Cost Effective Equipment

Apogee™ Bonder – Preventative Maintenance Guidelines & Procedures

Vacuum Pump Assembly

The vacuum pump system in the Apogee™ Bonder is of the scroll pump variety and is designed to provide a long service life with a minimum of required maintenance.

Recommendation:

Periodically check the clamps for all vacuum hose connection points to ensure that they are tight. Vacuum pressure cycling, vibration, and other environmental factors can cause them to loosen over time.

Procedure:

Observe Lockout / Tagout Procedures

Wear safety glasses

Every 100 hours of operation or every 1000 wafers processed (whichever comes first), physically check each clamp by grasping the clamp wingnut by hand and turning clockwise. Do not use any tools for this procedure; simple hand-applied force is all that is required. See Figure 1 (below).

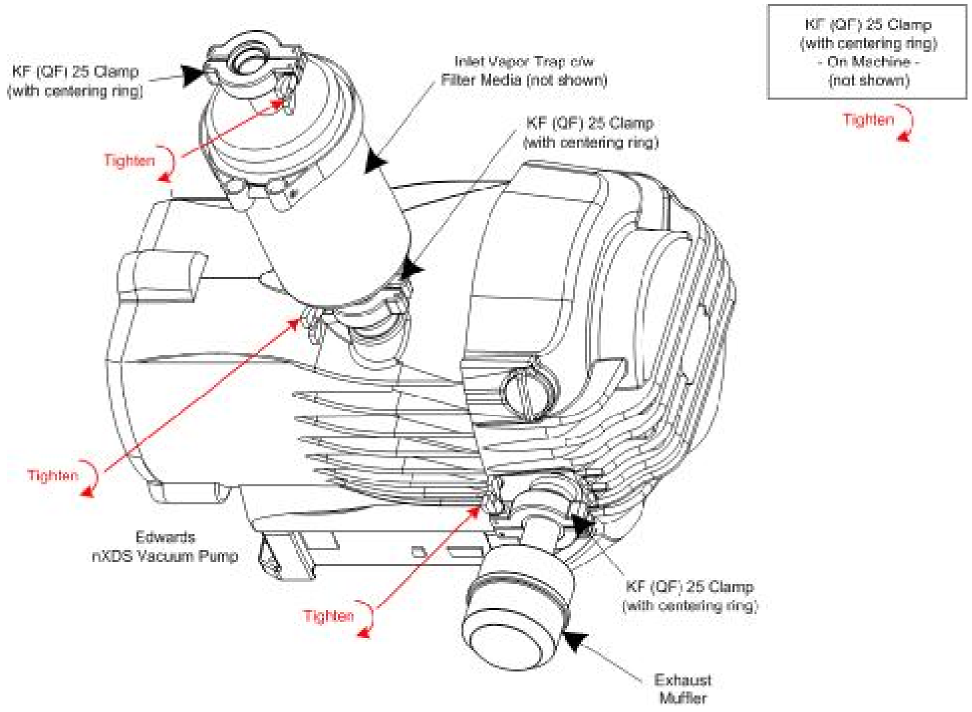

Figure 1: Apogee™ Vacuum Pump Assembly

Recommendation:

Periodically check the filter media in the inlet vapor trap to ensure that it is functioning as intended. The purpose of the filter media in the vapor trap is to capture and collect any vapors that may be drawn from the bonding chamber during a wafer bonding process. The filter media is chosen to prevent a wide variety of vapor types from entering the pump and/or being exhausted through the pump into the room.

Procedure:

Observe Lockout / Tagout Procedures

Wear safety glasses

Do Not Eat or Drink While Performing this Procedure

Wear Protective Gloves

Locate the inlet vapor trap on top of the vacuum pump. See Figure 2 (below).

Remove the hose connecting the vapor trap to the rest of the machine by loosening the vacuum clamp wingnut (Turn counter-clockwise). Remove the clamp and the centering ring that is fitted between the two flanges.

While holding the vapor trap, loosen and remove the vacuum clamp and centering ring securing the trap to the pump.

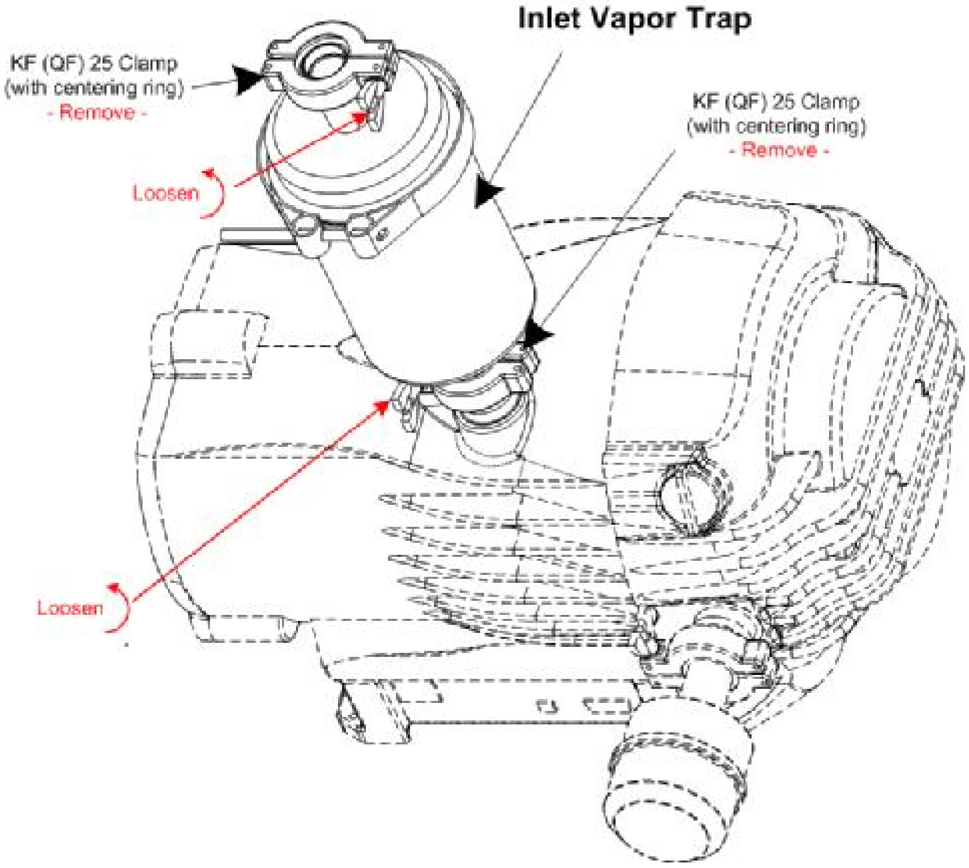

Figure 2: Apogee™ Vapor Trap in Pump Assembly

Disassemble the inlet vapor trap by removing the hex nut and clamp that hold the top and bottom of the trap together. See Figure 3 (below).

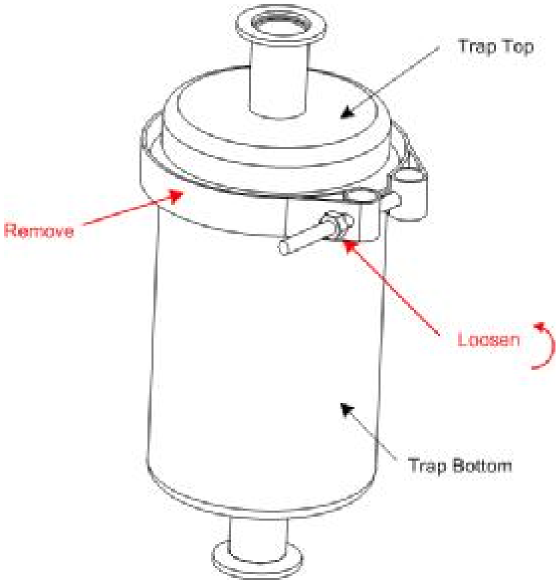

Figure 3: Apogee™ Vapor Trap (detail)

Discard the carbon filter media in a manner suitable for your local area.

Do not discard the metal screens inside the trap since they will need to be re-used.

Replace the screens in the trap bottom to ensure that the carbon media stays contained within the trap bottom. Add replacement carbon media (BSI P/N: 611582). Other filter media types are available to accommodate different bonding materials. Please contact Brewer Science Customer Support for additional assistance in determining which filter media is right for your application.

Re-assemble the trap by reversing the procedure used for disassembling the trap.

Re-attach the trap to the vacuum pump taking care to tighten each vacuum clamp fully.

Lower Chamber Assembly

Recommendation:

Clean the heated bonding platen surface as required to ensure continued performance of the bonding tool and successful bonding of your substrates.

Procedure:

Observe Lockout / Tagout Procedures

Wear safety glasses

Do Not Eat or Drink While Performing this Procedure

Wear Protective Gloves

Caution:
Surfaces may be hot

Allow platen surface to cool. If platen surface is hot, do not touch. Do not attempt to clean a platen that is too hot to touch.

A solvent compatible with the bonding agent used in your specific process should be all that is necessary for routine cleaning. For more persistent stains or heavier fouling, a stainless steel razor blade or glass microscope slide can be used. Use the edge to gently scrape the fouling from the surface of the platen.

Check to ensure that the platen grooves are free from fouling or other foreign objects (i.e. broken wafer shards). Foreign materials in the grooves can interfere with the operation of the wafer alignment/centering system and may have an adverse impact on your bonded wafers.

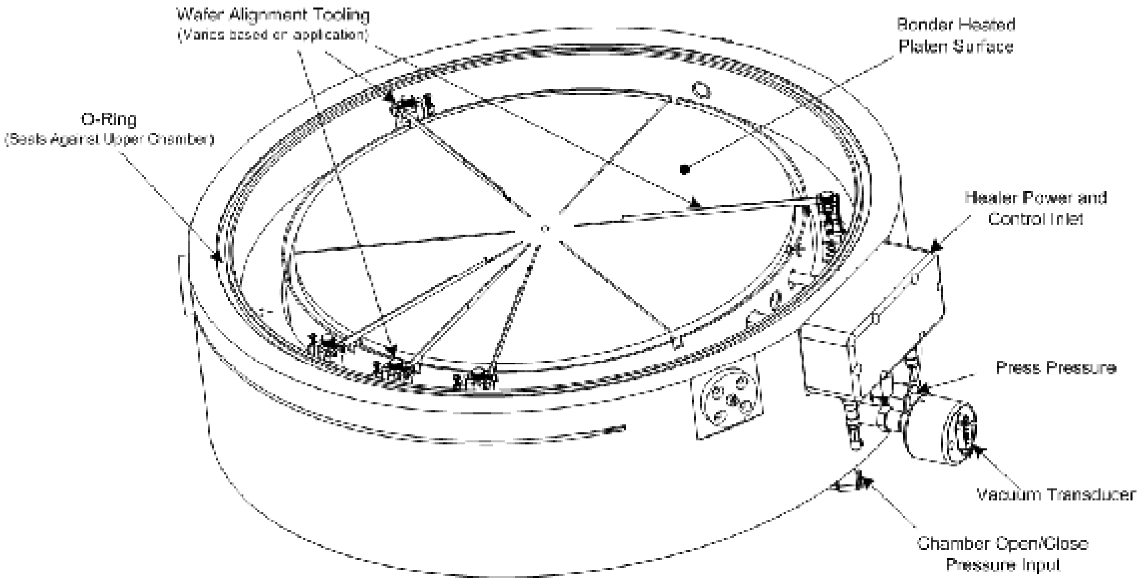

Figure 4: Apogee™ Lower Chamber Assembly

Upper Chamber Assembly

Recommendation:

Clean the heated bonding platen surface as required to ensure continued performance of the bonding tool and successful bonding of your substrates.

Procedure:

Observe Lockout / Tagout Procedures

Wear safety glasses

Do Not Eat or Drink While Performing this Procedure

Wear Protective Gloves

Caution:
Surfaces may be hot

Allow platen surface to cool. If platen surface is hot, do not touch. Do not attempt to clean a platen that is too hot to touch.

The Apogee™ Bonder is equipped with a mechanism that allows the upper chamber assembly to be tilted upward for easier access for cleaning.

To access the tilt function, loosen the four (4) M12 screws located in the corners of the upper chamber housing with an 8mm hex wrench, and remove. See Figure 5 (below).

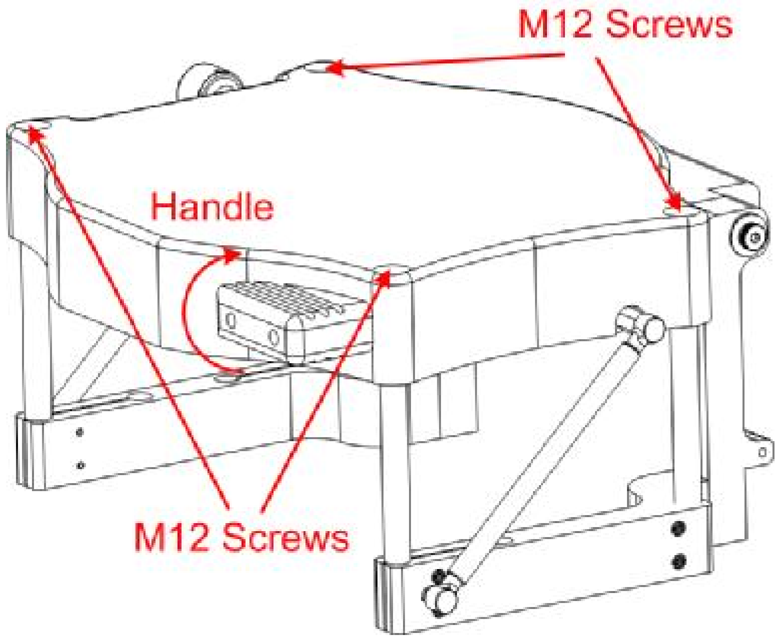

Figure 5: Apogee™ Upper Chamber Assembly (closed)

With the four screws removed, grab the handle, and lift upward until the chamber housing comes to rest as show in Figure 6 below.

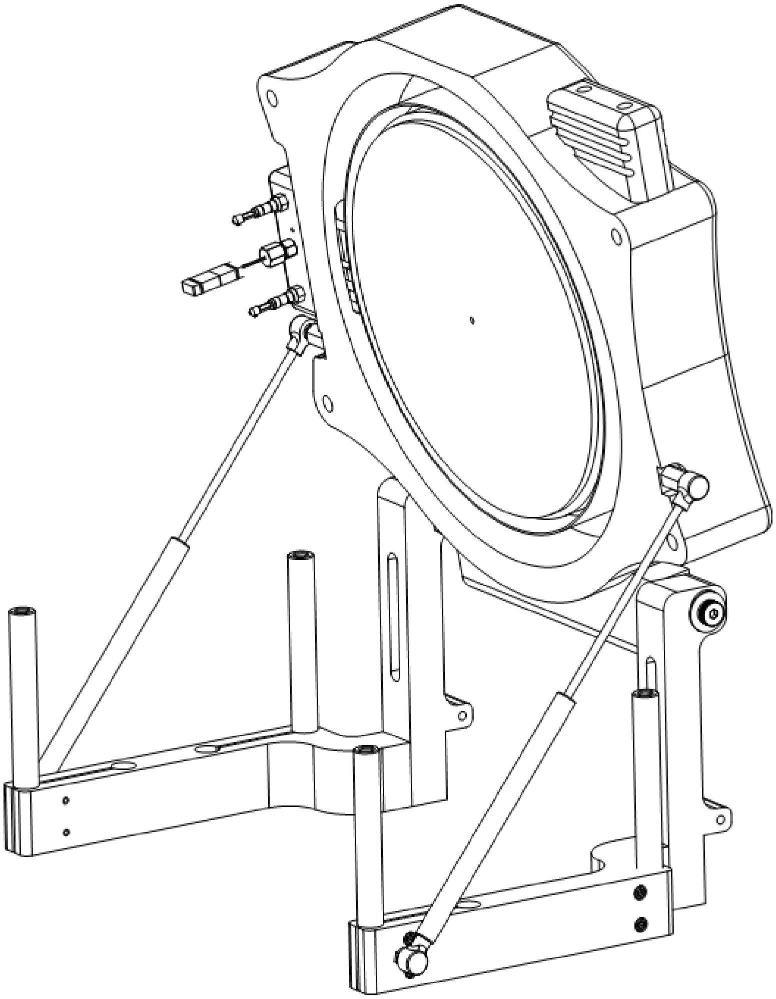

Figure 6: Apogee™ Upper Chamber Assembly (open)

A solvent compatible with the bonding agent used in your specific process should be all that is necessary for routine cleaning. For more persistent stains or heavier fouling, a stainless steel razor blade or glass microscope slide can be used. Use the edge to gently scrape the fouling from the surface of the platen.

To re-assemble the upper housing, reverse the steps of disassembly. Tighten the four (4) M12 screws to a final torque of at least 20 lb-ft. (27 N-m).

Check fasteners weekly for tightness.

User Interface Assembly

Recommendation:

Periodically check the Emergency Stop function to ensure proper operation.

Procedure:

With machine powered up and running, press the Emergency Stop button on the user interface console. Machine should shut down.

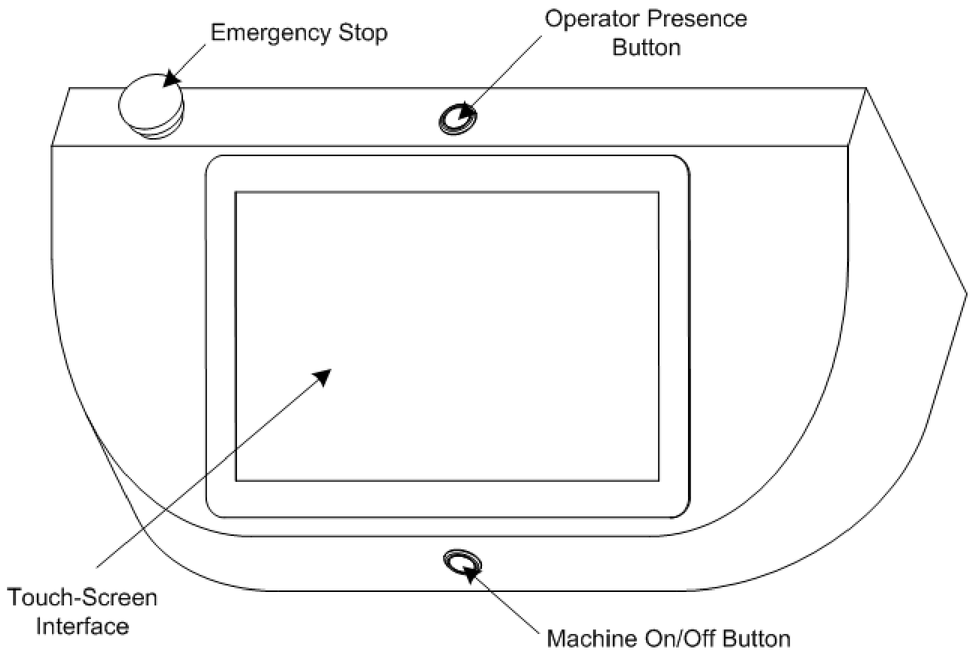

Figure 7: Apogee™ User Interface Assembly

If the machine does not shut down, stop using the machine immediately, and contact Brewer Science Equipment Customer Support for additional help and instructions.

Recommendation:

Promptly clean up any spills on the touch-screen surface.

Procedure:

Using a clean, absorbent material wipe any spills from the user interface touch screen surface. Do not apply solvents of any kind to the touch screen.