

**OPERATING PROCEDURE
CANON 501 With Alignment**

Rev. 10/30/01

START-UP

1. Turn on mercury lamp power supply (located on the floor).
 - a) Toggle switch **ON**.
 - b) Press black **START** buttonLet the bulb warm up for 15 minutes.
2. Clean the mask. (Use 1165 Remover in the Ultrasonic for 15 min. followed by DI water rinse for 10 min.)
3. Turn on the main switch for the Canon 501. (Located on upper left panel.)
4. Select the mode, i.e.: soft contact or proximity.
5. Make sure that the **ALIGN GAP** setting is about 90 and **PRINT GAP** is 20.
6. Put the wafer feed in **AUTO**.
7. Press **MANU** alignment switch.
8. Check the 4 gauges located below the main panel. They should read:

Vacuum > 50 cm

Clean air = 2.2 kg/cm²

Pressure = 3.5 kg/cm²

Nitrogen = 0.8 kg/cm²

LOAD MASK

1. Unlock the saddle for the lamp housing by pulling the lever to the left rear of the housing. Swing the lamp house to the right.
2. Load mask with pattern facing downwards (Cr or emulsion goes down). The wafer flat will face to the left.
3. Push mask against the stops (two in rear, one on left side).
4. Turn on the vacuum to hold the mask by pressing the **MASK LOAD** switch.
5. Make sure the mask is oriented correctly so that subsequent plates do not need much alignment.
6. You may leave the saddle open for coarse alignment.

LOADING WAFERS

1. Load wafers into wafer holder using tweezers. Front side of wafers should face up when holder is put on the auto-loader.
2. Use N₂ gun to blow off the wafers.

3. Put the wafer holder with the unexposed wafers on the front loader. Place the bar of the wafer holder into the metal cradles. Put the unloaded wafer holder in the back loader.

EXPOSURE SETTINGS

1. Set the **LIGHT INTEGRA** to the desired time. For example, use 7.0 for photoresist 1813.
2. Check the **PRINT GAP** for the desired distance.
3. Press **START**. The first wafer will load with flat to the left.
4. The **ALIGN** lamp will flash.

COARSE ALIGNMENT

1. With the saddle still open look at the wafer through the mask (using your eyes not microscope)
2. Make rough X-Y alignment by pressing the button on the alignment mouse and moving the mouse. This moves the wafer beneath the mask.
3. Make rough Ø alignment by rotating the mask with the Ø knob (located next to the X-Y mouse).
4. Return the saddle to the closed position.

ADJUST MICROSCOPE AND VIEW ALIGNMENT MARKS

1. Turn **ILLUMINATOR ON**.

To adjust the microscope field of view, the black button next to the handle (noted with a red arrow) must be depressed while moving the microscope.

2. Turn the LEFT and RIGHT knobs to obtain the desired microscope illumination.
3. Focus the objective lenses.
 - A. Focus the left lens with the focus knob for both fields of view (knob on right side of the saddle, below the scope light source).
 - B. Focus the right field of view using the right field knob (knob on left side of the saddle, below the scope light source).
4. Move the objective lenses so the desired alignment marks may be viewed. (One mark will be on left side of the wafer in the left lens, and one mark on the right side of the wafer in the right lens).

- A. Move the entire alignment scope left-right or back-front by depressing the release button (black button by grip) and moving the scanning grip (white handle on left of scope).
- B. Adjust the objective lens spacing with the right and left objective spacing knobs. (The right spacing view knob is on the left side of the stage, and the left view spacing knob is on the right side.)
- C. You should now simultaneously see the alignment marks from each side of the wafer in the microscope.

FINE ALIGNMENT

1. While observing the mask and wafer alignment marks through the microscope, perform X-Y and Ø fine alignment
2. Make fine X-Y alignment by moving the alignment mouse (don't press the button). This moves the wafer beneath the mask.
3. Make fine Ø alignment by using the Ø control switches on the front panel.
4. When satisfied with the alignment, press the **ALIGN** switch. The **EXPO** light will flash.
5. Using the microscope, recheck the alignment marks, If alignment is unsatisfactory press the **ALIGN** switch again and repeat 1-4.
6. Once alignment is satisfactory, press **EXPO**.
7. The **ALIGN** lamp will go out, the **EXPO** lamp will light continuously, and the alignment scope moves.
8. The shutter will open and expose the wafer.
9. Once the exposure is complete, the shutter closes and the **EXPO** lamp goes out.
10. The exposed wafer is sent to the take-up carrier and the next wafer is loaded under the mask.
11. Perform coarse alignment, fine alignment, and exposure on the next wafer and continue until complete.

LOADING ERRORS

If you get a load error press **RELOAD** and the wafer will be put in the exposed wafer boat with out being exposed - reload it in the expose boat when done exposing the remaining wafers.

WHEN COMPLETE

Turn off the power switch on the upper left panel. If no else will be using the system soon turn off the lamp (power switch by the floor).