1. EV420 Mask Aligner

- Alignment Display Monitor: Displays Alignment Video Images
- EVG 420 Aligner: Control Electronics, UV Lamp Optics, Mask and Wafer Handling Mechanics
- Air Table: isolates system from Mechanical Vibrations
- Alignment Display Computer: displays Microscope Video Images and Computer generated Crosshairs
- UV Lamp Power Supply: provides required Voltage and Current to the Lamp
2. EVG 420 Assembly Locations

- Lamp House: contains UV Lamp, Mirrors, Lens, Filters and Shutter
- Control Panel: has Digital Control Display, Main Power Switch, Power On / Off Switch, Pressure Regulators and Pressure Gauges.
- Keyboard: has numeric and function keys required to enter process parameters, navigate system control software and Align wafer to Mask
- Micrometers: move the Wafer Chuck in X,Y and Theta to Align the Wafer to the Mask
- Tray: supports Wafer Chuck, Transports Mask Holder and Mask during loading procedure
- Lamp House Warning: The Lamp House moves over this area during exposure. Keep area free and clear.
3. AC Power Switches

• POWER ON
  o Turns Control Electronics and Display Computer Off
  o Turns Control Electronics ON
  o Make sure that the Lamp Supply is On and the Lamp is ignited before turning key to the On Position
  o After switching On System will Initialize
  o Turn Off when not using the system

• MAIN / EMERGENCY
  o Leave On when done using the system
  o Controls all AC power to the System
  o Will turn off the UV lamp supply

Note: The Main / Emergency Switch should be only used to remove AC power in case of an Emergency or during Maintenance

4. UV Lamp Power Supply (shown with power off)

• Supply on Indicator does not indicate Lamp is on
• Current / Voltage meter displays levels used by the Ignited Lamp
• Intensity is the amount of Light being supplied by the Ignited Lamp
• Power is the Amount of Power being delivered to the Lamp
5. UV Lamp Power Supply (shown with lamp on and shutter open)
   - Current / Voltage Meter reading Amps
   - Intensity / Power Meter reading mW / cm²
   - Meter Selector switches change parameters displayed

   **Note: A Current or Voltage reading indicates that the Mercury Lamp is on**

6. PC Display computer
   - Power On only if Mercury Arc Lamp has been Ignited and remains on
   - Switches off with Power On Switch
   - Need to Press Power On Button and let Computer start up to get Microscope Alignment display
7. Pressure Controls and Gauges

- **HARD CONTACT PRESSURE**
  - Sets and Displays the Hard Contact N\textsubscript{2} Pressure
- **CHUCK WEIGHT**
  - Sets and Displays the pressure used during Wedge error Compensation.
  - Typical setting about 270-300 mbar.
- **CONTACT FORCE ALIGN**
  - Active during the Alignment phase Typical 1.1 bar
- **CONTACT FORCE**
  - Active during Wedge Error Compensation Typical 0.5 bar

8. Display and Function Keys

- **DISPLAY**
  - Alphanumeric characters display status or request for action
- **FUNCTION KEYS**
  - Key Function will change with Display request for action.
9. Keyboard

- Some Keys have LED status indicators
- SEP/CONT
  - Red LED indicates chuck not contacting wafer
  - Pressing brings mask into contact with wafer. Contact force is adjusted to 1.1 bar
- RES
  - Cancels current process. Unloads wafer if loaded.
- BOW
  - Used during Bonding process
- MENU
  - Allows change to preset or process parameters
- Direction Keys
  - Moves brackets around display to select a preset or variable
  - Moves Microscope objectives if required for alignment
- CONTINUE
  - Accepts input and goes to the next step
10. Keyboard Continued

- **Z/Y**
  - Switches the up and down arrow functions between microscope movement in Z axis or Y axis
- **L**
  - Switches Objective and Crosshair adjustment to left
- **C/F**
  - Changes Microscope movement speed between fast and slow
- **R**
  - Switches Objective and Crosshair adjustment to right
- **MIC**
  - Switches between Objective and Crosshair adjustment modes
- **Enter**
  - Accepts inputs or changes and goes to next step
- **Numeric Keys**
  - Used to enter numeric values or process selection
11. Wafer Alignment Micrometers

- Set to Middle position of 5mm before loading Wafer on Chuck
- Allow X,Y and Theta movement of Wafer in relation to the Mask
12. Tray

- Moving to out position

13. Tray in out position

- Make sure that the Wafer Chuck is sitting flat in the Tray
- Mask Frame alignment pins go into Alignment holes on the Tray
14. Mask Frame Bottom View

- Alignment Pins fit into holes on Tray

15. Mask Frame Top View

- Plastic Screw Heads are used to Align the Mask on the Frame
16. Mask Frame with Mask
   • Mask should be loaded with coated side (Chrome) down

![Mask Frame with Mask](image1.png)

17. Mask and Mask Frame on Tray
   • Frame should not move side to side if properly seated in the Tray

![Mask and Mask Frame on Tray](image2.png)
18. Lamp House in Exposure Position

- Lamp House moves forward during Exposure

**Note: The Lamp House moves forward and covers the Warning Label**

Yellow Warning Label no Longer Visible