



DICING SAW (DISCO DAD 321)



LOCATION: 10K Area

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1. OVERVIEW

This tool is used for dicing (cutting) Si and similar substrates. The chuck can support 6" wafer (full size) and anything smaller than that. The substrates can be bare, with thin films or without, patterned or etched. If there is a delicate device on the substrate, thin layer of photo resist can be used for protection.

2. SAFETY PRECAUTIONS

If you are bringing any new materials into the NanoFab for use in your process, it is necessary to fill out a chemical import form (available on our website, <http://www.nanofab.ualberta.ca>) and supply an MSDS data sheet to Stephanie Bozic.

3. OPERATING INSTRUCTIONS

1. Begin by heating up the hotplate in between the disco and diamond touch dicing saws. Turn on high heat.
2. Mount the substrate (silicon wafer or piece) to be diced in the center of the correct metal frame.



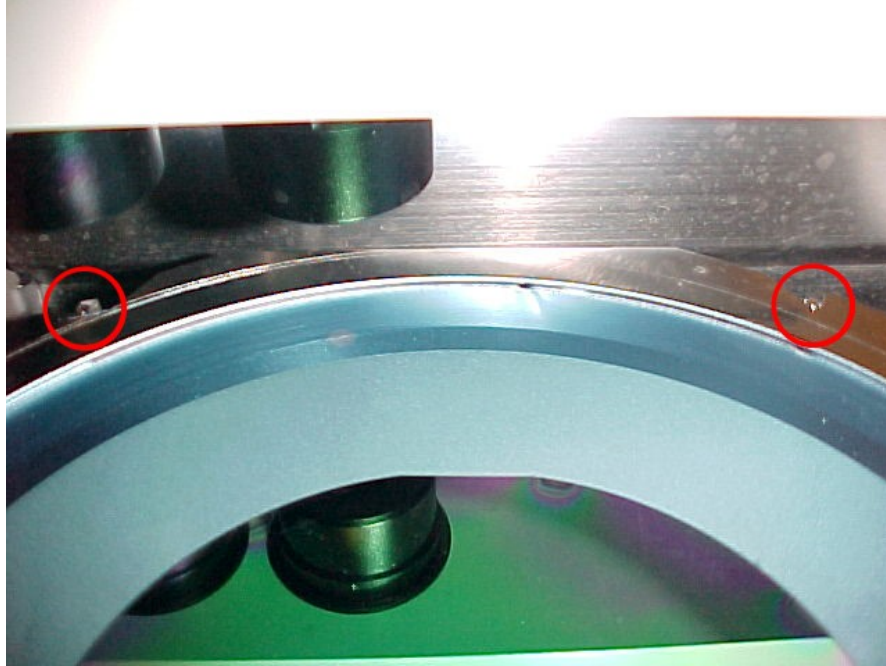
- a. Substrate is placed feature side down on the heated hot plate. Turn on the substrate vacuum. Place it as close to the center as possible.
 - b. The correct frame is placed around the substrate. Frames are kept separated in separate labeled boxes.
 - c. Match the notches on the frame to the shaped posts on the hotplate.
 - d. Pull the blue tape across the substrate and frame and press “Table Up”.
 - e. Roll/push out the air bubbles. The larger the air bubbles the less likely the pieces will stay stuck to the tape once cut.
 - f. Close the top and spin to cut the tape around the frame.
 - g. Raise the top, turn off the substrate vacuum, and remove mounted substrate and frame.
3. Turn on the Disco Dicing saw by turning the key to START until the green light comes on. Let go of the key and let it return to ON. (Just like starting a car). The screen will remain dark for a while.



4. Once the screen comes on it will read “Initialize System” at the bottom left. Press the SYS INIT button. The system will then initialize and once done will read “G007 Initialization complete”
5. Blade Setup
 - a. Go to the Blade Maintenance menu (F5)
 - b. Enter the Blade Setup menu (F3)
 - c. Start the Non-Contact Setup (F3)
 - d. When the bottom left of the screen reads “G074 Press the ENTER key to execute” press ENTER



- e. When the bottom left of the screen reads “G173 !Attention: press ENTER, axis moving to setup point” press ENTER
 - f. When the bottom left of the screen reads “G173 !Attention” press ENTER, axis moving to 0 point”, press ENTER
 - g. Once completed, press EXIT twice to return to the main menu.
6. Load your substrate onto the chuck, now press the C/T VAC button, the frame should be against the two pins as shown below. The vacuum gauge should move from red to green, if it does not you will need to adjust your dicing frame and substrate until it does.



7. Select Device Data (F4) to choose a program. Scroll up and down and press ENTER when the one you wish to use is highlighted. Any program may be chosen and modified.
8. Using the up and down scroll through and change the program to suit your substrate or piece. Values are entered using the number pad and then pressing the arrow to replace the previous value.
 - a. RND WORK SIZE: the diameter of the work area in millimeters.
 - b. WORK THICKNESS: the typical thickness of a silicon substrate is 0.5000mm.
 - c. TAPE THICKNESS: the thickness of the blue tape is 0.0700mm.
 - d. BLADE HEIGHT: the blade is set to cut down to 0.0500mm.
 - e. FEED SPEED: is the speed the blade moves, typically between 10-20mm/sec
 - f. Y INDEX
CH1: is the distance between the first set of cuts (not applicable if only one cut is being made)
CH2: is the distance between the second set of cuts (not applicable if only one cut is being made or cutting in only one direction)
9. Press ENTER to save the changes to the program.
10. Press EXIT twice to return to the main menu.
11. In the main menu choose Semi-Auto (F2)
12. Press F8 to enter the measure view and see the substrate through the lenses.
13. Press EXIT once to return to the commands at the bottom of the screen.



14. The substrate can be moved using the X, Y, and Q keys. Use the SLOW key to make finer movements. The INDEX key will move the substrate the distance set in the program.



15. Choose a line that runs across the width of the substrate (or two features that are even). Using the movement keys, align to the three dashed lines across the screen.





- ## 4. TROUBLESHOOTING

6. APPROVAL

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