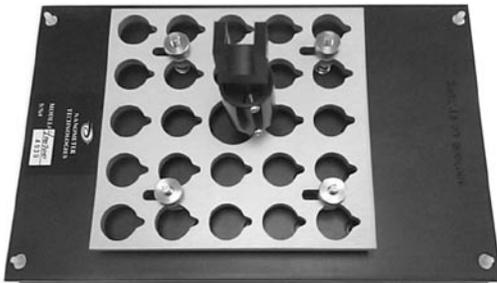


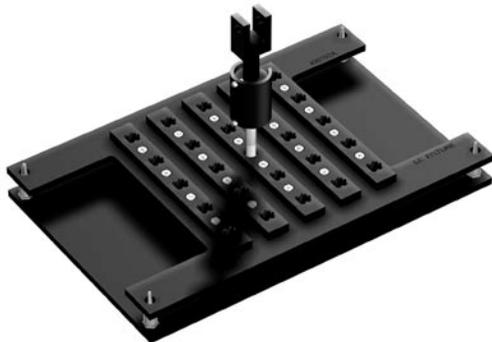
MCP 24-60

MASS CONNECTOR POLISHER

INSTRUCTION MANUAL



LC & MU Fixture Plate



LC "Snap-in" Fixture Plate



Instructions for using and polishing with the:
LC & MU Fixture Plate
LC "Snap-in" Fixture Plate

NANOMETER TECHNOLOGIES

2501 Golden Hill Rd

Paso Robles, CA 93446

PHONE: (805) 226-7332 FAX: (805) 226-8753

www.nanometer.com

**MCP24
MASS CONNECTOR POLISHER
INSTRUCTION MANUAL - LC-MU & LC “Snap-in” Fixture Plates**

Document Number RE:00B1-LCMUSNAPIN24

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NANOMETER TECHNOLOGIES

2501 Golden Hill Rd.
Paso Robles, CA 93446
TEL: (805) 226-7332
FAX: (805) 226-8753

www.nanometer.com
mm@nanometer.com

October 10th, 2007

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Before using the MCP24-60 please make sure that all of the following items (Shown in Table 0-1) are present.

Standard Parts List

Base Polisher
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

CAUTION:

REMOVE THE SHIPPING STRAP PRIOR TO PLUGGING IN THE MCP24-60 POLISHER.

Consumables

PART	PART CODE	REMARKS
Cutting Disk	6MB1	For Cutting Angles
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

Connectors

Films

Final Film

AB-9123

Nanometer Technologies

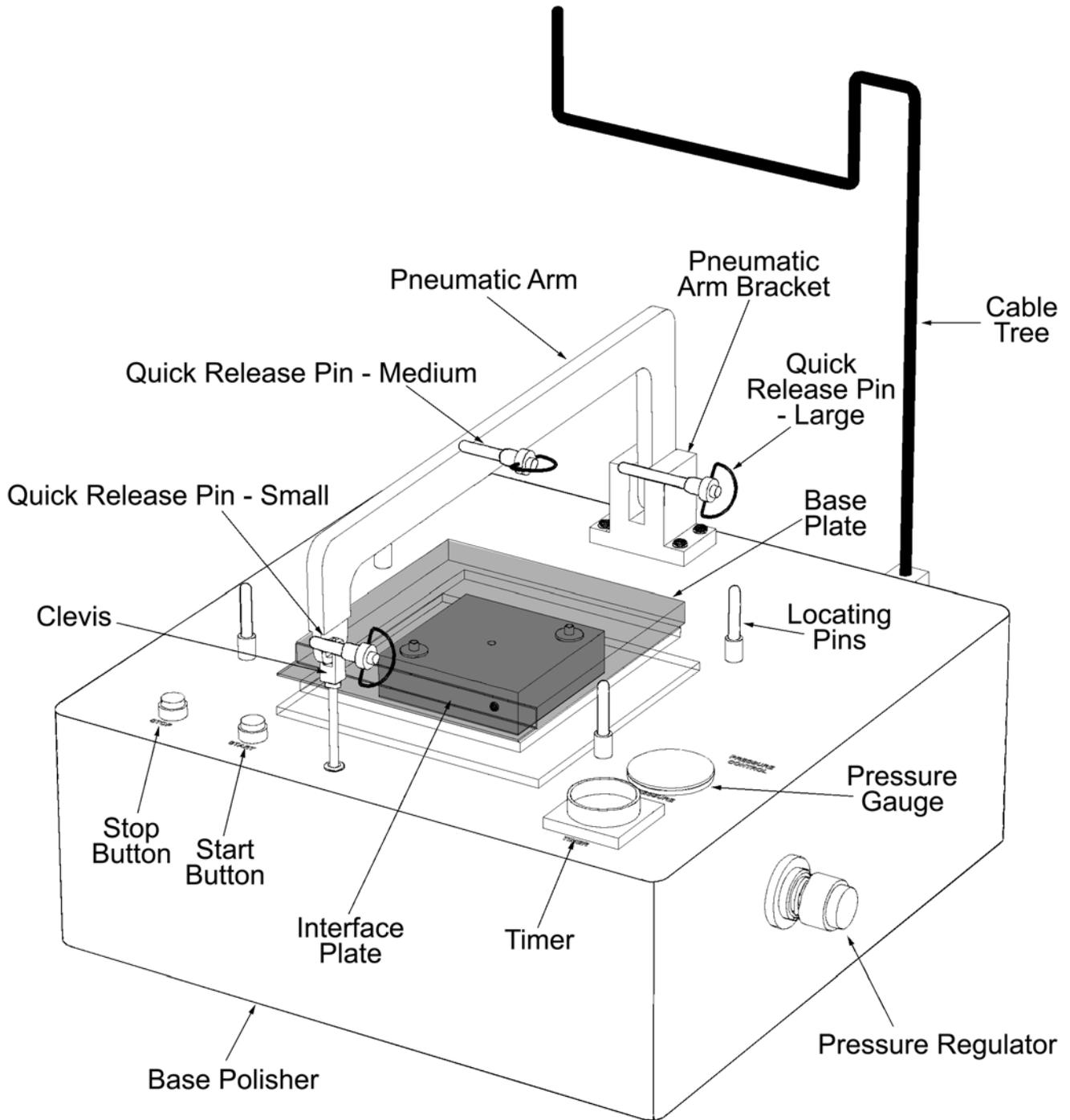
DS Series Polishing Films

863XW-6

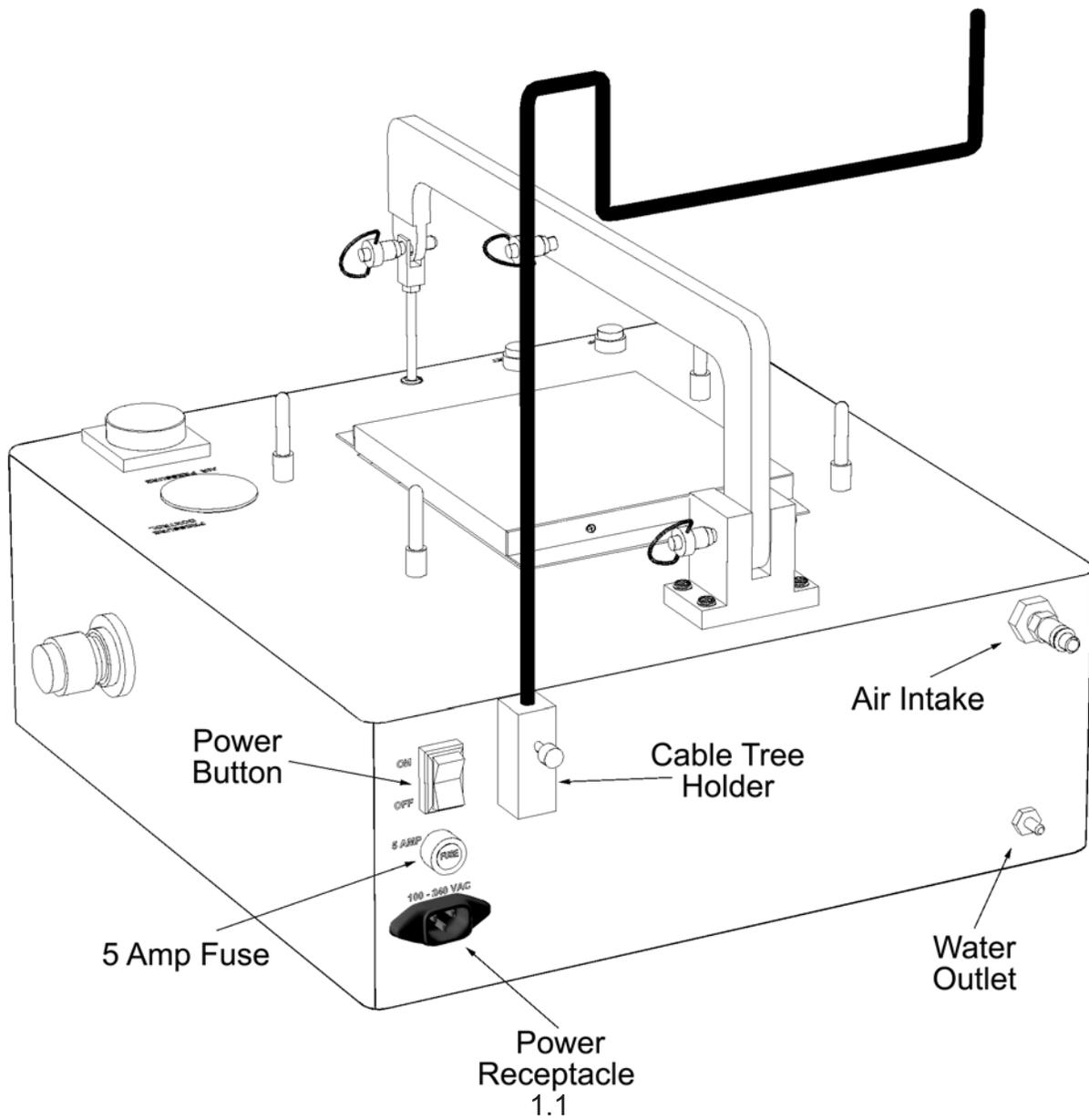
MCP 24

Mass Connector Polisher

Front View



Back View



USERS NOTES

MCP 24-60 Mass Connector Polisher

In this chapter, important notes for the user are given. Please read them carefully before using the MCP24-60.

PRECAUTIONS FOR USING THE MCP24-60

To protect the MCP24-60 and use it correctly, please pay attention to the following notes:

- Do not leave the MCP24-60 outdoors, or where water might damage it.
- Do not subject the MCP24-60 to undue vibrations or drop it.
- Do not touch the operation panel or the switches with wet hands.
- The MCP24-60 is heavy (about 32 lbs.), so place it on 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 MCP 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 MCP24

- 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)

Setting Air Pressure

- To increase the pressure, pull and turn the regulator knob clockwise.
- To reduce the pressure, pull and turn the regulator knob counter-clockwise until the pressure reaches 0-lbs. Once pressure stabilizes at 0-lbs., increase the pressure to desired setting.

FIXTURE PLATES Cleaning And Maintenance

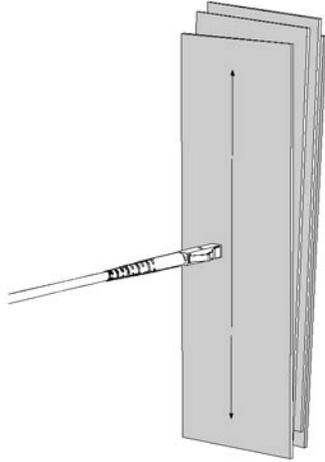
- Polishing plate must be kept clean to eliminate cross contamination.
- Wipe plate clean after each step during polishing procedure using lint-free wipes and distilled water.
- Blow-dry if compressed air is available.
- **Do not drop fixture plate as this can cause serious damage. Do not hit the fixture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

The Shipping Box that the MCP 24 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.

Connector Preparation

This procedure is for “Tent” or Air Polishing your connectors. There are many ways to accomplish this task. If you already have a procedure for Tent Polishing your connectors that works good for you, we recommend staying with your original process.

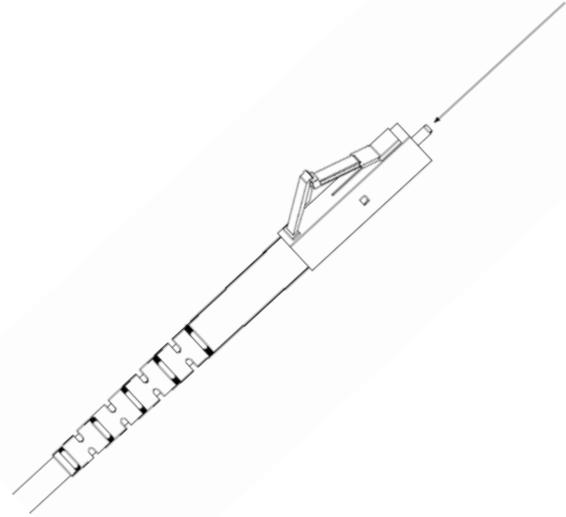
Step 1 “Tent” or Air Polishing



After cleaving the ferrule, “Tent” or Air Polish the connector to remove the excess fiber stub. Take 3-5 pieces of 15 micron silicon carbide film layered together and polish the connectors by moving the film back and forth across the ferrule tip.

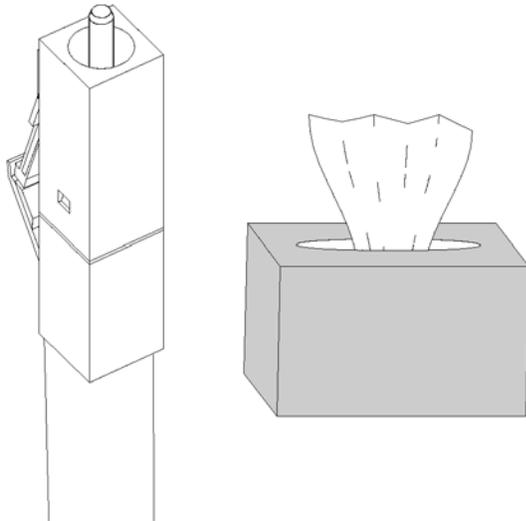
NOTE: If the connector has a small epoxy bead, continue this process until the epoxy bead has been removed.

Step 2



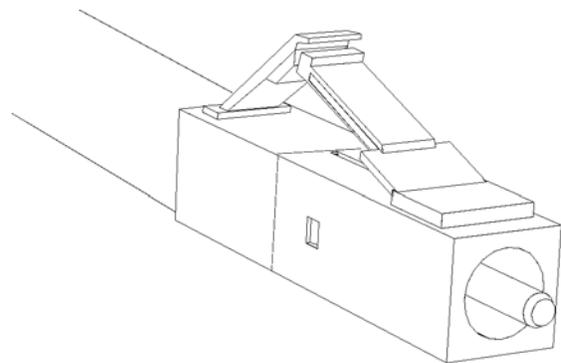
After “Tent” or Air Polishing, press on the ferrule tip to make sure the epoxy bead has not glued the ferrule tip to the LC or MU connector housing.

Step 3



Clean the ferrule end face using a clean lint-free optical wipe.

Step 4

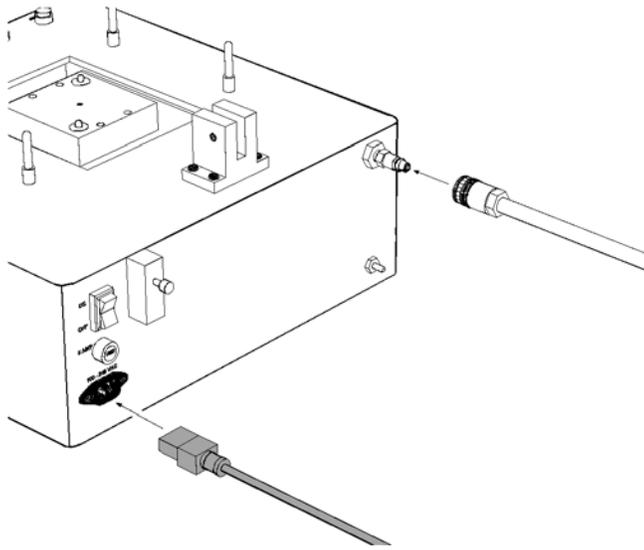


Inspect the fiber end face to make sure that the fiber is not cracked into the ferrule face. Use an Inspecting Scope or Interferometer to accomplish this task.

Cracks and breaks on the ferrule face are caused by bad cleaving.

Machine Setup Instructions

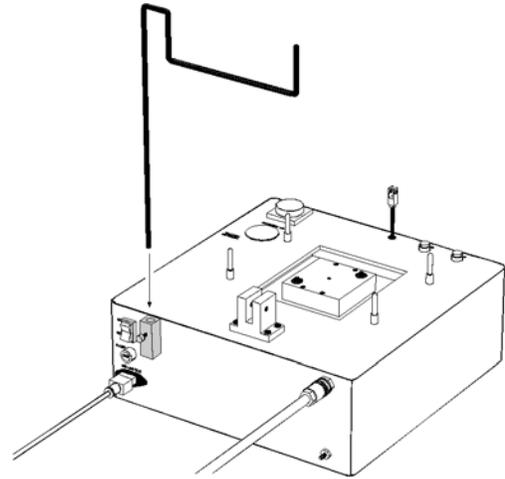
Step 1



1. Plug in Power Cord into the back of the MCP 24-60. Before plugging in air hose, make sure the air pressure is set to zero to avoid damaging internal components and the maximum air pressure does not exceed 100 PSI.

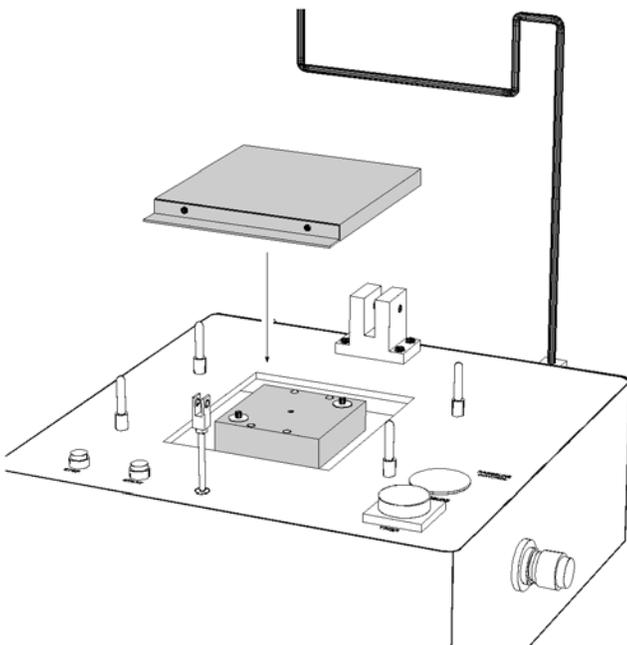
Plug Power Cord into your power source (with surge protection) and the Air Hose into your air source.

Step 2



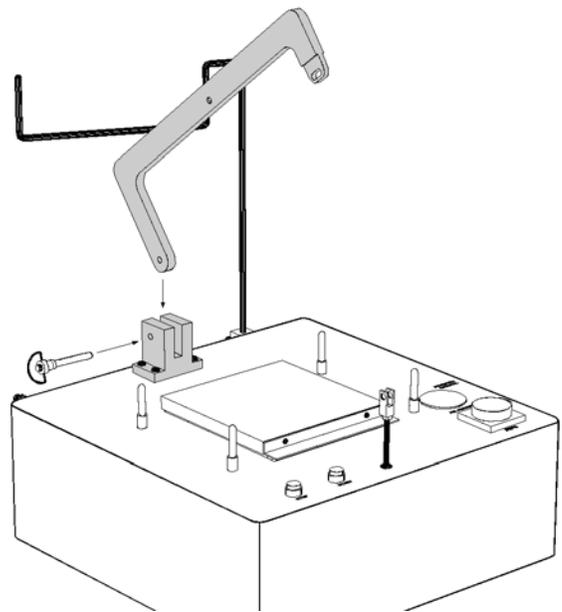
2. Insert the Cable Tree into the back of the MCP 24-60. The Cable Tree attaches just above the power cord.

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 nose pins located on the Interface Plate.

Step 4

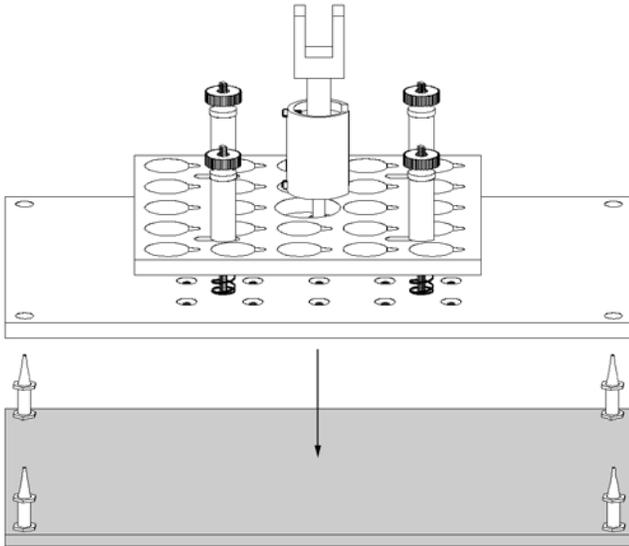


4. Take the Pneumatic Arm and place the longer end into the Pneumatic Arm Bracket located in the rear-center of the MCP 24-60. Line up the open holes. Take the Large Push-Pull Locking Pin and push in and hold the Lock-Release button located on the end of the pin. Insert the pin into the hole and release the Lock-Release button.

Fixture Setup Instructions

LC & MU Fixture Plate

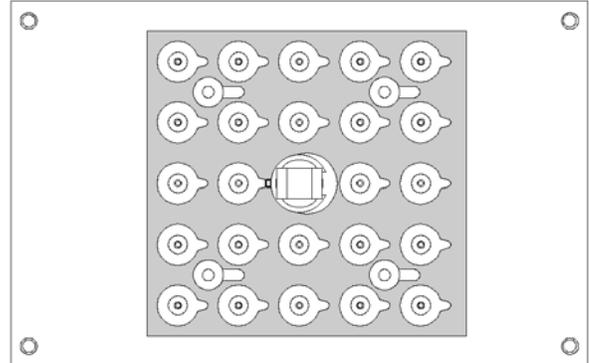
Step 1



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



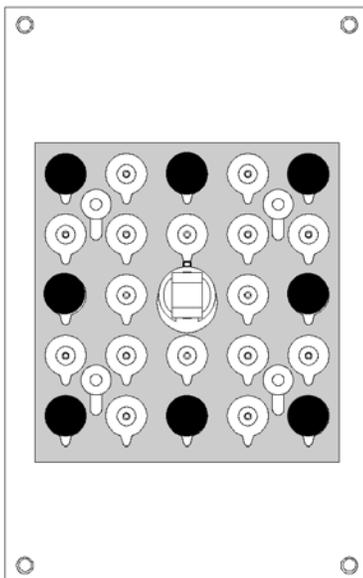
2. Loosen the nuts that hold down Locking Plate and slide it until the large round holes are centered with the holes on the Polishing Fixture.

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

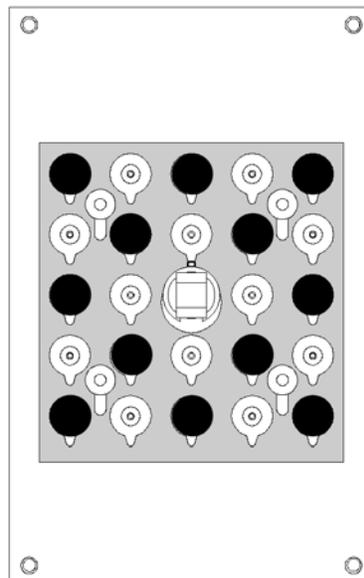
The Fixture Plate is now ready to be loaded with the connectors.

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.

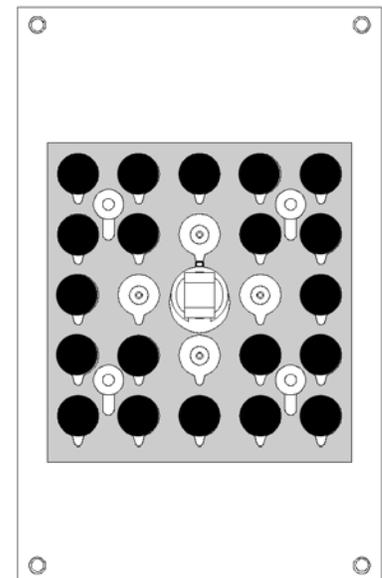
Examples



8 Connectors



12 Connectors

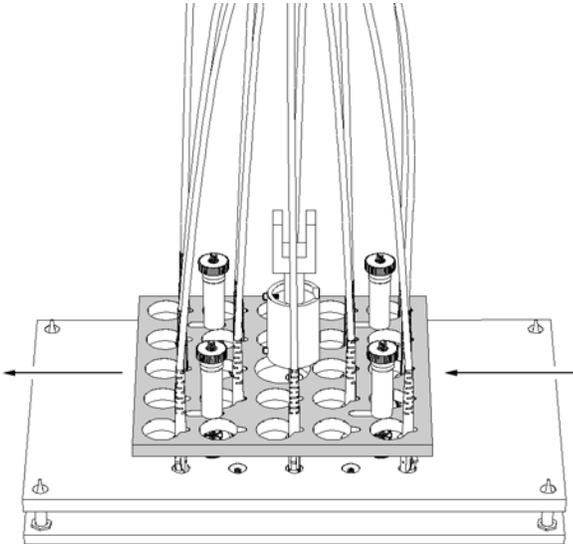


20 Connectors

Fixture Setup Instructions

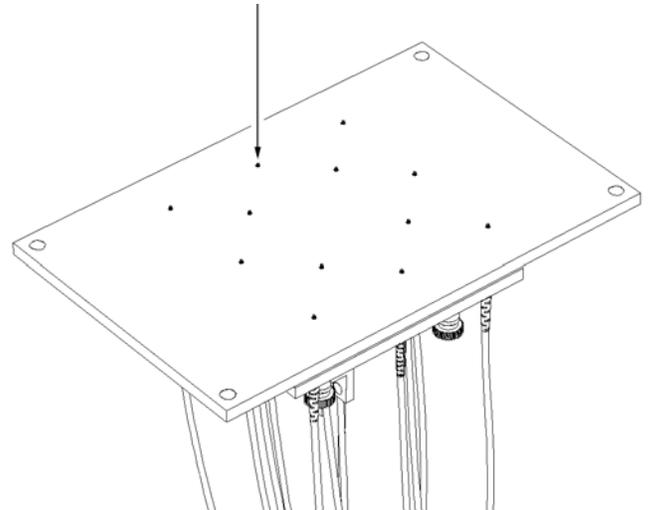
LC & MU Fixture Plate

Step 3



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

Step 4

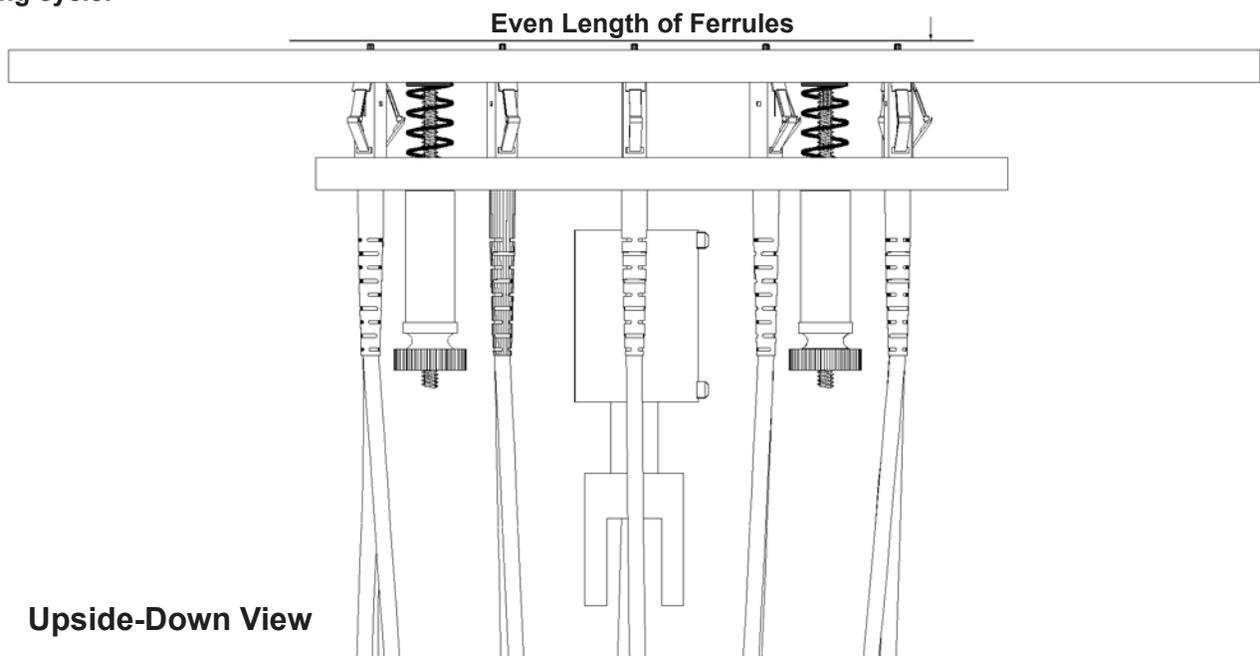


4. Lift up plate and press on the ferrules, checking to make sure the connectors have spring action and none are locked in place. Place the Fixture Plate back onto the Fixture Holder.

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.

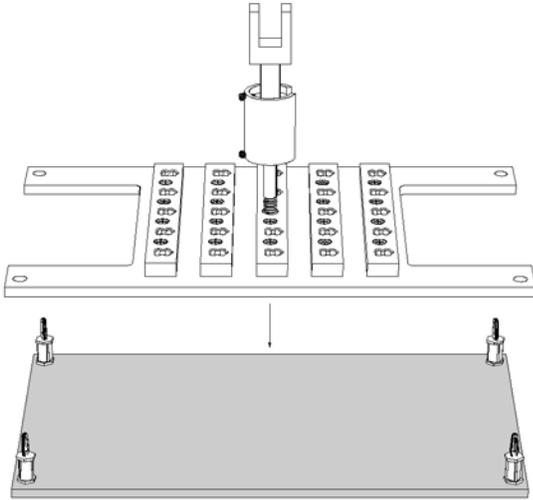


Upside-Down View

Fixture Setup Instructions

LC 'Snap-in' Fixture Plate

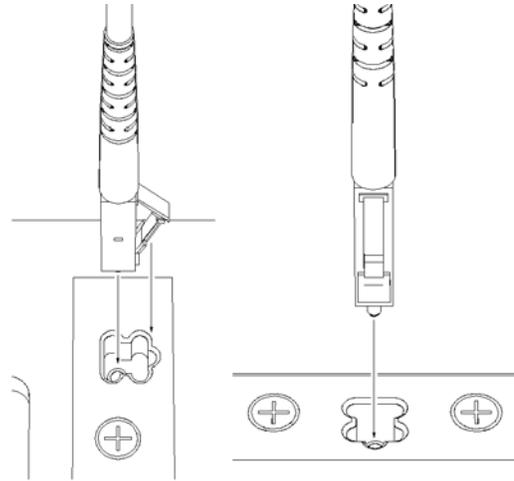
Step 1



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.

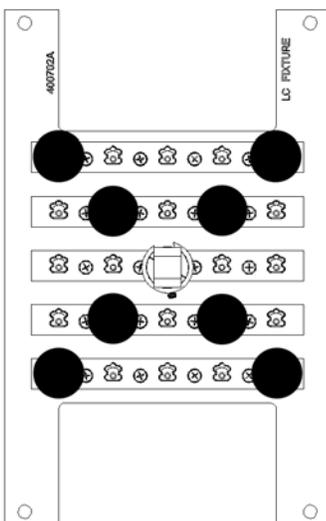
Step 2



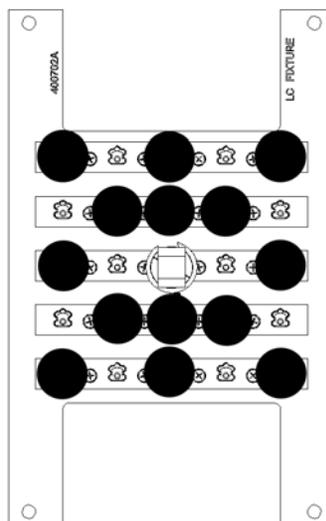
2. Place the LC connector into a connector slot with the locking arm facing the notched side of the connector slot as shown. If done properly the connector will snap into place.

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.

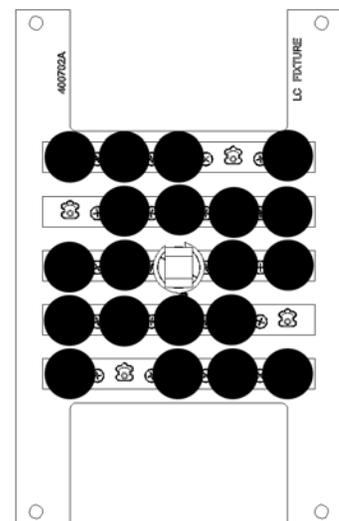
Examples



8 Connectors



14 Connectors

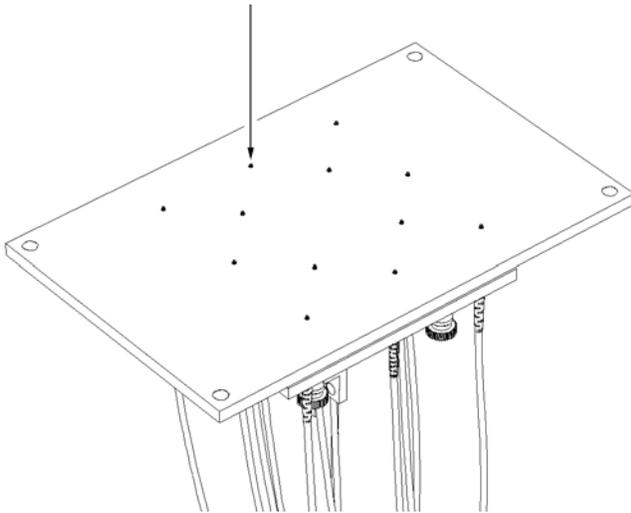


20 Connectors

Fixture Setup Instructions

LC 'Snap-in' Fixture Plate

Step 3

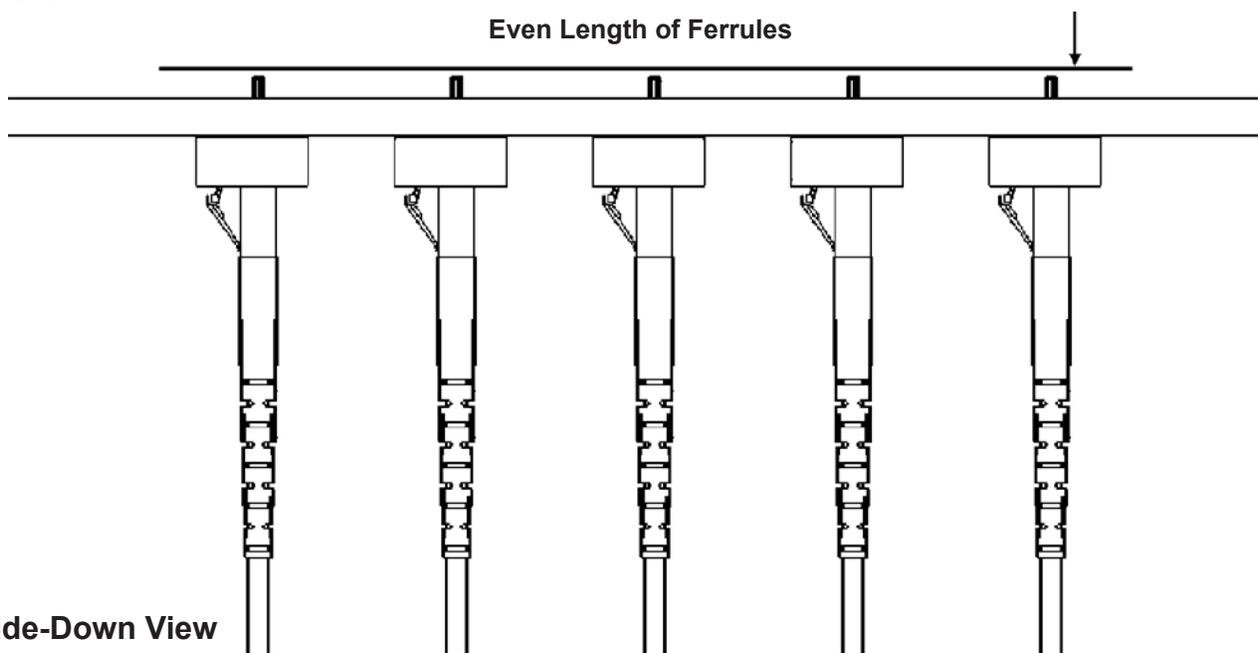


3. Lift up plate and carefully press on the ferrules, checking to make sure the connectors have spring action and none are locked in place. Pressing too hard may cause a connector to pop free. Place the Fixture Plate back onto the Fixture Holder.

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

Polishing Procedure

LC-MU & LC “Snap-in” Fixture Plates

Warning!! Do Not Polish Less Than 8 Connectors At A Time.

Step 1

1. Set the air pressure.

To increase the pressure, pull and turn the Regulator Knob clockwise.

To reduce the pressure, pull and turn the Regulator Knob counter-clockwise until the pressure reaches 0-lbs. Then increase the pressure to desired setting.

Use the guide below to set the air pressure according to the number of connectors that are being polished.

Pressure VS Connector Quantity

LC - MU FIXTURE PLATE

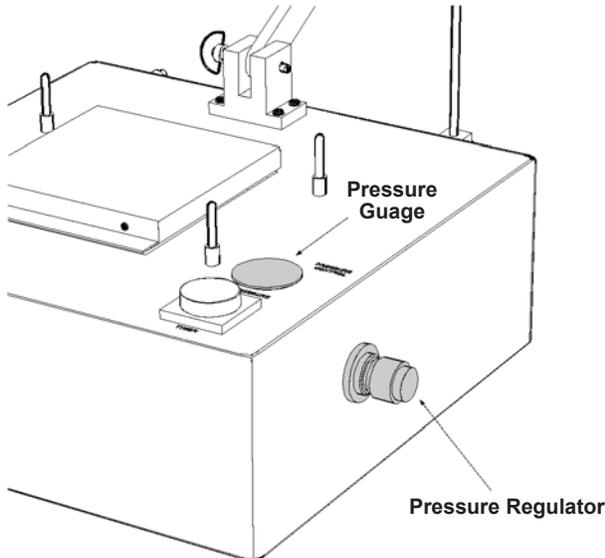
8-12 connectors = 0 PSI (No Weight Needed)
13-16 connectors = 1 PSI
17-20 connectors = 2.5 PSI
21-24 connectors = 4 PSI

LC “Snap-in” FIXTURE PLATE

8-12 connectors = 0 PSI (No Weight Needed)
13-16 connectors = 2.5 PSI
17-20 connectors = 3.5 PSI
21-24 connectors = 5 PSI

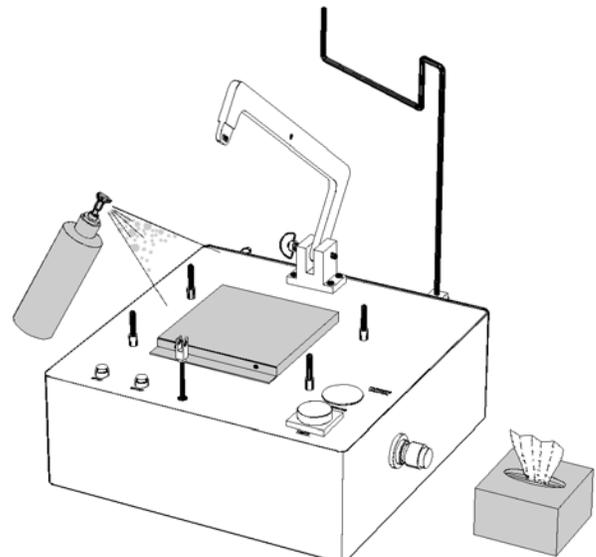
The exact amount of pressure is determined by connector quality composition and desired final radius.

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



Step 2

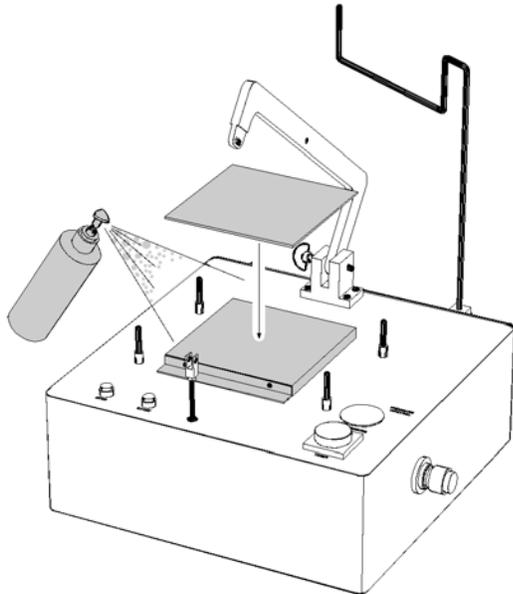
2. Make sure the surface of the Base Plate is clean. Spray a very small amount of distilled water onto the top of the Base Plate. Use a Lint-Free Optic Wipe to clean the surface.



Polishing Procedure

LC-MU & LC “Snap-in” Fixture Plates

Step 3

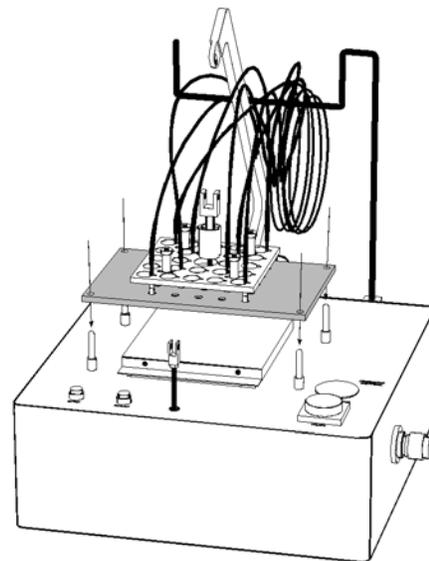


3. Spray a very small amount of distilled water onto the surface of the Base Plate.

Place an 80 Durometer Glass Filled 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.

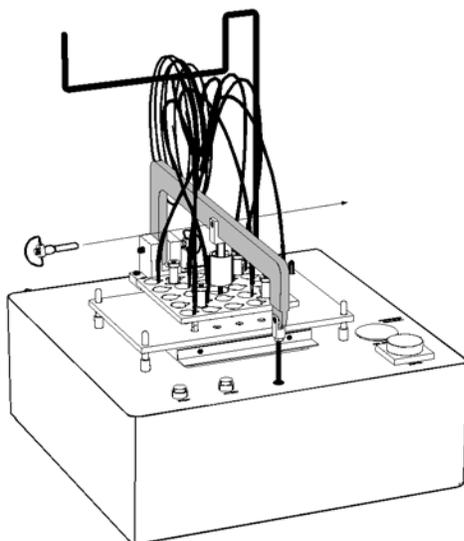
Step 4



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

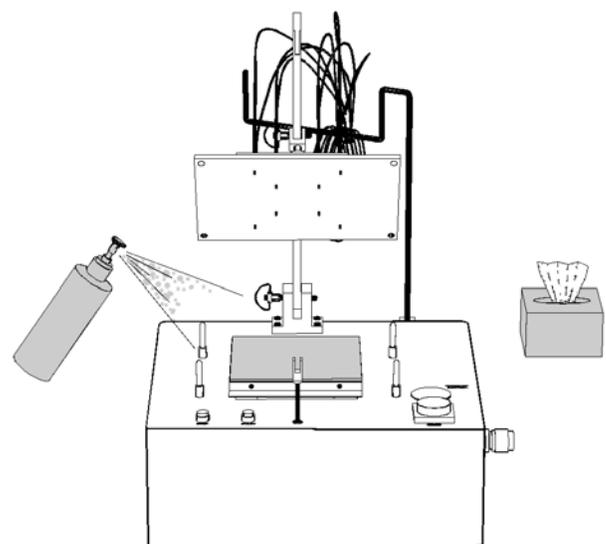
Set the Polishing Fixture onto the 4 pins that surround the Base Plate.

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



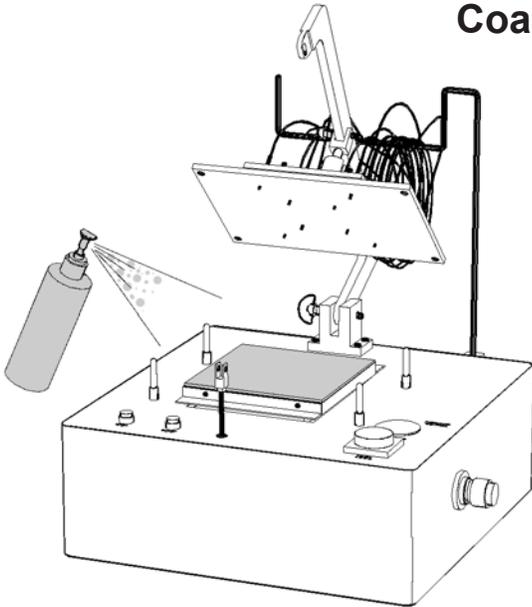
6. Lift the arm to expose the Rubber Pad. Spray distilled water onto the Rubber Pad and use a Lint-Free Optical Wipe to clean the surface.

Polishing Procedure

LC-MU & LC “Snap-in” Fixture Plates

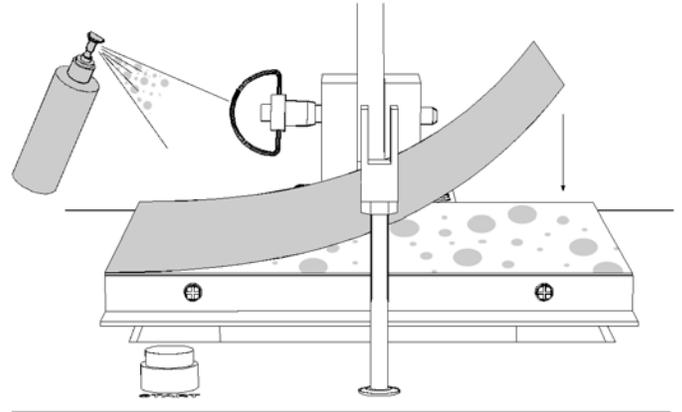
(Due to the small size of the LC & MU Connectors, this process accomplishes both epoxy removal and coarse lapping film polishing.)

Step 7 Coarse Lapping Film



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.

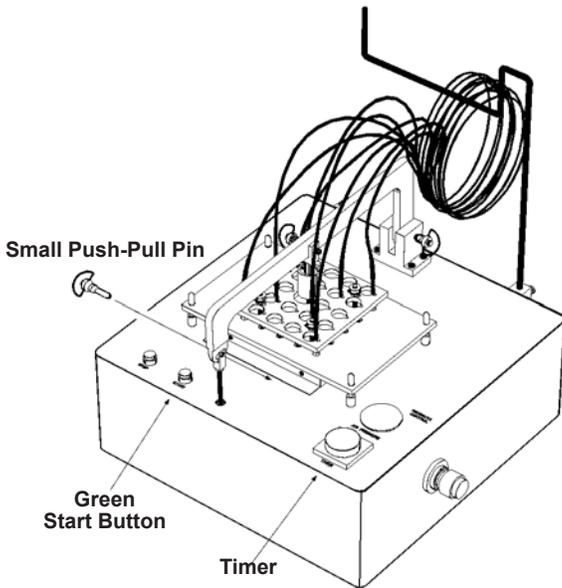


7b. Place the 6 um Diamond film with the smooth shiny side down on the rubber pad.

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.

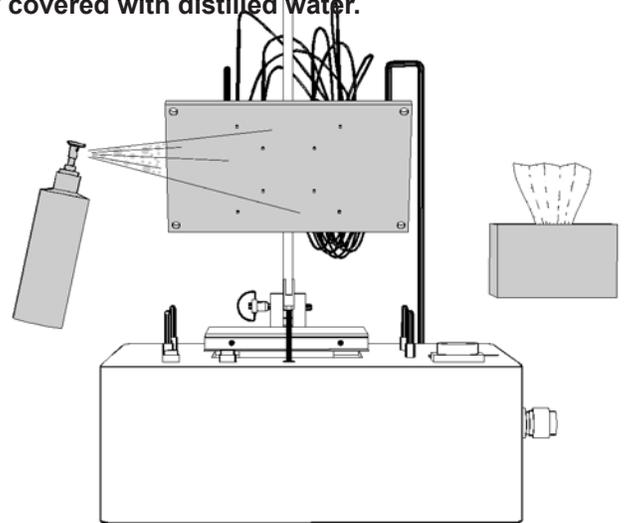
Spray distilled water onto the surface of the film again. Make sure the surface of the film is completely covered with distilled water.



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.

Set the timer to 45 seconds and press the Green Button.



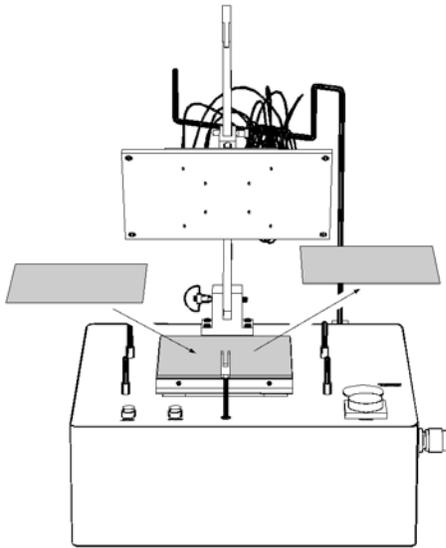
7d. After polishing has finished, remove the Small Push-Pull Pin and lift the polishing plate.

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

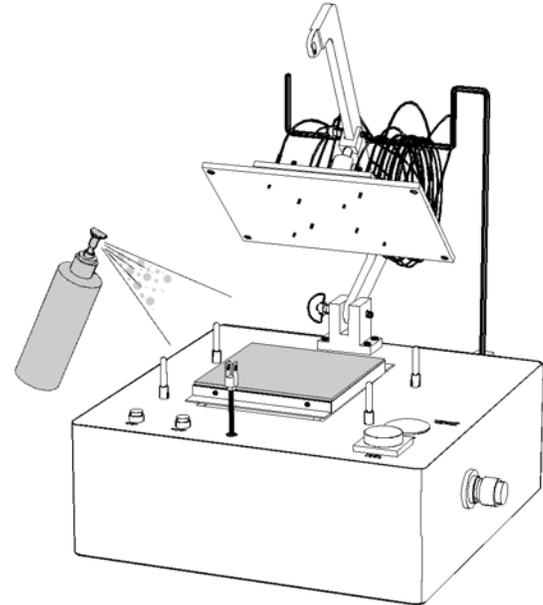
LC-MU & LC “Snap-in” Fixture Plates

Step 8 Medium Coarse Lapping Film



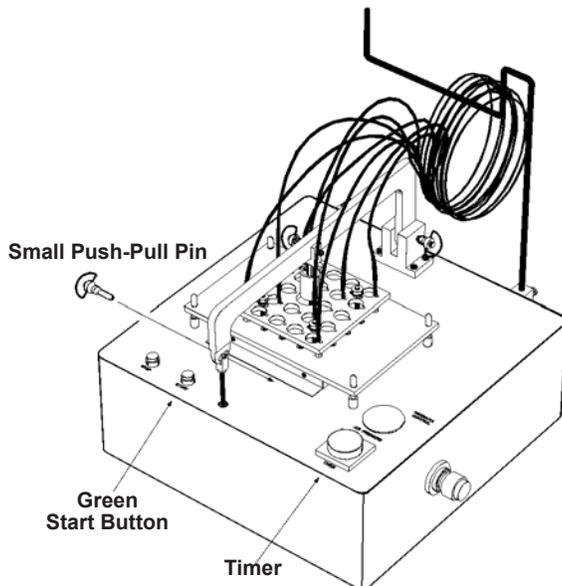
8a. Replace the 6 um Diamond Film with the 3 um Diamond Film.

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



8b. 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.

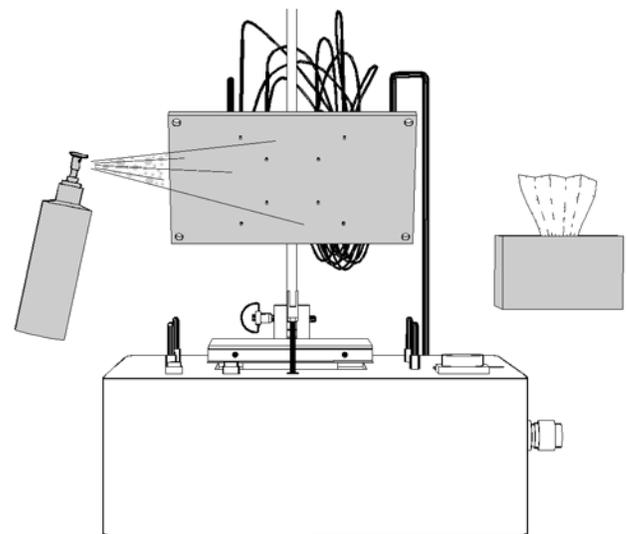
Again spray distilled water on the film completely covering the surface.



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.

Set the timer to 45 seconds and press the Green Button.



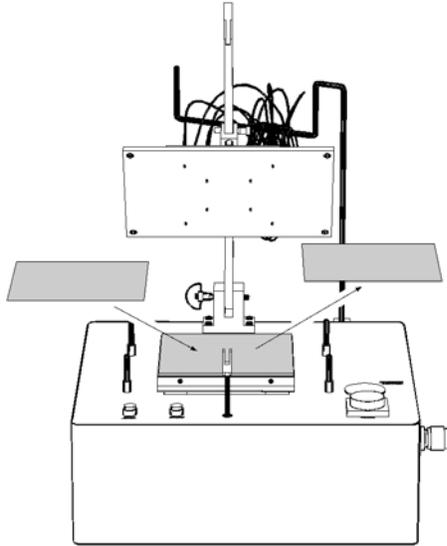
8d. After polishing has finished, remove the Small Push-Pull Pin and lift the polishing plate.

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

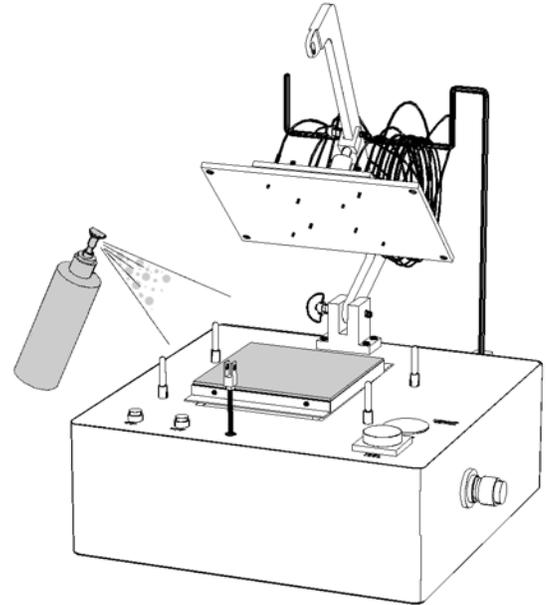
LC-MU & LC “Snap-in” Fixture Plates

Step 9 Fine Lapping Film



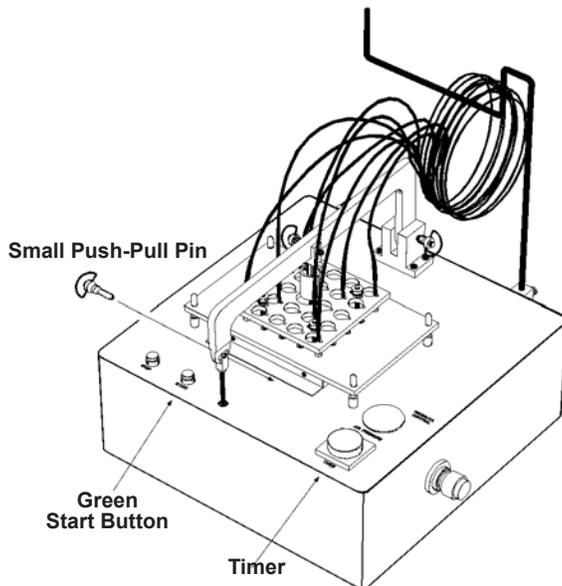
9a. Replace the 3 um Diamond Film with the 1 um Diamond Film.

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.

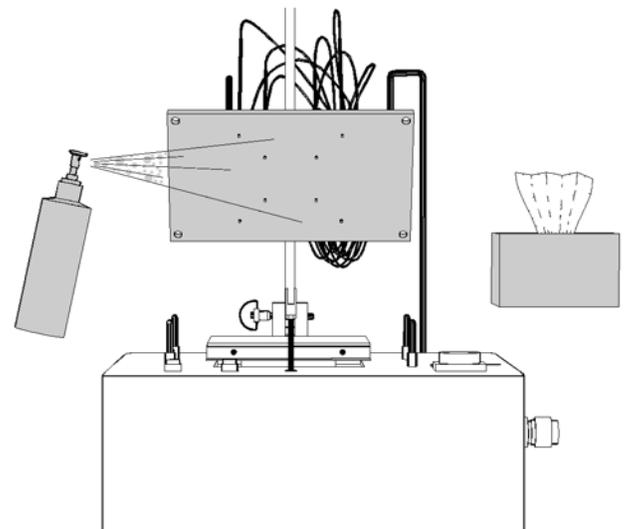
Again spray distilled water on the film completely covering the surface.



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.

Set the timer to 45 seconds and press the Green Button.



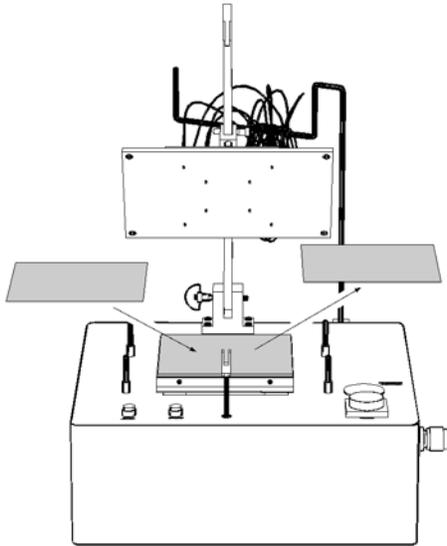
9d. After polishing has finished, remove the Small Push-Pull Pin and lift the polishing plate.

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.

Polishing Procedure

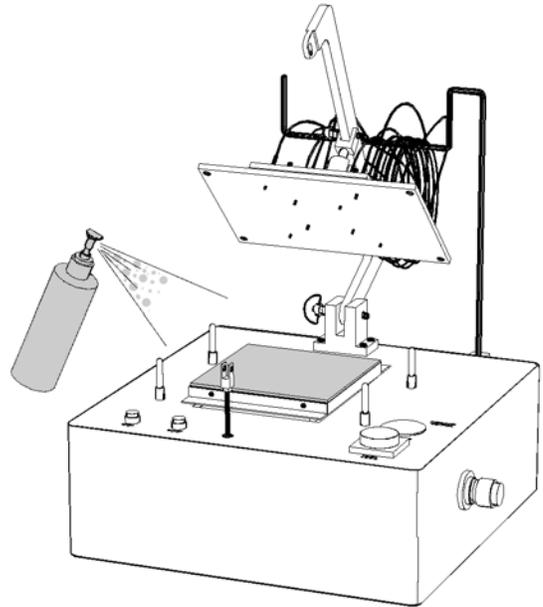
LC-MU & LC “Snap-in” Fixture Plates

Step 10 Final Polishing Film



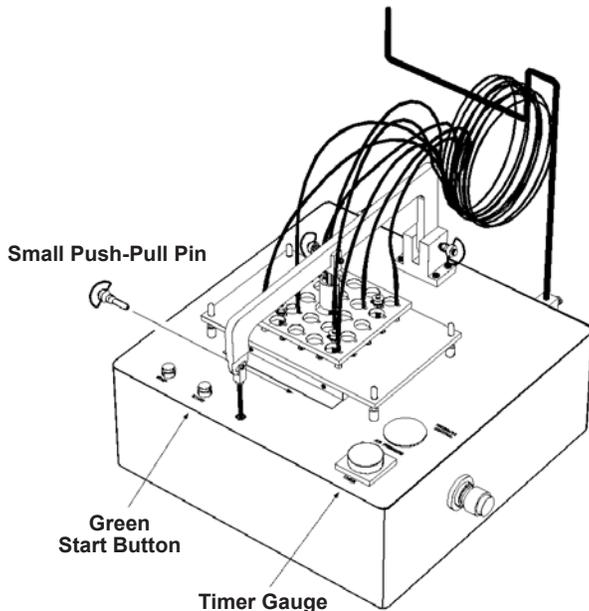
10a. Replace the 1 um Diamond Film with the Final Polishing film.

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



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.

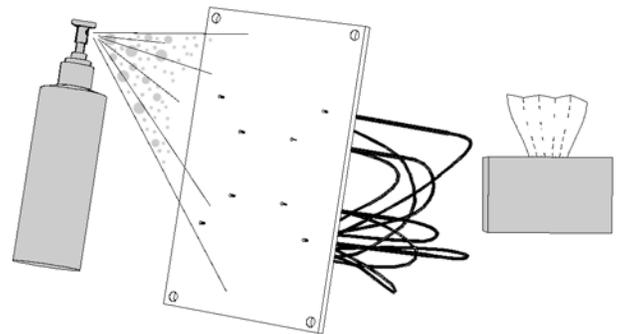


10c. Lower the polishing plate onto the 4 locating pins making sure that it lies flat on the base plate.

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

Set the timer for 1 minute 45 seconds and press the Green Button.

Step 11 Cleaning Fixture Plate



11. Remove both the Small and Medium Push-Pull Pins. Raise the Pnuematic 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.

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.

Nanometer Technologies Inc
2501 Golden Hill Rd
Paso Robles, Ca 93446

Tel: (805) 226-7332
Fax: (805) 226-8753
www.nanometer.com

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

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

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 & 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)

NOTES:

Maintenance for Mcp12, 24, 48 Polishers

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. Systems with air (Mcp24 & 48) need to be checked out with a soapy water test (small paint brush and a container of soapy water), 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 than 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

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

Bellcore Spec's

Radius of Curvature

7-30 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:

NANOMETER TECHNOLOGIES

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