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| **FLEXIBLE DISPLAY CENTER** | Document Owner: | Release Date: |
| Document Title: **RITE TRACK**  **COAT + DEVELOP+ BAKE** | Document No:  FDC-OP-0000000000 | Document Rev: 01 |

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| |  |  |  |  |  | | --- | --- | --- | --- | --- | | **SPECIFICATION FORMAT:** | |  | | | | **EQUIPMENT MANUFACTURER:** | | **SVG 8600 and 8800** | | | | **EQUIPMENT MODEL:** | | RITE TRACK | | | | **ASU ASSIGNED TOOL ID NUMBER:** | | | 6154686 | | | **APPLICATION PROGRAM(S) AND REVISION:** | | | | Microsoft Word 2003 | | |  |  | | | | | | | | | | | | | |
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# SCOPE

## Definitions

## Documents and Manuals Referenced

# EQUIPMENT AND SUPPLIES

## Test Equipment

## Standard Product + Supplies

### Black Pen

### Scotch Brite

## Parts and Consumables List (Supplier Information)

### Lab Safety Supply, P.O. Box 1368 Jamesville, Wisconsin 53547, [www.labsafety.com](http://www.labsafety.com/) 1-800-356-0783 FAX - 800-543-9910 Item # 4BC-17146 Wide-Mouth Jars 1 gal.

### AZ 5214 E Positive Photoresist

### AZ MIR900 Positive Photoresist

### AZ 300 MIF Developer

### KMG Propylene Glycol Methyl Ether Acetate EBR

### HMDS

### Clean room wipes

2.3.8 Q tips

# SAFETY

## Additional Reference Specification

### MSDS (located in change room).

### FDC Safety Specification #

# OPERATING PROCEDURES

## Start up Procedure

NOTE: Check the Coat/Dev/Bake Program Log Book. Do NOT change programs that are already set.

### Check the Resist Bottle by lifting slightly making sure it is not empty.

### Check EBR and Developer add if needed (refer to filling steps )

### Check HDMS level in can by lifting slightly making sure it is not empty.

### Clean resist nozzles at beginning of morning shift.

### Turn power off to coater module:

### Remove cover to coater module.

### Put clean room wipe over chuck.

### Pull up on nozzles carefully and move over chuck.

### Use Acetone and bent Q-tips to clean out inside of resist dispense nozzles.

### Spray Acetone on top of nozzle and wipe dry with clean room wipe.

### Turn power back on to coater module.

### Hit Clear and Start on control panel.

### Throw used wipes and Q-tips in solvent trash can.

### Use purge programs to dispense resist through lines 4-5 times.

### Ready to use.

## Start up from Hard Shut Down

### Turn water on under the floor

### Turn chilled water ON (these are the red knobs – they will be vertical).

### Flip Power ON located on the right side at the back top of tool.

### Press the Power RESET button on the same panel.

### Check the GPH meters located behind front door panel – adjust if needed to 15 psi.

### Push POWER button on for the Coater, Bake, and Developer (located on the top).

## Selecting Programs

### Press STATION SELECT button, which will move the + sign to/from top or bottom selection.

### Press # of Program wanted (refer to Program Listing)

### Press the PROGRAM SELECT button. Check that correct program wanted is displayed.

### Check Program steps (found in Program Listing)

### Press EVENT SELECT button, insure program step is correct. Press this button through entire program steps.

### Set Hotplates to temperature wanted (refer to Program Listings--)

### Place Cassettes with wafers to run on the Send indexers and empty cassettes on the Receive indexers.

### Press mode button to Auto lit.

### Press the START button.

### Cassettes will move down.

### When all wafers from the Send cassette are done – the cassette will come up.

### Run is complete when both cassettes are UP.

### Carefully remove the Cassette.

## Changing Hotplate Temperature

### Press UP or DOWN arrows on the temperature controller.

### When Alarm sounds, press the CLEAR button on the control panel for the corresponding Hotplate.

## Programming Procedure

### Note symbols on track keys: \* is Coater, ^ is Arm, and + is Hotplate

### Note option 01 – can change from MIX LOT (will take all 25 wafers in boat) or LOT CONTROL (controls number of wafers in boat).

### To Change press 0

### Note Option 02 tells you options available to program track.

## Set-Up Program

### Set up program for Coat, Develop and Bake

### Choose # of program to be set-up by pressing 1-36 and press Program Select

### Note event 1 should be shown on display

### Choose the operation wanted (Spin, Step, Bake, End etc.)

### Press Operation

### Press Event

### Set up the Arm program – press 2-9

### Press Arm to set –

NOTE: The Arm program must be set up separately

### Press Event

### Set time wanted #0-9

### Press Time

### Press Event

### Set Spin Speed wanted

### Press Speed\*

### Press Event

### Set Exhaust if applicable

### Note last Event in the Program will be END operation with 0 time

## To Adjust EBR Edge Bead on a wafer (make edge line thinner/thicker).

### Press Station Select (asterisk (\*) should be on Coater).

### Press #7 button

### Press Arm Prog. Mode button

### Repeat steps 4.7.2 and 4.7.3 (will display 7A1)

### Press Event Select Button (7A2 will be displayed).

### Press #’s wanted to change (example 160 + will make the line wider, less than 160 the line will become thinner).

### Press the Speed button

### Repeat steps 4.7.5 to 4.7.7 for Events 7A2-7A5

### Press #1

### Press Program Select

### Coat a wafer and check the edge of the wafer.

### Repeat steps 4.7.2 to 4.7.11 until edge is good.

## Shut down

### Press the RED EMERGENCY STOP button for immediate Shut Down..

NOTE: If wafers are on the spinner and button is pressed the vacuum will be shut off and the wafer will spin off chuck.

# LOG SHEETS + SEPARATE DOCUMENTS

## Source

# ROUTINE MAINTANENCE

## Calibrations

### Calibrate Spin Speeds and Hot Plate Pins – NO WAFER USED.

### Press OPTION

### Press 0

### Press 7

### Press START

### NOTE: DO NOT STOP during check.

### Press POWER off – wait 1 second.

### Press POWER on – everything will reset.

## Check Spin Speed – Using STROBE LIGHT

### Use Program #6 for the Develop track and use Program #29 (T) for the Coat Track.

### Select Program # and press the PROGRAM SELECT button.

### Remove the cover from the coat bowl.

### Select the MANU wafer Mode on the Rite Track

### Get the Strobe Light which is stored under the Rite Track.

### Press the Strobe Light Button on the handle.

### Turn the Black Dial and set digital reading to 1000 rpm.

### Note that wafer will spin at 1000 rpm hold Strobe Light over wafer watching the white sticker turn. NOTE: Program is set-up for 60 second time for first reading after that it is set-up for 45 seconds between spin speed changes.

### Place Strobe wafer on moving belt before coater bowl. Wafer will load onto chuck automatically.

### Press START

### Turn the Black knob on the Strobe Light so that white sticker looks like it is standing in one place.

### Record the digital reading on the Strobe Light.

### Turn the Black knob on the Strobe to 2000 rpm.

### Repeat steps 6.2.10 and 6.2.11

### Turn the Black knob on the Strobe to 3000 rpm.

### Repeat steps 6.2.11 and 6.2.12

### Continue to increase the Black knob, repeat steps 6.2.11 and 6.2.12 for 4000 rpm, 5000 rpm and 6000 rpm for Coater and up to 5000 rpm for the Developer.

### Wafer can be removed from coater chuck when program is completed and wafer has stopped.

### Put Strobe away under the coater.

### Place cover back on over the coater chuck.

## Resist Thickness/Uniformity check (Done every Monday)

### Coat wafers (refer to Coat/Develop Program Listings …)

### Check uniformity using the Prometrix (refer to spec. # for operating). 3 wafers to read for SPC. Use SPC 5214E RT8600 15kA on Prometrix.

### Note that the program will measure 5 points on the wafer.

### Log data in the computer in the Photo Data Folder in the Coat Uniformity Check log sheet.

### Click on SUMMARY at the bottom of the screen when done entering the data into the computer log sheet

### Click on the box that reads Click Here For Update.

## SPC Particle check (Done every Monday)

NOTE: Wafers can be reused until 200 or more particles are present then use newer wafers.

### Put 6 wafers (new or particle wafers) in a black cassette using a vacuum wand ONLY. 3 wafers will be used for the Coat track and 3 will be used for the Develop track.

### Using the Surfscan measure the particles on each wafer and write down the Total Defects

### Place 3 wafers on the Coater using Program 9 and Program 1 for bake.

### Place 3 wafers on the Develop track Program 1 and Program 1 for bake.

**NOTE: Wafers will now be reversed in black cassette (wafer 1 will now be wafer 3)**

### Using the Surfscan measure the particles on each wafer and write down the Total Defects – remember to write down the correct wafer # readings.

### Record the data open the Photo Data Folder on the computer.

## Changing Photo Resist Waste Jar (As Needed)

### Refer to the-----Safety Specifications for proper gear and handling of chemicals.

### Drop jar by turning brass locking bar up and pulling on Black handle.

### Slide waste jar tray out.

### Place lid on jar and remove full waste jar.

### Place new waste jar in the hole and slide the tray back in position.

### Push black handle in and slide brass bar down locking handle in place.

### Place Label on Jar (AZ5215 Resist, EBR Waste).

### Place jar in the Solvent cabinet for pick-up.

## Filling Developer Tanks (As Needed)

### Refer to the-----Safety Specifications for proper gear and handling of chemicals.

### Filling Develop and EBR Tank Procedure

### Lift lid on Plexiglas tank housing.

### Turn the Pressure off the tank by turning the Black handle to the back. Watch the gauge – the pressure will drop to 0.

### Lift the handle up on the tank top and remove.

### Check the Chemical Level on the AZ EBR 300 (Tank 1), nothing (Tank 2) and Develop AZ300 MIF (Tank 3)

### Use the Funnel if tanks need to be filled. NOTE: Use only the EBR funnel for EBR do not use for Develop.

### Put lid back on the tank and lock handle down in place.

### Turn Black Pressure handle to front and watch gauge. AZ300 MIF Develop tank reads 12 psi and AZ EBR 300 reads 4.4 psi.

### Close Plexiglas lid.

### Rinse empty bottles with water in solvent hood and place in dumb waiter.

## Cleaning Coater Bowl and Drain Pipe (Weekly)

### Refer to the-----Safety Specifications for proper gear and handling of chemicals.

### Leave POWER ON

### Remove Cover over the coater bowl.

### Lift Coat Transport Assembly.

### Using an Allen wrench (5/64) loosen the 2 set screws on the side of the wafer chuck shaft.

### Lift EBR dispense nozzle and turn clockwise and drop. This will expose screws below chuck.

### Using a 5/64 Allen wrench and loosen the 2 screw under wafer chuck.

### Pull up and remove the chuck - set aside (is not cleaned).

### Lift shaft off and remove EBR tube by pulling off the tube from the shaft and disconnect EBR tube at bottom of coater.

### Turn POWER OFF on the coater track only – shaft will drop (coater arm will move freely)

### Pull arm forward and remove catch cup. Place in cart on wipe.

### Push Arm Back in place.

### Remove top of the waste bowl.

### Remove the inner ring in the waste bowl as well as the waste bowl.

### Using a 3/16 Allen Wrench losen the screw located at the top side of the drain pipe – Do Not remove screw.

Note: Drain pipe sits in a groove at the side of the smaller pipe.

### Refer to 6.4 for resist waste jar changing.

### Push Drain tray back in position.

### Remove the clamp ring using the screw driver loosen the clamp ring while holding the waste jar alarm sensor.

### Remove EBR line by using a wrench to loosen the nut located at the side of the drain pipe.

### Push the drain pipe down through the bottom on 8600.

### Do not remove drain pipe on 8800 but pour acetone down drain pipe to clean out resist.

### Pull down on the drain pipe to remove.

### Refer to Safety Specification for proper Safety Gear.

### Place parts in Solvent hood Tank 2 located in the Metals Bay.

### Clean parts in Acetone – soak in 2 gal.

### Clean resist from the parts using a wipe.

### Place clean parts in the cart.

### Drain tank refer to Solvent hood Specification # for operating procedure.

### To put machine back together from the bottom install drain pipe – set small tube in hole at the top of the tool. Push up from bottom then pull rest from the top into position on SVG 8600.

### Using the (3/16) Allen wrench crew tighten the pipe clamp in place (easier to tighten by putting hand down from the top of the tool.

### Place Coater Bowl in place. Place Back Wash tube through middle of bowl.

### Put in the liner in bowl.

### Place lid on the bowl.

### Move arm to the middle of the bowl.

### Insert drip cup.

### Move arm back to start position.

### Attach EBR tube to chuck spindle.

### Turn Power ON the coater track.

### Silence the Alarm by pressing CLEAR.

### Place spindle in place over shaft – make sure it is in the lock position (will be off to the right slightly).

### Place Chuck on and tighten 2 screws located directly under the chuck using a 5/64 Allen wrench.

### Lift EBR nozzle and turn to left to set position – hold up (not to top touching chuck) and tighten 2 screws on the side of metal rod chuck base with a 5/64 Allen wrench.

### Place track assemble down into position lift arm to unlock.

### Place Cover back on module.

### From under the tool attach the EBR nut to the side of the drain pipe.

### Put waste jar back in the 1st slot and remove the lid.

### Push handle in and lock with brass bar.

### Attach waste bottle overflow sensor to the drain pipe at the bottom tighten ring. (See photo#)

## Cleaning Develop Bowl (Weekly)

### Using a DI Water bottle – clean and wipe the top, bottom and inside of bowl without taking it apart.

### Spray DI Water on nozzles and wipe clean.

### Wipe top and bottom of cover plate with moist clean room wipe.

### Wipe chuck and spinner shaft with moist clean room wipe.

## Cleaning Hot and Cold Plates (As Needed)

### Turn off the Hotplates by pressing the DOWN ARROW key on the Temp. Controller.

### Alarm will sound – press the CLEAR button on the corresponding control panel.

### Once Hotplate is cool, use a Scotch Brite and Alcohol to clean off the chuck. For heavy photoresist attached use Acetone.

### Using a cleanroom wipe and alcohol wipe chuck until wipe is clean.

### Press the UP ARROW and set temperature to required setting.

## Filling HMDS Can (As Needed)

### Obtain new HMDS bottles from refrigerator.

### Open lower drawer to coater.

### Turn N2 pressure off by Toggle switch.

### Note pressure on gauge should go from 3 to 0.

### Disconnect fitting to back of pressure line.

### Disconnect N2 connector on tygon tubing lines by unscrewing white connector.

### Disconnect molex electrical connector, panel should alarm and hit Clear to quiet alarm.

### Disconnect HMDS line out swagelock connector.

### Disconnect N2 quick disconnect at back of can.

### Remove can from bottom of coater.

### Open lid and fill can with HMDS bottles.

### Replace lid and reconnect all fittings.

### **Turn N2 pressure on by Toggle switch and note pressure gauge goes back to 3psi.**

### Return empty bottles to dumbwaiter bottom shelf for Air Products to pick up.

### 6.10.15 Enter on log sheet on inner panel door that HMDS can was filled.

### 6.10.16 Run a test wafer on coater using HMDS to make sure pressure is correct and to check for air leaks.

## Changing Resist Bottle. (As needed)

### Check resist level in bottle every two weeks.

### Prepare new resist bottle by taking out of refrigerator in order to get to room temperature.

### Carefully remove cap and pick up tube from old bottle and place in new bottle.

### Run appropriate purge program until air is completely out of resist line, approx 15-20 dispense cycles.

### Run three clean silicon dummy wafers to verify even resist coverage.

## Resist Thickness Check (Weekly)

### Run three clean silicon dummy wafers for thickness check.

6.12.2 Take wafers to Prometrix to measure resist thickness.

# TROUBLSHOOTING

## If the Coater does not Spin – check the fuse in the Board Box (fuse is located in the black tube with the grey screw driver slot top.

### If error occurs on the coater track do the following:

### Press Clear

### Press Diagnostic Select button

### Press #1

### Read the error message displayed. Make a note of the message.

## If and error occurs on the Develop track do the following:

### Press Manu

### Press Single

### Press Auto watch to verify that the Bake and Develop control boxes are changing at the same time (that they are talking to each other). Leave in the Auto mode.

## To calibrate the spindle speed and Calibrate the hotplate on the Develop track: See instruction in Coat/Develop/Bake Program binder

### Press Option Select

### Press 0 then 7

# ILLUSTRATIONS AND PHOTOS

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Figure 6. Blank Page for Illustration #2

# ADDITIONAL REFERENCE SPECIFICATIONS/MATERIAL

# ?

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