



VACUUM CHAMBER PM TECHNIQUE LAM 9600 Metal ETCH WET-Strip Procedure

OBJECTIVE:

TO PM THE LAM 9600 METAL ETCH CHAMBER IN AN EFFECTIVE AND TIMELY MANNER WHILE IMPROVING PARTICLE PERFORMANCE, TOOL RECOVERY AND MAXIMIZING TOOL UPTIME

Vacuum Chamber:

Vacuum Chamber Process Residue:

Vacuum Chamber Components:

Solvent:

LAM METAL ETCHER

PROCESS INDUCED RESIDUE

METAL ETCH CHAMBER, VAT VALVE, CHAMBER LID
AND CHAMBER PARTS

DI WATER, IPA (ONLY)

Vacuum Chamber Products:

- (1) [HT4528D](#)-10 280 Grit Diamond UltraSOLV[®] ScrubPAD
- (1) [HT4580D](#)-10 800 Grit Diamond UltraSOLV[®] ScrubPAD
- (2) [HT111328D](#)-1 280 Grit Diamond UltraSOLV[®] Straight ScrubTIP[®]
- (2) [HT111380D](#)-1 800 Grit Diamond UltraSOLV[®] Straight ScrubTIP[®]
- (2) [HT174913PD](#)-1 1350 Grit Diamond 3" ScrubTIP[®]
- (1) [HT4754](#) UltraSOLV[®] Sponge
- (2) [HT1790](#)-5 UltraSOLV[®] Swab
- (2) [HT1750](#)-5 UltraSOLV[®] Swab
- (2) [HT5790S](#)-25 MiraWIPE[®] Wipers

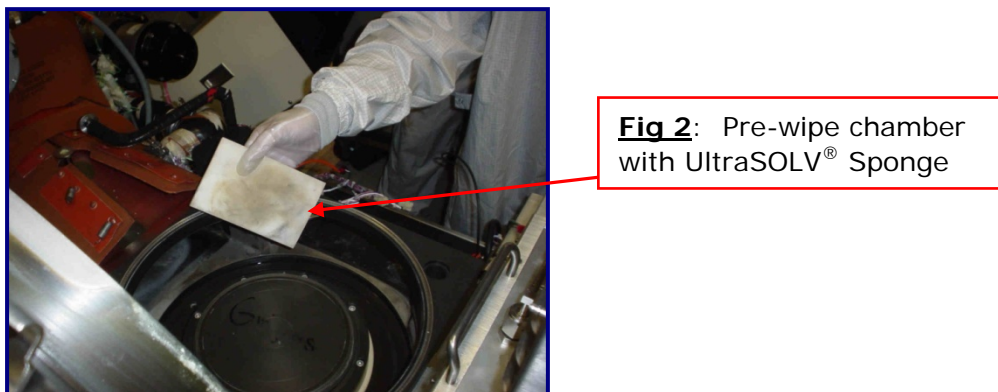
LAM 9600 METAL ETCH WET-STRIP PM PROCEDURE:

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

- Step 1:** Using proper procedures and **safety guidelines** properly shutdown and vent entire Metal ETCH chamber
- Step 2:** Reduce ETCH chamber heater settings to 35°C to 40°C
- Step 3:** Remove slit valve doors and place in container with DI water to soak (See Fig 1a)



- Step 4:** Thoroughly moisten all areas within chamber with DI water using [HT4754 UltraSOLV[®] Sponge](#); including slit valves, chamber walls, vat valve and chamber lid
- Step 5:** Allow Metal ETCH chamber to soak with DI water for one hour
- Step 6:** Place [HT4754 UltraSOLV[®] Sponge](#), [UltraSOLV[®] 280 Grit Diamond ScrubPAD](#) and [280 Grit Diamond ScrubTIP[®]](#) in container with approximately 1 liter of DI water (See Fig 1b)
- Step 7:** Soak and ring out the [UltraSOLV[®] Sponge](#) and proceed to wipe down all areas throughout Metal ETCH chamber (**this will remove flakes and gross buildup**). Continue to repeat process until [UltraSOLV[®] Sponge](#) will no longer remove deposition (See Fig 2)

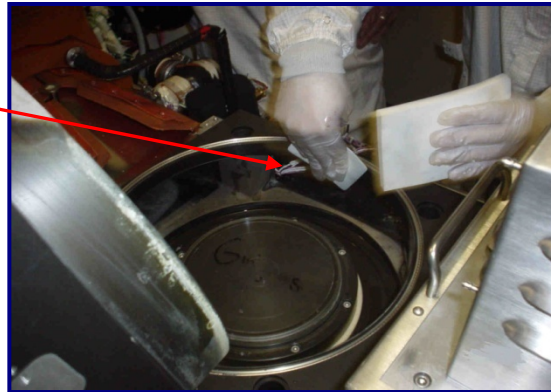


LAM 9600 METAL ETCH WET-STRIP PM PROCEDURE (CONT'D):

Step 8: With UltraSOLV[®] Sponge, dampen and moisten a 6" to 8" scrubbing area within the chamber

Step 9: With dampened UltraSOLV[®] 280 Grit Diamond ScrubPAD, scrub off deposition from moistened area (See Fig 3)

Fig 3: Scrub off deposition using Diamond ScrubPAD



Step 10: As deposition begins to release from chamber areas, remove by taking the dampened UltraSOLV[®] Sponge and wiping the affected area (See Fig 4)

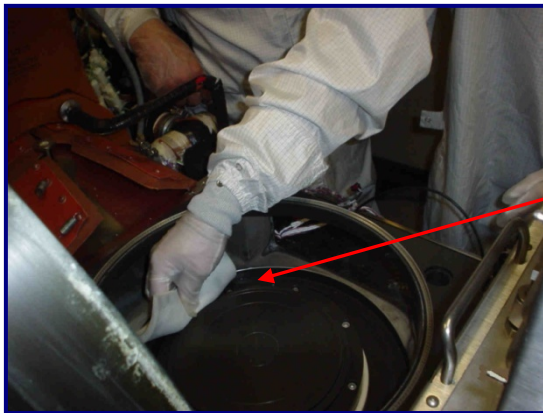


Fig 4: Wiping the scrub areas using the UltraSOLV[®] Sponge

Step 11: Continue to repeat process throughout entire chamber until all deposition is removed (see notes for Special Cleaning Tasks)

LAM 9600 METAL ETCH WET-STRIP PM PROCEDURE (CONT'D):

Step 12: As UltraSOLV® ScrubPAD begins to load-up with deposition; it can be cleaned off by dragging across UltraSOLV® Sponge in one direction (See Fig 5, 6 & 7)



Fig 5: ScrubPAD loaded with deposition

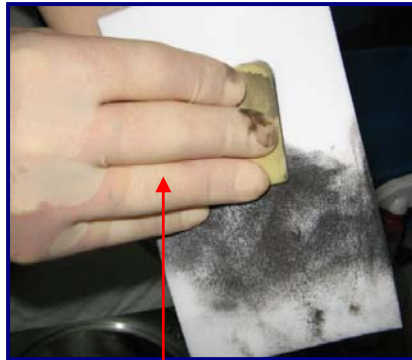


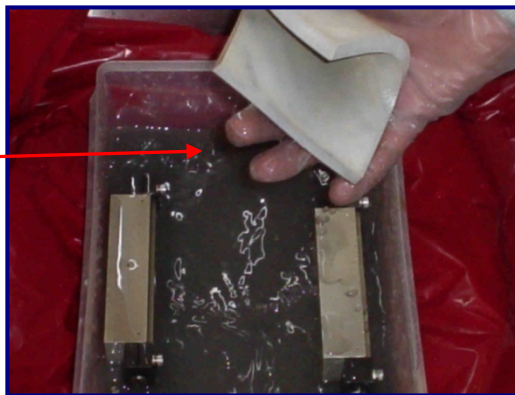
Fig 6: Pull ScrubPAD across UltraSOLV® Sponge



Fig 7: Unloaded ScrubPAD

Step 13: As UltraSOLV® Sponge begins to load-up with deposition; it can be rinsed off and rung-out in container of DI water (See Fig 8)

Fig 8: Unloading the UltraSOLV® Sponge with DI water



Step 14: As water becomes filled with deposition, recommend disposing dirty DI water in appropriate hazardous waste collection tank and replacing with fresh DI water

Step 15: After all areas within entire chamber have been effectively cleaned, take UltraSOLV® 800 Grit Diamond ScrubPAD, and using the same technique, proceed to lightly scrub all areas scrubbed previously

NOTE: Ensure to wipe chamber with a freshly rinsed out UltraSOLV® Sponge to prep the chamber for FINAL IPA WIPE-DOWN

LAM 9600 METAL ETCH WET-STRIP PM PROCEDURE (CONT'D):

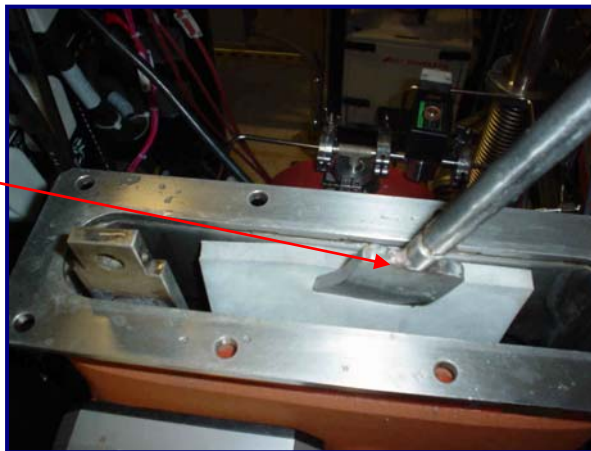
SPECIAL TASKS (VAT VALVE, TIGHT CORNERS, O-RING GROOVES, MANOMETERS & REMOVABLE PARTS):

VAT VALVE:

Recommend cleaning VAT valve after chamber clean, as UltraSOLV[®] 280 Grit Diamond ScrubPAD will be softer, more flexible and easier to work with after cleaning ETCH chamber

Step 16: Take a DI water dampened [HT4754](#) UltraSOLV[®] Sponge and proceed to reach into VAT valve from top and bottom to thoroughly wipe out the VAT valve (See Fig 9)

Fig 9: Wipe-down VAT valve using UltraSOLV[®] Sponge



Step 17: Using modified extender tool, slide UltraSOLV[®] Sponge down into VAT valve to wipe areas not able to reach previously

Step 18: Using the dampened UltraSOLV[®] 280 Grit Diamond ScrubPAD and the modified extender tool, slide the ScrubPAD into the VAT valve to effectively clean down into the valve (See Fig 10)

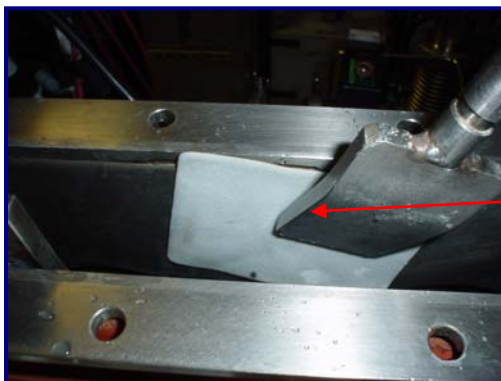


Fig 10: Scrub down into the VAT valve using the Diamond ScrubPAD

NOTE: Use ScrubPAD after cleaning chamber as pad will soften & be easier to use in VAT valve

LAM 9600 METAL ETCH WET-STRIP PM PROCEDURE (CONT'D):

- Step 19:** Using same technique, wipe the inside of the VAT valve with the [HT4754 UltraSOLV[®] Sponge](#)
- Step 20:** Repeat sequence as necessary to remove as much deposition as possible
- Step 21:** In order to clean the tight corners and seals within the VAT valve still not reachable, moisten the 280 Grit Diamond ScrubTIP[®] and scrub the affected areas (See Fig 11)

Fig 11: Clean tight corners and edges using the Diamond ScrubTIP[®]



- Step 22:** Using the UltraSOLV[®] Foam Swabs in the same manner as the UltraSOLV[®] Sponge, wipe out the loosened deposition in the tight corners and seals within the VAT valve
- Step 23:** Take UltraSOLV[®] 800 Grit Diamond ScrubPAD to perform final scrub and wipe out thoroughly using freshly rinsed UltraSOLV[®] Sponge
- Step 24:** With fresh MiraWIPES[®] and IPA, thoroughly wipe down all areas throughout VAT valve

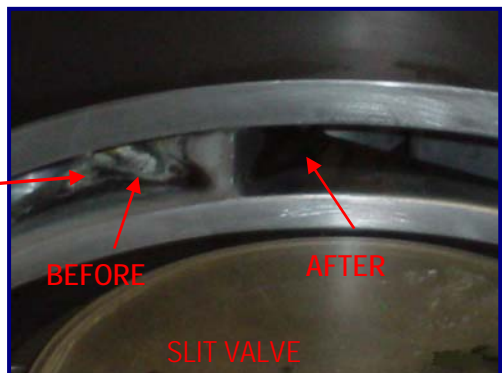
TIGHT CORNERS, EDGES & O’RING GROOVES:

- Step 25:** Dampen the 280 Grit Diamond and 800 Grit Diamond ScrubTIPS[®] with DI water and proceed to scrub all hard to reach tight corners and edges (See Fig 12 & 13)



Fig 12 & 13: Use Diamond ScrubTIP[®] to clean tight corners and grooves

280 Grit Diamond ScrubTIP[®] cleaning track on bottom of Chamber

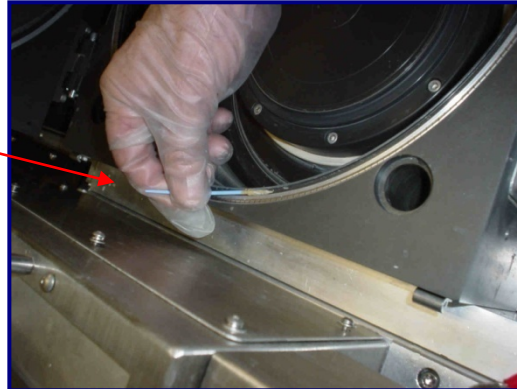


LAM 9600 METAL ETCH WET-STRIP PM PROCEDURE (CONT'D):

Step 26: In all areas the UltraSOLV[®] Sponge may not reach, use the UltraSOLV[®] Swabs in the same manner as the UltraSOLV[®] Sponge and wipe out the loosened deposition in the tight corners and edges

Step 27: For o-ring grooves, use 1350 Grit Diamond ScrubTIPS[®] provided (See Fig 14)

Fig 14: Use 1350 Grit Diamond ScrubTIPS[®] to polish o-ring grooves



Step 28: Follow o-ring groove with similar size UltraSOLV[®] Swabs for wipe-down

Step 29: With fresh MiraWIPES[®] and IPA, thoroughly wipe down all areas throughout tight corners, edges and o-ring grooves effectively as possible

MANOMETERS:

Step 30: Use dampened 280 Grit Diamond ScrubTIP[®] to reach into manometer plumbing and remove buildup within manometer ports (See Fig 15 & 16)

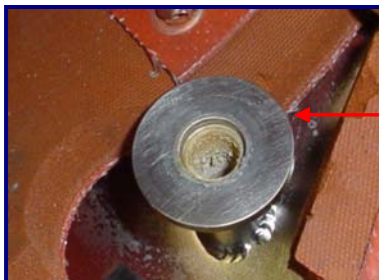
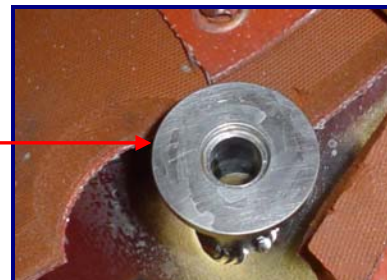


Fig 15 & 16: Use ScrubTIP[®] to clean all plumbing ports



LAM 9600 METAL ETCH WET-STRIP PM PROCEDURE (CONT'D):

Step 31: Use UltraSOLV[®] Swab to remove loosened deposition from within manometer (See Fig 17)



Fig 17: Use UltraSOLV[®] Foam Swabs to wipe out deposition from manometer ports

Step 32: With fresh MiraWIPES[®] and IPA, thoroughly wipe down all areas throughout manometers

REMOVABLE PARTS (SLIT VALVE DOORS, END PORT & END PORT WINDOW):

Step 33: On a designated work bench, wipe down parts with DI water dampened UltraSOLV[®] Sponge

Step 34: Use dampened UltraSOLV[®] 280 Grit Diamond ScrubPAD to remove deposition buildup on affected areas (See Fig 18 & 19)

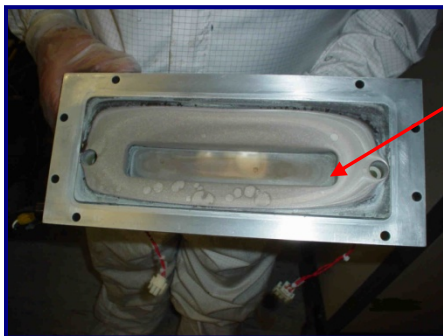
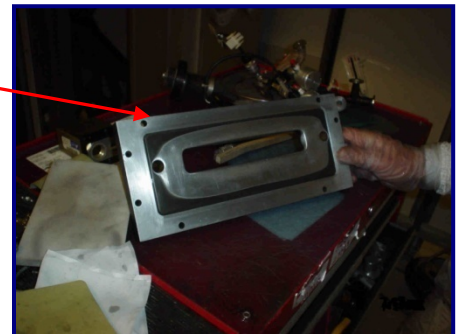


Fig 18 & 19: Use ScrubPAD to clean removable parts



Step 35: Use associated ScrubTIP[®] to scrub tight corners, edges and o-ring grooves

LAM 9600 METAL ETCH WET-STRIP PM PROCEDURE (CONT'D):

Step 36: Use UltraSOLV[®] Sponge and UltraSOLV[®] Swabs to remove loosened deposition from associated areas (See Fig 20 & 21)

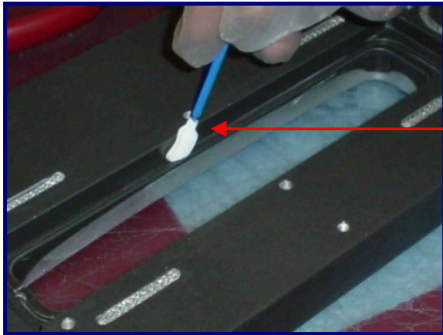
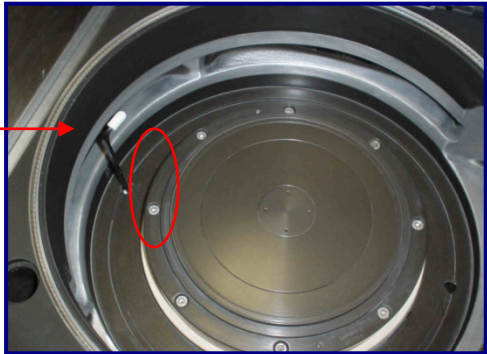


Fig 20 & 21: Use UltraSOLV[®] Swabs for o-ring grooves



FINAL IPA WIPE PROCEDURE:

IMPORTANT NOTE

THIS PORTION OF THE CLEAN IS CRITICAL FOR AN EFFECTIVE TOOL RECOVERY. AS FINAL IPA WIPE NEARS COMPLETION, USE MORE AND MORE FRESH MIRAWIPES[®] TO REDUCE CHANCES OF INTRODUCING PARTICLES BACK INTO THE CHAMBER

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 IPA Wipe the most **CRITICAL STEP** of the PM procedure (See Fig 22a & 22b)

Fig 22a: Current fab wiper after completely wiping LAM 9600



Fig 22b: Particles picked up using HT5790S MiraWIPES[®] after completely wiping with current fab wiper

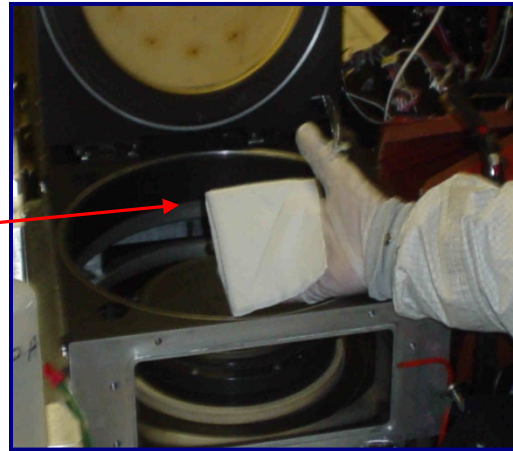
MiraWIPES[®] are the KEY STEP for DEFECT REDUCTION and IMPROVED TOOL RECOVERY

Step 37: With fresh MiraWIPES[®] and IPA, thoroughly wipe down all areas throughout removable parts

LAM 9600 METAL ETCH WET-STRIP PM PROCEDURE (CONT'D):

Step 38: Using a single [HT5790S](#) MiraWIPE[®], folded into quarters, moisten with IPA (See Fig 23)

Fig 23: Use MiraWIPE[®] with IPA for final tool wipe down



Step 39: Working from highest point down; proceed to effectively wipe out entire Metal ETCH chamber, refolding MiraWIPE[®] to expose fresh side of MiraWIPE[®]

Step 40: Continue to repeat this sequence until entire Metal ETCH chamber is effectively wiped out

TOOL RECOVERY:

Step 41: Ensure all PM procedures have been completed and checked off to the point of preparation for tool recovery

Step 42: Just prior to closing chamber lid, effectively wipe out entire chamber one last time using a fresh MiraWIPE[®] with IPA (See Fig 24)

Fig 24: Wipe entire chamber with IPA & MiraWIPES[®] just prior to closing chamber lid



Step 43: Close and seal chamber lid