

Wirebonder 4546E SOP

This provides a basic operation procedure for the wirebonder **Model 4546E-79 (serial # 20093)**

Setup

Step 1 - Turn on the wirebonder at four places:

- the dry air hose (at the backside of the bonder), and check the pressure ~50psi.
- the general power button
- the lights on the microscope
- the monitor

Step 2 - Setting the work height (to set up the correct work height)

- 4 - 6 - 9 - 7, press G. The tip will move down.**
- put your devices under the bond wedge
- move the stage up slowly until the monitor says "good".

Step 3 - Align cross hairs to the bond

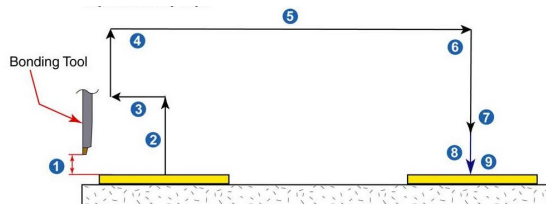
- press **3** to home menu; press **6** to go to THREAD AND BOND OFF menu
- look under microscope and press **G** or **0** to move wedge inch down onto the work surface, and bond off.
- align the cross hairs to the bond
- press **G** for OK

Step 4 - programming the bond loop motion

4 - G from home menu (to set up the device/wire type/loop motion)

- choose Device # (see log book for your device number; Device #0 is for practice)
- edit device name (six characters only)
- how many wire type (= how many various lengths of bonds)
- how many wire for each type (0: repeating the same type until manually switch to another type; 2: bonding type 1 **twice** and automatically switch to type 2)
- how many bonds for each type type: typical 2
- critical bond for each type (the bond that cross hairs align to on the monitor)
- Edit loop motion; make sure the bond #1 and bond #2 are at the center of the microscope field and the X-Y manipulator (ball) position is at resting (90 degree); move the ball to align cross hairs to the bond 1 position and press G

- search before bond # 1 (height above the bond #1 from home position)
- Z before Y: 50 steps
- Backbend in Y: 0 step
- Loop elevation: maximum height
- Y- offset from Bond #1: distance between bond # 1 to bond #2
- Close clamp at loop height (keep the clamp open unless you have a very short bond or you want a very high loop)
- Search elevation before Bond #2 from loop elevation
- Y- offset for Bond 2 (final adjustment)
- Close clamp at search (keep the clamp open unless you have a very short bond or you want a very high loop)
- press A to go back to previous option



NOTE: 1 Z Micro-Step = 0.000208 inch = 0.208 mil = 5.2832 microns.
1 Y Micro-Step = 0.000208 inch = 0.208 mil = 5.2832 microns.

Step 5 - Edit the bond (for change power, time and force settings)

- Choose devices/type: **3** (home) - **2** (Go To (Device / Type / Wire))
- 3** (home) - **4** - **A** - **4**
- make sure you go thru power, time and force settings for both bond #1 and Bond #2

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Step 6 - Bonding

- **Auto bonding (don't use it unless you know your setting is 100% repeatable)**
 - a. Press **8 - 8** from home to toggle between half and full auto bonding
 - b. align cross hairs to your critical bond on the monitor
 - c. press and hold **G** to move wedge at search position above bond #1
 - d. release **G** to make the bonds
 - e. if press **G** without holding, the machine will make the bonds
- **Half - auto bonding**
 - a. Press **8 - 8** from home to toggle between half and full auto bonding
 - b. align cross hairs to your critical bond on the monitor
 - c. Press and hold **G** to the search position for the first bond (moves in X-Y to the hover over the surface); **or** press **G** to make the first bond
 - d. Let **G** go to make the first bond. The wirebender will make the bond, move up, through the backbend and laterally to the location of the second bond at loop elevation.
 - e. Press and hold **G** to the search position for the second bond; **or** press the **G** to make the second bond
 - f. Let **G** go to make the second bond.
- **Manual bond**
 - a. Useful for clearing/pinch-off/ inch down/inch up/ open or close the clamp
 - b. **3** (home) - **0**

Threading

1. **6** to open the clamp
2. Thread the tip at a 45 degree angle
3. **6** to close the clamp
4. **A** to feed wire
5. look under microscope and press **G or 0** to move wedge inch down onto the work surface, and bond off.
6. check the alignment between the cross hairs and the bond; press **G** for OK

Clogged/damaged tip

1. If the wire won't go through the tip, it is possible that the tip is clogged.
2. Take a piece of Ti wire and thread the tip. The Ti wire should push any junk through.
3. Now the Al wire should be able to go through the tip
4. If the tip is damaged, you can replace the tip with a new tip.

Program Keys:

- 0** manual bond menu
- 2** Go to Device/ Bond/Type
- 3** will take you to the home screen
- 4** Edit menu
- 5** Info
- 6** thread / bond off menu (open clamp)