

**Micro Automation- Model 1006 Dicing Saw
Instructions**



Serial #

Rev 2 (12-23-05 R.DeVito)

Location Chase 1

Dicing Saw Instructions

(Revised 8/9/03 - K.J)

1. On the **Log Sheet** sign in, including **Name** and **Date**.
2. Prepare wafer by applying tape to back surface, minimizing the number of bubbles.

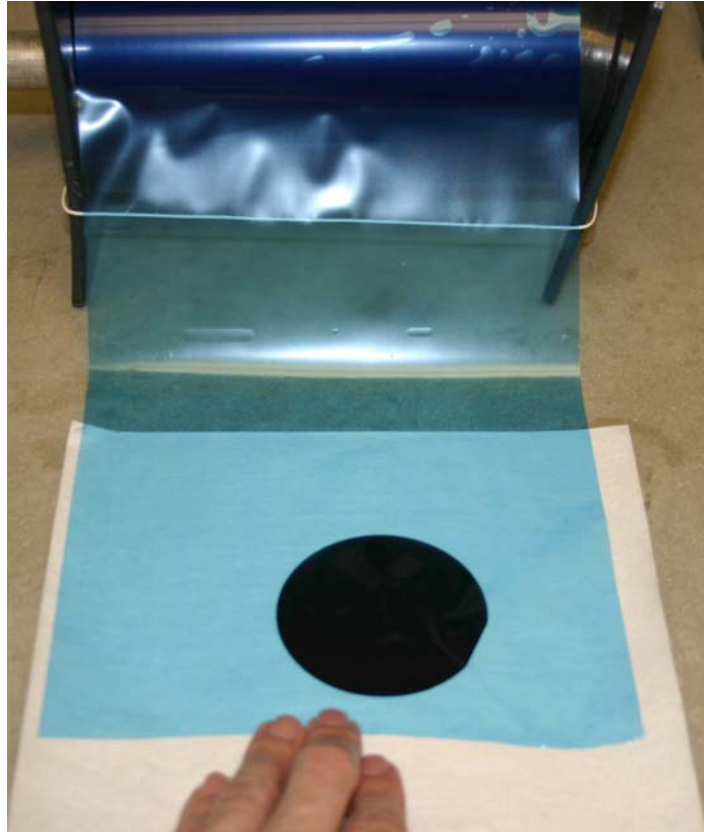


Figure 1 Lay Silicon wafer on Text wipe front side down and apply dicing tape

3. Install correct blade for material being diced.

Procedure for Blade Installation

- Use the hex key in figure 2 to remove the two screws on the splash plate/protector
- Once remove in figure 3 install the hub removal tool to remove the hub bolt holding the blade. Tune CC
- Remove the hub bolt and the shaft washer from the shaft exposing the blade
- Remove the blade with the red handle pliers/forced as shown in figure 6
- Install new blade and reverse procedure above



Figure 2



Figure 3



Figure 4. Insertion of hub bolt removal tool



Figure 5. A quick twist CC and the hub bolt and washer are removed exposing the blade

Utilities

4. Open fully **Spindle Cooling Water** (blue valve coming thru wall on left labeled "city water").

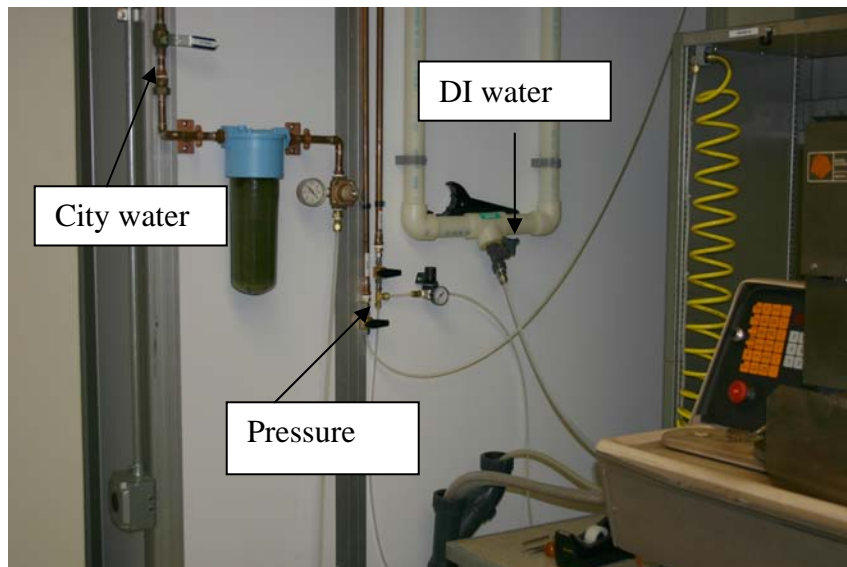


Figure 7. Location of Utilities for Dicing Saw

5. Open **Deionized Cutting Water** valve 2 full turns (grey valve with blue dot).
6. Open both **Air** and **Vacuum** valves. Wait for air cylinder to charge before proceeding- you will hear a large hiss for about 30 seconds.
7. Turn on **Bench Power**, lower right of bench.

Turning on the Saw

8. Turn on **Saw Power** by turning red emergency stop knob.
9. Machine will be in standby; push **Reset** - spindle position and stage motors will go to home positions.
10. Press **Spindle** button - reset and spindle lights will blink until spindle is brought up to speed.

Programming the Saw

11. Press **Prog** and enter values for:

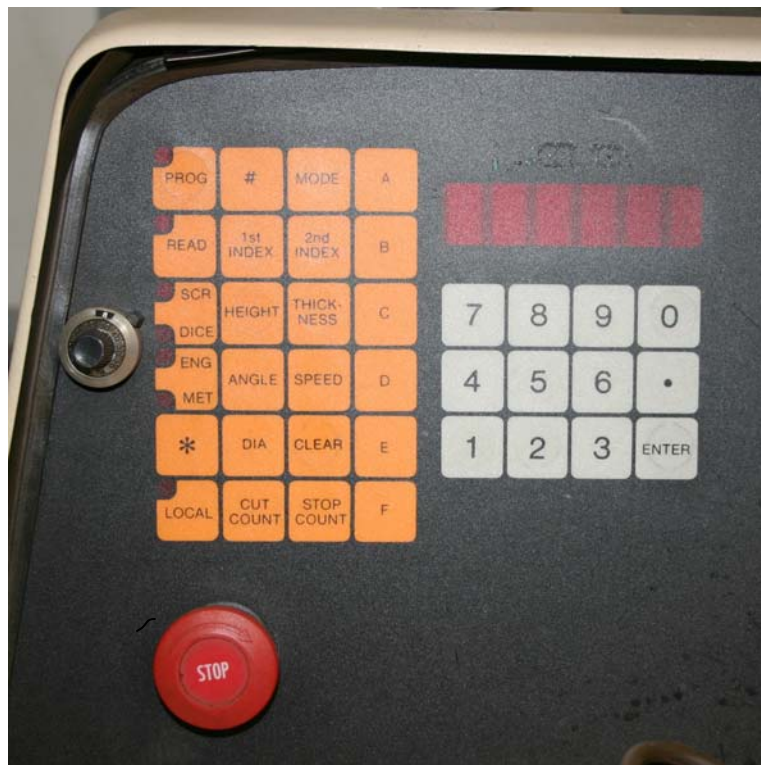


Figure 8 Program Entries for Dicing.

1st Index - Vertical distance between cuts along horizontal (should be center to center distance of cut lines on wafer and **not** the chip size)

Height - Distance in mm from top of chuck to bottom of blade, or remaining thickness of wafer after cut plus the thickness of plastic tape. Usually 0.16 mm (0.175mm) when using 0.90 mm thick tape.

Angle - Angle between first pass and second pass cuts, usually 90°.

Diameter - Diameter in mm of wafer, usually 75 mm (3")

Mode - Cutting mode - refers to the shape of the substrate and the type of cutting action (multiple passes, etc.), usually 010.

2nd Index - Horizontal distance between cuts along vertical (should be center to center distance of cut lines on wafer and **not** the chip size).

Thickness - Total thickness of wafer and tape in mm.

Speed - Cutting feed rate (mm/sec), usually 1.25 for silicon.

12. Press **Prog** when complete. If errors appear check manual for error codes (on wall in upper right behind machine). To read program values press **Read**, then hit any of the buttons to see the current value.

Ref Height

Refer to figure 10 for location of controls

13. Center calibration plate on chuck, make sure chuck is dry, and press **Chuck Lock** to hold it to the chuck.



Figure 9. Setting the ref. plate down in the center of the chuck.

14. Press **Chuck Zero**. Stage will move under the blade and rise until blade hits calibration plate, then return to home. Press **Chuck Unlock** to remove calibration plate once stage returns home.



Figure 10 Secondary control panel for alignment and dicing start

15. Place wafer on chuck and press **Chuck Lock** in figure 10.
16. Press **Align**. Chuck will move under the camera. Use **Front** or **Back** buttons to move the wafer. To speed things up, press **Fast** then either Front or Back. Press **CW** or **CCW** to adjust wafer rotational angle. This is the alignment for Index 1.
17. Once wafer is aligned press **Index** and **CCW**. This will rotate wafer 90 degrees into the index 2 position. Press **Align** and once again align the wafer.
18. Press **Index** then **CW**. This brings the wafer back to Index 1 positioning.
19. A test cut is necessary to test blade alignment with the camera. Press **Front** until blade is at the front of the wafer. Press **Single Cut** to make one pass with the saw. If the line on the monitor is in the center of the cut (you might need to press **Align** in order to move the wafer under the camera) proceed to step 20. If the line on the monitor does not fall in the middle of the cut then use the **Position Up** and **Dn** buttons on the side of the camera to align it.

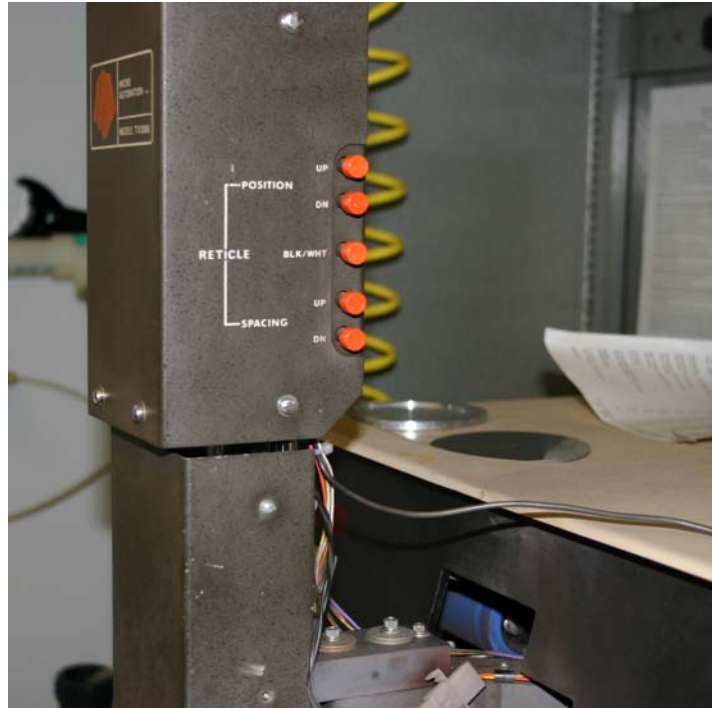


Figure 11. Controls on camera head for reticule alignment movement on CCTV screen

The line can only be adjusted in the vertical direction; any angular changes need to be made to the chuck/wafer using **Align** and **CW** or **CCW**. Press **Index**, then **Back** then **Single cut** to recheck alignment. A test cut should also be made in the 2nd index direction by using these instructions and step 17.

20. Once the wafer is aligned press **Align** then **Auto Cut**. The wafer will be diced according to the program.
21. After completion, press **Unlock** and carefully remove the wafer. You might need to gently blow some compressed air under the wafer to lift it up.
22. Press **Standby**, the spindle will slow down and the chuck will go to home.
23. Turn off machine by pressing emergency **Stop** button.
24. Turn off **Bench Power**.
25. Turn off **Spindle Cooling Water**, **Vacuum**, and **Deionized Water**.
26. Dry off machine with Air gun / text wipes and turn off **Air**.
27. Finish **Log Sheet**

Do not use the saw unless you have been trained!!

Do not attempt to run the spindle unless air is on!!