Suss MA6/BA6 Mask Aligner - Standard Operating Procedure

Overview:
UV broadband 350nm. Exposure methods are flood, proximity, soft contact, hard contact, Low vacuum, and vacuum. Top side alignment and bottom side alignment. Mask size 4”x4” up to 7”x7”. Sample size 10mmx10mm up to 6”wafer. Maximum wafer thickness: 3mm

Safety Precautions:
Watch out for the microscope movement at all times.
There is a RED EMERGENCY Off button (located on the left of the font panel next to the main power switch). If it is pressed the machine gets isolated from the power supply. Press only in an event of danger.
In case of lamp explosion immediately leave the area and call the staff.

Turn System On:
The system is usually left in the ON and in CHANGE MASK mode. There should be an operating program on the monitor and the light source power supply (located beneath the floating table) should have a value in the right window.
If the system is down turn the MAIN POWER switch (located on the left side of the alignment stage) to the ON position.

Turn light power supply on:
If the light power supply is off or says STAND-BY it will need to be restarted. First press the ON button (on the left side of the power supply) wait until READY appears on the display next press the CP button (located to the right of the power ON button). The system will say START so you can press the START button (located on the right side of the power supply). The light should turn on and the LED's on the power should say LIGHT COLD. It takes about 5 min. For the light to warm up. The chassis has to be turned off in order to start the light power supply.
Turn chassis on:
Turn the POWER SWITCH on the front panel clockwise into the ON position and Release. The system will go thru a start up process and it will ask you to press the LOAD button (located on the bottom left of the flat part of the chassis). The system will then ask you to choose MA6 (mask align) or BA6 (bond align) mode by using the Y keys (located in the center of the chassis). You should choose MA6 for mask align mode.

Turn Computer On:
If there is no operating system on the monitor you will need to start the computer (located on the floor to the left of the light power supply). Open the cover on the computer and press the UPS POWER ON button (located at the very bottom of the computer). Next press the square RED button. The computer should boot-up (no pass word required).
Load Mask:
Place mask holder upside down on the small mask holder table (located on the left side of the system). Press the CHANGE MASK button (located near the top right side of the chassis). Place photo mask chrome side up on mask holder. Press photo mask up and to the left so that it rests against the screws to ensure proper placement. Press the ENTER button to activate the photo mask vacuum. Press down on the metal clip below the photo mask causing the black bar to spring up and help lock the mask in place. Carefully slide Mask holder and mask into the mask holder slot on the MA6. Press the CHANGE MASK button.

Load Wafer Chuck:
Place wafer chuck carefully on slide.

Edit Parameters:
Press the EDIT PARAMETERS button (located on the right side on the chassis). Enter your choice of options with the X and Y KEYS. The Y keys will move up or down through the Modes and the X keys will change the values. Once you have set your exposure mode and exposure parameters press the EDIT PARAMETERS button again to begin your exposure.

Wafer exposure:
Press the LOAD button. The green screen will tell you to “pull slide and load wafer”. Place the flat of the wafer against the two pins at the bottom and move the wafer against the last pin on the left. When the wafer is on the chuck press the ENTER button. This will turn on the chuck vacuum. The green screen will say “Push slide into system”. Puss slide into aligner and press the ENTER button. The wafer will move up from the slide and into CONTACT with the mask. The Orange CONTACT light will come on and then the wafer will drop down the alignment gap to what was set in the EDIT PARMETERS step. The green screen will now say ALIGN WAFER. You can now use the micrometers to move your sample.

Microscope Alignment:
Turn the monitor on. Select Top Side Microscope or Back Side Microscopes by pressing the BSA button (located near the bottom right of the key pad) if the BSA button is lit up
the BSA microscopes are activated, if not the Top Side Microscopes are activated. You can adjust the microscope light levels by switching the light switch knob to either Top Side or Back Side (located in the middle of the front panel). Use the two knobs below and to the left of the Light Switch Knob for the Backside Microscope light levels and the Knob directly below the Light Switch Knob for the Top Side Microscopes light levels. Use the SPLITFIELD switch (located on the left side of the front panel) to switch for one side microscope or both. Use the GRAB IMAGE key (located near the bottom left of key pad) to grab an image of the mask before you load your sample when doing Back Side Aligning.

Exposure:
Press the exposure key (located in the top middle of the key pad) to expose the resist coated wafer. The wafer moves into the exposure position and is exposed. Depending on the exposure program selected all program steps will be performed automatically. After finishing the exposure process the wafer chuck moves down to unload the exposed wafer.

Unload Wafer:
Wait until the message on the LCD screen appears “UNLOAD SUBSTRATE FROM SLIDE”. Pull transport slide out completely. Unload wafer and move transport slide into aligner.

Unload Mask:
Press the CHANGE MASK key and the mask holder will be released. Pull the mask holder out and flip it 180 degrees and place it onto the tray on the left side of the system. Press the ENTER key to turn the mask vacuum off. Retract the mechanical clamp and remove the mask. Press the CHANGE MASK key and then press the ENTER key to clear the error. The tool can be left in this mode.