This device is used to grind small grooves in diffused wafers to determine the junction depth. The machine operates on a countdown timer so once it’s been started it will run until that time has elapsed. If the grinding wheel has a glazed look, use a lint free towel and acetone to remove the built up silicon on the surface (power switch on, cooling water switch off, and pull chuck away from grinding wheel and use 30 sec time).

**Set up**

1. **Turn ON** both the power and cooling water switches on the top of the machine.
2. The cooling water is fed by the lines coming from the sink. Just crack **OPEN** the cold water faucet next to the machines, opening the valve more will only cause water to spray off the grinding wheel.
3. **REMOVE** any plastic spacers keeping the chuck from resting on the grinding wheel.
4. **REMOVE** the plastic chuck from the metal armature by pulling the spring loaded knob with one hand while holding the plastic chuck in the other. Gently release armature to resting position against grinding wheel.
5. Roll the adjusting pins toward the center of the chuck to lift the spring steel clamps.
6. Position your sample roughly in the middle of the chuck and roll the pins back to their original positions.
7. Now mount the chuck using the reverse procedure of step 4. It seems to fit best with the conical holes mated to the spring loaded knob and the cylindrical holes mated to the fixed pins. With the chuck in place, slowly and gently release it until the sample rests against the grinding wheel. Careless handling of the chuck will crack or splinter your sample.

**Processing**

8. Prep the wheel by holding the armature and chuck away from the grinding wheel, **SET** the timer to approximately 5-10 sec and **START** the machine by pushing on the button at the center of the timer. This vents any trapped air in the line and wets the wheel prior to grinding. Once the water has formed a steady flow, use a Kim wipe and slowly rub the wheel transverse to its rotation to remove any loose silicon particles on the surface. **ADJUST** the input water pressure as necessary with the cold water faucet: the water should not spray the surrounding area but should maintain a constant flow to remove silicon particles.
9. Fine tune the position of the sample using the zip tie on the oscillating arm to judge where the grinding wheel will travel. For example, if the zip tie is against the body of the machine,
the arm is at the inner limit of its travel. Therefore, if the area to be ground is very small, it should be placed just to the inside (toward the machine) of the wheel’s contact patch.

10. Now **ADJUST** the grind time by rotating the black dial either clockwise for longer time or counter-clockwise for shorter time.

11. **START** the process by pressing the button at the center of the timer dial.

12. After each grind and when you are done, **REPEAT** step 8 to prevent silicon build-up on the wheel.

13. Repeat steps 8 through 11 until you have completed your sample(s).

**Shut down**

14. Make sure to remove your sample from the chuck.

15. **Turn OFF** the cold water tap. Holding the armature away from the grinding wheel, set the timer to approximately 5-10 sec and start the machine by pushing on the button at the center of the timer to release the water pressure in the lines.

16. Take a minute to wipe any water remaining on the machine, counter or floor.

17. **Turn** the power and cooling water switches **OFF** and replaces the plastic spacer between the armature and grinding wheel.