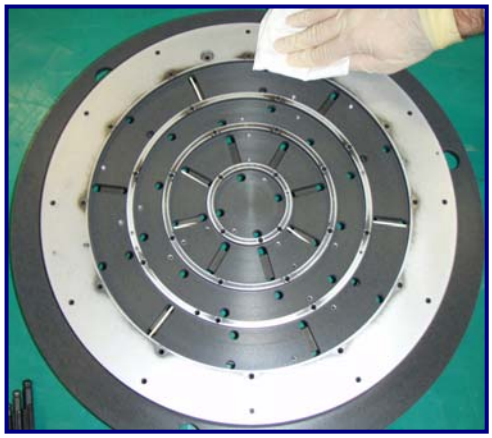
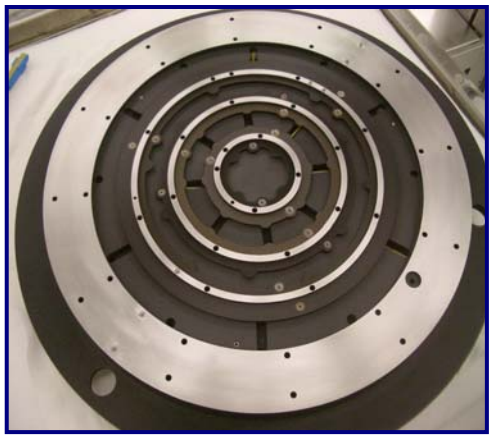


BEFORE

Foamtec International
Wilshire Contamination Control Division
cleaning critical surfaces



AFTER

VACUUM CHAMBER PM TECHNIQUE
LAM 2300 EXELAN FLEX OXIDE ETCH HOT PLATE

OBJECTIVE:

TO EFFECTIVELY PM THE LAM OXIDE ETCH HOT PLATE IN A TIMELY MANNER, WHILE IMPROVING TOOL RECOVERY AND REDUCING PARTICLE PROBLEMS ASSOCIATED WITH TRYING TO CLEAN WITH SCOTCHBRITE

Vacuum Chamber: LAM 2300 EXELAN FLEX OXIDE ETCH
Vacuum Chamber Process Residue: ACCUMULATED RESIDUE FROM BACKSIDE OF ELECTRODE
Vacuum Chamber Components: HOT PLATE

Old Procedure:
1+ hours using ScotchBrite®, IPA and fab wipers
Recovery time: Varies with particle issues
Interval: PM Hot Plate on every LAM OXIDE ETCH PM every two weeks

New Procedure:
1 hour using Diamond ScrubPAD, ScrubWRIGHT™ Pen, MiraWIPE® and MiraSWABS®
Recovery time: Improved recovery time with particle reduction

Vacuum Chamber Products:
LAM 2300 OXIDE ETCH HOT PLATE PM KIT
PM Kit P/N: HT4500-LAMHP1

- (1) HT9423 CushionPAD 24" X 24"
- (1) HT4536D-10-1 360 Grit Diamond ScrubPAD
- (1) HT4536DW-1 360 Grit Diamond ScrubBELT®
- (1) FTPEN-1 ScrubWRIGHT™ PEN
- (1) HT4754 UltraSOLV® Sponge
- (2) HT1511FC-5 MiraSWABS® (10 MiraSWABS®)
- (2) HT5790S-5 MiraWIPES® (10 MiraWIPES®)

LAM 2300 EXELAN FLEX HOT PLATE PM PROCEDURE:

View "How to" instructional videos on http://www.foamtecintlwcc.com/flash/

Step 1: Using proper procedures and **safety guidelines** remove LAM OXIDE ETCH Hot Plate from ETCH Chamber and prepare for PM

Step 2: Place HT9423 Foam CushionPAD onto a flat solid work area, this will protect the hot plate during the cleaning procedure (See Fig 1)

Fig 1: Foam CushionPAD to be placed on flat work area

Step 3: Safely place hot plate on top of CushionPAD (See Fig 2)

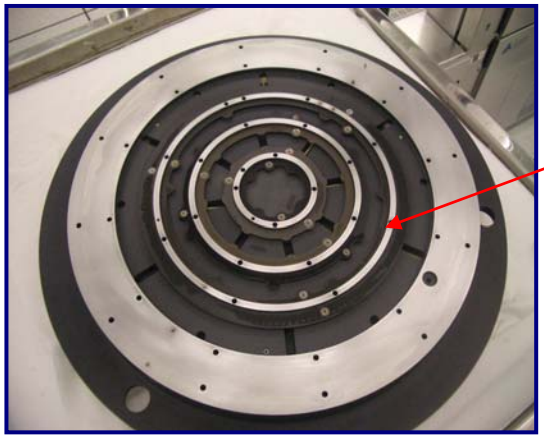
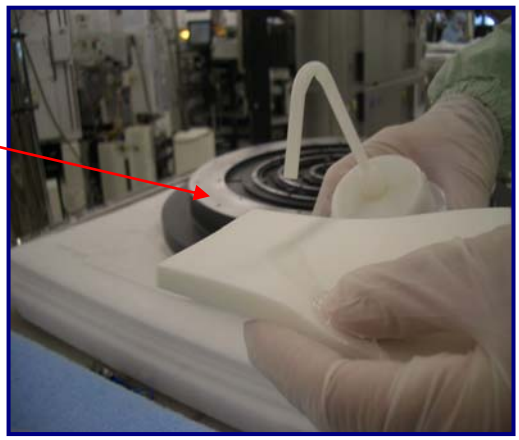


Fig 2: Hot plate placed on top of Foam CushionPAD

LAM 2300 EXELAN FLEX HOT PLATE PM PROCEDURE (CONT'D):

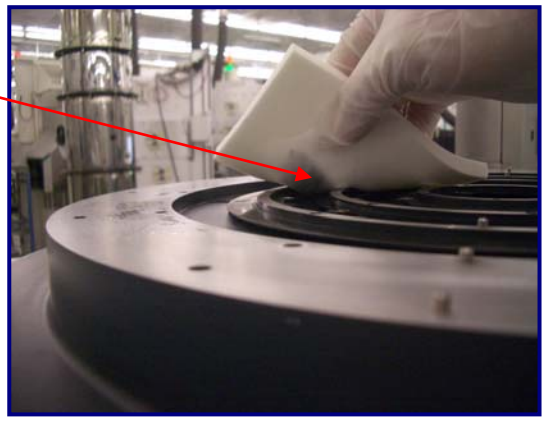
Step 4: Take the HT4754 UltraSOLV® Sponge and lightly dampen with DI water (See Fig 3)

Fig 3: Lightly dampen UltraSOLV® Sponge with DI water



Step 5: Using the lightly dampened UltraSOLV® Sponge, pre-wipe the entire hot plate to remove any flaking or loose buildup (See Fig 4)

Fig 4: UltraSOLV® Sponge pre-wiping the hot plate



Step 6: Lightly dampen the HT4536D 360 Grit Diamond ScrubPAD with DI water and proceed to gently scrub off the buildup on top of the hot plate (See Fig 5 & 6)

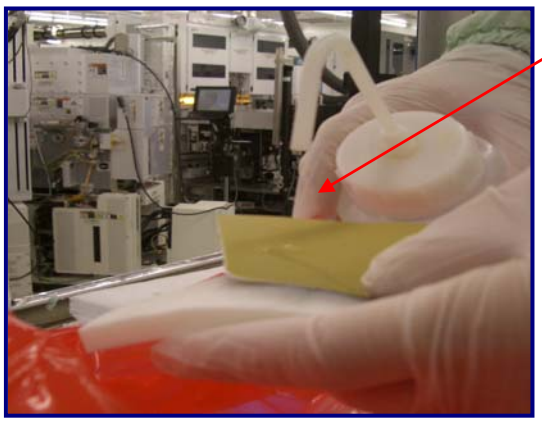


Fig 5: Lightly dampen ScrubPAD with DI water

Fig 6: Gently scrub off buildup throughout ETCH hot plate

LAM 2300 EXELAN FLEX HOT PLATE PM PROCEDURE (CONT'D):

Step 7: Using the lightly dampened UltraSOLV® Sponge wipe away the buildup as it becomes loose on top of the hot plate (See Fig 7)

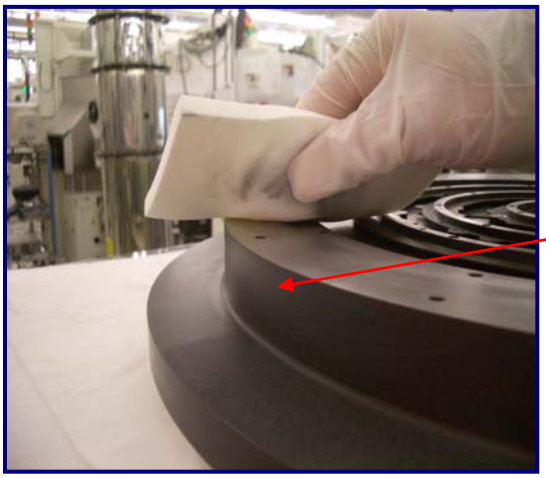


Fig 7: Lightly dampened UltraSOLV® Sponge removing loose buildup on top of hot plate

Step 8: As Diamond ScrubPAD begins to load up with deposition, pull ScrubPAD across UltraSOLV® Sponge to unload (See Fig 8, 9 & 10)

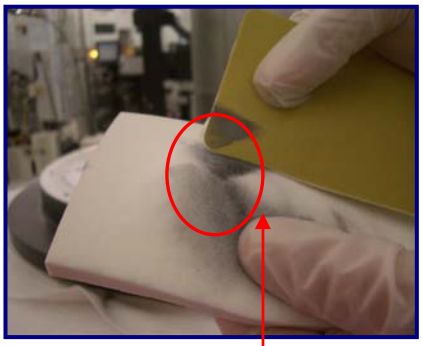


Fig 8: ScrubPAD loaded with deposition

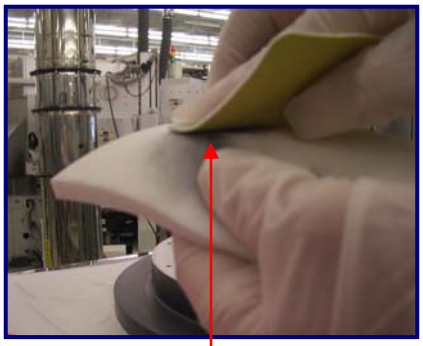


Fig 9: Pull ScrubPAD across UltraSOLV® Sponge

Fig 10: Unloaded ScrubPAD

LAM 2300 EXELAN FLEX HOT PLATE PM PROCEDURE (CONT'D):

Step 9: Continue to rinse UltraSOLV® Sponge with DI water as sponge begins to load up with deposition (See Fig 11 & 12)

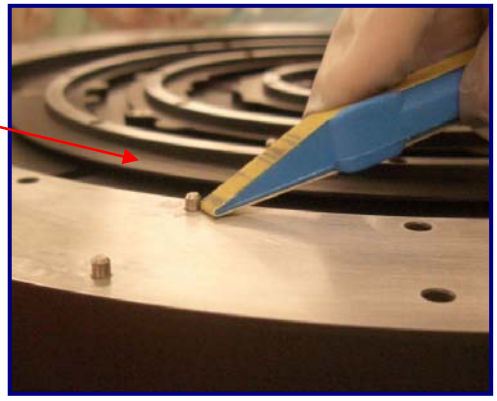
Fig 11: UltraSOLV® Sponge loaded with deposition

Fig 12: UltraSOLV® Sponge free of deposition after rinse in DI water

Step 10: Repeat steps 4 – 9, scrubbing the remaining areas of the LAM ETCH Hot Plate, ensuring to rinse UltraSOLV® Sponge and unload 360 Grit Diamond ScrubPAD, as necessary

Step 11: Use HT4536DW 360 Grit Diamond ScrubBELT® with FTPEN-1 ScrubWRIGHT™ Pen to clean around any hard to reach areas, such as the "guide pins" that normally get very dirty (See Fig 13)

Fig 13: Tip of **FTPEN**-1 scrubbing off buildup from hard to reach areas



NOTE: WHEN USING THE FTPEN-1, ENSURE TO ROTATE THE ScrubBELT® AROUND THE PEN AS NECESSARY TO KEEP A FRESH PORTION OF THE ScrubBELT® AVAILABLE AT THE TIP OF THE FTPEN. THIS IS THE AREA YOU ARE USING WHEN GENTLY SCRUBBING ANY DETAILED AREAS

LAM 2300 EXELAN FLEX HOT PLATE PM PROCEDURE (CONT'D):

IMPORTANT NOTE

THE USE OF HT5790S MiraWIPES® AND HT1511FC MiraSWABS® DURING THE FINAL WIPE PORTION OF THE PROCEDURE IS A CRITICAL STEP TO EFFECTIVELY REMOVE PARTICLE DEFECTS FROM ETCH HOT PLATE

NOTE: Figure below shows how much more deposition the Foamtec International MiraWIPE® can remove from a critical surface compared to the standard fab wiper, making the MiraWIPE® FINAL WIPE PROCEDURE the most **CRITICAL STEP** of the PM procedure (See Fig 14a & 14b)

Fig 14a: Current fab wiper after completely wiping chamber

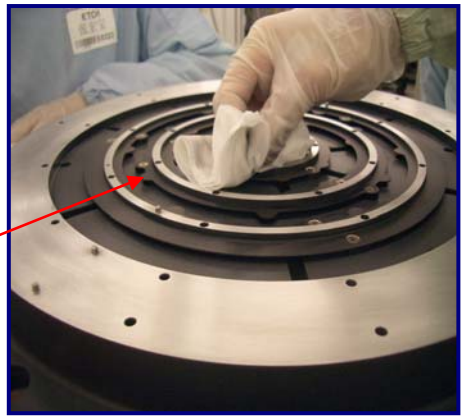
Fig 14b: Particles picked up using HT5790S MiraWIPES® after completely wiping with current fab wiper

MiraWIPES® are the KEY STEP for DEFECT REDUCTION and IMPROVED TOOL RECOVERY

Step 12: Once scrubbing off buildup throughout hot plate is complete, saturate the HT5790S MiraWIPE® with IPA and perform an initial wipe down of hot plate (See Fig 15 & 16)

Fig 15: Saturate MiraWIPES® with IPA for initial wipe down

Fig 16: Perform an initial wipe down of hot plate using MiraWIPES®

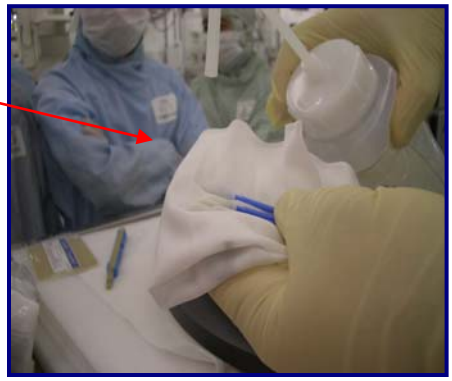


LAM 2300 EXELAN FLEX HOT PLATE PM PROCEDURE (CONT'D):

Step 13: Replace MiraWIPE® with a fresh MiraWIPE® as necessary, and continue wiping hot plate until MiraWIPE® is no longer able to remove visible film

Step 14: When initial wipe down of hot plate is complete, place the HT1511FC MiraSWABS® into a MiraWIPE® and saturate with IPA (See Fig 17)

Fig 17: Placing MiraSWABS® into a MiraWIPE® and saturating with IPA



Step 15: Take saturated MiraSWABS® and wipe off build up from all the hard to reach areas throughout hot plate assembly (See Fig 18 & 19)

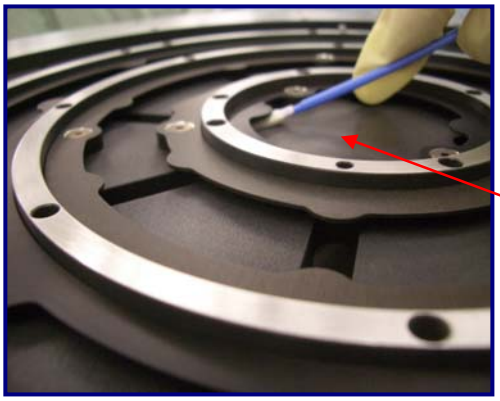
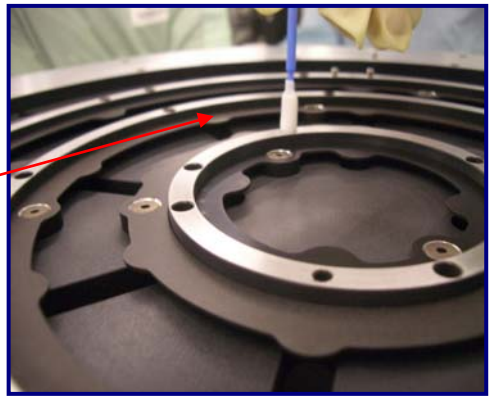
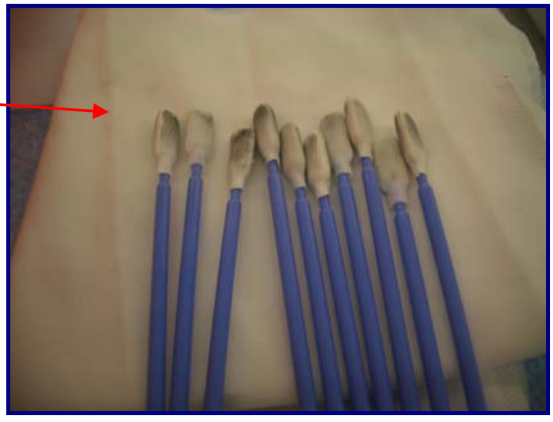


Fig 18 & 19: Saturated MiraSWABS® removing film from hard to reach areas throughout hot plate



NOTE: IMPORTANT TO USE MiraWIPES® ALONG WITH THE MiraSWABS® AS THE SWABS WILL REMOVE LOOSE DEPOSITION FROM THE HARD TO REACH AREAS THROUGHOUT THE ETCH HOT PLATE

MiraWIPES® and MiraSWABS® are the KEY STEPS for DEFECT REDUCTION and IMPROVED TOOL RECOVERY



LAM 2300 EXELAN FLEX HOT PLATE PM PROCEDURE (CONT'D):

Step 16: When wiping hard to reach areas with MiraSWABS® is complete, saturate a MiraWIPES® with IPA and perform a FINAL WIPE PROCEDURE of the hot plate (See Fig 20)

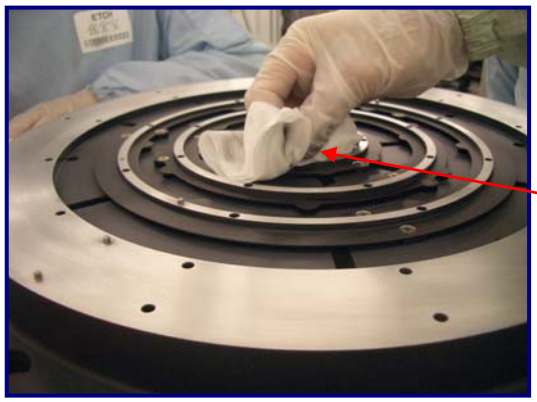


Fig 20: Taking remaining MiraWIPES® and performing a FINAL WIPE PROCEDURE using IPA

NOTE: TO ENSURE BEST RECOVERY RESULTS, RECOMMEND USING FOAMTEC INTERNATIONAL WCC CLEANING TECHNIQUE FOR REMAINDER OF LAM 2300 OXIDE ETCH CHAMBER PM

- **USE IPA WITH MiraWIPES® AND MiraSWABS® AND WIPE DOWN REMAINING CHAMBER PARTS AND CHAMBER BODY**
- **FOLLOW APPLICATION NOTE FOR CLEANING OF GRAPHITE ELECTRODE**

Step 17: Using LAM approved procedures, return hot plate and electrode to LAM OXIDE ETCH Chamber and return tool to production

COMPLETED HOT PLATE PM