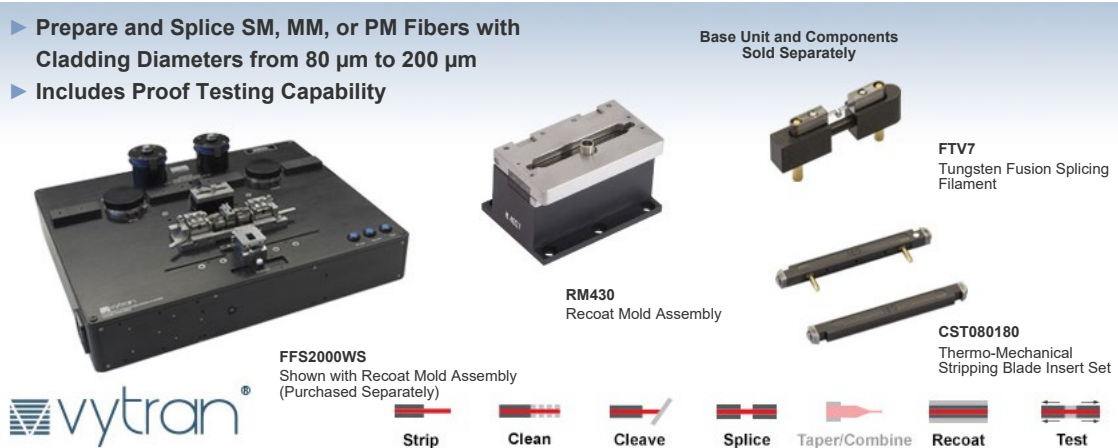


FFS2000WS - August 21, 2024

Item # FFS2000WS was discontinued on August 21, 2024. For informational purposes, this is a copy of the website content at that time and is valid only for the stated product.

VYTRAN® FIBER PREPARATION, SPLICING, AND PROOF TESTING: SM, MM, AND PM

- ▶ Prepare and Splice SM, MM, or PM Fibers with Cladding Diameters from 80 μm to 200 μm
- ▶ Includes Proof Testing Capability



OVERVIEW

Features

- Fiber Coating Soaking Station
- Thermo-Mechanical Coating Stripping Station
- Ultrasonic Fiber Cleaning Station
- Fiber Cleaving Station Provides Flat Cleaves (Replacement Blades Available Below)
- Automatic Fiber Alignment and Accurate Splice Loss Determination
- Automatic 4-Axis Positioning System for PM Rotation
- Filament Fusion Splicing Station with Automatic Post-Fusion Fire Polishing for Strength Enhancement
- Recoat Station for Acrylate Coating Restoration
- Built-in Proof Tester / Tension Tester
- Includes Windows® 7 PC with GUI
- Replacement Components Sold Separately Below

Thorlabs' Vytran® All-in-One Fiber Preparation and Fusion Splicing Workstation offers all fusion splicing and cleaving procedures integrated into a single benchtop system that can be used to produce consistent splices quickly and efficiently (US Patent: 9,977,189). This workstation uses our filament fusion technology to provide a convenient, reliable method of making high-strength, low-loss splices for both production and R&D applications. The splicer features True Core Imaging technology, which is a high-magnification, high-resolution optical imaging system capable of detecting and displaying the inner core structure of a fiber. This technology provides for fast, accurate core alignment and splice loss calculation. Also included is a Windows® 7 PC with a user interface that offers complete configuration and process control. The model offered here includes rotational alignment for PM fibers and a proof / tension tester.

The system is capable of processing fibers with Ø80 μm to Ø200 μm cladding. This includes standard Ø80 μm cladding / Ø180 μm coating and Ø125 μm cladding / Ø250 μm coating fibers.

Automatic Alignment

Our FFS2000WS All-in-One Workstation detects and displays a fiber's inner core structure; in conjunction with 0.01 μm resolution stepper-motor-controlled XY positioners, the FFS2000WS provides a fast and accurate alignment system. Alternately, the stepper motors in the FFS2000WS can also interface with external test and measurement equipment, such as power meters, spectrum analyzers, and polarimeters, through analog BNC inputs, to create a fully automated optical assembly station.

The workstation can also provide a splice loss determination after the splicing is complete. From the image of the fiber cores, a proprietary algorithm is used to

Building a Complete Fiber Processing System?

To build a complete system, you will need to purchase a base unit plus additional components that are dependent upon the size of the fiber being processed. We recommend that you contact us prior to ordering for assistance with choosing a system and all the necessary components. This also allows us to install and factory-align all system components within the base unit prior to shipping, ensuring optimal performance out-of-the-box.

To take advantage of this assistance, please e-mail us directly at techsupport@thorlabs.com and a representative will contact you shortly.

The Process for Fusion Splicing

The FFS2000WS Incorporates All Components and Procedures to Prepare the Fiber for Splicing:

1. A Coating Soaking Station for Specific Fibers that Require a Solvent Pre-Soak to Soften the Coating Prior to Stripping
2. A Thermo-Mechanical Stripping (TMS) Station Provides a Fast, Single-Step Process for Safely Removing Acrylate Coatings while Maintaining Fiber Strength
3. Ultrasonic Fiber Cleaning Removes Coating Particles or Residue Left on the Glass Surface that Could Reduce Splice Strength
4. An Automatic Fiber Cleaver Produces a Flat Cleave, Important for Achieving Low-Loss Splices
5. Uniquely Designed Fiber Holding Blocks and Transfer Jig Minimize Fiber Handling by Precisely Positioning the Fibers for Each Process
6. Omega-Shaped Filament Provides a Uniform Concentric Heat Source for Fusing the Fiber Tips, as well as for an Optional Post-Fusion Fire Polishing Step to Remove Silica Deposits
7. Recoater Restores the Protective Polymer Coating Over the Spliced Region
8. Rotary Proof Tester Qualifies the Strength of the Splice

See the *Tutorial Videos* tab for demonstrations of these features.

accurately calculate the loss for a splice of a variety of similar or dissimilar fiber types.

Filament Fusion

Our unique filament fusion technology provides a consistent, reliable method of making high-strength, low-loss splices. Precise control of the fusion process is achieved by purging the splice region with an inert gas and using a tungsten or iridium filament to supply the thermal input necessary for fiber fusion. Because the fusion heat source is isolated from the environment, filament fusion splicing is not dependent on ambient conditions. Controlled conditions inside the system in combination with constant power control circuitry ensure repeatable performance splice after splice.

Fire Polishing

Our fire polishing process significantly increases splice strength through a rapid post-fusion heat treatment of the splice region. When a fusion splice is made, silica will evaporate off of the hot center region of the splice and condense on either side of the joint where the fiber is cooler. The condensed silica deposits act as a surface flaw, lowering splice strength. The fire polishing process removes or minimizes the deposits, thereby improving splice strength. In addition, the fire polishing process provides capabilities to expand adiabatically the mode field diameter of a fiber by causing the dopants in the cladding to diffuse farther from the core. Through this thermal core expansion process, extremely low-loss fusion splices between markedly dissimilar fibers, such as those typically used in WDM applications, can be achieved.

Recoating

The FFS2000WS includes an optical fiber recoater to restore the protective polymer coating over the fusion splice. The combination of high-strength filament fusion splicing and UV acrylate recoating provides a more reliable alternative to standard heat shrink protection sleeves. The recoat process maintains a near-original fiber diameter and delivers a smooth, flexible fusion splice that can be handled or tightly coiled as if no splice were present.

Proof Testing

The FFS2000WS includes a rotary proof tester that can test fibers up to a tension of 89 N (20 lbs) with an accuracy of $\pm 2\%$. The included software allows the user to program the unit to perform either a tension test, where the splice is tested to failure, or a proof test, where it is tested to a pre-determined tension. One set of proof test grips is included; replacement proof test grips are available below in packs of 10.

All-In-One Fiber Processing Workstation Selection Guide

SM and MM Fiber	SM and MM Fiber with Proof Testing	SM, MM, and PM Fiber	SM, MM, and PM Fiber with Proof Testing
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SPECS

Item #	FFS2000WS
Accepted Fiber Cladding Diameters	80 to 200 μm
Fiber Type	SM, MM, or PM
Thermo-Mechanical Stripper	
Accepted Coating Materials	Single or Dual Acrylate
Maximum Stripping Temperature	~ 130 °F (54 °C)
Ultrasonic Cleaner	
Accepted Cleaning Solvents	Acetone or Isopropyl Alcohol
Cleaning Time	1 to 120 s
Cleaver	
Cleave Method	Tension and Scribe (Replacement Blade Item # ACL83, Available Below)
Cleave Type	Flat (0°)
Maximum Tension ^a	2.45 N (0.55 lbs)
Splicing	
Fusion Method	Filament Fusion
Filament Power	40 W (Max)
Alignment Method	Fully Automated by True Core Imaging [®] or External Feedback
XY Fiber Positioning Resolution	Stepper Motor Controlled with 0.01 μm Resolution
Z Fiber Feed Resolution	Stepper Motor Controlled with 0.125 μm Resolution
Insertion Loss (SMF to SMF)	0.02 dB (Typical)
Tensile Strength	>250 kpsi (Typical)
PM Rotation Specifications	
Rotation Alignment	Fully Automated by End-View Alignment Technology or External Feedback
Rotation Resolution	Stepper Motor Controller (0.01° Resolution)
Rotation Travel	190°
Extinction Ratio	-35 dB (Typical)
Recoating	
Recoat Mold	Quartz
Recoat Diameter ^b	$\varnothing 280$ μm , $\varnothing 430$ μm , or $\varnothing 600$ μm
UV Source	Four Tungsten Halogen Lamps
Proof Testing	
Maximum Tension ^c	89 N (20 lbs)
Mandrel Size	$\varnothing 2$ " ($\varnothing 50.8$ mm)
Accuracy	$\pm 2\%$
General Specifications	
Size (L x W x H)	17.0" x 13.9" x 5.0" (432 mm x 353 mm x 127 mm)

Weight	26 lbs (11.8 kg)
Power	12 V DC External Power Supply with Universal AC Input
Operating System	Included Windows® 7 PC with Software GUI Installed

- Tension can be adjusted manually by the user for different fiber sizes. The cleaver is calibrated using standard weights that are hung off of a pulley, so the tension settings are programmed in grams. This maximum tension corresponds to 250 g.
- Depending on your selection of Recoat Mold Assembly below.
- The proof tester is calibrated using standard weights that are hung off of a pulley, so the tension settings are programmed in grams. This maximum tension corresponds to 9.1 kg.

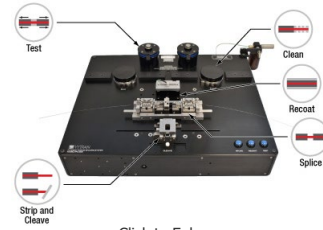


TUTORIAL VIDEOS

Tutorial Videos

Introduction

The FFS2000 All-in-One Fiber Workstations provide users with a system that can perform all the necessary steps to process a fiber: stripping, cleaning, cleaving, splicing, and recoating. Our FFS2000PT and FFS2000WS systems come with a proof testing station to qualify newly processed fiber. For polarization-maintaining or structured fiber processing, our FFS2000PM and FFS2000WS workstations feature rotary fiber holding blocks for aligning structured fibers before a splice. The splicing station contains an omega-shaped filament that will require regular maintenance to guarantee consistent performance.



Click to Enlarge
FFS2000WS with Working Areas Highlighted

Item #	Strip	Clean	Cleave	SM and MM Splice	PM Splice	Recoat	Test
FFS2000	✓	✓	✓	✓	-	✓	-
FFS2000PM	✓	✓	✓	✓	✓	✓	-
FFS2000PT	✓	✓	✓	✓	-	✓	✓
FFS2000WS	✓	✓	✓	✓	✓	✓	✓

Quick Links	Setup	Filament Maintenance	Software Introduction	Processing
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Setup

To assist new or returning FFS glass processor users with operating their glass processors, we have created a series of tutorials aimed at teaching the basic skills needed to run this machine including lab bench setup and argon setup. To read the text in the videos, we strongly recommend viewing them at full screen, 1080p resolution. If you require assistance performing other operations using your FFS glass processor, please contact Tech Support.

[Lab Bench Setup](#)

[Workstation Setup](#)

[Argon Setup](#)

Filament Maintenance

An omega-shaped filament is used to bring glass components to temperature at an FFS2000 splicing station. Filaments are chosen based on the diameter of the fibers to be processed. Brand new filaments must be burned in before use. The burn-in process consists of bringing the filament to a high temperature and back down to room temperature using a routine included in the software. This routine is performed four times with a 15-second cooldown between each execution. A new filament only needs to be burned in once; however, it will need to be normalized regularly to ensure consistent performance over its life. Normalization consists of heating two fiber tips and measuring the resulting rounding. Regular normalization ensures consistent performance over time. If performance begins to degrade, filament refurbishments can be ordered by contacting Tech Support.

[Filament Normalization Process](#)
[Filament Installation and Burn-In Process](#)

Software Introduction

Many Vytran fiber processors, including the FFS glass processing workstation, use the FFS3 software package to control all parameters of the setup, fusion, and tapering. This software has a variety of tools and functions; the following videos will help familiarize users with the basic menus and toolbars commonly used in day-to-day operation.

[View Menu](#)

[File Menu](#)

Processing

Users should familiarize themselves with preparing fibers using the strip and clean function in the FFS glass processors. Once the fiber is prepared, the FFS series of glass processors can perform cleaves and splices on a variety of glass components. Finally, users can recoat and test the fibers that have been processed. Users who can successfully perform these operations will have a basic understanding of fiber processing with FFS systems, allowing them to approach more advanced or specialized techniques for their particular application. Our engineering staff can help design splicing programs in the FFS3 software to automate processing

components for your specific application.

Strip

Our thermomechanical stripping station uses heat to soften the fiber coating before the fiber is pulled through the blades, stripping the coating from the cladding. This is done without scratching the underlying glass. The current used to heat the stripping blades and the time spent applying heat to the fiber can be set through the FFS3 software.

Clean

An ultrasonic cleaning station removes debris remaining from the stripping process, leaving a clean surface for subsequent steps of fiber processing. Opposite the cleaning station is a soaking station, which can be used for softening more durable fiber coatings before they are stripped. Dwell times for each bath can be set using the FFS3 software.

Cleave

To perform a flat cleave, these workstations use a tension-and-scribe method. The fiber is placed under tension by a fiber holding block. The diamond cleaving blade then scribes the fiber, which causes a fracture that propagates perpendicular to the fiber axis, resulting in a flat cleave. The fiber tension can be adjusted to maximize the amount of mirrored fiber end and minimize misting and hackle.

Manual Splice

This video outlines how to splice fibers manually using the software on Thorlabs' Vytran FFS2000 All-in-One Fiber Preparation and Fusion Splicing Workstation.

Loading and Unloading Fibers

This video outlines how to load and unload fibers at the Splice Station using the transfer jig on Thorlabs' Vytran FFS2000 all-in-one Fiber Preparation and Fusion Splicing Workstation.

SM and MM Splice

Argon gas is fed into the splicing area which maintains a clean working environment for two cleaned and cleaved fibers to be spliced. The workstation's omega-shaped filament is swept along the splicing region, providing even heating and creating a high-strength splice. The FFS2000PM and FFS2000WS have rotary fiber holding blocks which allow for the alignment of structured fibers before the splice.

PM Splice

While similar to a traditional splice, PM splicing differs by the addition of proper rotational alignment of stress rods used to maintain polarization of light in the fiber. The FFS2000PM and FFS2000WS workstations have rotary blocks to perform this rotational alignment of stress rods in many configurations such as panda and bow tie. Both core and stress rod alignment through the workstation provide low loss and high polarization extinction ratio splices.

Recoat

The optical fiber recoater restores the protective polymer coating over the fusion splice. The combination of high-strength filament fusion splicing and UV acrylate recoating provides a more reliable coating than standard heat shrink protection sleeves. The recoat process maintains a near-original fiber diameter and delivers a smooth, flexible fusion splice that can be handled or tightly coiled as if no splice were present.

Proof Test

The FFS2000PT and FFS2000WS workstations include a rotary proof tester that tests the strength of newly spliced and recoated fibers. The included software allows the user to program the unit to perform either a tension test, where the splice is tested to failure, or a proof test, where it is tested to a pre-determined tension.

DEMO ROOMS



Product Demonstrations

Thorlabs has demonstration facilities for the Vytran® fiber glass processing systems offered on this page within our Morganville, New Jersey; Shanghai, China; and Exeter, Devonshire offices. We invite you to schedule a visit to see these products in operation and to discuss the various options with a fiber processing specialist. Please schedule a demonstration at one of our locations below by contacting technical support. We welcome the opportunity for personal interaction during your visit!

Thorlabs China Shanghai, China

Room A101, No.100, Lane 2891, South Qilianshan Road
Shanghai 200331
China

Appointment Scheduling and Customer Support

- Phone: +86 (0) 21-60561122
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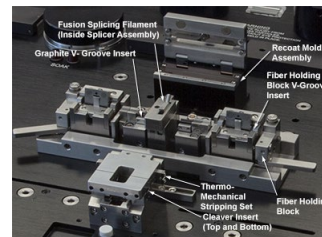
All-in-One Fiber Preparation, Fusion Splicing, and Proof Testing Workstation - Base Unit

To begin the process of purchasing your complete fiber preparation and fusion splicing workstation, add the Item # FFS2000WS to your cart. In the subsequent product groupings, you will select one or more required accessories; the number of items required from each group will be indicated in the red headings. The specific choice of components will depend upon your fiber size and type. Once we receive your order, we will review it and contact you if we have any additional questions or if a required component is missing.

As the alignment of the components in the FFS2000WS workstation is critical and must be performed in the factory, your complete system will ship with all of the components installed. Once you receive the system, most inserts (except the Graphite V-Groove Inserts) can be easily replaced by the user if needed. One FTV7 Tungsten Filament and two VHG Graphite V-Grooves (for $\text{\O}80 \mu\text{m}$ - $\text{\O}125 \mu\text{m}$ cladding) come pre-installed in the system. If a different filament or graphite v-groove is needed (see below for additional options), contact Tech Support when purchasing to request a substitution.

An external supply of argon and soaking and cleaning solvents must be provided by the user to operate the workstation.

Please contact Tech Support if you have any questions or would like assistance in building a fiber processing solution to meet your needs. In addition, installation and training by one of our application engineers is recommended for this system; please contact tech support for more details.



[Click to Enlarge](#)

The locations of components that can be purchased separately are labeled in the schematic above and are available for purchase below. The unit ships with a FTV7 Filament and two VHG125 V-Grooves; replacement filaments and v-grooves are available below. For more details on this kit, please see the list to the left.

Components Included

- FFS2000WS Base Unit
- One FTV7 Tungsten Filament Installed
- Two VHG125 Graphite V-Grooves ($\text{\O}80 - \text{\O}125 \mu\text{m}$ Cladding) Installed
- FHBR1 Fiber Holding Blocks
- Fiber Holding Block Transfer Jig
- Location-Specific Power Supply and AC Power Cord
- PC with Monitor, Keyboard, and Mouse
- Large Tank Regulator with Gas Line (For Argon Gas Supply)

Must Be Purchased Separately

- V-Groove Inserts for Fiber Holding Blocks (Two Required)
- Thermo-Mechanical Stripper Blade Sets (One Required)
- Bottom Cleaver Inserts (Two Required)
- Top Cleaver Inserts (Two Required)
- Mold Assembly for Recoater (One Required)
- Recoat Materials (One Required)
- >99.999% Purity Argon Gas (Not Available from Thorlabs)
- Soaking and Cleaning Solvents (Not Available from Thorlabs)

Optional Accessories

- Additional Graphite V-Groove Inserts

External Vacuum Pump

- Tool Kit

- Additional Fusion Splicing Filaments

Part Number	Description	Price	Availability
FFS2000WS	Fiber Stripper, Cleaner, Cleaver, Splicer, Recoater, and Proof Tester for SM, MM, and PM Fiber - Base Unit	\$83,387.47	Lead Time

V-Groove Inserts for Rotating Fiber Holding Blocks - Two Required



- V-Groove Inserts Align Fibers within the Fiber Holding Blocks Included with the Workstation Base Unit
- Support Buffer or Coating Diameters Ranging from 90 µm to 990 µm
- Two Required: One Each for Left and Right Holding Blocks

These inserts are designed for the FHBR1 Rotating Fiber Holding Blocks that are included with the workstation base unit. A total of two items must be purchased, one insert for the left holding block and one insert for the right holding block. They are provided individually so as to allow for the construction of a system that can process two fibers with different coating diameters. Different V-groove sizes are provided to support a range of fiber coating diameters; compatibility is listed in the table to the right.

When purchased with a workstation base unit, the inserts can be installed at the factory upon request by contacting Tech Support. If necessary, the V-groove inserts can be replaced by the user.

Compatible Fiber Buffer/Coating Diameters			
Item #	Nominal Diameter	Minimum Diameter	Maximum Diameter
VHN100	100 µm	90 µm	110 µm
VHN125	125 µm	113 µm	137 µm
VHN135	135 µm	130 µm	145 µm
VHN160	160 µm	144 µm	176 µm
VHN200	200 µm	180 µm	220 µm
VHN250	250 µm	225 µm	275 µm
VHN300	300 µm	270 µm	330 µm
VHN400	400 µm	360 µm	440 µm
VHN500	500 µm	450 µm	550 µm
VHN600	600 µm	540 µm	660 µm
VHN700	700 µm	630 µm	770 µm
VHN800	800 µm	720 µm	880 µm
VHN900	900 µm	810 µm	990 µm

Part Number	Description	Price	Availability
VHN100	V-Groove Insert for FHBR1, Ø90 µm - Ø110 µm Coating	\$175.81	Today
VHN125	V-Groove Insert for FHBR1, Ø113 µm - Ø137 µm Coating	\$175.81	Today
VHN135	V-Groove Insert for FHBR1, Ø130 µm - Ø145 µm Coating	\$175.81	Lead Time
VHN160	V-Groove Insert for FHBR1, Ø144 µm - Ø176 µm Coating	\$175.81	Today
VHN200	V-Groove Insert for FHBR1, Ø180 µm - Ø220 µm Coating	\$175.81	Today
VHN250	V-Groove Insert for FHBR1, Ø225 µm - Ø275 µm Coating	\$175.81	Today
VHN300	V-Groove Insert for FHBR1, Ø270 µm - Ø330 µm Coating	\$175.81	Today
VHN400	V-Groove Insert for FHBR1, Ø360 µm - Ø440 µm Coating	\$175.81	Today
VHN500	V-Groove Insert for FHBR1, Ø450 µm - Ø550 µm Coating	\$175.81	Today
VHN600	V-Groove Insert for FHBR1, Ø540 µm - Ø660 µm Coating	\$175.81	Today
VHN700	V-Groove Insert for FHBR1, Ø630 µm - Ø770 µm Coating	\$175.81	Today
VHN800	V-Groove Insert for FHBR1, Ø720 µm - Ø880 µm Coating	\$175.81	Today
VHN900	V-Groove Insert for FHBR1, Ø810 µm - Ø990 µm Coating	\$175.81	Today

Thermo-Mechanical Stripping Blade Inserts - One Required



- Thermo-Mechanical Stripping (TMS) Insert Sets for the All-In-One Fiber Preparation and Splicing Workstation
- Each Blade Set Consists of One Top and One Bottom Insert
- Four Sizes Available (See Table to the Right)

Thorlabs offers four sets of blades for stripping fiber. The maximum buffer diameter is limited by the size of the channel in the insert. Each blade set consists of two pieces: one top and one bottom insert that each have flat blades on the ends.

Three of the blades sets are designed to strip the same size cladding on both the left and right ends. The CSTM080125 blade set is designed to strip Ø80 µm cladding fiber on one end and Ø125 µm cladding fiber on the other. When ordered with the workstation base unit, it will be installed by default with the blades for Ø80 µm claddings on the left and the blades for Ø125 µm cladding on the right. The blade orientation can be reversed by the user to strip Ø80 µm cladding on the right and Ø125 µm cladding on the left; however you must be certain to switch both the top and bottom inserts together.

We offer four inserts from stock to accommodate standard fiber sizes. TMS blade insert sets are available for cladding diameters up to Ø200 µm upon request by contacting Tech Support.

One TMS blade insert set must be purchased in order to operate your workstation; when purchased with a workstation base unit, the stripping blade insert set can be installed at the factory upon request by contacting Tech Support. If necessary, the stripping blade insert set can be replaced by the user.

Thermo-Mechanical Stripping Blade Insert Sets			
Item #	Accepted Cladding Diameter ^a		Maximum Buffer Diameter
	End 1	End 2	
CST080180	80 µm	80 µm	180 µm
CSTM080125	80 µm	125 µm	250 µm
CST125250	125 µm	125 µm	250 µm
CST125400	125 µm	125 µm	400 µm

- a. For different cladding diameters than those listed here, please contact Tech Support. TMS blade insert sets are available for cladding diameters up to Ø200 µm upon request.

Part Number	Description	Price	Availability
CST080180	TMS Blade Insert Set for Ø80 µm Cladding, up to Ø180 µm Buffer	\$1,701.11	Today
CSTM080125	TMS Blade Insert Set for Ø80 µm and Ø125 µm Claddings, up to Ø250 µm Buffer	\$1,701.11	Today

CST125250	TMS Blade Insert Set for Ø125 µm Cladding, up to Ø250 µm Buffer	\$1,701.11	Today
CST125400	TMS Blade Insert Set for Ø125 µm Cladding, up to Ø400 µm Buffer	\$1,701.11	Today

Bottom Cleaver Inserts - Two Required



SCV125

- V-Groove Inserts Align the Fibers within the Fiber Cleaver Unit
- Five Versions to Support the Workstation's Accepted Cladding Diameters (From 80 µm to 200 µm)
- Two Required: One Each for Left and Right Cleaver

These Bottom Cleaver Inserts secure the fiber inside the cleaving assembly of the workstation. They are sold individually to allow cleaving of differently sized fibers held within the left and right fiber holding blocks. Different inserts are available to

support a variety of fiber sizes; compatibility is listed in the table to the right. Please note that the base unit is compatible with fiber cladding from Ø80 µm to 200 µm, even though the inserts can hold fiber cladding diameters outside of this range. Please contact Tech Support for more information.

Two bottom cleaver inserts, one for both the left and right fibers, must be purchased in order to operate your workstation. These can be installed at the factory upon request by contacting Tech Support. If necessary, the cleaver inserts can be replaced by the user. When the cleaving assembly is closed, the top (sold in the next product grouping) and bottom inserts mate to secure the stripped fiber.

Compatible Fiber Cladding Diameters ^a			
Item #	Nominal Diameter	Minimum Diameter	Maximum Diameter
SCV075	75 µm	68 µm	82 µm
SCV100	100 µm	90 µm	110 µm
SCV125	125 µm	113 µm	137 µm
SCV150	150 µm	135 µm	165 µm
SCV200	200 µm	180 µm	220 µm

a. Please note that the cladding diameter range of the base unit is limited to 80 µm to 200 µm.

Part Number	Description	Price	Availability
SCV075	Bottom Cleaver Insert for Ø68 µm - Ø82 µm Cladding	\$152.05	Today
SCV100	Bottom Cleaver Insert for Ø90 µm - Ø110 µm Cladding	\$152.05	Today
SCV125	Bottom Cleaver Insert for Ø113 µm - Ø137 µm Cladding	\$152.05	Today
SCV150	Bottom Cleaver Insert for Ø135 µm - Ø165 µm Cladding	\$152.05	Today
SCV200	Bottom Cleaver Insert for Ø180 µm - Ø220 µm Cladding	\$152.05	Today

Top Cleaver Insert - Two Required



SCV000

- Top Insert for the Fiber Cleaver Unit
- Two Required: One Each for Left and Right Cleaver

The SCV000 Top Cleaver Insert is a flat plate that helps secure the fiber inside the cleaving assembly of the workstation. It is sold individually, so two items must be purchased, one for the left and one for the right fiber cleaver.

In addition to these top cleaver inserts, you must buy the bottom insert that matches your fiber size (see the previous product grouping). When purchased with a workstation base unit, the top cleaver inserts can be installed at the factory upon request by contacting Tech Support. If necessary, the cleaver inserts can be replaced by the user. When the cleaving assembly is closed, the top and bottom inserts mate to secure the fiber.

Part Number	Description	Price	Availability
SCV000	Top Cleaver Insert	\$152.05	Today

Additional Graphite V-Groove Inserts for Splicing Unit



VHG200

- V-Grooves Support Fibers for Fusion Splicing (Two VHG125 are Installed with System)
- Support Cladding Diameters Ranging from 80 µm to 200 µm (See Table to the Right)
- Two Required: One Each for Left and Right Sides of the Splicer Assembly

These Graphite V-Groove Inserts help to position the fiber in the fusion splicer. The fiber size is limited by the size of the channel in the insert; the compatible sizes are

listed in the table to the right.

Compatible Fiber Cladding Diameters			
Item #	Nominal Diameter	Minimum Diameter	Maximum Diameter
VHG125	125 µm	80 µm	125 µm
VHG200	200 µm	150 µm	200 µm

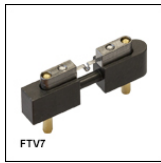
These items are sold individually; two Graphite V-groove inserts, one for the left and one for the right side of the splicer assembly; two VHG125 inserts are included with the system. Due to the alignment precision required, these inserts must be installed and aligned at the factory and are not user replaceable. If you require a different insert size for an existing system, please contact tech support to arrange the reconfiguration.

Part Number	Description	Price	Availability
VHG125	Graphite V-Groove, Ø80 µm - Ø125 µm, 0.313" Length	\$158.00	Today
VHG200	Graphite V-Groove, Ø150 µm - Ø200 µm, 0.313" Length	\$158.00	Today

Additional Fusion Splicing Filaments

- Two Options Available:
 - FTV7 Tungsten Filament Ideal for Most Applications
 - ETV7 Iridium Filament Ideal for Soft Glass Fibers

Filament Assembly Specifications		
Item #	Filament Material	Fiber Cladding Diameter (Min / Max)



- Omega Shape Provides Uniform Concentric Heat Source

FTV7	Tungsten	80 μm / 200 μm
ETV7	Iridium	80 μm / 200 μm

There are two available fusion splicing filaments for the

all-in-one workstation. The FTV7 tungsten filament is ideal for most splicing applications, while the ETV7 iridium filament is ideal for soft glass fibers. The omega-shaped filament is housed in an included mount and is easily replaced by the end user. The omega shape provides a uniform concentric heat source for fusing the fiber tips and for an optional post-fusion fire polishing step. Filament lifetimes will depend upon the particular splicing parameters used but are typically about 40 minutes.

One FTV7 filament comes pre-installed in the workstation. Additional filaments may be purchased, but before a new filament can be used in a system, it must be burned in. During the burn-in process, the filament is cycled between its operating temperature and room temperature several times. This stabilizes the thermal properties of the filament so that it produces a more consistent power output and heating performance when current is passed through it. This procedure only needs to be performed once, after which the filament will only need regular normalization. Instructional videos on the burn-in and normalization processes can be viewed in the *Tutorial Videos* tab above. If splicing performance begins to degrade, filament refurbishments can be ordered by contacting Tech Support.

Part Number	Description	Price	Availability
FTV7	Tungsten Fusion Splicing Filament for the FSX2000PM and FFS Series	\$290.91	Today
ETV7	Iridium Fusion Splicing Filament for the FSX2000PM and FFS Series	\$402.89	Today

Mold Assembly for Recoater - One Required



- Three Options Available for 280 μm, 430 μm, or 600 μm Recoat Diameter
- Other Sizes up to Ø900 μm Available Upon Request (Contact Tech Support)
- Maximum Recoat Length of 50 mm
- One Mold Assembly Required

Compatible Coating Diameters	
Item #	Recoated Diameter
RM280	280 μm
RM430	430 μm
RM600	600 μm

There are three available recoater mold assemblies for the all-in-one fiber processing workstation. They are available for 280 μm, 430 μm, or 600 μm coating diameters. Custom mold sizes up to Ø900 μm are available; please contact Tech

Support for more information. The assembly is composed of split quartz mold plates, which, when closed, form the cylindrical mold cavity around the exposed section of the fiber being recoated.

During operation, the recoat material (available in the next product grouping) is injected into the mold assembly with a manual injection system that is included in the workstation base unit. Then, UV light cures the recoat material. Cure times are dependent on the mold size and recoat material, but they range from approximately 12 - 15 seconds for the RM280 mold assembly with high-index AB950200 recoat material to 30 - 60 seconds with the low-index PC373 recoat material. The recoater mold assembly should be cleaned thoroughly with isopropyl alcohol or acetone between each recoating process; reliable and repeatable performance is highly dependent on the cleanliness of the mold.

One recoater mold assembly must be purchased in order to operate your workstation. The mold can be factory installed prior to shipment upon request by contacting Tech Support. If necessary, the recoat mold assemblies are user replaceable.

Part Number	Description	Price	Availability
RM280	Recoater Mold Assembly, Ø280 μm Coating, 50 mm Max Recoat Length	\$4,798.02	Lead Time
RM430	Recoater Mold Assembly, Ø430 μm Coating, 50 mm Max Recoat Length	\$4,798.02	Lead Time
RM600	Recoater Mold Assembly, Ø600 μm Coating, 50 mm Max Recoat Length	\$4,798.02	Lead Time

Recoat Materials - One Required



- AB950200: High-Index Recoat Material
- PC373: Low-Index Recoat Material

Thorlabs offers UV-curable acrylic recoat materials for the fiber processing workstation. We offer both high-index and low-index materials. The recoat material is injected into the recoater mold assembly by a manual injection system included in the workstation base unit. Each bottle includes 1 oz (30 g) of recoat material.

One bottle of recoat material must be purchased in order to operate your workstation.

Part Number	Description	Price	Availability
AB950200	High-Index Recoat Material, 1 oz	\$315.99	Today
PC373	Low-Index Recoat Material, 1 oz	\$460.92	Today

Replacement Rotating (PM Compatible) Fiber Holding Block Set



- Replacement Fiber Holding Blocks for Our Fiber Processing Systems (See List to the Right)
- Allows for Rotational Alignment of PM Fiber Prior to Splicing
- Sold as a Set of Two (Left and Right Pair)
- Requires V-Groove Inserts (Available Separately Above)

Compatible Systems

- FFS2000PM and FFS2000WS Fiber Preparation, Splicing, and Proof Testing Workstations

Fiber Holding Blocks secure the fiber and simplify moving the fibers between the different processing steps. The FHR1, which is sold as a pair of left and right fiber holding blocks, is the replacement set for the Vytran fiber processing systems listed to the right.

In order to securely hold a fiber with a particular diameter, a set of V-Groove inserts must be installed within the fiber holding block; these can be factory installed prior to shipment upon request by contacting Tech Support. V-Groove inserts must be purchased separately above.

Part Number	Description	Price	Availability
FHBR1	Replacement Set of Right and Left Rotating Fiber Holding Blocks for SM, MM, and PM Fiber	\$7,056.25	Lead Time

Replacement Diamond Cleave Blade



- Replacement Blade for Our Fiber Cleaving Systems (See List to the Right)
- 0.08" (2.0 mm) Long Diamond Blade
- User Installable

The ACL83 Diamond Cleave Blade is a replacement blade for the Vytran fiber processing systems listed to the right. Each system is shipped with a blade included.

When used with proper cleave parameters, a single location on the blade can provide up to 5,000 cleaves (dependent on the cladding properties of the fiber being cleaved). The blade can be positioned approximately 10 times before replacement (assuming proper cleave parameters and usage that does not cause unexpected damage to the blade). Blade replacement instructions for each system are provided in the user manuals.

Note: Severe damage to the blade can occur if conditions cause high stress perpendicular to the edge of the blade or if incorrect parameters are used to cleave the fiber.

Compatible Systems

- CAC400 and CAC400A Fiber Cleavers
- LDC401 and LDC401A Fiber Cleavers
- LDC450B Portable Fiber Cleaver
- GPX3800, GPX3850, and GPX3900 Automated Glass Processors with Cleavers
- FFS2000 and FFS2000PT Fiber Preparation and Splicing Workstations
- FFS2000PM and FFS2000WS Fiber Preparation, Splicing, and Proof Testing Workstations
- Former Generation LDC-200 Fiber Cleaver

Part Number	Description	Price	Availability
ACL83	Replacement Diamond Cleave Blade	\$727.02	Today

Replacement Proof Test Grips for Fiber Rotary Proof Testers



The PG200 Proof Test Grips are designed as replacements for the Vytran rotary proof testers listed to the right. Each system is sold with a set of these grips installed.

Proof test grips may need to be replaced when the fiber slips at high tension levels. After the proof test grips are replaced the system will need to be calibrated; please contact Tech Support for details. Instructions for replacing the proof test grips are provided in each system's manual.

Compatible Systems

- PTR302 Fiber Rotary Proof Tester
- PTR307(B)* and PTR407(B) Manual Fiber Recoaters with Proof Testers
- FFS2000PT Fiber Preparation and Splicing Workstation
- FFS2000WS Fiber Preparation, Splicing, and Proof Testing Workstation

*These previous-generation items are no longer available for purchase.

Part Number	Description	Price	Availability
PG200	Replacement Proof Test Grips for Rotary Proof Testers, Qty. 10	\$60.59	Today



FFS2000WS Shown with Accessories