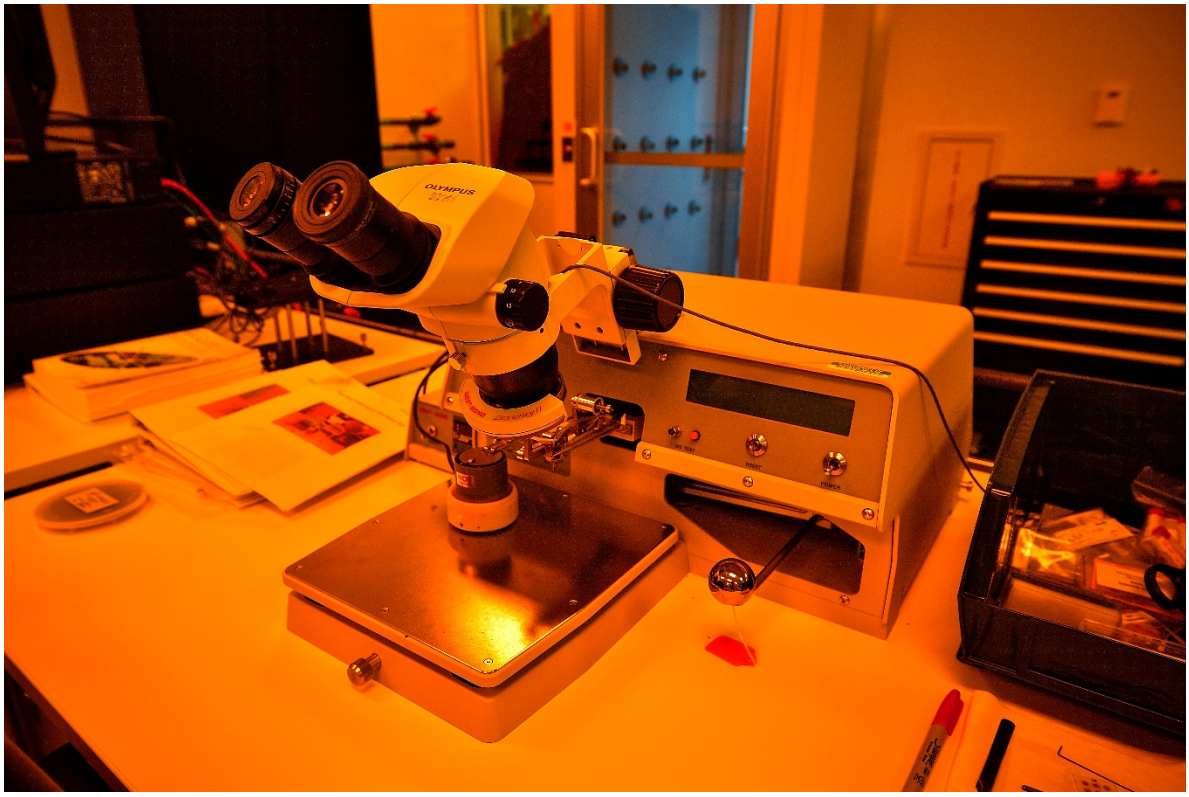
West Bond 7476D Manual Wire Bonder SOP

4/29/2020



Operation Tips:

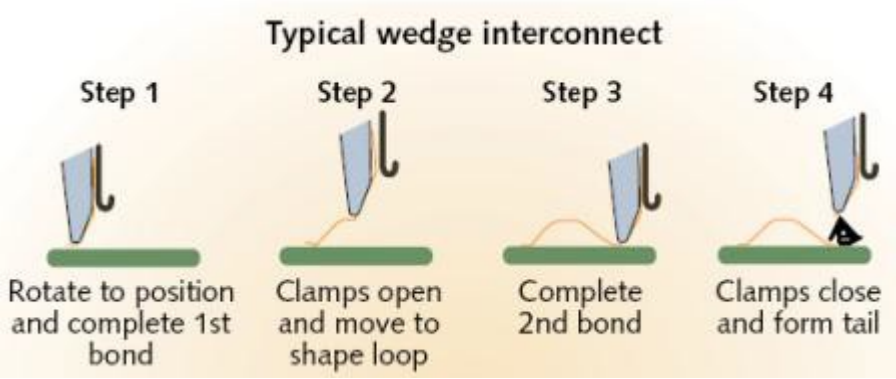


Figure 1. schematic of wedge bonding

• Make sure that your package and dies are clean. Photoresist residue, fingerprints, acetone/alcohol residue, on any surface to be bonded will make bonding difficult or impossible.

• In general, aluminum wire has a shelf life of 6 months in air. After that, enough surface oxide can build up on the wire to impede bonding. The shelf life is significantly reduced if the wire spool is dropped on the floor where it can pick up contamination or if the spool is handled by someone not wearing clean gloves. Never handle a spool of wire without first putting on clean gloves!

• The metal bond pad on your device/substrate must also be oxide free and the metal must adhere well to the substrate. If your device has severe metal adhesion problems, do not expect to be able to get good wire bonds. If you are having difficulty getting wires to stick to the package metal pad, e.g. oxidized copper surface. Try lightly scrubbing the metal surface with sharp tweezers to expose fresh metal and then bond to the freshly exposed metal surface.

Description of wire bonder and buttons

POWER Switches

Located on the power module assembly, it activates the wire bonder system. Upon power-up, the microprocessor will complete several internal tests and display a description if any problem is detected.

CLAMP-FEED/OPEN switch

The switch performs several functions. To open the wire clamps, push the switch to the OPEN position. To close the clamps and feed wire though the bonding tool, press the switch to the FEED position.

During programming, press the switch in either direction while in the edit menus to page forward or backwards through the menus.

BUFFER Switch

The BUFFER Switch is used to navigate between thirty different buffers. The buffers are considered as recipe in tool. Each of the buffers holds the bond settings and bonds per wire data for a particular application.

REV/FWD Switch

While in the Edit menus, the UP/DOWN switch will allow the operator to increase or decrease the desired settings

Bonding procedures

Log in FOM from general usage computer to start the session!

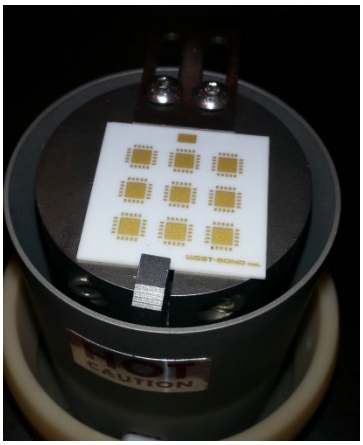
1. Turn the bonder power on (located on the right of the panel)

2. Turn on the microscope lamp

3. Choose the desired program buffer using the buffer switch. Note: You should only edit your assigned program buffer

4. Press EDIT to verify or modify program settings. See the sections of programming for an explanation of the various program settings. Note that recommended values are shown on the display for each setting. It is suggested that you record your settings for future reference

5. Mount your sample onto the work holder



6. Move the work holder beneath the bonding tool and adjust the work platform height by platform height adjustment knob (if needed)

7. Adjust the zoom and focus of the microscope so that the area of interest on the part is in full view and is in focus.

8. Now after all preparation work is done, you can start the wire bonding by using the micromanipulator to lower the bonding tool to the bond location and gently touch the tip of the tool to the bond surface. (Note that the machine will only bond when it is at the "home screen" and ready for "bond 1 of 2" or after first bond has been completed, the top line of the LCD will display "bond 2 of 2". The tool detects contact automatically and will activate the ultrasonic energy on contact). An audible beep will be heard while the bond is being made. The bonder then opens the wire clamp and prepares for second bond.

9. After completing the first bond, gently lift the micromanipulator and move the bonding tool forward through the looping path. (Note - the tool must be moved from front

to back for wedge bonding).

10. Move down toward the second bond site and gently touch the tip of the tool to the bond surface. An audible beep will be heard.

11. Lift up on the micromanipulator and move to next bond pairs.

12. Repeat steps 9-11 for each bond pairs.

Shut Down:

- When you finish bonding your sample, slide the work holder completely to the side so that no part of it remains beneath the bonding tool.
- Turn off the power switch and the microscope lamp.
- Remove your part from the work holder.
- Log out of FOM from general usage computer to stop the session.

- Feed through the broken wire

When wire is broken during operation, mostly happening between capillary and the guide tube, having the clamp open by pressing the TORCH/THREAD switch up once, then using the tweezers to hold the wire and feed it through the capillary, It will take some practice to get it done and it may take some time.

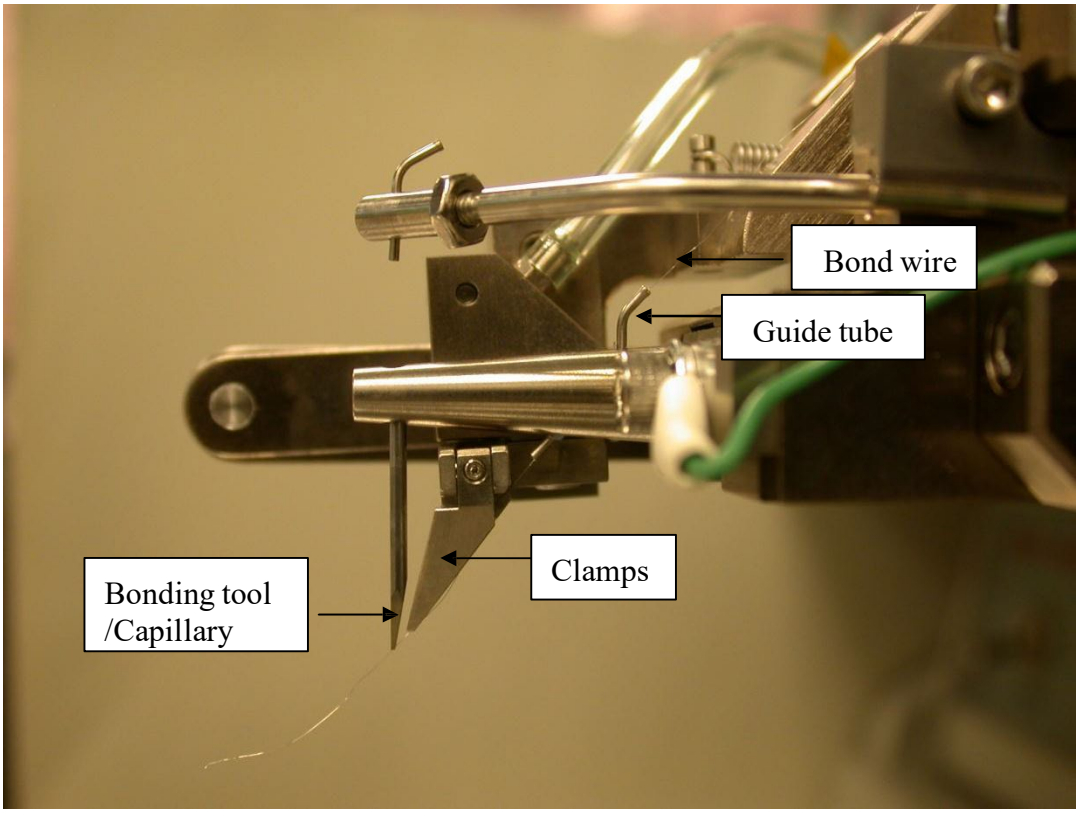


Figure 4. Picture of bonding tool and bonding wire

The bonder is using house N2 to operate the clamps; the N2 valve against the wall should be always open. If there is no N2 supply, verify if the N2 valve is in opened position.