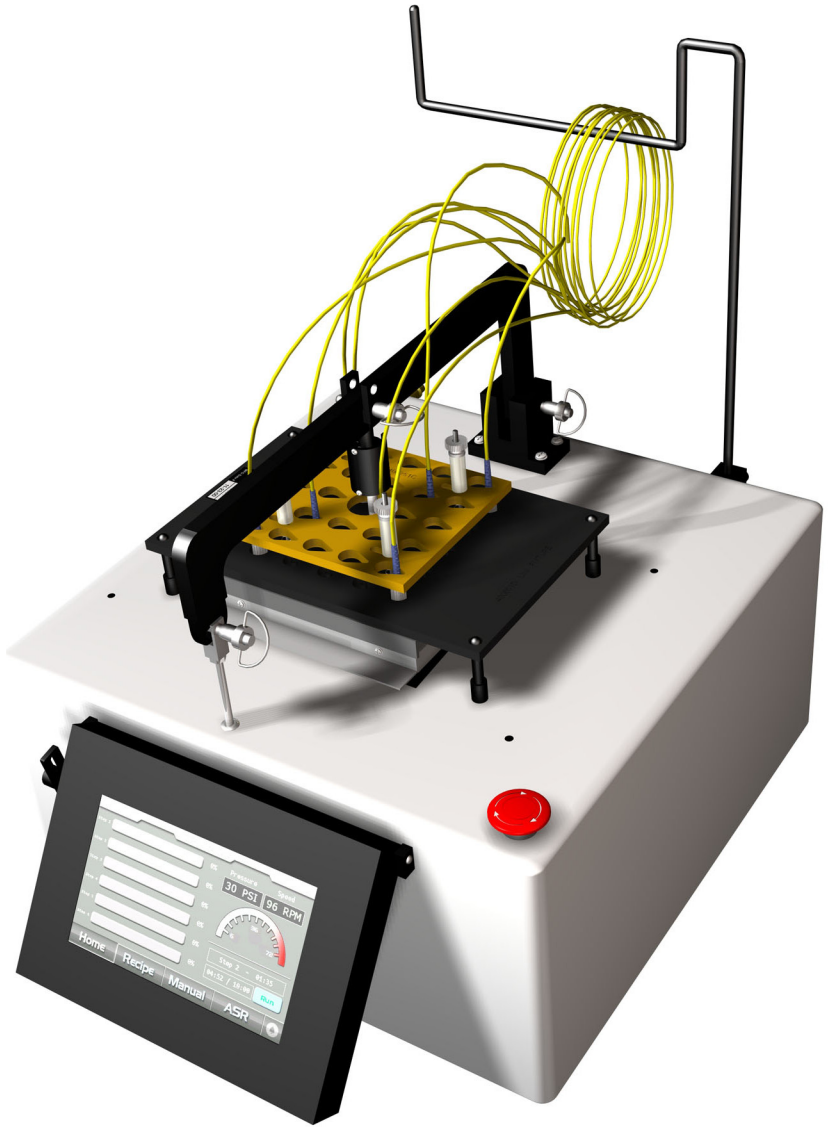

ACP 24/96

AUTOMATED CONNECTOR POLISHER

INSTRUCTION MANUAL

NANOMETER TECHNOLOGIES

Video Training available online

Visit: www.youtube.com/nanometertech

ACP24/96

AUTOMATED CONNECTOR POLISHER

Document Number RE:ACP24/96-01C

Please address any questions, comments and suggestions to:

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www.nanometer.com

September 18th, 2018

TABLE OF CONTENTS

Before using the ACP 24/96 please make sure that all of the following items are present.

Standard Parts List

Base Polisher
ASR Fixture Plate
Cable Tree
Resilient Rubber Pad
Power Cord
Quick Release Pins - Small, Medium, and Large
Water Bottle (8oz)
Base Plate
Pneumatic Arm
High Pressure Air Hose
Instruction Set
Material Safety Sheet

CAUTION:

REMOVE THE SHIPPING STRAP PRIOR TO PLUGGING IN THE ACP 24/96 POLISHER.

Consumables are listed below

PART	PART CODE	REMARKS
Cutting Disk	6MB1	For Cutting Angles
Stub Removal Film 15uM	SCS660150P-6	6 1/2” SQ 15 micron SC PSA-backed
Polishing Film 6uM	DS66060N-6	Change After Every 10-15 Uses
Polishing Film 3uM	DS66030N-6	Change After Every 10-15 Uses
Polishing Film 1uM	DS66010N-6	Change After Every 10-15 Uses
Final Polishing Film	863XW-6	Change After Every Use (One Use Only)

All consumables and connectors can be bought separately.

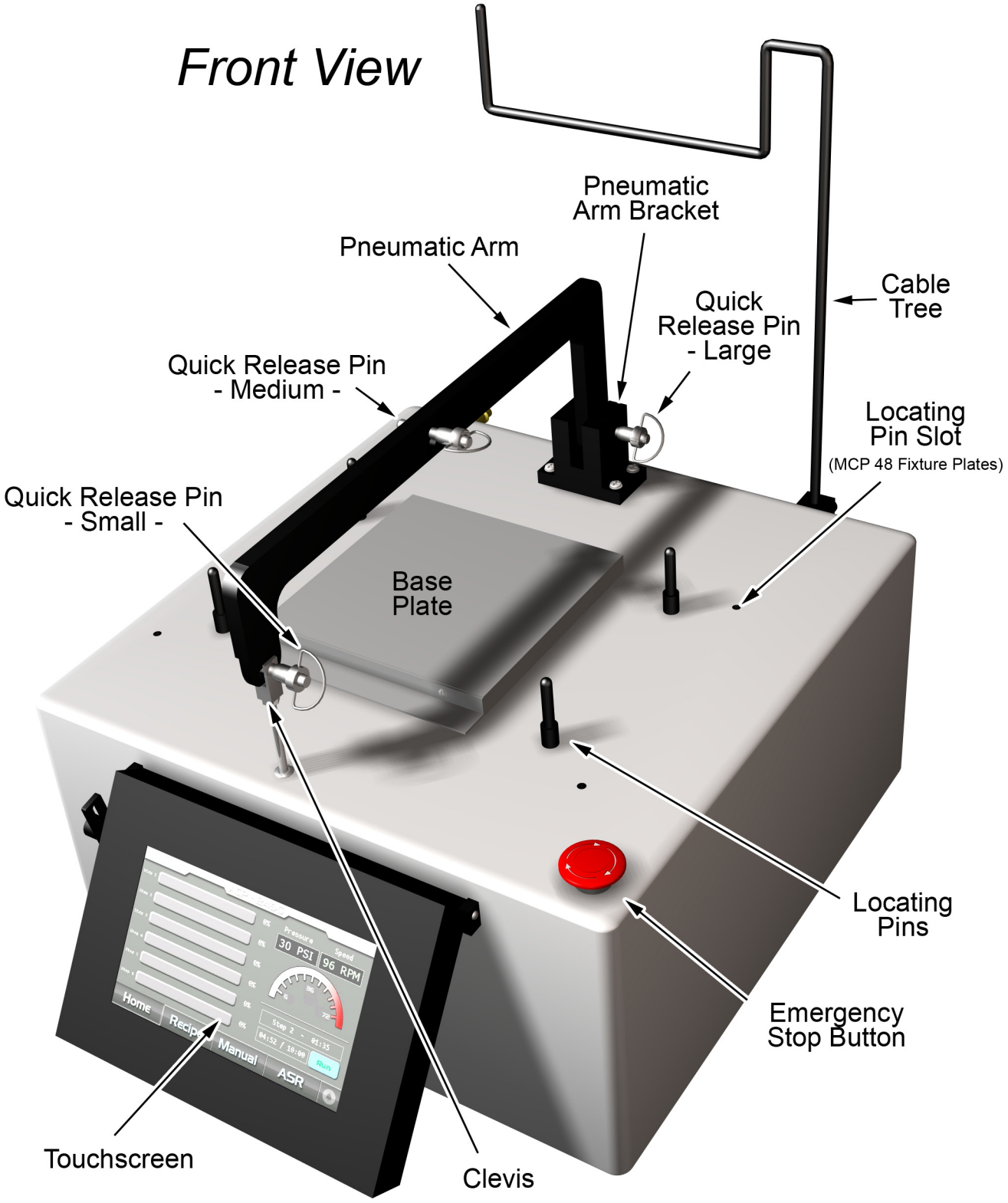
Recommended Consumables:

Epoxy: TRA-CON	AB-9123
Connectors	Nanometer Technologies
Films	DS Series Polishing Films
Final Film	863XW-6

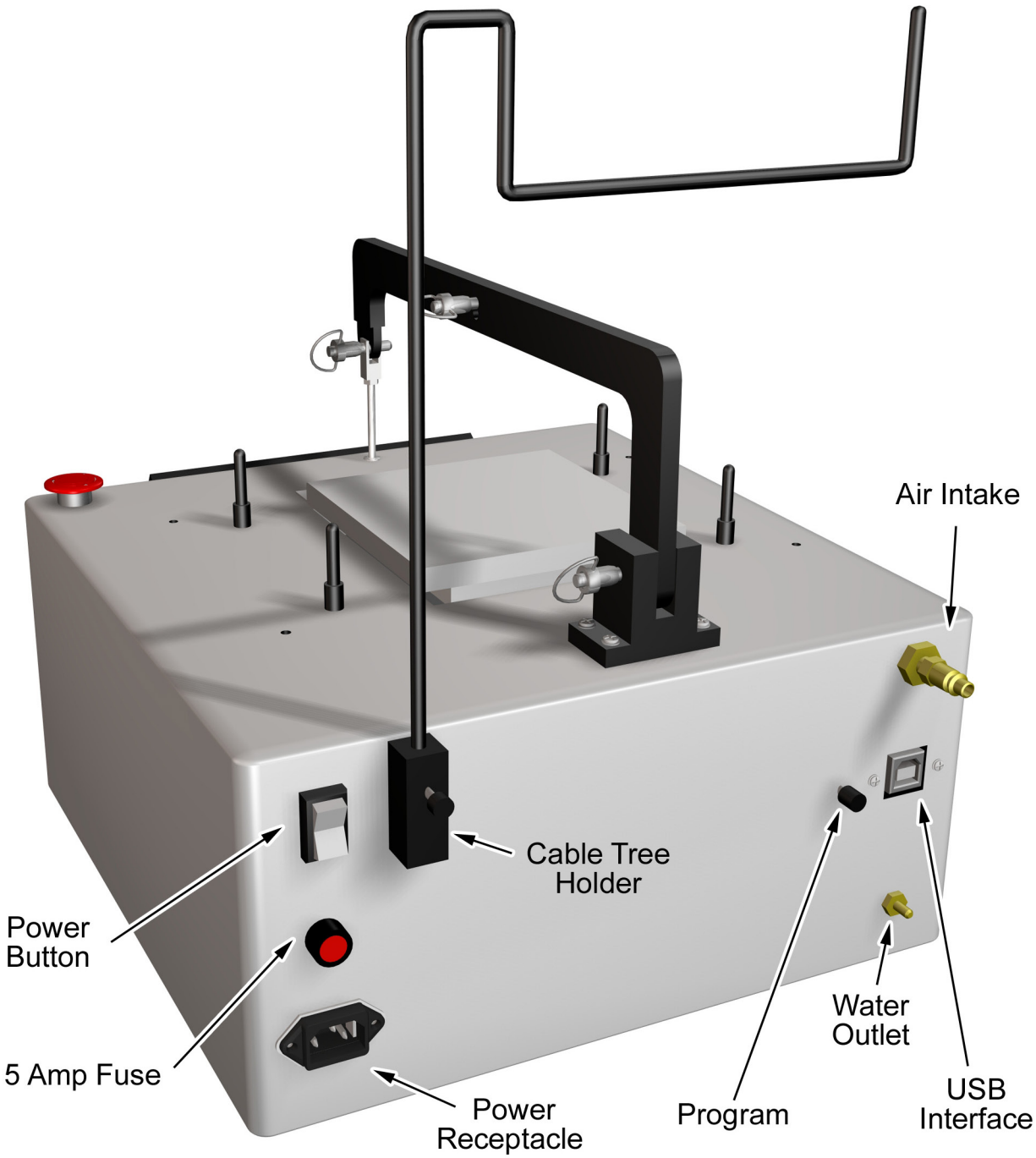
ACP 24/96

Automated Connector Polisher

Front View



Back View


Air Intake
Cable Tree Holder
Power Button
5 Amp Fuse
Power Receptacle
Program
Water Outlet
USB Interface

USER NOTES
ACP 24/96 Automated Connector Polisher

In this chapter, important notes for the user are given. Please read them carefully before using the ACP 24/96.

PRECAUTIONS FOR USING THE ACP 24/96

To protect the ACP 24 and use it correctly, please pay attention to the following notes:

- Do not leave the ACP 24/96 outdoors, or where water might damage it.
- Do not subject the ACP 24/96 to undue vibrations or drop it.
- Do not touch the operation panel or the switches with wet hands.
- The ACP 24/96 is heavy (about 25kg (37 lbs.), and requires a sturdy table.
- Do not touch the moving parts during use.
- Do not drop fixture plates.
- Do not hit or bump fixture plates while suspended from pneumatic arm. This can cause permanent damage to the fixture plate itself.
- **Do not leave fixture plates hanging on pneumatic arm longer than it takes to clean and change films.**
- Do not use alcohol to clean plates or films.
- Do not reuse lint free wipes. This can cause cross-contamination to the polishing process.
- **IMPORTANT - Make sure the compressed air is clean and dry before connecting to ACP 24/96 Polisher.**
- Check the Air Filter for water build-up on a regular basis. If water has built-up, loosen the plug and let the excess water drain. If the Filter needs changing, contact Nanometer Technologies for replacement parts.

PREPARATION

In addition to the Mass Production Polisher and its accessories, please prepare the following items:

1. Lint Free Wipes
2. Fine Mist Spray Bottle with Distilled Water

Polishing Tips For ACP 24/96

- Use Spray Bottle for applying distilled water.
- Use a very small amount of distilled water for adhering the film to the Rubber Pad, and the Rubber Pad to the Base Plate.
- Always clean film, ferrules, and Rubber Pad before and after each step using distilled water and a lint-free optical wipe. (This will help eliminate cross contamination)
- Use enough distilled water to cover film for polishing. (Do not over apply)

FIXTURE PLATES
Cleaning And Maintenance

- Polishing plate must be kept clean to eliminate cross contamination.
- Wipe plate clean after each step during polishing procedure using lint-free wipes and distilled water.
- Completely clean plate with distilled water and non-abrasive pipe cleaners after final polishing.
- Blow-dry if compressed air is available.
- **Do not drop fixture plate as this can cause serious damage. Do not hit the fixture plate while suspended from pneumatic arm or leave suspended for longer than necessary.**

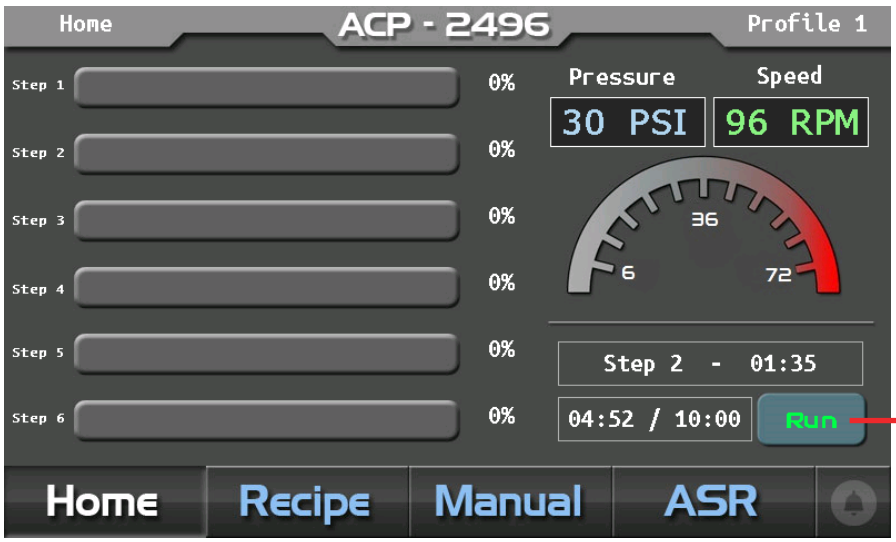
The Shipping Box that the ACP 24/96 comes in contains Re-Packaging and Shipping Strap instructions. These instructions are important and can be found on one of the upper inside box flaps.

Using the Touchscreen

Press the start screen logo twice to start the ACP 24/96

HOME SCREEN

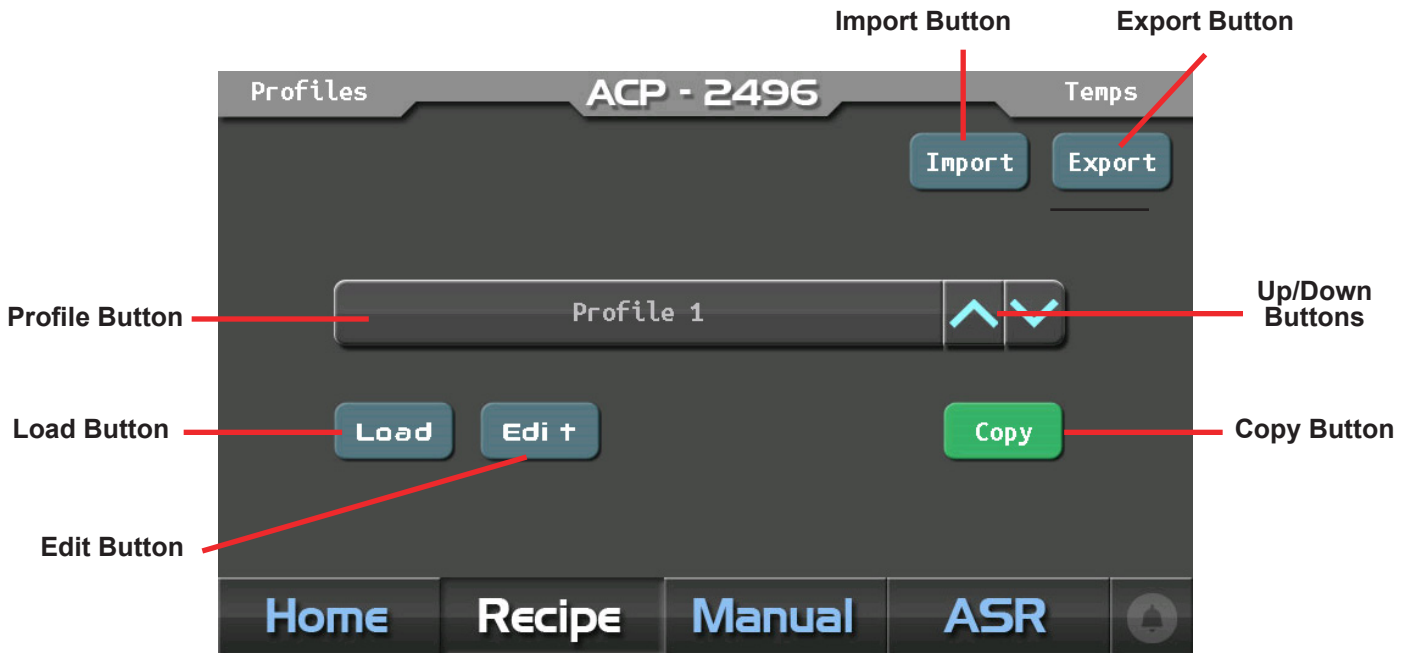
The Home Screen displays information related to the selected polishing recipe. This information includes polishing steps, pressure, and RPM speed.



Using the Touchscreen

RECIPE SCREEN

Use the Recipe Section to load a polishing procedure.



PROFILE BUTTON:

Press the Profile Button to choose a polishing recipe. Use the up/down arrows to select a recipe.

LOAD BUTTON:

Press the Load Button to load selected selected polising recipe.

COPY BUTTON:

Use the Copy Button to make a copy of the selected recipe. This option is for making a custom polishing recipe and keep the original recipe.

EDIT BUTTON:

Use the Edit Button to make changes to the currently loaded recipe.

IMPORT BUTTON:

Use the Import Button to add a polishing recipe to the ACP 24/96. This option requires a USB cable, windows based computer, and ACPprofilesync.exe software.

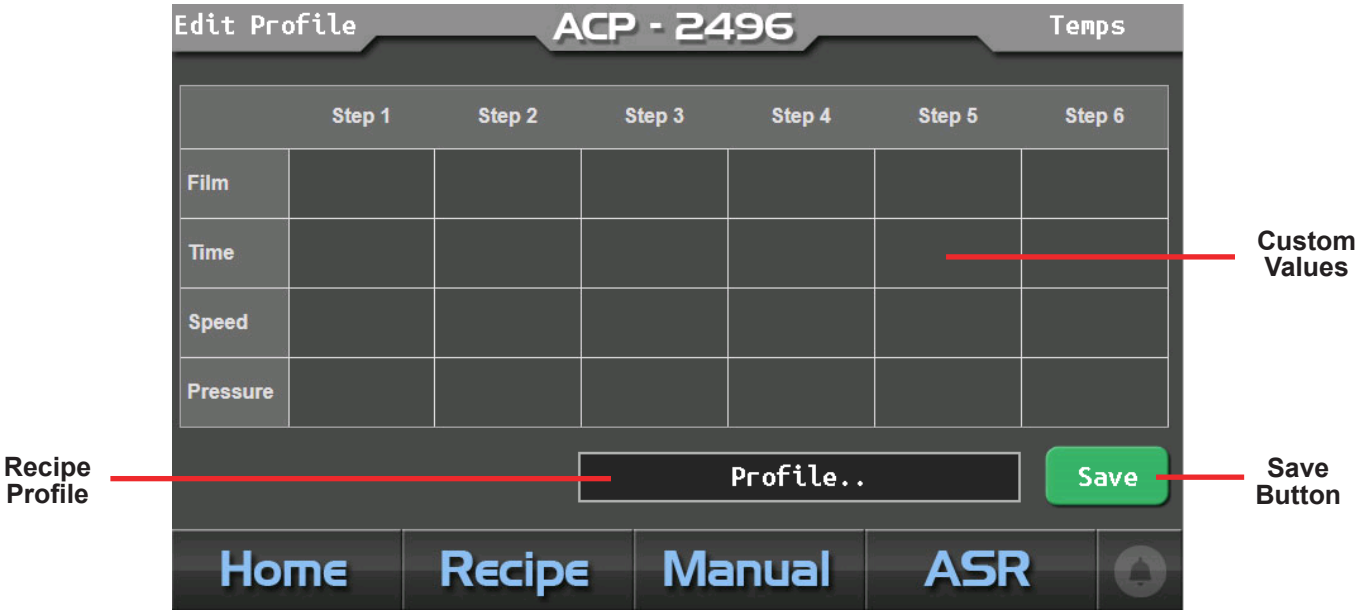
EXPORT BUTTON:

Use the Export Button to place a copy of a recipe.This option requires a USB cable, windows based computer, and ACPprofilesync.exe software.

Using the Touchscreen

EDIT RECIPE SCREEN

Create custom polishing recipes



Use the Edit Recipe function to create custom polishing recipes or make adjustments to existing recipes. Press an empty box under each step to enter a custom configuration.

Film:
Enter a name/grade of the film that is required.

Time:
This option sets the running/polishing time of the current step.

Speed:
This option sets the rotation RPM of the base plate.

Pressure:
This option sets the downward pressure of the connectors against the film during the polishing process.

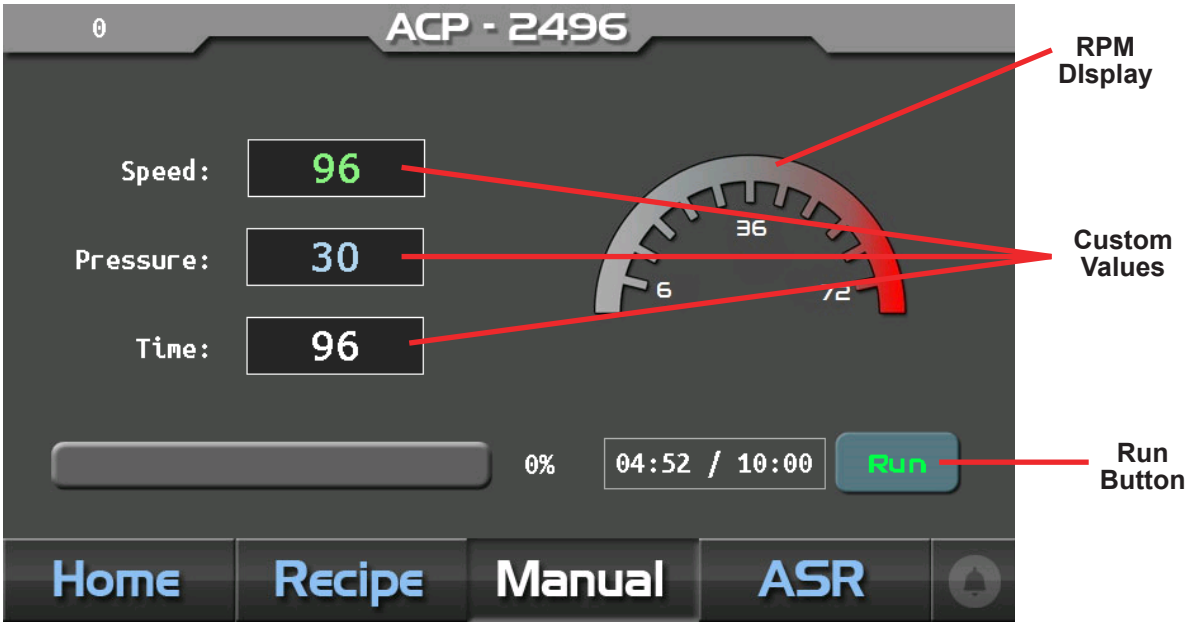
Profile..:
Use to create the name of the custom recipe.

Use the Save Button to save the custom recipe to the system.

Using the Touchscreen

MANUAL SCREEN

Run a quick custom polishing step



The Manual Screen is for running a quick custom polishing step.

Speed:
This option sets the rotation RPM of the base plate.

Pressure:
This option sets the downward pressure of the connectors against the film during the polishing process.

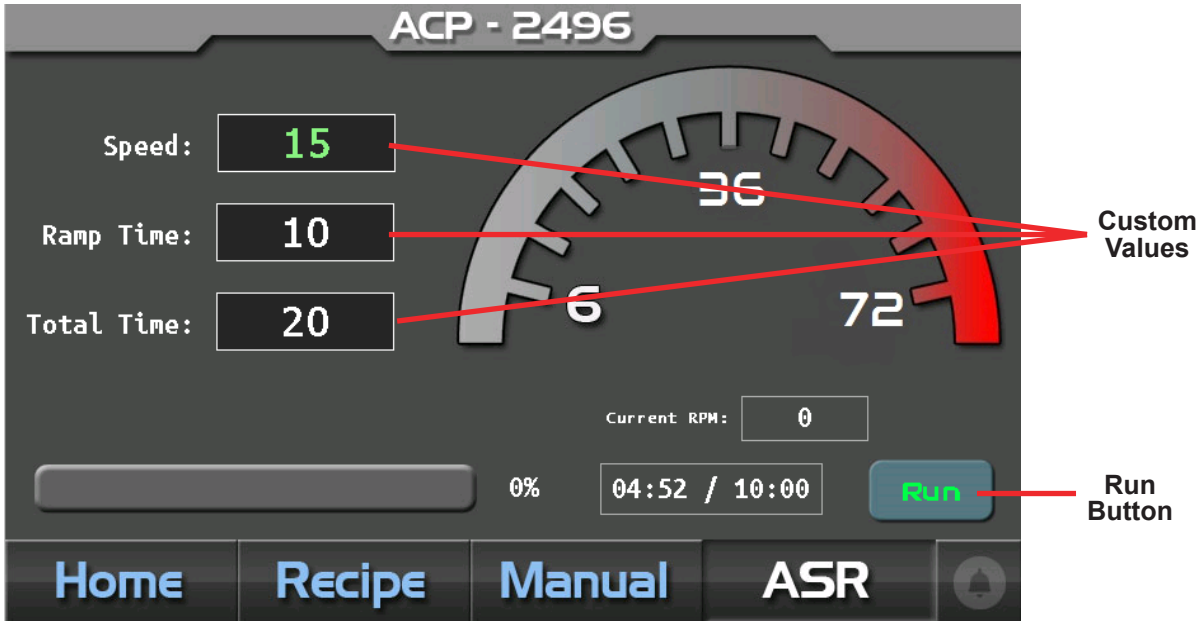
Time:
This option sets the running/polishing time of the current step.

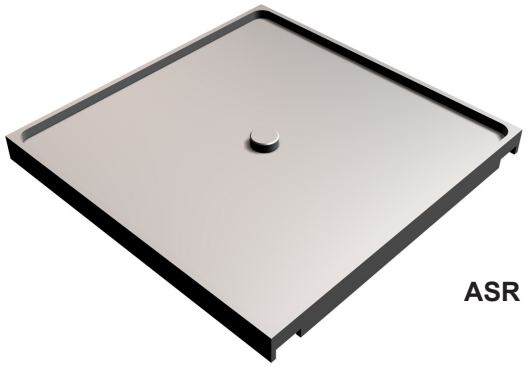
Press Run to begin the polishing process.

Using the Touchscreen

ASR SCREEN

FIber Stub Removal





ASR Fixture Plate

Use the ASR option to remove fiber stubs from connectors. This option requires the usage of the ASR Fixture Plate.

Speed:

This setting controls how fast the ASR fixture Plate moves in a figure 8 pattern. Slower speeds can reduce fiber tip breaking

Ramp Time:

This setting controls the time it takes for the ASR process to reach MAX SPEED starting from 0. If fibers are breaking before the process reaches maximun speed, raise the time. Longer times slow down the ramp process. Numerical Value represents in seconds of time.

Total Time:

The Total Time setting controls the length of time for the ASR process. Numerical value represents how many seconds the process will run for.

Press **Run** to start the ASR process.

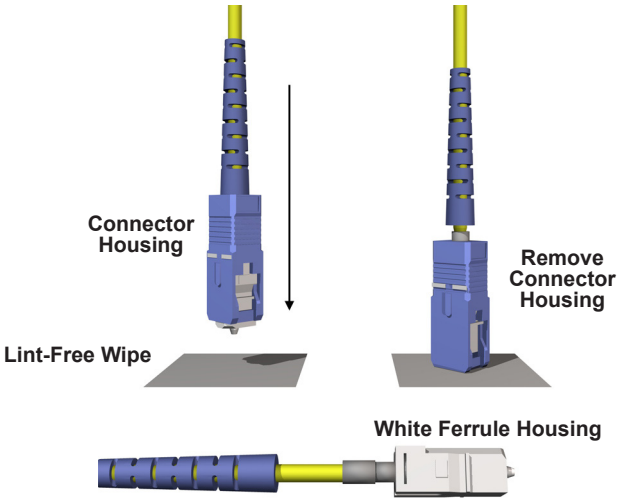
NOTES:

Connector Preparation

Important Note:

SC Connectors

(This does not apply to SC/APC Connectors)

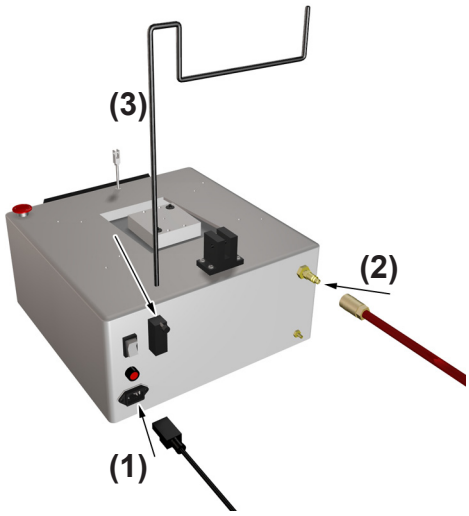


It is important that the SC Connector is polished prior to assembly. Make sure the outer housing is off and boots are pulled back.

If the connector is already put together, place a lint-free wipe on a hard clean surface. Grip the **Connector Housing** and push down on the hard surface. This will remove the **Blue Outer Shell** from the **White Ferrule Housing**. Pull back the **Connector Boot** to allow more of the Slider plate surface area to hold the connector in place.

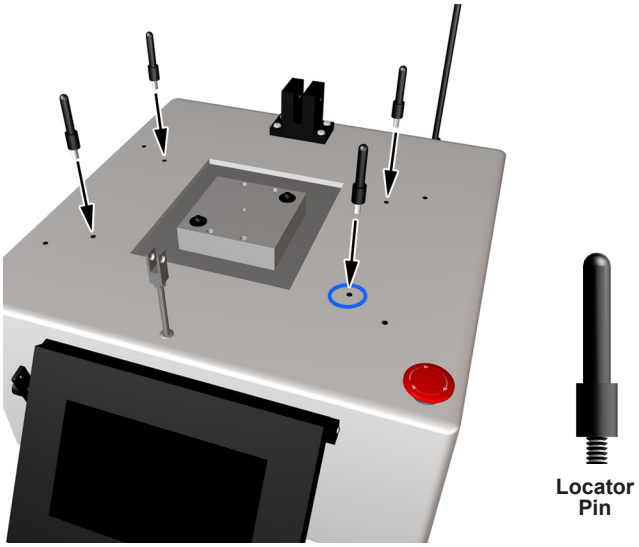
Machine Setup Instructions

Step 1



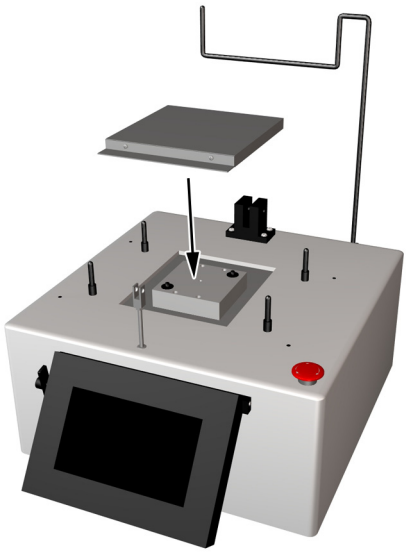
1) Plug in **Power Cord(1)** into the back of the **ACP 24/96**. Before plugging in **Air Hose(2)**, make sure the air pressure is set to zero to avoid damaging internal components and the maximum air pressure does not exceed 100 PSI. Plug **Power Cord** into your power source (with surge protection) and the **Air Hose** into your air source. Insert **Cable Tree (3)**. Do not tighten.

Step 2



2) Insert the **Fixture Plate Locator Pins.** The inner holes are for MCP 24 Fixture Plates. The outer holes are for MCP 48 Fixture Plates.

Step 3



3) Set the **Base Plate** on the **Interface Plate**. Make sure both surfaces are clean. Use the guide holes on the **Base Plate** to line up with the **Interface Plate**.

Step 4

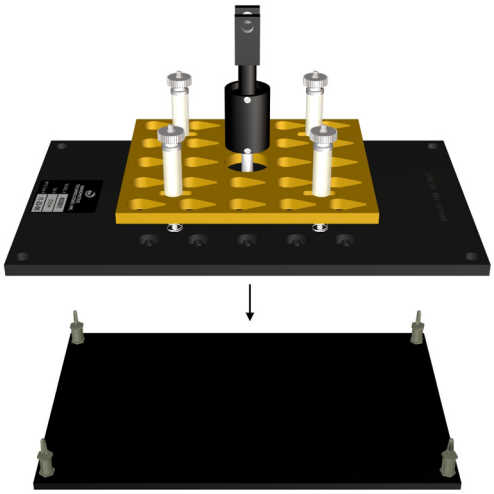
4) Take the **Pneumatic Arm** and place the longer end into the **Delrin Bracket** located in the rear-center of the polisher. Line up the open holes. Take the **Large Push-Pull Locking Pin** and push in and hold the **Lock-Release Button** located on the end of the pin. Insert the pin into the hole and release the **Lock-Release Button**.

Fixture Setup Instructions

UNI-24 & UNI-32 Fixture Plates

(UNI-24 Plate Shown)

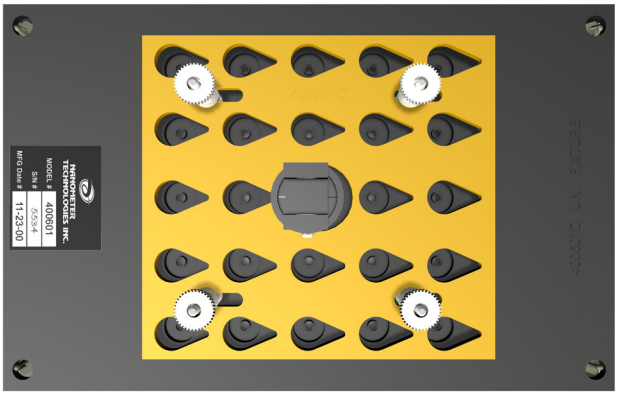
Step 1



1) Make sure the **Fixture Plate** is free of particles. Place the **Polishing Fixture** on the **Fixture Holder**.

This will ensure a clean polish of your connectors and will avoid cross-contamination from previous polishings.

Step 2



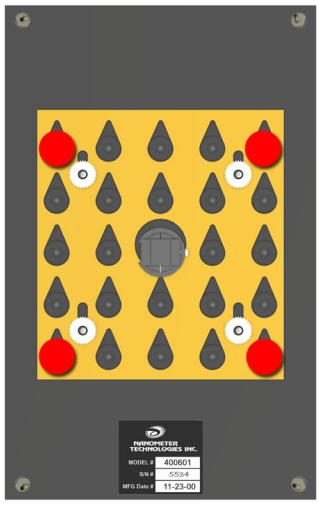
2) Loosen the nuts that hold down L**ocking Plate** and slide it until the large end of the tear drop holes line up with the holes on the **Polishing Fixture**.

Tighten down the **Locking Plate** now, as this will make it easier to insert your connectors.

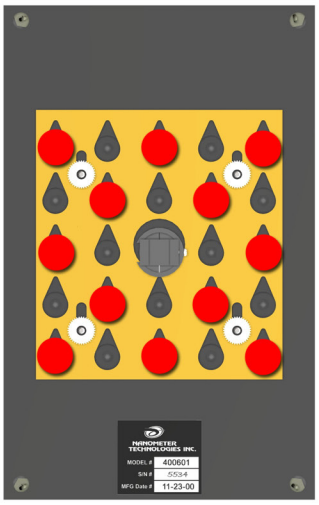
The **Fixture Plate** is now ready to be loaded with the connectors.

NOTE: If the Polishing Fixture is being loaded with less than 24 connectors, it is important the connectors be placed in symmetrical pattern. This will keep the Polishing Fixture surface level over the base plate during the polishing procedure. Load outside holes first, spacing evenly.

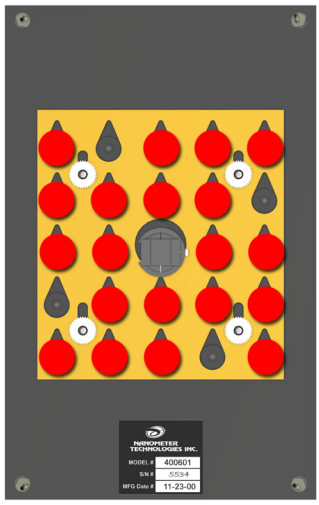
Examples



4 Connectors



12 Connectors



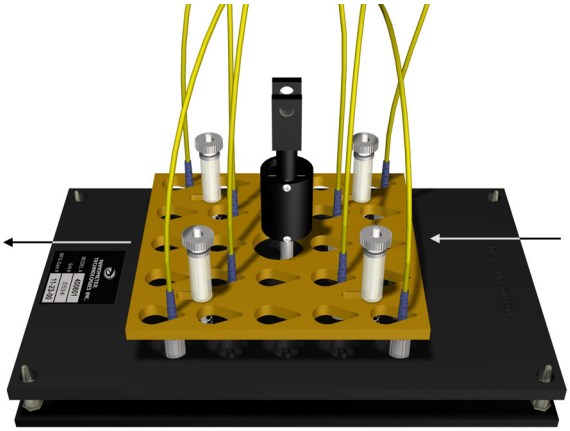
20 Connectors

Fixture Setup Instructions

UNI-24 & UNI-32 Fixture Plates

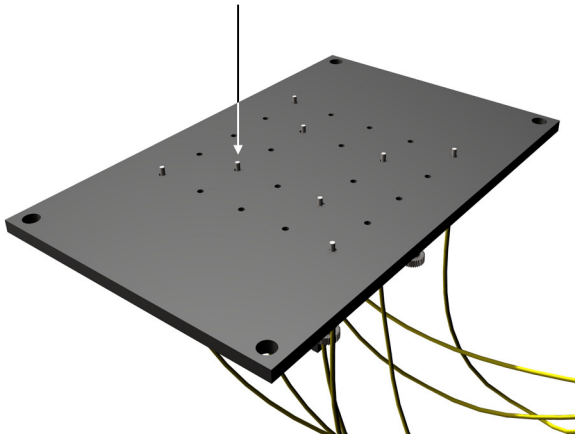
(UNI-24 Plate Shown)

Step 3



3) Loosen the **Locking Plate** and slide it over the connectors, then re-tighten the **Locking Plate**. Tighten nuts diagonally.

Step 4

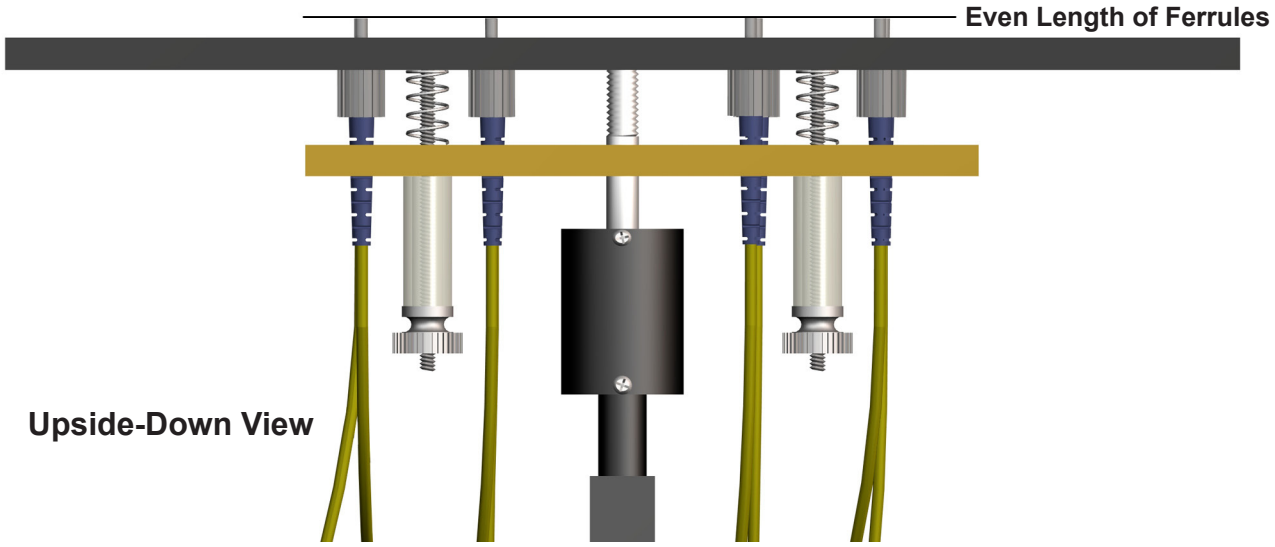


4) Lift up plate and press on the ferrules, checking to make sure the connectors have spring action and none are locked in place. Place the **Fixture Plate** back onto the **Fixture Holder**.

IMPORTANT

Make sure that all of the ferrules protrude from the bottom of the plate an equal length. Uneven ferrules will greatly affect the polishing performance. Sight down the profile of the plate referencing the ferrule tips to each other. Push on each ferrule face to check for ferrules sticking. Ferrules that stick are a sign of an unclean plate or epoxy on the side of ferrule.

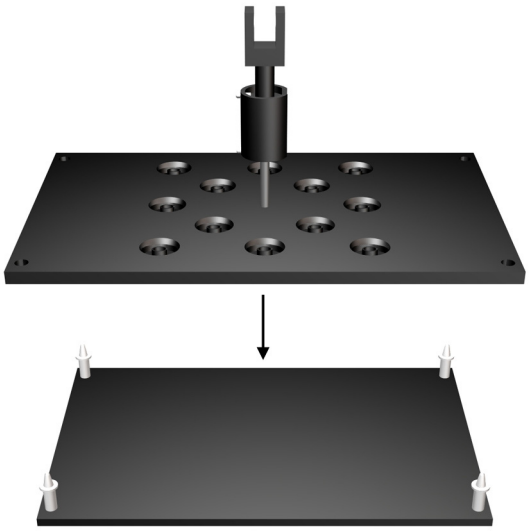
Use high quality connectors and ferrules whenever possible. This will reduce the number of failures per polishing cycle.



Fixture Setup Instructions

FC-APC Fixture Plate

Step 1

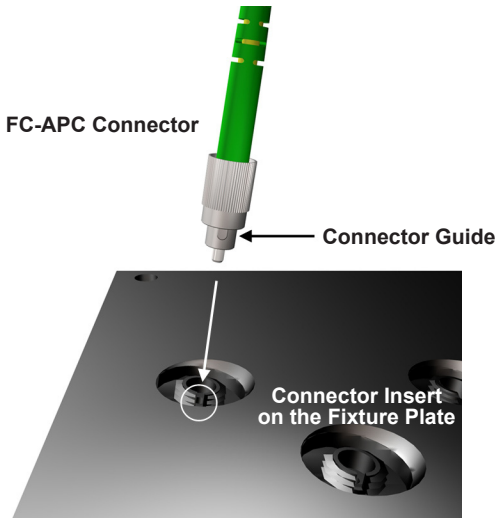


1) Make sure the **Fixture Plate** is free of particles.

Place the **Polishing Fixture** on the **Fixture Holder**.

This will ensure a clean polish of your connectors and will avoid cross-contamination from previous polishings.

Step 2

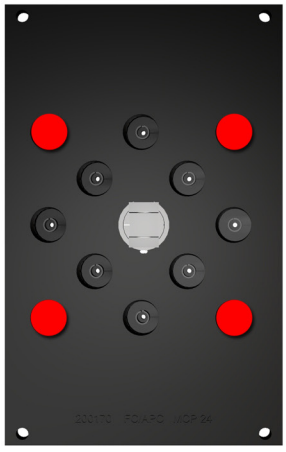


2) Insert the **FC/APC Connectors** into the **Fixture Plate**. Make sure the guide on the **Connector** is aligned with the slot on the Fixture Plate.

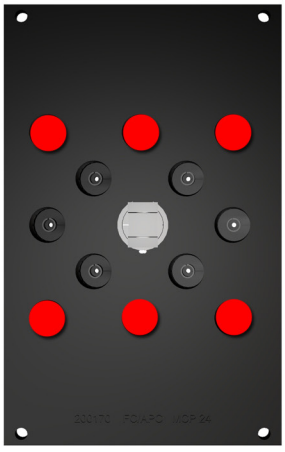
Screw and tighten the **Connectors** to the F**ixture Plate**.

NOTE: If the Polishing Fixture is being loaded with less than 12 connectors, it is important the connectors be placed in symmetrical pattern. This will keep the Polishing Fixture surface level over the base plate during the polishing procedure. Load outside holes first, spacing evenly.

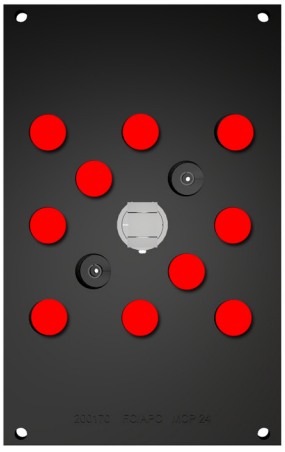
Examples



4 Connectors



6 Connectors

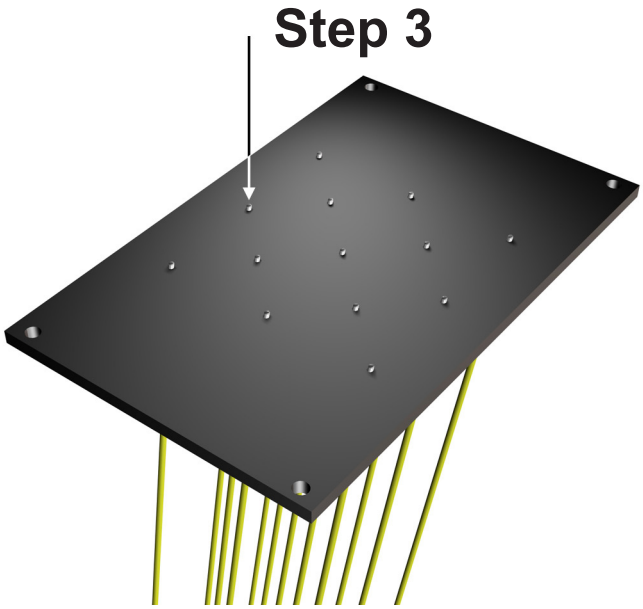


10 Connectors

Fixture Setup Instructions

FC-APC Fixture Plate

Step 3



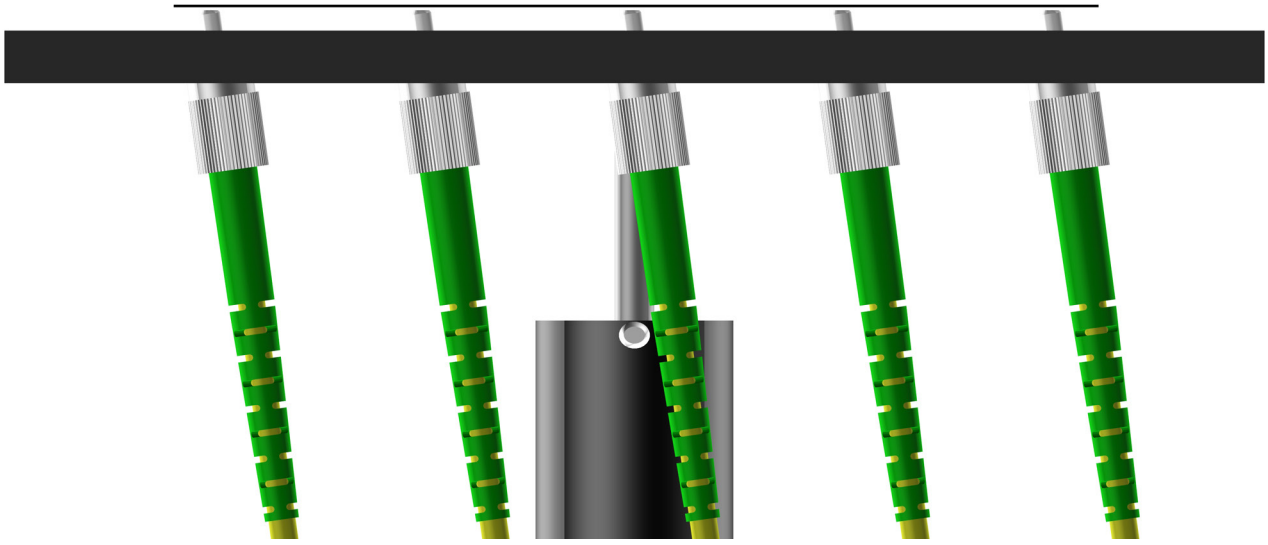
3) Lift up plate and press on the ferrules, checking to make sure the connectors have spring action and none are locked in place. Place the **Fixture Plate** back onto the **Fixture Holder**.

IMPORTANT

Make sure that all of the ferrules protrude from the bottom of the plate an equal length. Uneven ferrules will greatly affect the polishing performance. Sight down the profile of the plate referencing the ferrule tips to each other. Push on each ferrule face to check for ferrules sticking. Ferrules that stick are a sign of an unclean plate or epoxy on the side of ferrule.

Use high quality connectors and ferrules whenever possible. This will reduce the number of failures per polishing cycle.

Even Length of Ferrules

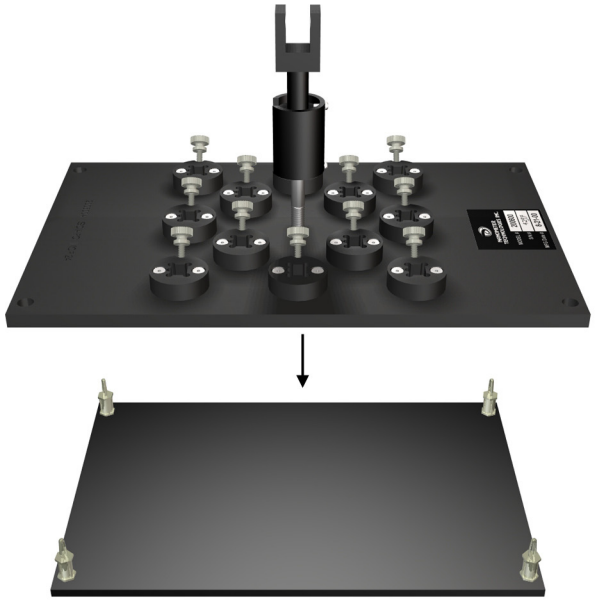


Upside-Down View

Fixture Setup Instructions

SC-APC Fixture Plate

Step 1

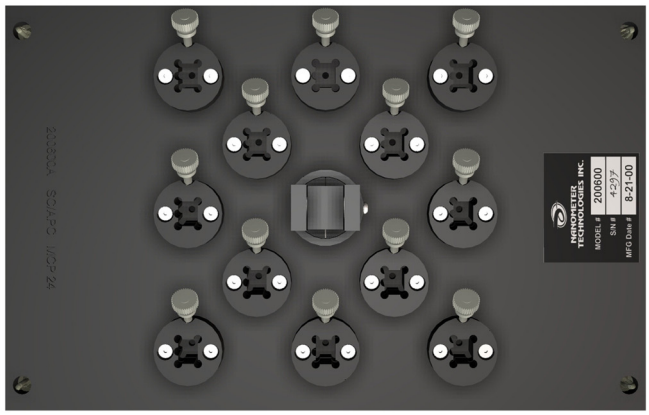


1) Make sure the **Fixture Plate** is free of particles.

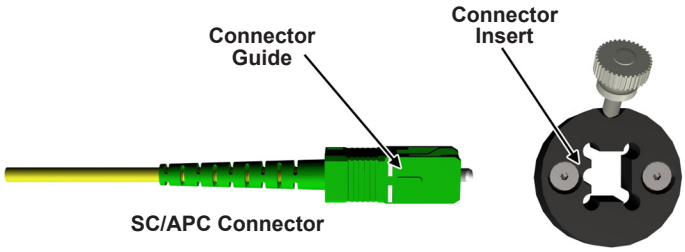
Place the **Polishing Fixture** on the **Fixture Holder**.

This will ensure a clean polish of your connectors and will avoid cross-contamination from previous polishings.

Step 2



2) Loosen the screws enough to insert the connectors.

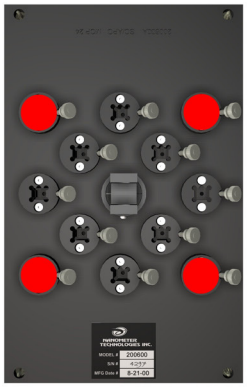


Insert the **SC/APC Connectors** into the **Fixture Plate**. Note that the guide on the top of the connector slides into a slot located in the **Connector Insert** of the **Fixture Plate**. Make sure the connector has been pushed to the bottom of the **Connector Insert**.

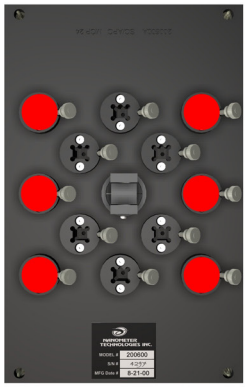
Re-tighten the screws that will hold the connectors.

NOTE: If the Polishing Fixture is being loaded with less than 12 connectors, it is important the connectors be placed in symmetrical pattern. This will keep the Polishing Fixture surface level over the base plate during the polishing procedure. Load outside holes first, spacing evenly.

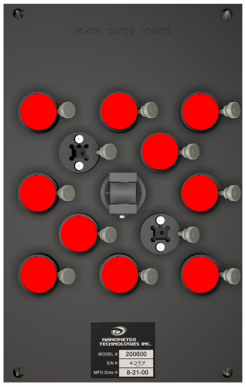
Examples



4 Connectors



6 Connectors



10 Connectors

Fixture Setup Instructions

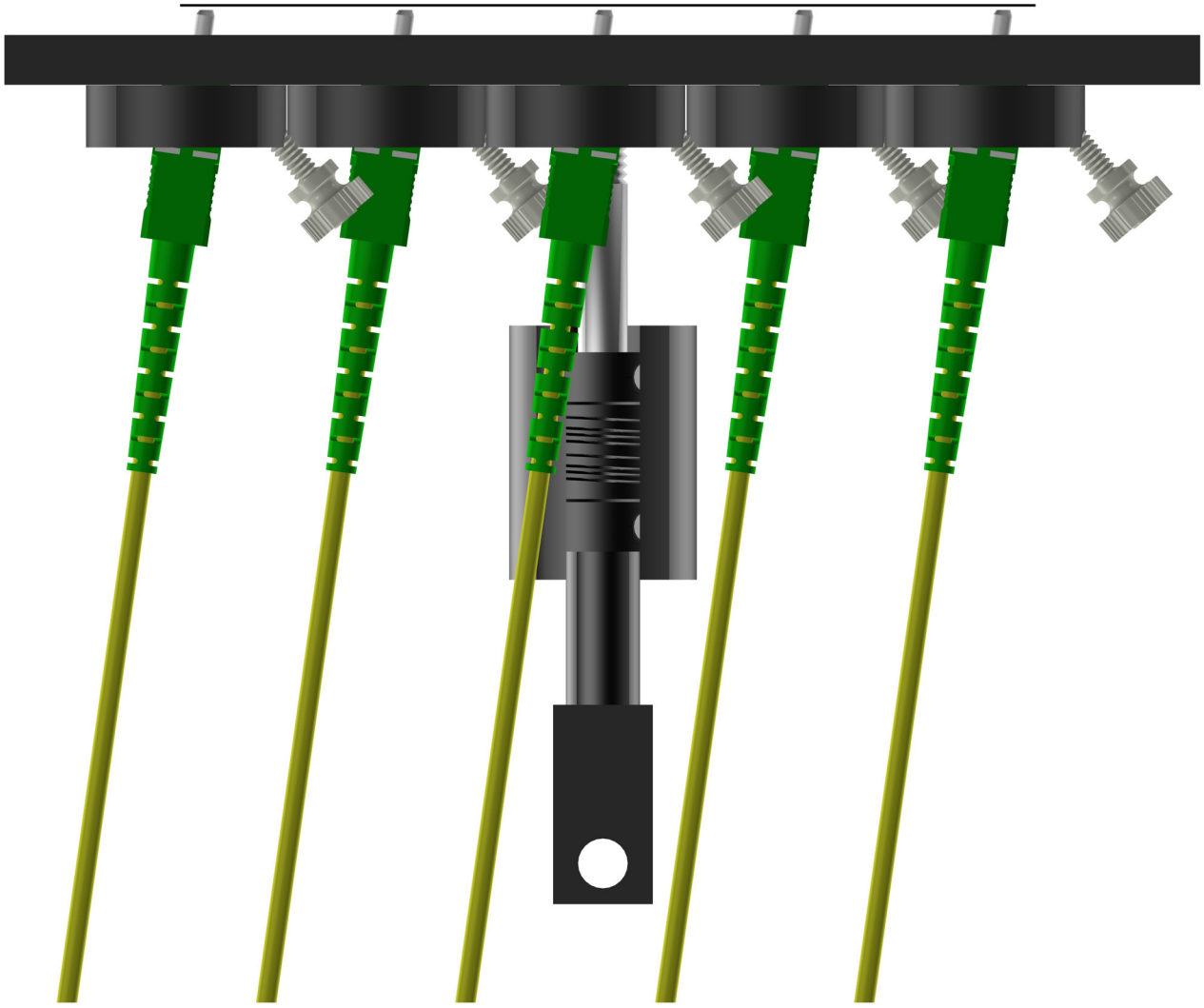
SC-APC Fixture Plate

IMPORTANT

Make sure that all of the ferrules protrude from the bottom of the plate an equal length. Uneven ferrules will greatly affect the polishing performance. Sight down the profile of the plate referencing the ferrule tips to each other.

Use high quality connectors and ferrules whenever possible. This will reduce the number of failures per polishing cycle.

Even Length of Ferrules

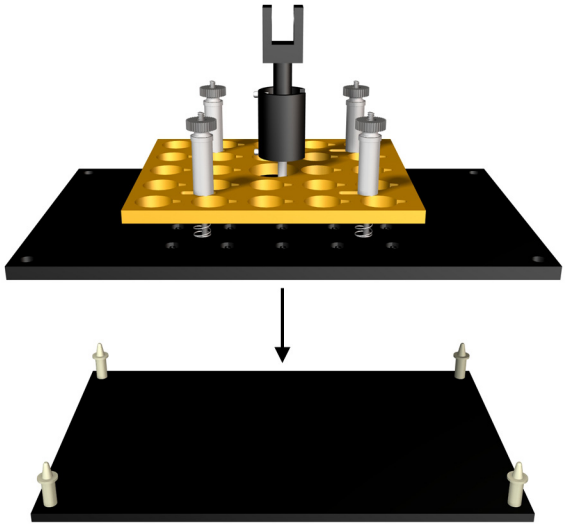


Upside-Down View

Fixture Setup Instructions

LC & MU Fixture Plate

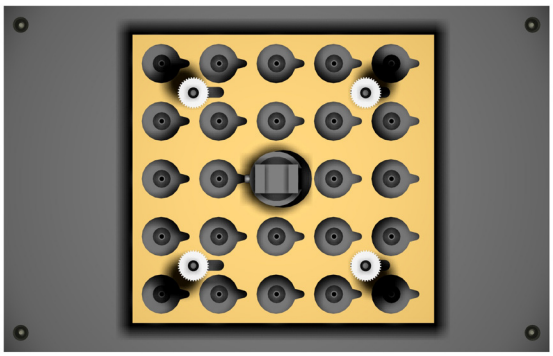
Step 1



1) Place the **Polishing Fixture** on the **Fixture Holder**.

This will ensure a clean polish of your connectors and will avoid cross-contamination from previous polishings.

Step 2



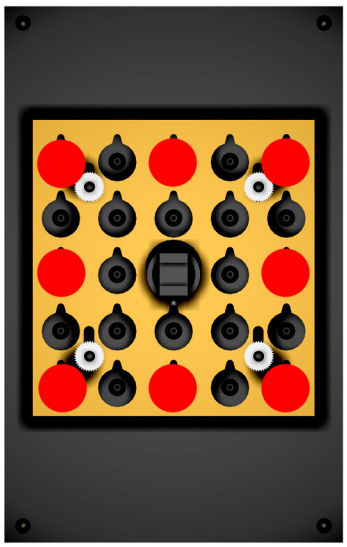
2) Loosen the nuts that hold down Locking Plate and slide it until the large round holes are centered with the holes on the Polishing Fixture.

Tighten down the Locking Plate now, as this will make it easier to insert your connectors.

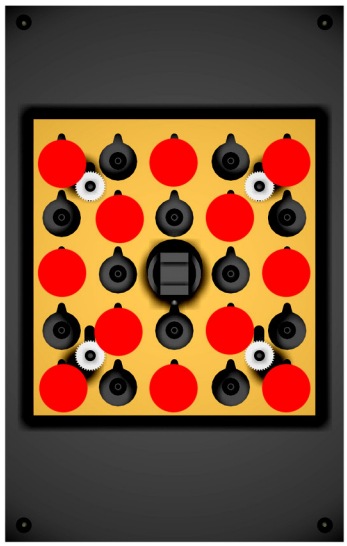
The Fixture Plate is now ready to be loaded with the connectors.

NOTE: If the Polishing Fixture is being loaded with less than 24 connectors, it is important the connectors be placed in symmetrical pattern. This will keep the Polishing Fixture surface level over the base plate during the polishing procedure. Load outside holes first, spacing evenly.

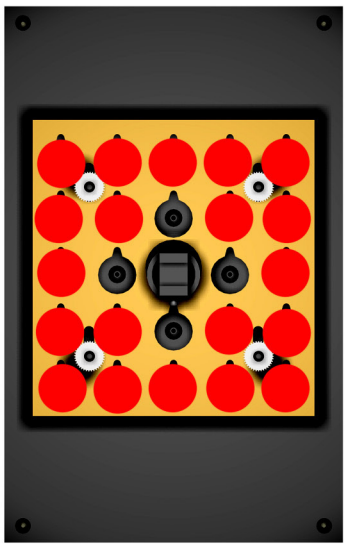
Examples



8 Connectors



12 Connectors

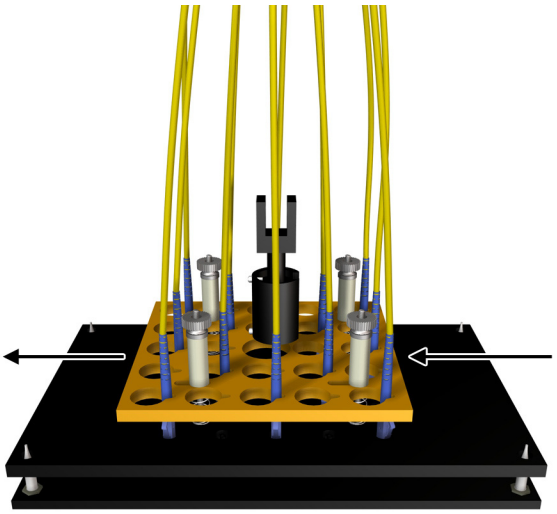


20 Connectors

Fixture Setup Instructions

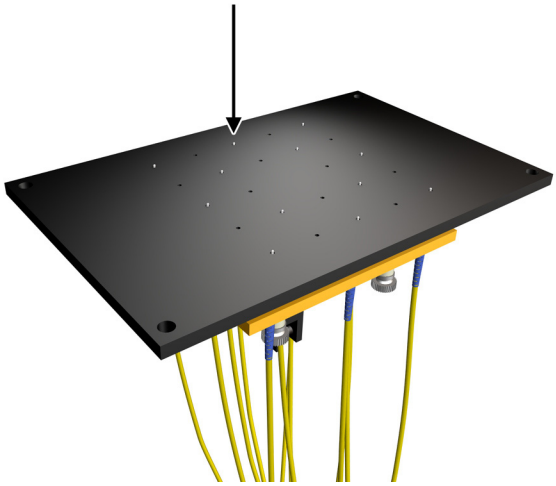
LC & MU Fixture Plate

Step 3



3) Loosen the **Locking Plate** and slide it over the connectors. Then retighten the **Locking Plate**. Tighten nuts diagonally.

Step 4

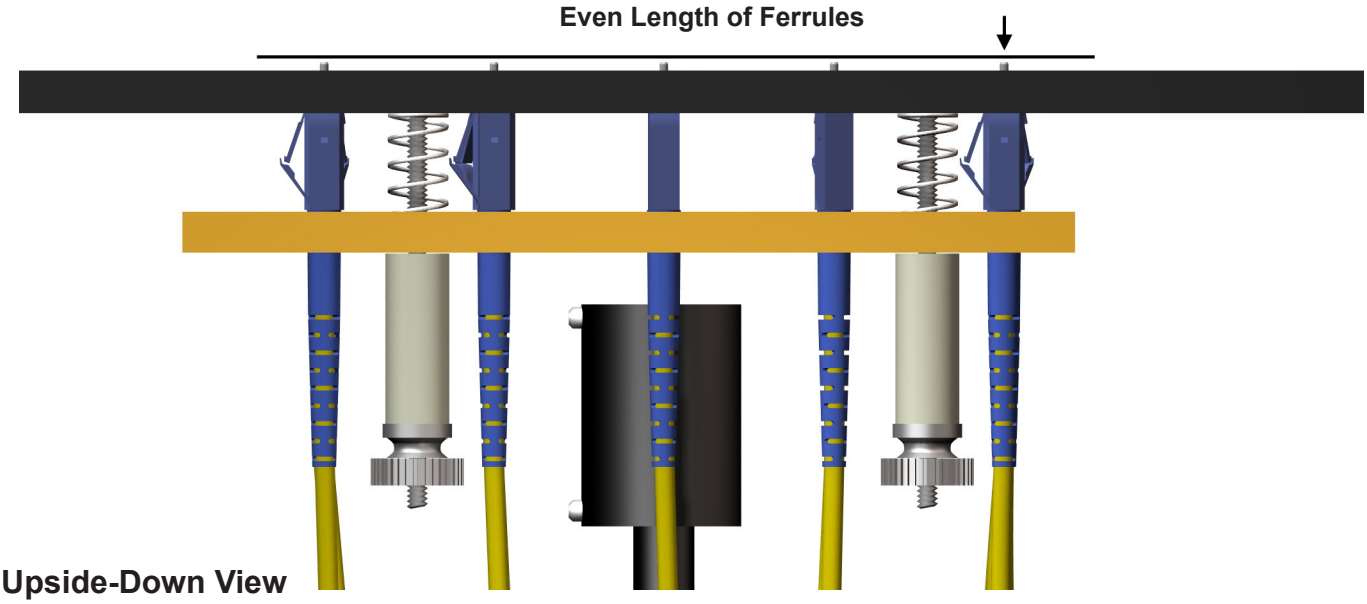


4) Lift up plate and press on the ferrules, checking to make sure the connectors have spring action and none are locked in place. Place the **Fixture Plate** back onto the **Fixture Holder**.

IMPORTANT

Make sure that all of the ferrules protrude from the bottom of the plate an equal length. Uneven ferrules will greatly affect the polishing performance. Sight down the profile of the plate referencing the ferrule tips to each other. Push on each ferrule face to check for ferrules sticking. Ferrules that stick are a sign of an unclean plate or epoxy on the side of ferrule.

Use high quality connectors and ferrules whenever possible. This will reduce the number of failures per polishing cycle.

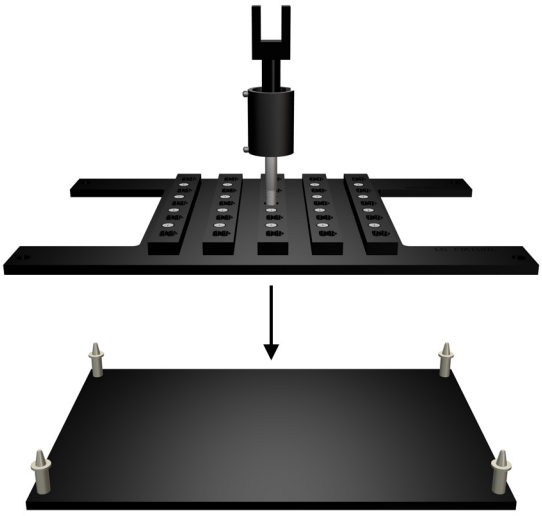


Upside-Down View

Fixture Setup Instructions

LC ‘Snap-in’ Fixture Plate

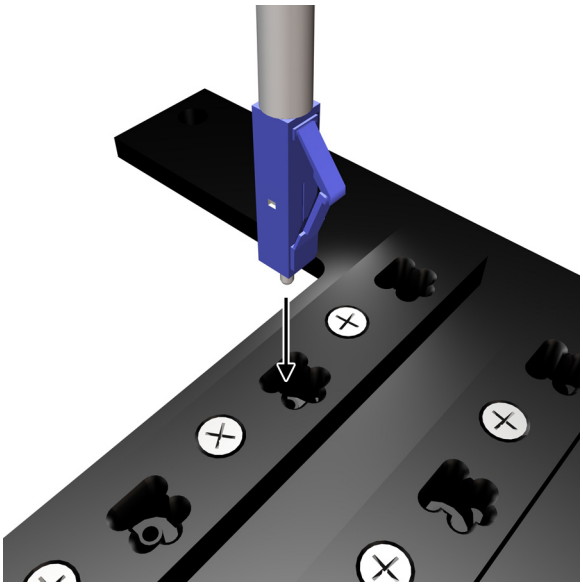
Step 1



1) Place the **Polishing Fixture** on the **Fixture Holder**.

This will ensure a clean polish of your connectors and will avoid cross-contamination from previous polishings.

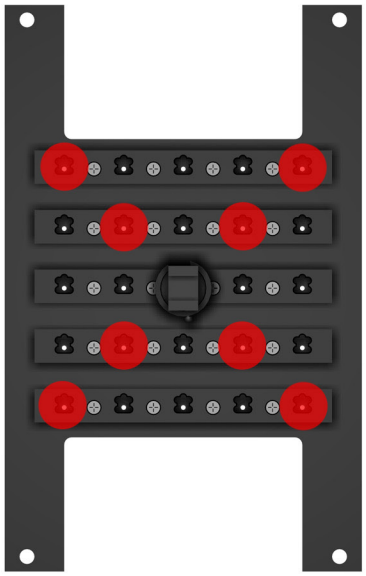
Step 2



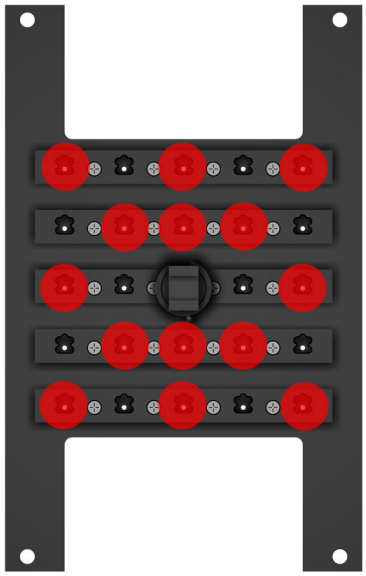
2) Place the **LC connector** into a connector slot with the locking arm facing the notched side of the connector slot as shown. if done properely the connector will snap into place.

NOTE: If the Polishing Fixture is being loaded with less than 24 connectors, it is important the connectors be placed in symmetrical pattern. This will keep the Polishing Fixture surface level over the base plate during the polishing procedure. Load outside holes first, spacing evenly.

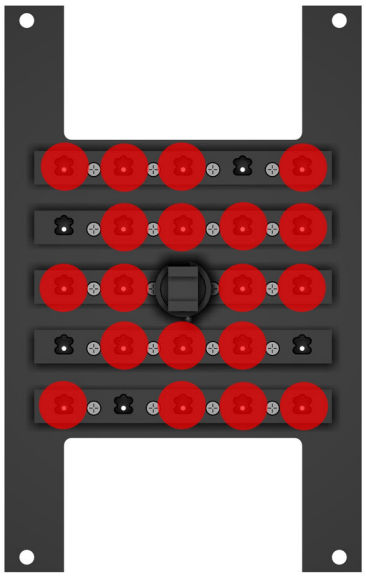
Examples



8 Connectors



14 Connectors

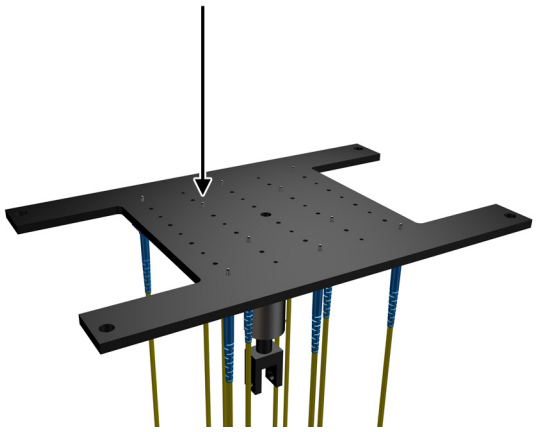


20 Connectors

Fixture Setup Instructions

LC ‘Snap-in’ Fixture Plate

Step 3

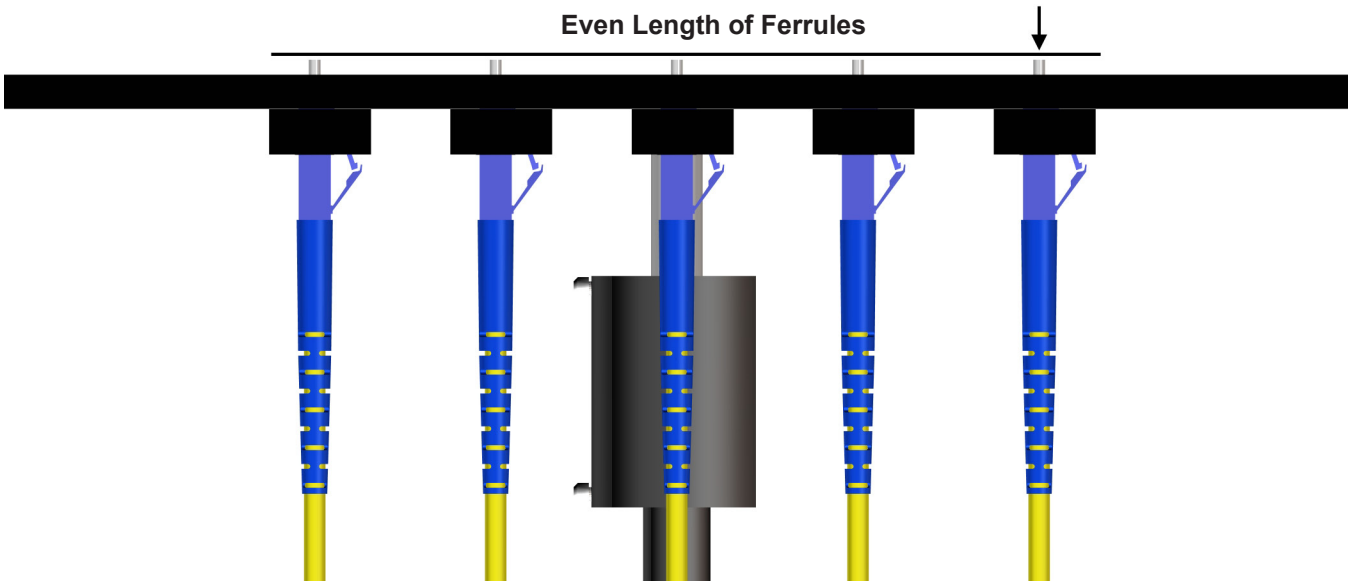


3) Lift up plate and carefully press on the ferrules, checking to make sure the connectors have spring action and none are locked in place. Pressing too hard may cause a connector to pop free. Place the Fixture Plate back onto the Fixture Holder.

IMPORTANT

Make sure that all of the ferrules protrude from the bottom of the plate an equal length. Uneven ferrules will greatly affect the polishing performance. Sight down the profile of the plate referencing the ferrule tips to each other. Push on each ferrule face to check for ferrules sticking. Ferrules that stick are a sign of an unclean plate or epoxy on the side of ferrule.

Use high quality connectors and ferrules whenever possible. This will reduce the number of failures per polishing cycle.

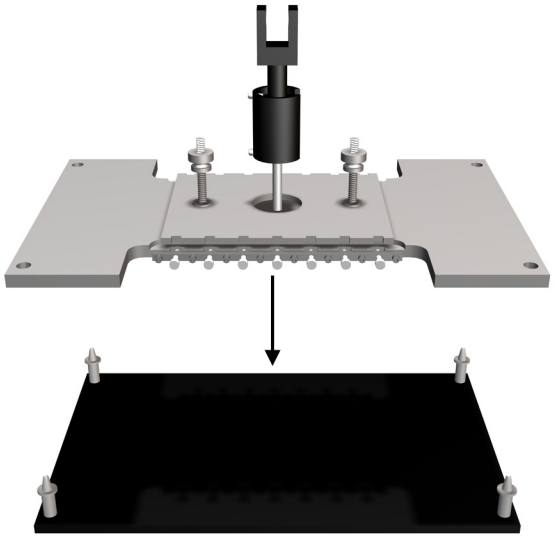


Upside-Down View

Fixture Setup Instructions

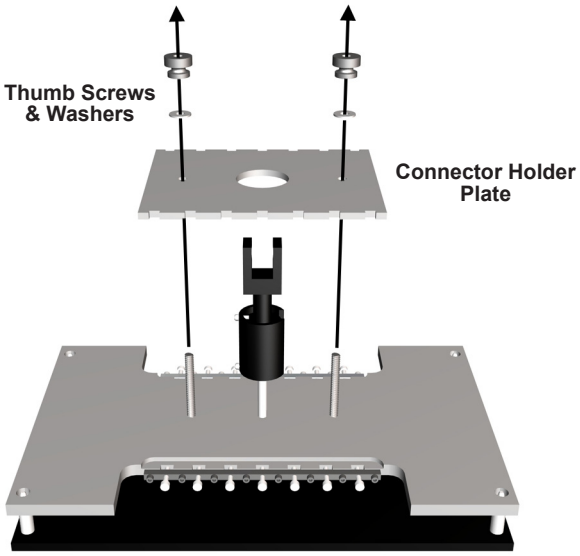
MT & MT/RJ Fixture Plates

Step 1



1) Place the **Fixture Plate** on the **Fixture Holder**.

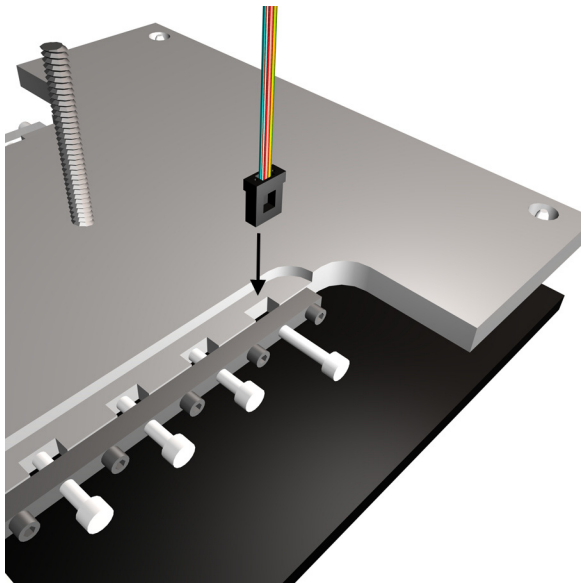
Step 2



2) Remove the **Thumb Screws & Washers**. Lift and remove the .

This procedure will make loading the connectors much easier.

Step 3

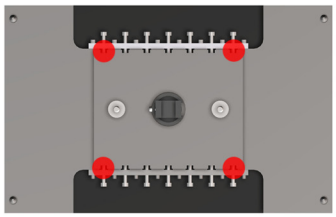


3) Loosen the **Nylon Screws** that will hold the connectors.

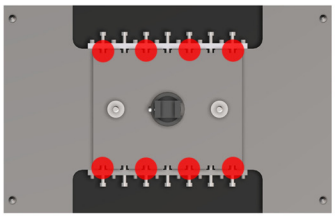
Place the connector into the **Fixture Plate** with the epoxy hole facing the **Nylon Screw**.

NOTE: If the Polishing Fixture is being loaded with less than 14 connectors, it is important the connectors be placed in symmetrical pattern. This will keep the Polishing Fixture surface level over the base plate during the polishing procedure. Load outside holes first, spacing evenly.

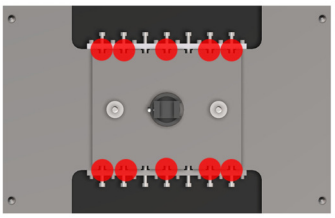
Examples



4 Connectors



8 Connectors

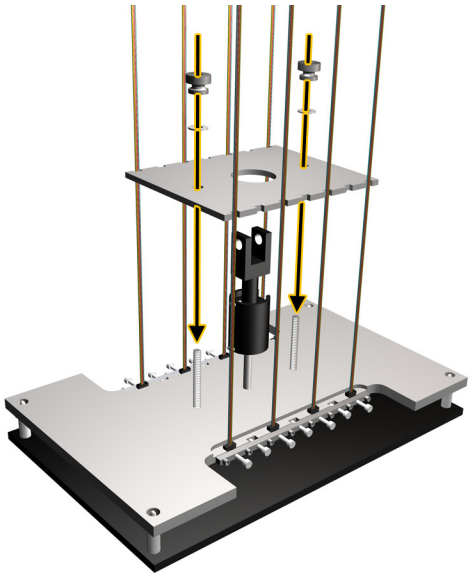


10 Connectors

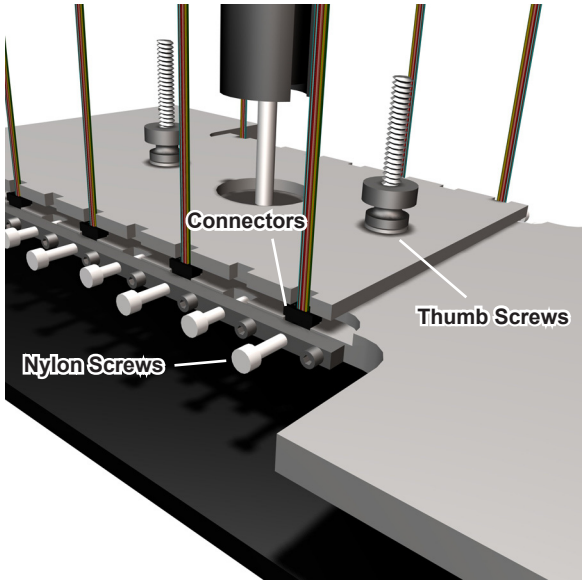
Fixture Setup Instructions

MT & MT/RJ Fixture Plates

Step 4



4a) Re-install the **Connector Holding Plate, Thumb Screws,** and **Washers.**

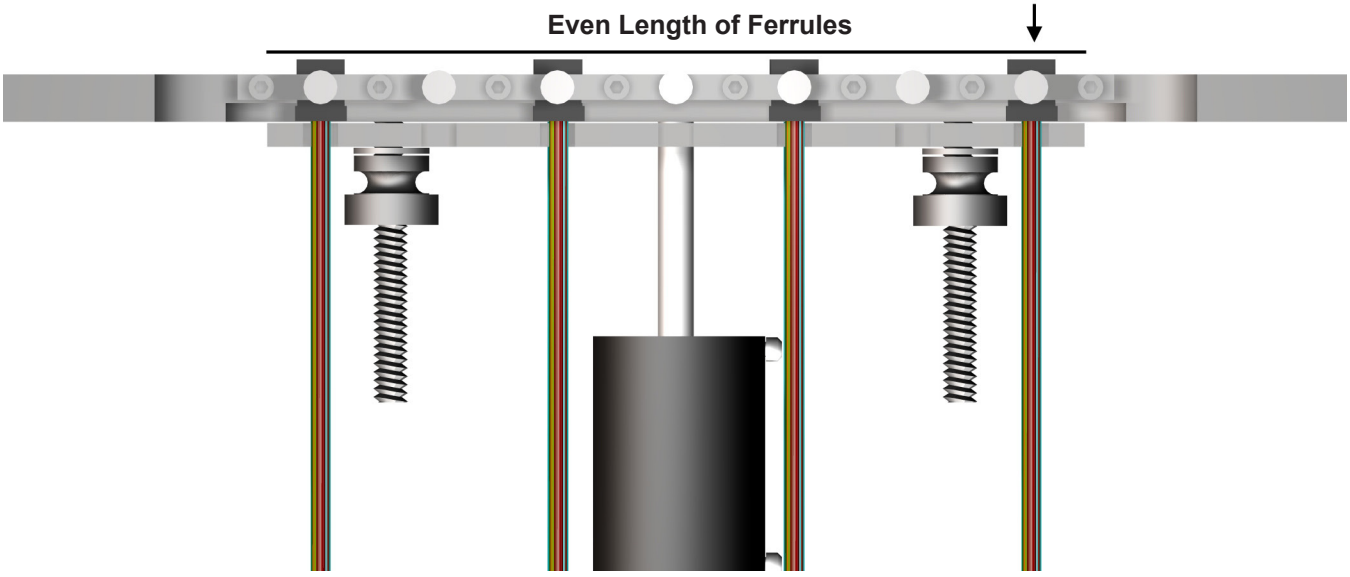


4b) Tighten the **Thumb Screws** first. Then tighten the **Nylon Screws** to hold the ferrules in place.

IMPORTANT

Make sure that all of the ferrules protrude from the bottom of the plate an equal length. Uneven ferrules will greatly affect the polishing performance. Sight down the profile of the plate referencing the ferrule tips to each other.

Use high quality connectors and ferrules whenever possible - this will reduce the number of failures per polishing cycle.

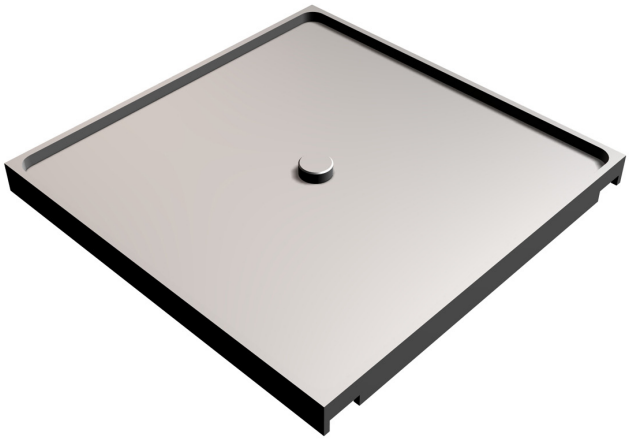


Upside-Down View

ASR - Fiber Stub Removal

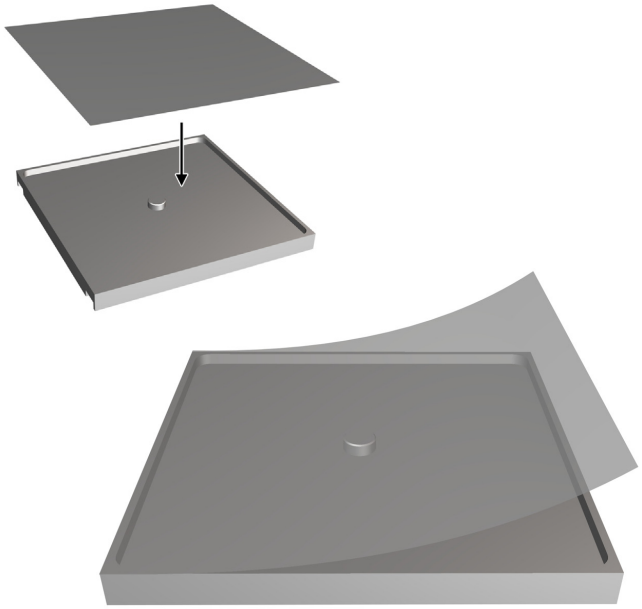
This section details how to use the ASR Fiber Stub Removal Fixture Plate with the ACP24/96 polisher.

Step 1



1) Make sure the ASR Fixture Plate surface edges are free of contaminates, glue, & dust before use. Clean fixture plate if nescessary.

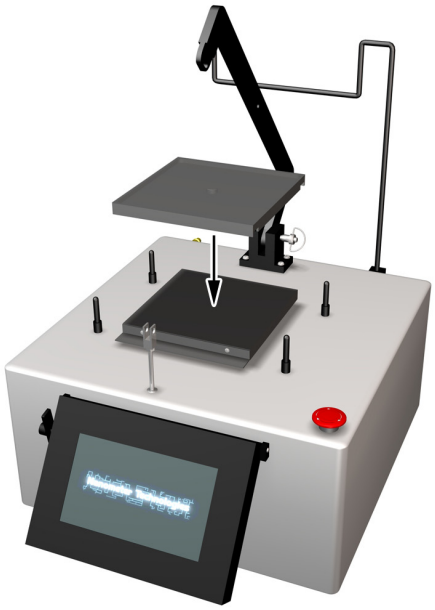
Step 2



2) Set the ASR Fixture Plate with the raised center face up. Place the **15 micron silicon carbide film** (with PSA backing) onto the **ASR Plate**. Start on an edge and slowly roll across the fixture plate.

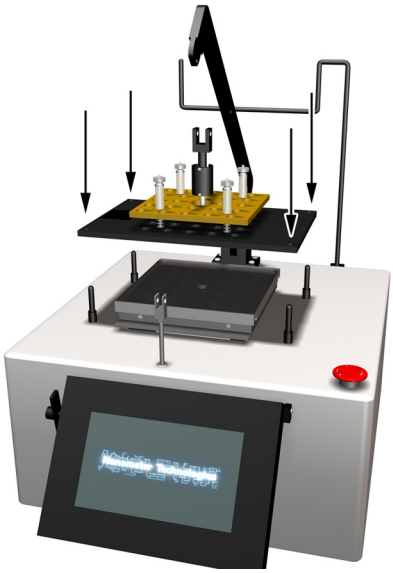
Make sure the film is flat along the edges of the fixture plate. Remove any bubbles or ripples before use.

Step 3



3) Place the **ASR Fixture Plate** onto the **Base Plate.**

Step 4

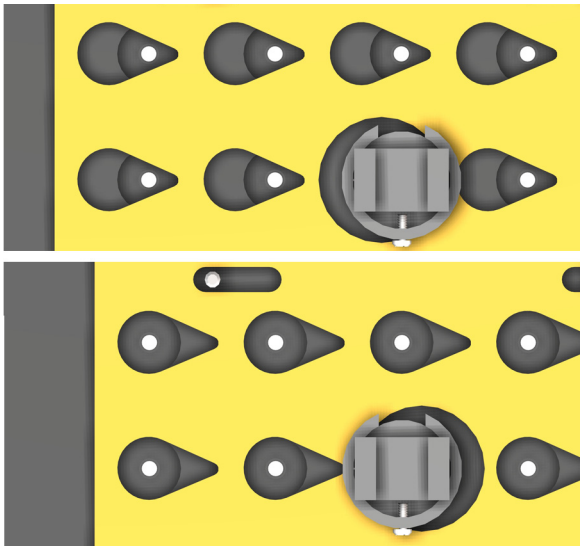


4) Place the **Fixture Plate** on the ACP 24. Make sure the **Fixture Plate** fits onto the 4 locator pins.

DO NOT USE THE PNEUMATIC ARM AT THIS TIME.

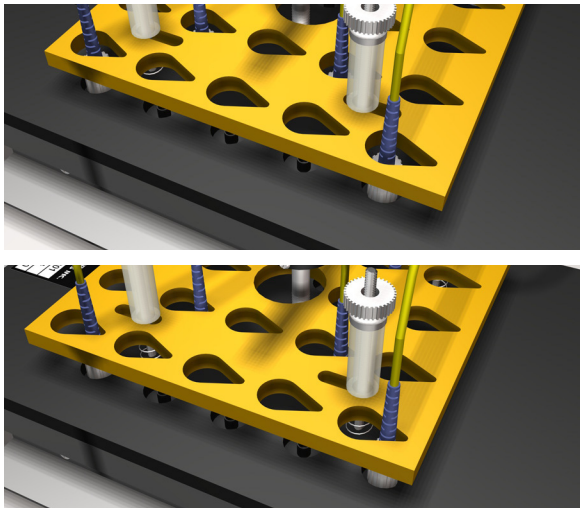
ASR - Fiber Stub Removal

Step 5



5) Adjust the S**lider Plate** until the connector slot lines up with the bottom edge of the tear drop shape. This will make it easier to load the connectors.

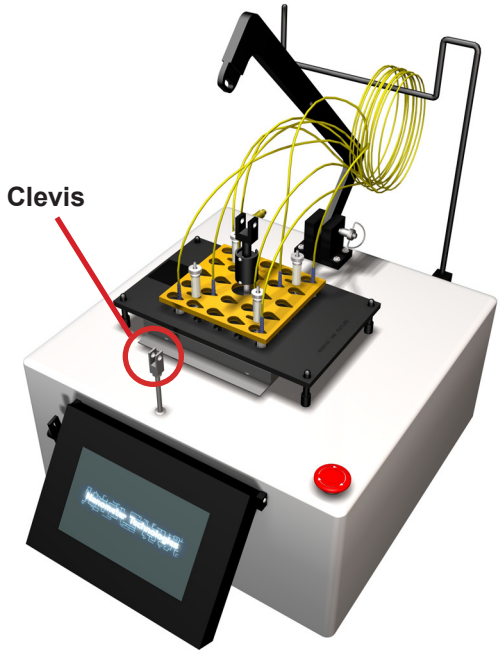
Step 6



6) Carefully lift the S**lider Plate** and gently place over the top of connectors. Make sure the small end of the tear drop is touching the **Connector Boots**.

DO NOT TIGHEN DOWN FIXTURE PLATE THUMB NUTS. LEAVE THE SLIDER PLATE FREE FLOATING AT THIS TIME.

Step 7



7) Use the touchscreen to begin the process. Select the ASR recipe and press start.

DO NOT USE THE PNEUMATIC ARM AT THIS TIME.

After the ASR process has completed, tighen down the **Thumb Nuts** on the **Fixture Plate** to keep the connectors in place.

Pick up the **Fixture Plate** and examine the connectors. Clean the **Fixture Plate** with clean water and **Lint-Free Optic Wipes.**

Continue with the polishing process.

NOTE: The Clevis may move during the process. This is normal.

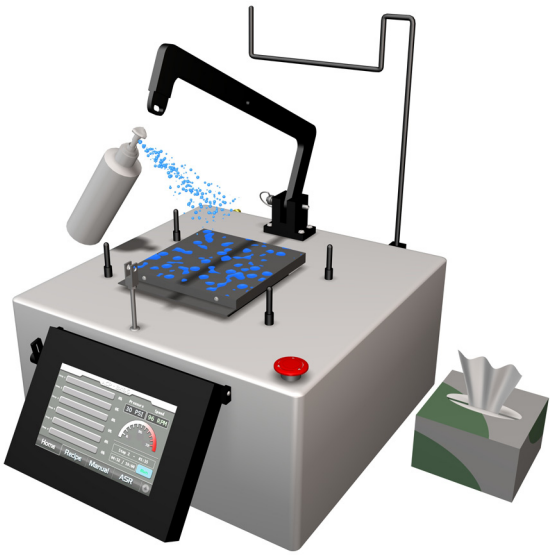
Polishing Procedure

Step 1

REMINDER:
Double tap screen to start system

1) Press the **Recipe Tab** on the bottom of the screen. Press the **Profile Button** to select a **Fixture Plate**. Use the **Up/Down Arrows** to find the fixture plate. With the fixture plate selected, press the **Load Button**. Return to the home page by pressing the **Home Tab**.

Step 2



2) Make sure the surface of the **Base Plate** is clean. Spray a very small amount of distilled water onto the top of the **Base Plate**. Use a **Lint-Free Optic Wipe** to clean the surface.

Polishing Procedure

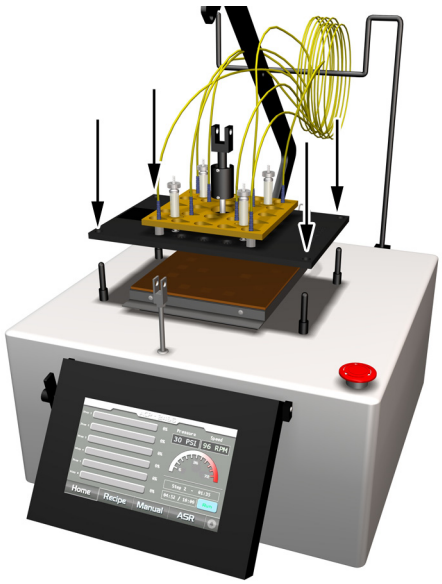
Step 3

3) Spray a very small amount of distilled water onto the surface of the **Base Plate**.

Place the **Rubber Pad** onto the **Base Plate** and slide the Rubber Pad around until it grips the surface.

Using too much water will cause the **Rubber Pad** to slide around on the Base Plate.

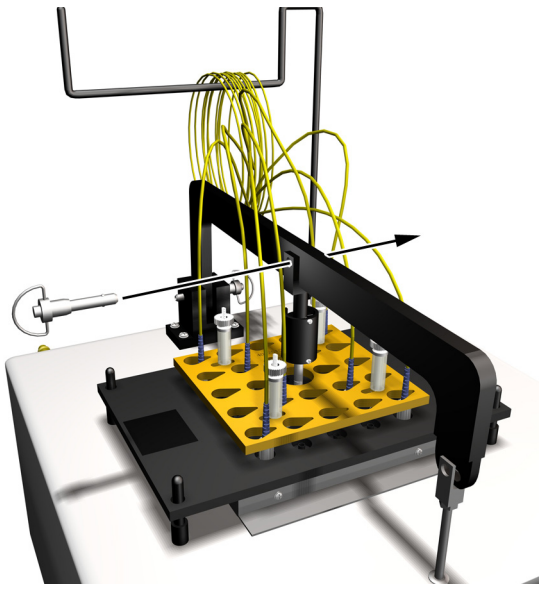
Step 4



4) Place the fiber optic cables onto the Cable Tree.

Set the **Polishing Fixture** onto the 4 pins that surround the **Base Plate**.

Step 5



5) Lower the **Pneumatic Arm** onto the **Polishing Fixture Bracket**. Use the **Medium Push-Pull Locking Pin** to attach the **Polishing Fixture** to the **Pneumatic Arm**.

Step 6

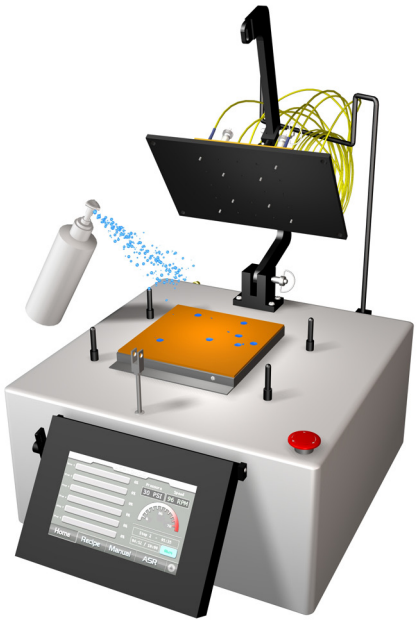
6) Lift the arm to expose the **Rubber Pad**. Spray distilled water onto the Rubber Pad and use a **Lint-Free Optical Wipe** to clean the surface.

Polishing Procedure

Step 7

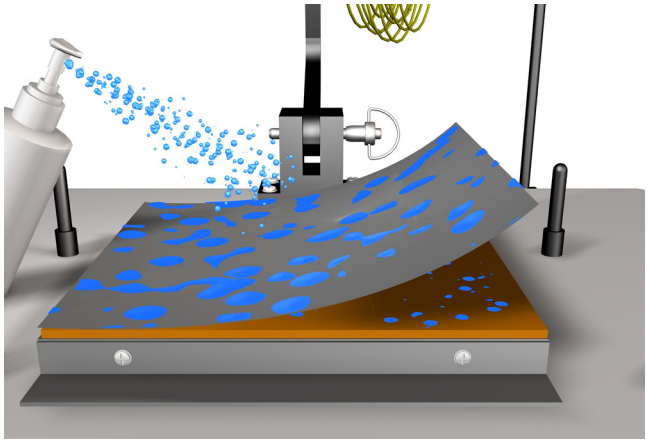
SINGLE AND MULTI-MODE EPOXY REMOVAL

(***Use this procedure only if the connectors need the epoxy bead removed***)



7a) Apply a very small amount of distilled water to the rubber surface using the spray bottle.

Using too much water will cause the film to slide around on the **Rubber Pad**.

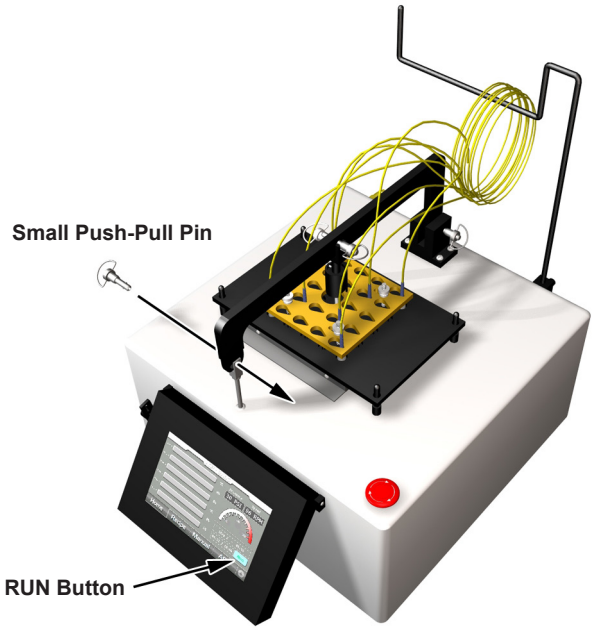


7b) Place the **15 um silicon carbide film** with the smooth shiny side down on the **Rubber Pad**.

Start by placing the edge of the film on the edge of the **Rubber Pad**. Slowly roll the film across the **Rubber Pad** to avoid creating large air bubbles.

Spray distilled water onto the surface of the film. Use a clean lint-free wipe to press out any existing large air bubbles while cleaning the film at the same time.

Spray distilled water onto the surface of the film again. Make sure the surface of the film is completely covered with distilled water.



7c) Lower the polishing plate onto the 4 locating pins making sure that it lies flat on the base plate.

Align the holes on the **Clevis** and **Pneumatic Arm** and insert the **Small Push-Pull Pin**.

Press the **RUN Button** on the touchscreen to start the polishing process.

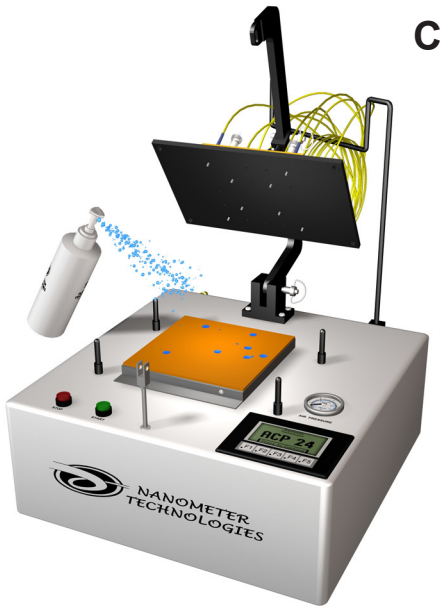
7d) After polishing has finished, remove the small push-pull pin and lift the polishing plate.

Visually inspect ferrule tips for any remaining epoxy; polish for an additional 15 seconds if any epoxy is visible.

Thoroughly clean the bottom surface of the plate, the ferrules, and the surface of the polishing film with distilled water and clean lint free wipes after each use to avoid cross contamination. Throw away lint free wipes after each use.

Remove the film.

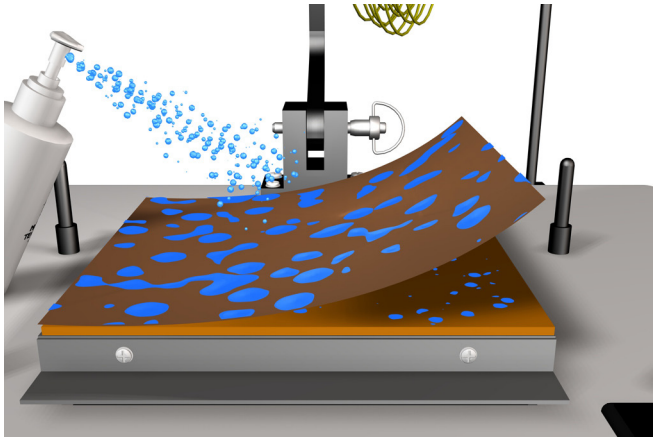
Step 8
Coarse Lapping Film



(If you are continuing from step 7d, the Rubber Pad should still contain enough water on the surface to keep the film in place.)

8a) Apply a very small amount of **Distilled Water** to the rubber surface using the spray bottle.

Using too much water will cause the film to slide around on the **Rubber Pad**.

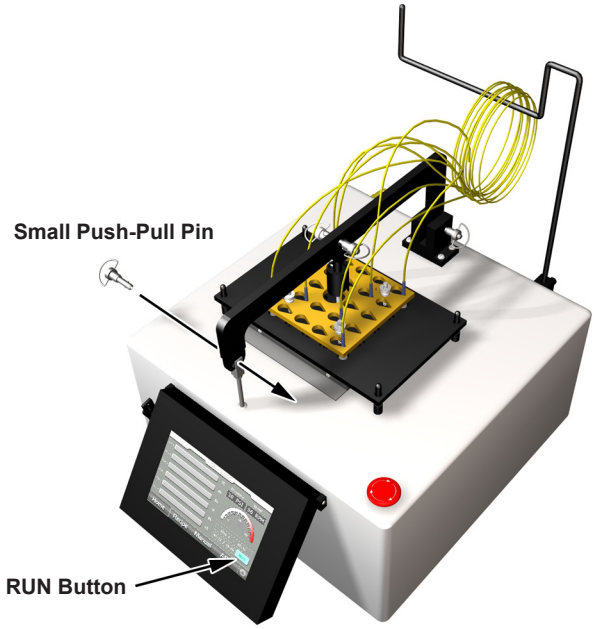


8b) Place the **6 um Diamond film** with the smooth shiny side down on the rubber pad.

Start by placing the edge of the film on the edge of the **Rubber Pad**. Slowly roll the film across the **Rubber Pad** to avoid creating large air bubbles.

Spray distilled water onto the surface of the film. Use a clean lint-free wipe to press out any existing large air bubbles while cleaning the film at the same time.

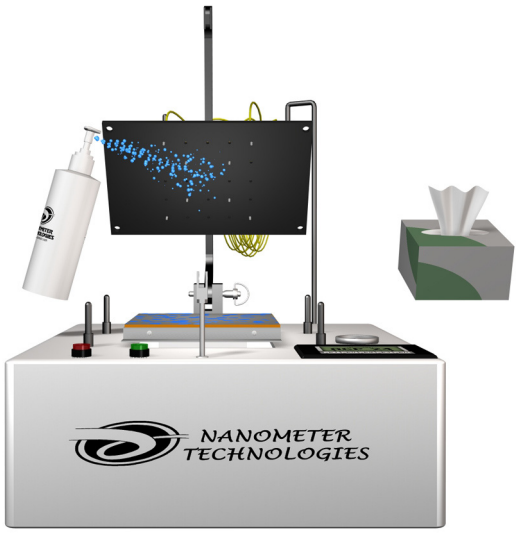
Spray distilled water onto the surface of the film again. Make sure the surface of the film is completely covered with distilled water.



8c) Lower the polishing plate onto the 4 locating pins making sure that it lies flat on the base plate.

Align the holes on the **Clevis** and **Pneumatic Arm** and insert the **Small Push-Pull Pin**.

Press the **RUN Button** on the touchscreen to start the polishing process.

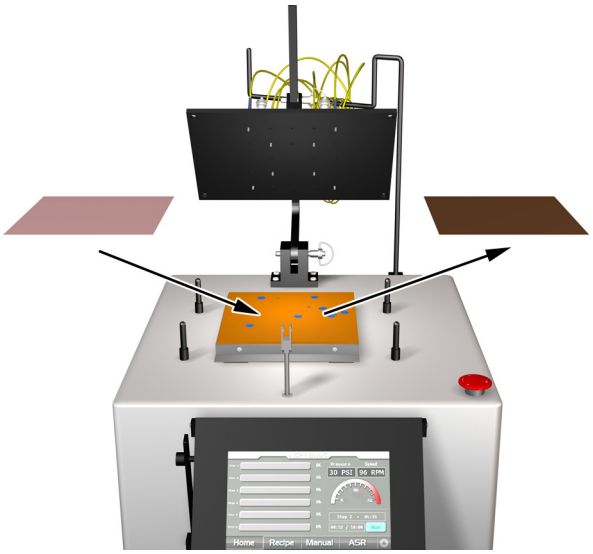


8d) After polishing has finished, remove the small push-pull pin and lift the polishing plate.

Thoroughly clean the bottom surface of the plate, the ferrules, and the surface of the polishing film with distilled water and clean lint free wipes after each use to avoid cross contamination. Throw away lint free wipes after each use.

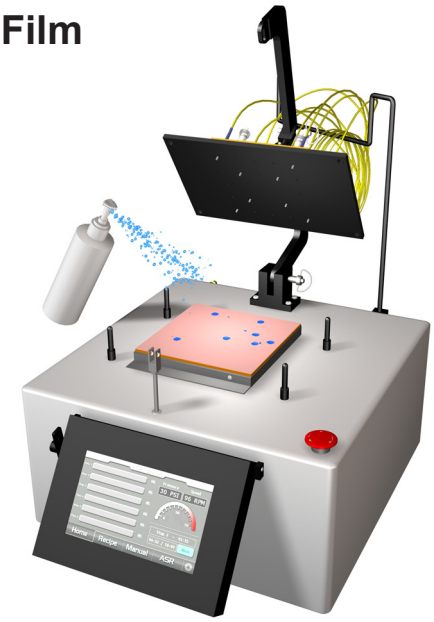
Polishing Procedure

Step 9
Medium Coarse Lapping Film



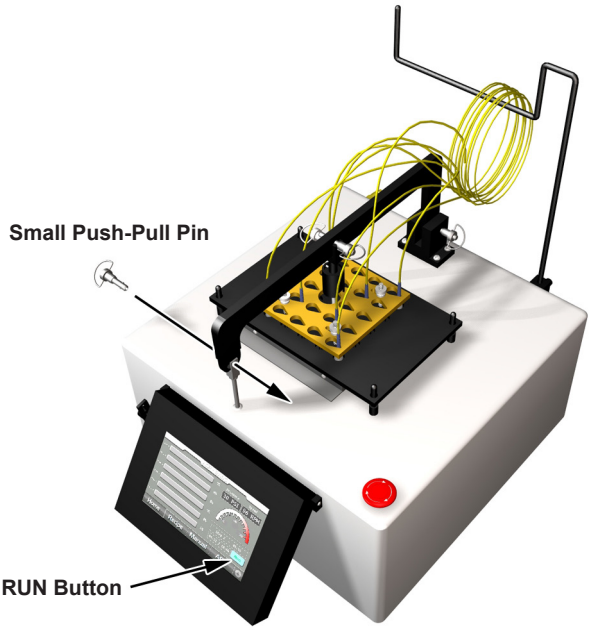
9a) Replace the **6um Diamond Film** with the **3um Diamond Film**.

The **Rubber Pad** should still have enough water on it to keep the film in place.



9b) Spray distilled water onto the surface of the film and wipe clean using lint-free wipes. This procedure will ensure a clean working surface and remove any large air bubbles.

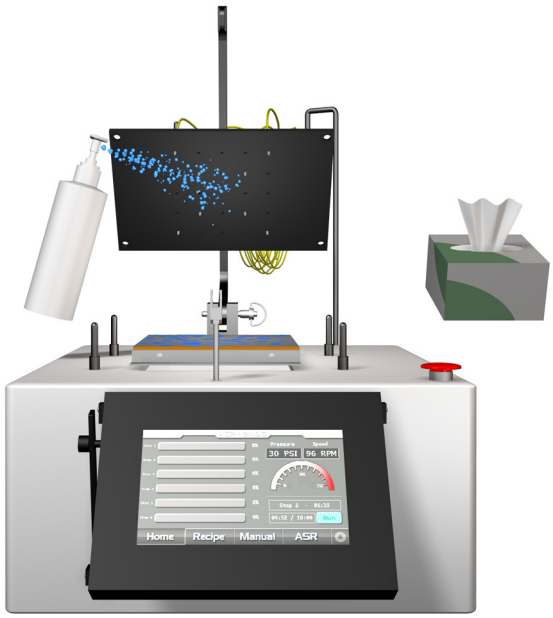
Again spray distilled water on the film completely covering the surface.



9c) Lower the polishing plate onto the 4 locating pins making sure that it lies flat on the base plate.

Align the holes on the **Clevis** and **Pneumatic Arm** and insert the **Small Push-Pull Pin**.

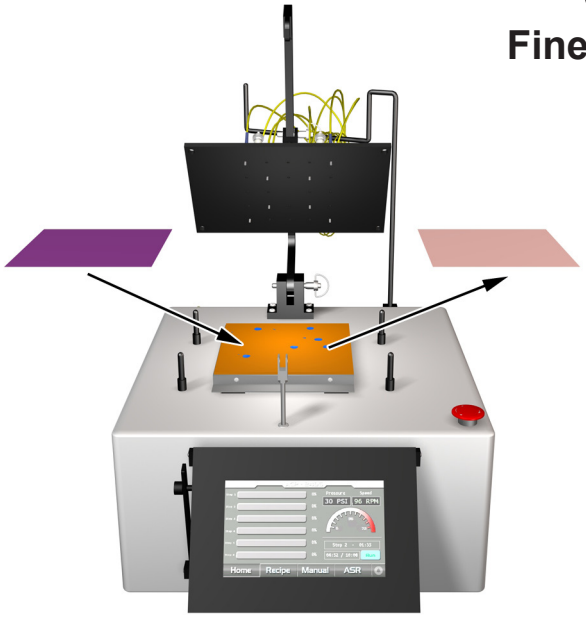
Press the **RUN Button** on the touchscreen to start the polishing process.



9d) After polishing has finished, remove the small push-pull pin and lift the polishing plate.

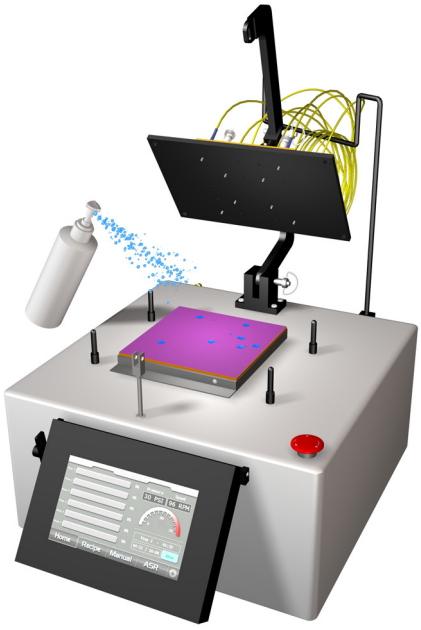
Thoroughly clean the bottom surface of the plate, the ferrules, and the surface of the polishing film with distilled water and clean lint free wipes after each use to avoid cross contamination. Throw away lint free wipes after each use.

Step 10
Fine Lapping Film



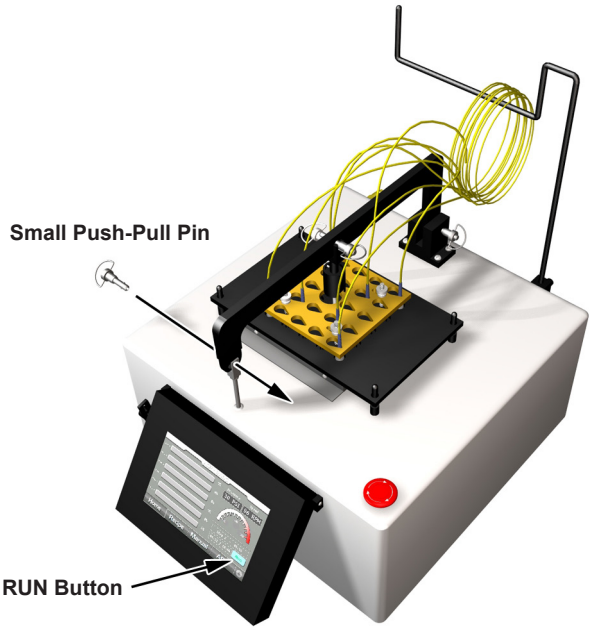
10a) Replace the **3um Diamond Film** with the **1um Diamond Film**.

The **Rubber Pad** should still have enough water on it to keep the film in place.



10b) Spray distilled water onto the surface of the film and wipe clean using lint-free wipes. This procedure will ensure a clean working surface and remove any large air bubbles.

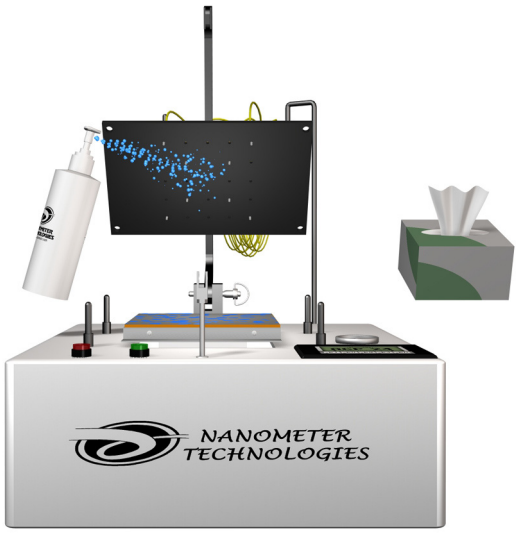
Again spray distilled water on the film completely covering the surface.



10c) Lower the polishing plate onto the 4 locating pins making sure that it lies flat on the base plate.

Align the holes on the **Clevis** and **Pneumatic Arm** and insert the **Small Push-Pull Pin**.

Press the **RUN Button** on the touchscreen to start the polishing process.

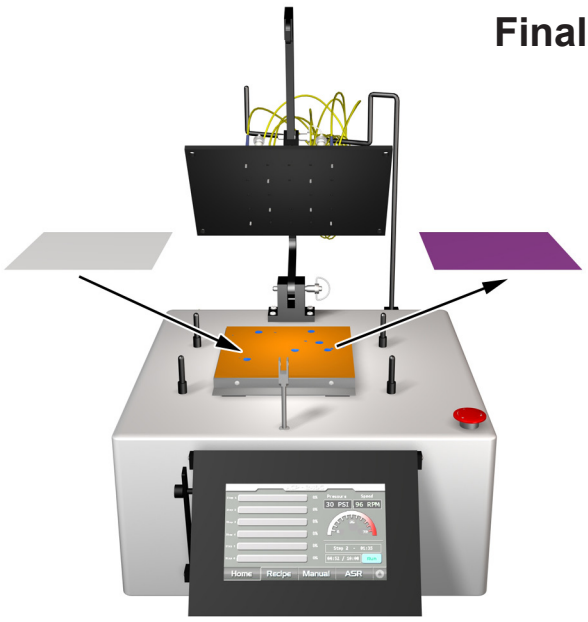


10d) After polishing has finished, remove the small push-pull pin and lift the polishing plate.

Thoroughly clean the bottom surface of the plate, the ferrules, and the surface of the polishing film with distilled water and clean lint free wipes after each use to avoid cross contamination. Throw away lint free wipes after each use.

Polishing Procedure

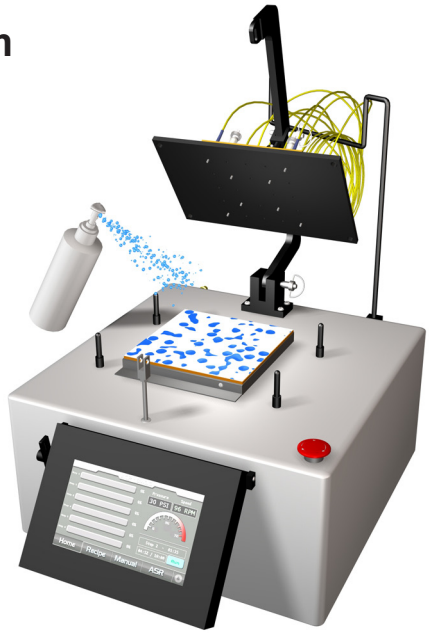
Step 11
Final Polishing Film



11a) Replace the **1 um Diamond Film** with the **Final Polishing Film.**

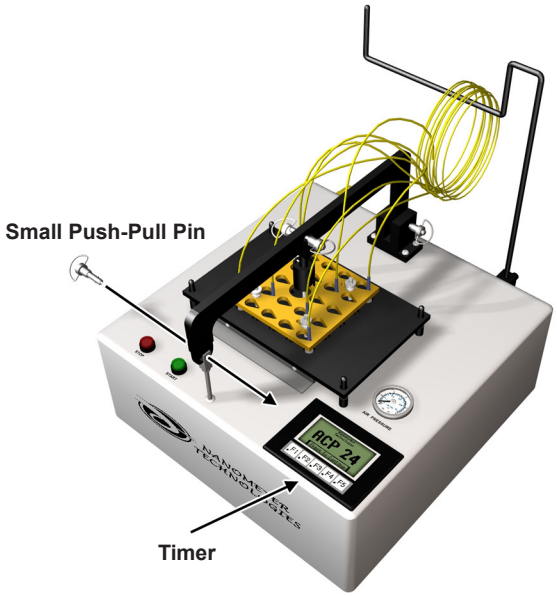
The **Rubber Pad** should still have enough water on it to keep the polishing pad in place.

Slide the pad around until it grips the surface of the **Rubber Pad**.



11b) Spray distilled water onto the surface of the film and wipe clean using lint-free wipes. This procedure will ensure a clean working surface and remove any large air bubbles.

Again spray distilled water on the film completely covering the surface.

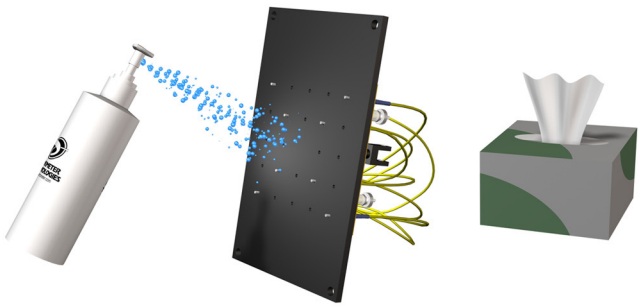


11c) Lower the polishing plate onto the 4 locating pins making sure that it lies flat on the base plate.

Align the holes on the **Clevis** and **Pnuematic Arm** and insert the **Small Push-Pull Pin**.

Press start on the touchscreen to continue the polishing process.

Step 12
Cleaning Fixture Plate



12) Remove both the **Small and Medium Push-Pull Pins**. Raise the **Pneumatic Arm.**

Pick up and thoroughly clean the surface of the **Fixture plate** and **Ferrules** with **Distilled Water**.

DO NOT USE ALCOHOL!!!

Once the cleaning is finished, place the **Fixture Plate** back on to the **Fixture Holder**. The connectors are ready to be removed and tested.

USER NOTES:

UNI Fixture Plate Polishing Guides

Here are tables showing general information for Air Pressure, Polishing Times, Motor Speeds & Film in regards to using the UNI Fixture Plate. Use these tables as a guide for creating custom polishing procedures.

TABLES

PRESSURE SETTINGS FOR UNI-FIXTURE

4-6 connectors = 0 PSI
7-12 connectors = 2-4 PSI
13-18 connectors = 4-6 PSI
19-24 connectors = 7-9 PSI
25-32 connectors = 9-11 PSI

The exact amount of pressure is determined by connector quality composition and desired final radius.

- Higher PSI will produce a smaller radius
- Lower PSI will produce a larger radius

UNI-FIXTURE POLISHING TIMES

	PAPER	TIME	
STEP 1	**15 Um Silicon Carbide**	**15-30 Sec**	**Epoxy Removal**
STEP 2	**6 Um Diamond**	**1 Min**	**Coarse Film**
STEP 3	**3 Um Diamond**	**45 Sec**	**Medium Coarse Film**
STEP 4	**1 Um Diamond**	**45 Sec**	**Fine film**
STEP 5	**Final Film**	**1min 45 Sec**	**Final Film (Single Mode only)**

UNI-FIXTURE MOTOR SPEEDS (RPM)

UNI Fixture Plate Motor Speed = **60 RPM**

APC Fixture Plate Polishing Guides

Here are tables showing general information for Air Pressure, Polishing Times, Motor Speeds & Film in regards to using APC Fixture Plates. Use these tables as a guide for creating custom polishing procedures.

TABLES

PRESSURE SETTINGS FOR APC-FIXTURE

4-6 connectors = 0 PSI
7-12 connectors = 2-4 PSI
13-18 connectors = 4-6 PSI
19-24 connectors = 7-9 PSI

The exact amount of pressure is determined by connector quality composition and desired final radius.

- Higher PSI will produce a smaller radius
- Lower PSI will produce a larger radius

APC-FIXTURE POLISHING TIMES

	PAPER	TIME	
STEP 1	**15 Um Silicon Carbide**	**15-30 Sec**	**Epoxy Removal**
STEP 2	**6 Um Diamond**	**2 Min**	**Coarse Film**
STEP 3	**3 Um Diamond**	**1.5 Min**	**Medium Coarse Film**
STEP 4	**1 Um Diamond**	**1 Min**	**Fine film**
STEP 5	**Final Film**	**1min 45 Sec**	**Final Film (Single Mode Only)**

APC FIXTURE MOTOR SPEEDS (RPM)

APC Fixture Plate Motor Speed = **60 RPM**

LC/MU Fixture Plate Polishing Guides

Here are tables showing general information for Air Pressure, Polishing Times, Motor Speeds & Film in regards to using the LC/MU Fixture Plate. Use these tables as a guide for creating custom polishing procedures.

THIS PROCEDURE REQUIRES THE USE OF AN 80 DUROMETER 'FIBERGLASS-FILLED' RUBBER PAD

TABLES

If you do not have one of these Rubber Pads, contact Nanometer Technologies about how to aquire one.

Pressure Settings For LC & MU Fixture plate

8-12 connectors = 0 PSI (No Weight Needed)
13-16 connectors = 1 PSI
17-20 connectors = 2.5 PSI
21-24 connectors = 4 PSI

The exact amount of pressure is determined by connector quality composition and desired final radius.

- Higher PSI will produce a smaller radius
- Lower PSI will produce a larger radius

LC/MU FIXTURE POLISHING TIMES

	PAPER	TIME	
STEP 1	**15 Um Silicon Carbide**	**15-30 Seconds**	**Epoxy Removal**
STEP 2	**6 Um Diamond**	**45 seconds**	**Coarse Film**
STEP 3	**3 Um Diamond**	**45 seconds**	**Medium Coarse Film**
STEP 4	**1 Um Diamond**	**45 seconds**	**Fine Film**
STEP 5	**Final Film**	**1min 45sec**	**Ultra Polish (Single Mode)**

LC ‘Snap-in’ Fixture Plate Polishing Guides

Here are tables showing general information for Air Pressure, Polishing Times, Motor Speeds & Film in regards to using the LC ‘Snap-in’ Fixture Plate. Use these tables as a guide for creating custom polishing procedures.

THIS PROCEDURE REQUIRES THE USE OF AN 80 DUROMETER ‘FIBERGLASS-FILLED’ RUBBER PAD

If you do not have one of these Rubber Pads, contact Nanometer Technologies about how to aquire one.

TABLES

Pressure Settings for LC “Snap-in” Fixture Plate

8-12 connectors = 0 PSI
13-16 connectors = 2.5 PSI
17-20 connectors = 3.5 PSI
21-24 connectors = 5 PSI
25-30 connectors = 6 PSI
31-35 connectors = 7 PSI
36-40 connectors = 8 PSI
41-48 connectors = 9-10 PSI

The exact amount of pressure is determined by connector quality composition and desired final radius.

- Higher PSI will produce a smaller radius
- Lower PSI will produce a larger radius

LC “Snap-in” FIXTURE POLISHING TIMES

	PAPER	TIME	
STEP 1	**15 Um Silicon Carbide**	**15-30 Seconds**	**Epoxy Removal**
STEP 2	**6 Um Diamond**	**45 seconds**	**Coarse Film**
STEP 3	**3 Um Diamond**	**45 seconds**	**Medium Coarse Film**
STEP 4	**1 Um Diamond**	**45 seconds**	**Fine Film**
STEP 5	**Final Film**	**1min 45sec**	**Ultra Polish (Single Mode)**

MT Multi-mode Polishing Guide

Here are tables showing general information for Air Pressure, Polishing Times, Motor Speeds & Film in regards to using MT & MT/RJ Fixture Plates. Use these tables as a guide for creating custom polishing procedures.

TABLES

PRESSURE SETTINGS FOR MT MM Flat Protruded Flocked Film

8 connectors	14 connectors
Step 1 = 2.5 PSI	Step 1 = 9 PSI
Step 2 = 2.5 PSI	Step 2 = 9 PSI
Step 3 = 7.5 PSI	Step 3 = 20 PSI
Step 4 = 7.5 PSI	Step 4 = 20 PSI

MT MM Flat Protruded Flocked Film POLISHING PROCEDURE

	PAPER	TIME	
STEP 1	**15 Um Silicon Carbide**	**45 Sec**	**Epoxy Removal**
STEP 2	**3 Um Silicon Carbide 468XW**	**1 Min**	**Medium Coarse Film**
STEP 3	**1 Um $A1_2O_3$ Flocked 298X PSA Backed**	**2 Min**	**Flocked Step**
STEP 4	**0.5 Um CeO Flocked 598X PSA Backed**	**2 min**	**Final Protrusion Step**

Throroughly clean the fixture and ferules between each step using US Conec document number AEN-1512. Removal of ALL contaminants between polishing steps is critical for the success of the process.

Note #1
If necessary repeat Step #1 in 15 second intervals until all epoxy is removed and the ferrules have an even matte finish completely across the end face.

Note #2
if re-work is necessary due to visual defects in the fiber tips, repeat Step #4 with a new CeO Flocked Film.

Note #3
if after repeating step #4 per the instructions in note #2 rework is still necessary due to visual defects in the fiber tip, return the step #2 and repeat the process from this point.

MT SM Angled Protruded Polishing Guides

Here are tables showing general information for Air Pressure, Polishing Times, Motor Speeds & Film in regards to using MT & MT/RJ Fixture Plates. Use these tables as a guide for creating custom polishing procedures.

TABLES

PRESSURE SETTINGS FOR MT SM Angled Protruded Flocked 3M Film

8 connectors	14 connectors
Step 1 = 3 PSI	Step 1 = 5 PSI
Step 2 = 3 PSI	Step 2 = 5 PSI
Step 3 = 3 PSI	Step 3 = 5 PSI
Step 4 = 17 PSI	Step 4 = 24 PSI
Step 5 = 17 PSI	Step 5 = 24 PSI

MT SM Angled Protruded Flocked 3M Film POLISHING PROCEDURE

	PAPER	TIME	
STEP 1	**15 Um Silicon Carbide**	**45 Sec**	**Epoxy Removal**
STEP 2	**15 Um Silicon Carbide**	**30 Sec**	**Cutting Angle**
STEP 3	**3 Um Silicon Carbide 468XW**	**1 Min**	**Medium Coarse Film**
STEP 4	**1 Um $A1_2O_3$ Flocked 298X PSA Backed**	**2 Min**	**Final Protrusion Step**
STEP 5	**0.5 Um CeO Flocked 598X PSA Backed**	**2 min**	**Final Step**

Throroughly clean the fixture and ferules between each step using US Conec document number AEN-1512. Removal of ALL contaminants between polishing steps is critical for the success of the process.

Note #1
If necessary repeat Step 1 in 15 second intervals until epoxy is removed & the ferrules have an even matte finish completely across the end face.

Note #2
iI necessary repeat Step 2 in 15 second intervals until the angles extend to the top edge of the guide pin holes.

Note #3
If re-work is necessary due to visual defects in the fiber tips, repeat step 5 with a new CeO Flocked Film.

MT Single Mode Pre- Angled Polishing Guides

Here are tables showing general information for Air Pressure, Polishing Times, Motor Speeds & Film in regards to using MT & MT/RJ Fixture Plates. Use these tables as a guide for creating custom polishing procedures.

TABLES

PRESSURE SETTINGS FOR MT SM Pre-Angled Protruded Flocked Film

8 connectors	10-12 connectors	14 connectors
Step 1 = 3 PSI	Step 1 = 3 PSI	Step 1 = 5 PSI
Step 2 = 3 PSI	Step 2 = 3 PSI	Step 2 = 5 PSI
Step 3 = 15 PSI	Step 3 = 20 PSI	Step 3 = 20 PSI
Step 4 = 15 PSI	Step 4 = 20 PSI	Step 4 = 20 PSI

MT SM Pre-Angled Protruded Flocked Film POLISHING PROCEDURE

	PAPER	TIME	
STEP 1	**15 Um Silicon Carbide**	**30 Sec**	**Epoxy Removal**
STEP 2	**3 Um Silicon Carbide 468XW**	**1 Min**	**Medium Coarse Film**
STEP 3	**1 Um $A1_2O_3$ Flocked 298X PSA Backed**	**2 Min**	**Flocked Step**
STEP 4	**0.5 Um CeO Flocked 598X PSA Backed**	**2 min**	**Final Protrusion Step**

Throroughly clean the fixture and ferules between each step using US Conec document number AEN-1512. Removal of ALL contaminants between polishing steps is critical for the success of the process.

Note #1
If necessary repeat Step 1 in 5 second intervals until the angles extend to the top edge of the guide pin holes and the ferules have an even matte finish completely across the angled area of the end face.

Note #2
if re-work is necessary due to visual defects in the fiber tips, repeat Step 4 with a new CeO Flocked Film.

TROUBLE SHOOTING

MT Single Mode Connectors

*Be sure to just thumb tighten the screws to the MT's. If this is tightened too much or top plate is too tight you will see negative ROC numbers.

*If you're working with 24-fiber MT ferrules the ROC on the "Y" axis is almost always going to be negative. This is because the two rows of fibers are close enough together (500um) that the ferrule surface is shaped into a "valley" between them. As long as the absolute value of the "Y" ROC is above 5mm, you are OK.

TROUBLE SHOOTING

*Be careful not to disform the ferrules. If you are over-tightening the ferrules into the polishing fixture, especially the top plate that holds the ferrules down into the fixture you can disform the ferrules. This over-tightening is deforming the ferrules causing the endface to "squeeze out" and be a convex shape when you begin polishing. Once the polishing is completed and the force on the ferrule is removed the ferrule "relaxes" back to its overall natural shape but, because the endface was polished in the deformed state, the endface and, naturally, the fiber protrusion profile, is now concave. Try not tightening the top plate so much and see what results you get. adding more polishing force will only make the concave profile worse.

24 Position MT Process Pressure for fully loaded plate

Here are tables showing general information for Air Pressure, Polishing Times, Motor Speeds & Film in regards to using MT & MT/RJ Fixture Plates. Use these tables as a guide for creating custom polishing procedures.

	PAPER	SPEED	TIME	
STEP 1	**15 Um Silicon Carbide Lapping Film** (If Necessary repeat step 1 in 15 second intervals)	**72**	**1 - 2 minutes**	**Epoxy Removal**
STEP 2	**3 Um Silicon Carbide Flock** (Repeat if necessarywith new film)	**72**	**1 - 1.5 minutes**	**Medium Coarse Film**
STEP 3	**1 Um $A1_2O_3$ Flocked 298X PSA Backed** (Repeat if necessarywith new film)	**72**	**1.5 - 2 minutes**	**Flocked Step**
STEP 4	**0.5 Um CeO Flocked 598X PSA Backed** (Repeat this step if there are visual defects	**72**	**1 - 1.5 minutes**	**Final Protrusion Step**

The window on your MT connector should be facing the MT-24 writing on the fixture plate.

*If you're working with 24-fiber MT ferrules the ROC on the "Y" axis is almost always going to be negative. This is because the two rows of fibers are close enough together (500um) that the ferrule surface is shaped into a "valley" between them. As long as the absolute value of the "Y" ROC is above 5mm, you are OK.

TROUBLE SHOOTING

*Be careful not to disform the ferrules.

If you are over-tightening the ferrules into the polishing fixture, especially the top plate that holds the ferrules down into the fixture you can disform the ferrules. This over-tightening is deforming the ferrules causing the endface to “squeeze out” and be a convex shape when you begin polishing.

Once the polishing is completed and the force on the ferrule is removed the ferrule “relaxes” back to its overall natural shape but, because the endface was polished in the deformed state, the endface and, naturally, the fiber protrusion profile, is now concave. Try not tightening the top plate so much and see what results you get. adding more polishing force will only make the concave profile worse.

Maintenance for ACP24/96 Polisher

Recommended yearly service
After warranty has expired.

1. Check for wobble between interface and base plate; make sure no rust has accumulated between the bullet nose pin on the interface plate and the liner inserted into the base plate, clean of any debris on both parts and recheck.

2. The Air System will need to be checked with a soapy water test (small paint brush and a container of soapy water), for all hose fitting internally and externally, (should have no air bubbles) clean pull down cylinder shaft once a month, also check to see if you hear any leaks from the cylinder.

3. Internal and external stages need to be checked for lubrication, we recommend water proof grease lightly applied to the rails on the stages, also check the stages to make sure they are not rocking from side to side. If they have a rocking motion they may need to be replaced.

4. Bearings in all pulleys and rods should be checked; they should have very little rocking motion and be smooth with no grinding.

5. Belt wear and tension, should not have more then 1/8” of play, and no threads coming out of belt. There should be very little or no belt dust, if there is re-alignment may be needed. Contact the factory.

TROUBLE SHOOTING

MACHINE POLISHING OF FIBER OPTIC CONNECTORS

SYMPTOM	CAUSE / SOLUTION
Clevis bounces during ASR process	This is normal and not a malfunction
Pits in all Connectors	Polish time too short on 3-1Um film
Pits in 1-3 Connectors or Small and Large Radius	Short Ferrules, protrusion tolerance bad. Tolerance +/-.001", 25 Um
Excess Scratching	Increase Final Polish, Bad Final Pad Contamination
Not Enough Undercut, Bad Back Reflection	Increase Final Polish Time
Too Much Undercut	Decrease Final Polish Time, Repolish With 1 uM then back to Final
Bad Back Reflection	Test, Test Cable
Dead Battery (CR2354)	The internal battery for the touchscreen needs to be replaced. Contact Nanometer technologies.

Bellcore Spec's

Radius of Curvature	7mm - 30 mm [optimum 12-15mm]
Apex Offset	Less than 50uM
Undercut/Protrusion	+/- 50nm [objective-30-45nm]

Limited Warranty

Nanometer Technologies products shall be free of defects in material and workmanship for a period of 1 year from the date of purchase.

Nanometer Technologies fixture plates shall be free of defects in material and workmanship for a period of 90 days from the date of purchase.

In the event of a defect in materials or workmanship, we will either replace or repair without charge (not including shipping costs) at our option any part which in our judgment shows evidence of such defect within 1 year (90 days for fixture plates) from the date of purchase. ***This warranty does not apply to misuse, abuse, tampered, altered items, overuse of water or UPS solution, dropping the fixture plate, or hitting the fixture plate while suspended from pneumatic arm.*** At the end of the warranty period Nanometer Technologies shall be under no further obligation expressed or implied. This warranty is in lieu of any other warranty, under no circumstances will Nanometer Technologies be liable for any loss, damage, expense or consequential damages of any kind arising in connection with the use or inability to use Nanometer Technologies products.

Warranty will be voided if tamper seals are broken on any product or unit is opened by any person not authorized by Nanometer Technologies without prior permission.

NOTES:

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