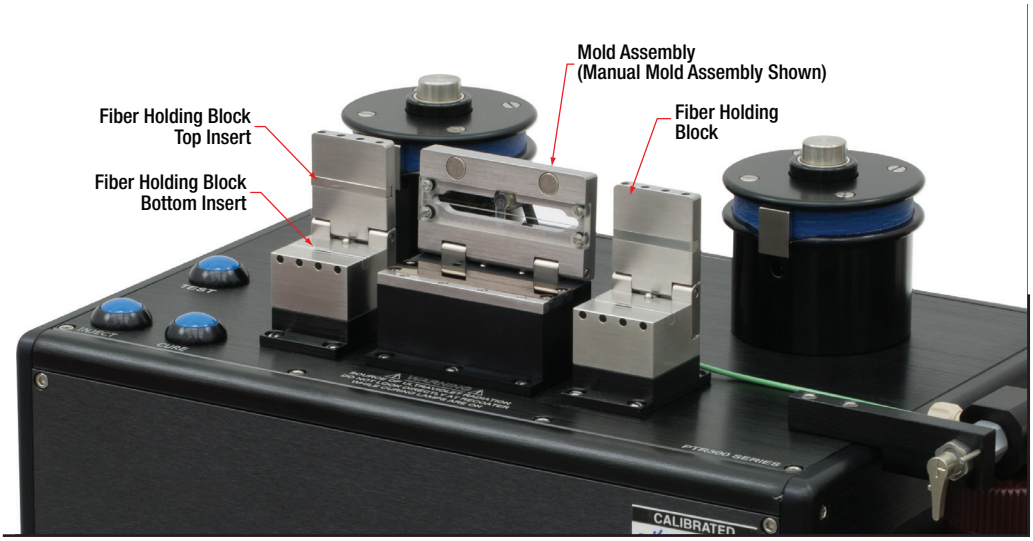
- Test Strength and Durability of a Fusion-Spliced Fiber
- Ensures Long-Term Reliability of the Fiber Splice
- Linear and Rotary Tester Versions Available
- Fully Programmable with Push-Button Operation and VYT300C Handset Controller

Proof Testers apply a set load to a fusion-spliced fiber at a controlled rate in order to test the spliced fiber's strength. During proof or tension testing, the load is taken up to a predetermined level and released. The PTR301 Linear Proof Tester can perform simple proof tests for loads up to 20 N (4.5 lbs). The PTR302 Rotary Tester can perform both proof testing and tension testing for loads up to 89 N (20 lbs), making it ideal for process qualifications that require very high proof test or tension test levels.

Integrated Recoater and Proof Testers

Features

- Combine Recoater and Proof Tester in a Single Unit
- Minimize Transport of Fiber Between Multiple Stations
- 50 mm Recoat Length
- Available Recoater and Proof Tester Combinations Shown in Table Below
- Fully Programmable with Push-Button Operation and VYT300C Handset Controller



Recoater with Integrated Rotary Proof Tester

These integrated recoating and proof testing platforms provide a compact solution combining the function of both into a single unit. This offers several advantages such as minimizing the transport of a fusion-spliced fiber between multiple workstations, optimizing process flow in manufacturing, and reducing the space required for fiber manufacturing. Workstations with an integrated linear proof tester share the same fiber holding blocks between recoater and proof tester; therefore, the fiber does not need to be moved at all between recoating and proof testing.

Integrated Recoater and Proof Tester Selection Guide

Item #	Mold Assembly	Recoat Injector	Proof Tester
PTR308	Automatic	Automatic	Linear (20 N)
PTR406	Manual	Automatic	Linear (20 N)
PTR406B		Manual	
PTR407		Automatic	Rotary (89 N)
PTR407B		Manual	

Applications

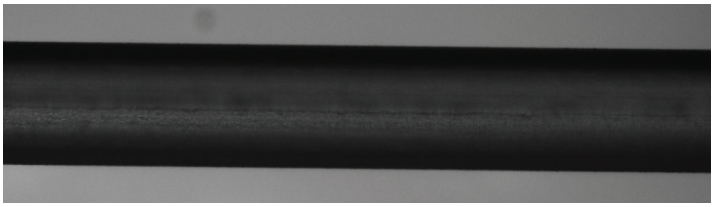


Image of Ø125 µm cladding / Ø250 µm coating fiber after recoat with a seamless interface between the original coating and the recoated splice region.

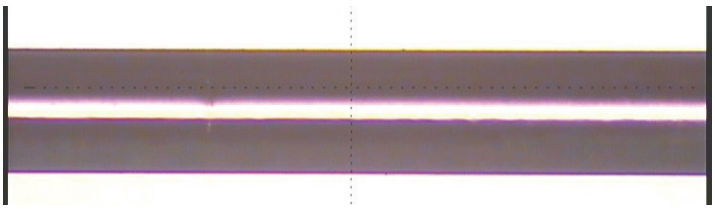


Image of Ø450 µm fiber after recoat with the core illuminated.

Recoating a splice with an acrylate coating material enables restoration of a fiber to nearly original condition. Unlike splices that are protected in a rigid splice protector, recoated fibers retain high flexibility and can be easily coiled or spooled. Because the recoat diameter accurately matches the original coating diameter, these fibers can be used in situations with tight packaging requirements.

As a result, recoating is ideal for applications where fibers that are spliced require high reliability and a high splice strength. Example applications include undersea fiber optic cabling and optical networks within submarines.

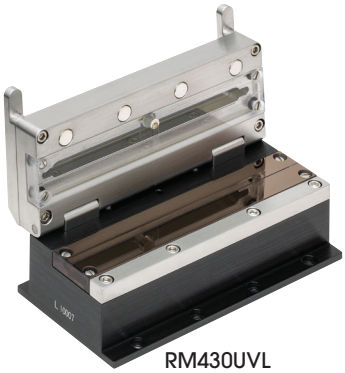
Features

Mold Assembly

Automatic Mold Assembly
(PTR305 and PTR308 Only)

- Pneumatic Mechanism Controls Mold Plates
- Direct Injection of Recoat Material into Mold Cavity
- Optimized for Ø430 µm Coating Fiber
- Designed for High-Volume Manufacturing Applications
- Reduced Cleaning Requirements Compared to a Manual Mold Assembly

An automatic mold assembly greatly reduces the time needed for each recoat operation.


RM430UVL

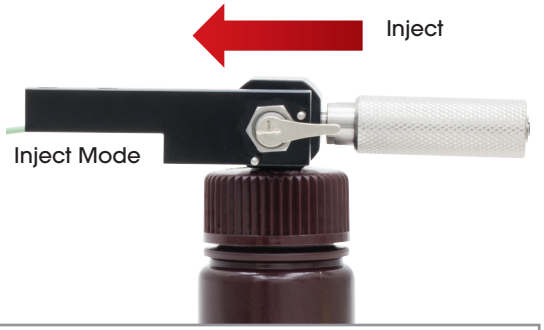

RM280UVA

Manual Mold Assemblies
(All Other Recoat-Capable Workstations)

- Split Quartz Mold Plates with Hinge
- Multiple Mold Sizes Offer Process Flexibility Ideal for R&D Applications
- Mold Assemblies for Ø280 µm, Ø430 µm, and Ø600 µm Available from Stock; Custom Mold Sizes Up to Ø900 µm Possible
- 50 mm or 100 mm Recoat Length

When purchasing a manual fiber recoater for the first time, it is necessary to choose a mold assembly that is appropriate for the desired fiber coating diameter. Additional mold assemblies may also be purchased and swapped out by the user. The assembly simply screws to the top of the device, making the removal and installation simple and easy. Because of this, our manual recoaters are adaptable and flexible in the field and can be quickly modified for a variety of fiber diameters.

Manual recoat injectors use a two-position valve to direct the flow of recoat material.



Recoat Injector

Two recoat injector configurations are available. For systems with automatic injectors, the amount of material dispensed by the automatic injector is controlled by hand via the top-mounted "Inject" button or programmed into the machine using the tablet controller.

Systems with a manual injector come with a reservoir to hold recoat material and a two-position distribution valve to direct the flow (see images to the right). A knurled dispensing screw with an internal plunger acts as a syringe for the recoat material.

Injector Type	Automatic	Manual
Recoat Volume Control	Programmable via VYT300C Handset Controller	Manual Control
Recoat Injection Rate	≤1.8 µL/s (Programmable)	Manual Control
Compatible Recoat Material	AB950200 High-Index Acrylate	AB950200 High-Index Acrylate or PC373 Low-Index Acrylate

Proof Tester Features

- Linear and Rotary Testing Methods Available
- Linear Testing Uses Fiber Holding Blocks to Pull Fiber
- Rotary Towers Offer Higher Loads and Tension Testing
- Fully Programmable with Included VYT300C Handset Controller

During proof or tension testing, the load is taken up to a predetermined level and released. Proof testing is employed in manufacturing applications to ensure the fiber can support the necessary service load. To ensure the long-term reliability of the spliced fiber, the proof test level should be about three times higher than the intended service load. For tension testing using a rotary tower, the load is typically increased to the breaking point of the fiber and is best suited for engineering and development applications. Both testing processes are fully programmable, allowing the user to select parameters such as the load, the rate at which the load is applied, and the hold time.

Linear Proof Tester

Rotary Proof Tester

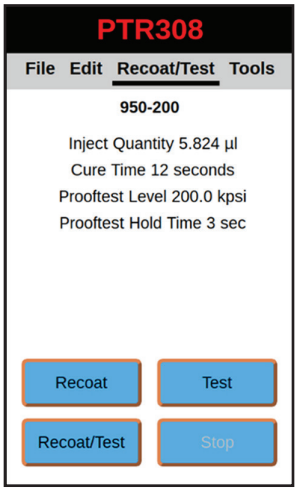
Specifications

Proof Tester Type	Linear	Rotary
Load Mechanism	1.5" (38 mm) Linear Fiber Clamp	Ø2" (50.8 mm) Rotating Mandrel
Fiber Length (Min)	6" (150 mm)	17" (432 mm)
Load (Max)	20 N (4.5 lbs)	89 N (20 lbs)
Accuracy	±2%	
Ramp Rate	Programmable, ≤22.2 N/s (5 lbs/s)	Manual, ≤22.2 N/s (5 lbs/s)

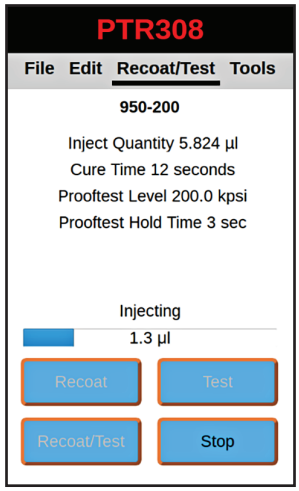
Handset Controller

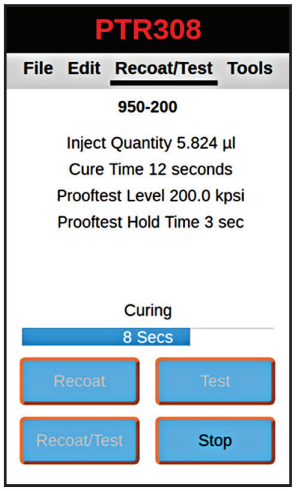
All workstations include a VYT300C handset controller (shown to the right) that uses a capacitive touchscreen and intuitive GUI to allow a user to control process parameters. Adjustable settings include the inject rate, inject amount, cure time, LED power, and proof test level. The controller is shipped preloaded with files for common recoat and proof test parameters but can store a virtually unlimited number of files.

The VYT300C handset controller includes a kickstand for easy viewing and use.



Initial screen showing the recoat and test functions.



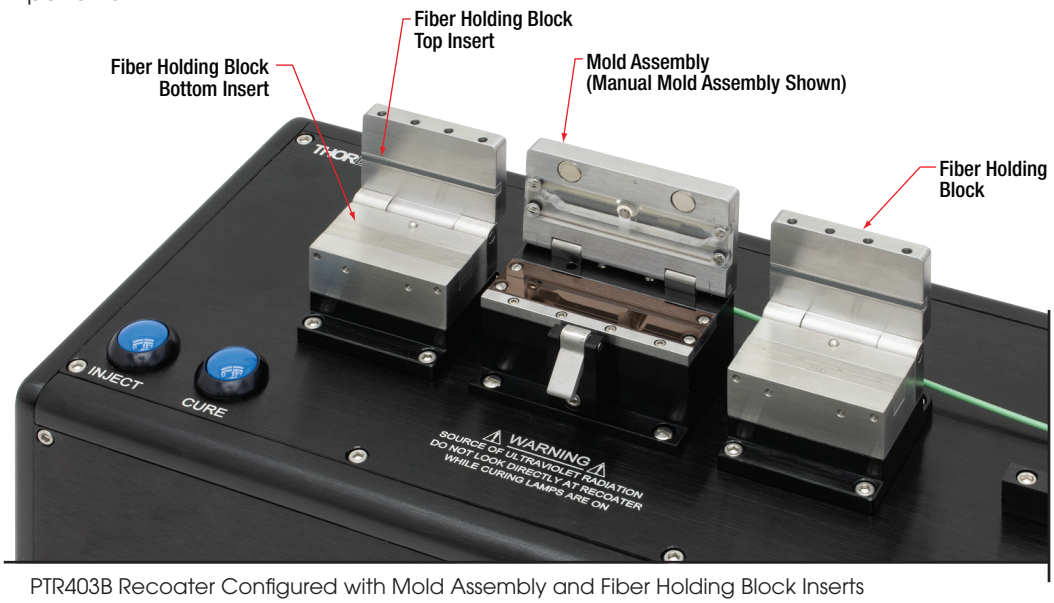


The recoat and test screen displays the status of the running process. Processes can be easily ended using the Stop button. Parameters can be changed using the Edit tab.

Build Your System

Our Vytran® Recoaters and Proof Testers are fully customizable with modular components such as manual mold assemblies and fiber holding block inserts for a wide range of fiber sizes. Use the guide below to determine the right set of components for the intended application.

Contact us at techsupport@thorlabs.com if you prefer to purchase and receive a fully configured and tested PTR400 series system instead of building your own system.



PTR403B Recoater Configured with Mold Assembly and Fiber Holding Block Inserts

Step 1: Choose a Recoater or Proof Tester Workstation

Choose among the many configurations available below. Workstations with item #s that end with a B (e.g., PTR403B or PTR406B) use a manual recoat injector while others use an automatic recoat injection system.

Recoater Workstation

- PTR305: Automatic Mold Assembly, 50 mm Recoat Length
- PTR403 or PTR403B: Manual Mold Assembly, 50 mm Recoat Length
- PTR404B: Manual Mold Assembly, 100 mm Recoat Length

Proof Tester Workstation

- PTR301: Linear Proof Tester
- PTR302: Rotary Proof Tester

Integrated Recoater and Proof Tester Workstation

- PTR308: Automatic Mold Assembly with Linear Proof Tester
- PTR406 or PTR406B: Manual Mold Assembly with Linear Proof Tester
- PTR407 or PTR407B: Manual Mold Assembly with Rotary Proof Tester

Recoaters with automatic injectors should be used only with high-index recoat material. Other materials may reduce the injection pump lifetime.

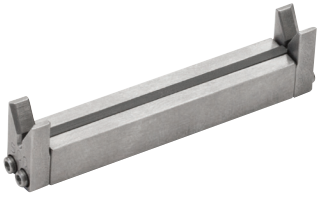
Step 1a: Choose a Mold Assembly (For Manual Recoaters Only)

If a recoater configured for a manual mold assembly was chosen in Step 1, the mold needs to be purchased separately. The table below outlines the recoat lengths and diameters available from stock. Custom molds with recoat diameters up to Ø900 µm are available upon request by contacting techsupport@thorlabs.com.

Manual Mold Assembly Item #	RM280UVA	RM430UVA	RM600UVA	RM280UVL	RM430UVL	RM600UVL
Recoat Diameter	280 µm	430 µm	600 µm	280 µm	430 µm	600 µm
Recoat Length	50 mm			100 mm		
Compatible Workstations	PTR403, PTR403B, PTR406, PTR406B, PTR407, PTR407B			PTR404B		

Step 2: Choose Fiber Holding Block Inserts (All Workstations Except PTR302)

Fiber holding block inserts are placed within the fiber holding blocks of recoaters and linear proof testers. For every workstation except the PTR302, two top and two bottom inserts should be selected. These support a wide range of fiber outer diameters (from Ø80 µm to Ø1000 µm). For a full list of options, please visit our website.



VHJ500
Bottom Insert for
Linear Proof Testers

VHH600
Bottom Insert

Workstation Item #	Top Inserts	Bottom Inserts
PTR301, PTR308, PTR406, PTR406B	VHJT, VHJT900	VHJ250, VHJ500, VHJ900S
PTR305	VHH000, VHH900	VHH100 through VHH900S (9 Options)
PTR403, PTR403B, PTR404B, PTR407, PTR407B	VHJT, VHJT900	VHV100 through VHV900 (10 Options)

Consumables and Replacement Items

Regular consumables such as recoat material and replacement items for worn and used components of a recoater or proof tester workstation are described below.

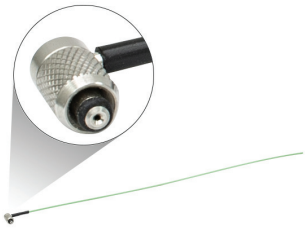
Recoat Material

- UV-Curable Acrylate Recoat Material (1 oz Bottle)
  - AB950200 High-Index Material Compatible with All Standard Recoaters
  - PC373 Low-Index Material Compatible with Recoaters Using Manual Injectors

AB950200
High-Index
Recoat Material

Replacement Automatic Injector

- Replacement Injection Tube for Recoaters with Automatic Injectors and Manual Mold Assemblies
- For Use with AB950200 and PC373 Recoat Materials



RRATA
Replacement Injection Tube
for Automatic Injectors

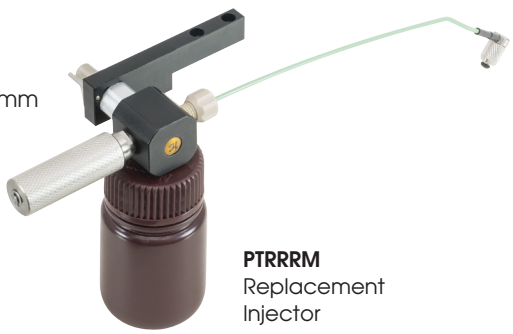
Replacement Proof Tester Grips

- Replacement Grips for Rotary Proof Testers
- Pack of 10

PG200
Proof Tester Grips

Replacement Manual Injector

- Replacement Manual Injector for Dispensing Recoat Material into the Mold
- Versions Compatible with 50 mm and 100 mm Length



PTRRRM
Replacement
Injector

Contact Us

Contact Vytran for assistance in selecting components for your specific application.

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