Mask Aligning at SCIF: Quintel© Q-2001 CT Mask Aligner SOP

- Chamber Pressure: Start at around 3-5” and work upwards to a maximum of 11”
- Power: Typically on/off as needed- Recommended always

  Powering up sequence:
  - Turn UV power supply on
  - Hold start switch for 4-6 seconds for the bulb to start. The bulb has a 20 minute warm up time
  - Use the UV meter to check intensity
  - Push power switch (The lamp supply toggle switch should be in on position)
  - Microscope illumination: Turn knob to the right completely for low power and start working upwards

  Functions of the Different Switches:

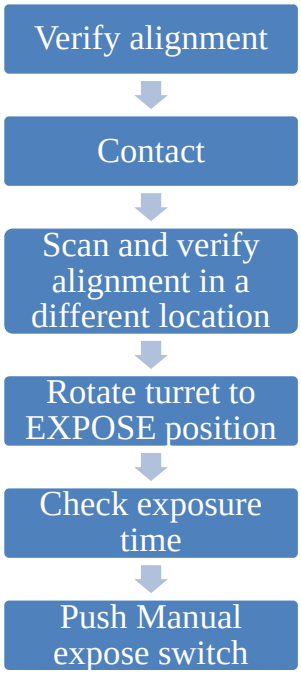
  - Mask load: Turns vacuum on/off to the mask
    - ➢ Needs to be on the whole time when machine is being operated with a mask in place
  - ♦ Visual align: Head moves upward. To gain access to the machine
  - ♦ Microswitch will not be enabled unless the chuck vacuum switch is on
  - ♦ The chuck needs to be clean at all times. Acetone or Isopropanol can be used to clean the chuck
  - ♦ Never drop the chuck
  - ♦ Mask Clamp- Usage is optional
    - ➢ It is to support the mask from the top as well as the bottom
    - ➢ It also keeps the mask from being deflected

- Contact calib. : For printing mode (Proximity printing). Will print away from the mask without making contact. It is hardly ever used
- Shutter: Works only when the optical head is down. Used for checking UV light uniformity and the position of UV light exposure
- Pressure contact: Mask makes soft contact with the wafer. Controlled by regulators at the back. The vacuum between mask and wafer is disabled when pressure contact is on
- No vacuum: soft contact only
- Vacuum mode is considered hard contact
- Standard contact will be with the pressure contact light off and chuck seal removed
- Seal off + Pressure contact on- Soft contact
- Seal off + Pressure contact off- Standard contact
- Seal on+ Pressure contact off- Vacuum contact
- Microswitches: Home microswitch; Vacuum switch; Proximity optical switch (Checks if the edge of the chuck is dropped)
- If the chuck sticks to the mask when there's no wafer, the best way to avoid any damage is to take the chuck vacuum off and then eject
- XY rotation (Wafer manipulator) - Fine. Push the white button to get coarse rotation
- Wafer rotation knob: Starting with it at the center is ideal (red indicator)
- Wafer load: To load/ expose sample against the mask
- If there is no pressure (18psi) then the optical head will not go up/down and the chuck will not move up
- The pressure switch (takes 3-4seconds) for the chuck to come up and planarize with the mask
- Regulator 8 controls air bearing leveling. If it is too high, focus and contact problems arise

- When hit load button, it first comes into contact mode and then goes back to separation
- The system has to be in separation mode to align wafer
- Once aligned, microscope or monitor can be used

  Focusing:
  - Start off with the single field mode
  - A turret is used to control magnification
  - Coarse focus knob is on the side
  - Fine focusing is to be done using switches at the bottom near the objectives
  - Wafers/Masks usually have alignment keys for initial focusing (most common: ++5)
  - If not ++5 there are usually alignment features that aid in initial alignment process
  - Alignment is to be done for the camera as it is very responsive to light
  - Split-field resolution: Objective spacing has to be used to align mask in split field
  - Split field has more accuracy compared to single-view
  - Individual fine adjustments can be made in the split field

Brief Outline of the Exposure process:



Switch off Procedure:

- Power off
- If the system is not to be used for a longer period of time switch off the toggle switch
- Vacuum is always on, so it is better to leave a dummy wafer and mask on to prevent dust from going in
- Power breaker can be left on if the machine is going to be used the same or next day

An Operational Instruction Manual and additional details will be provided for reference on request.