CORAL Name: Wirebond-Ball-MEI

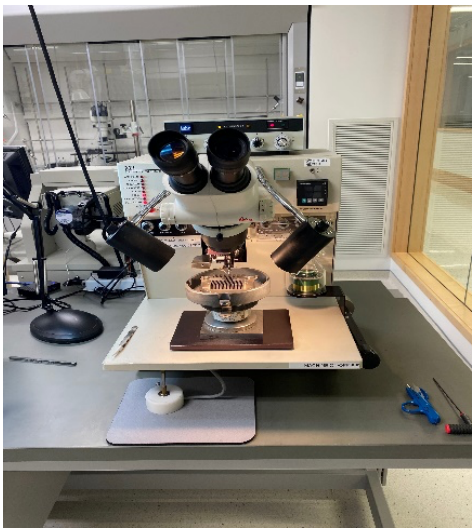
Location: Level 5 Packaging, Bay 5115
Purpose: Packaging
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Introduction

The MEI Wirebonder is a manual ball-bonding tool that uses gold (Au) wire to make electrical interconnections between bond pads on a device or between a device and a package. The tool uses a 1mil (25um) diameter Au wire. The minimum bond pad size on a device is 100um x 100um x 100nm thick. The tool is intended for smaller chips (less than 50mm x 50mm) and packages. The stage is approximately 75mm to hold these types of samples.



Safety

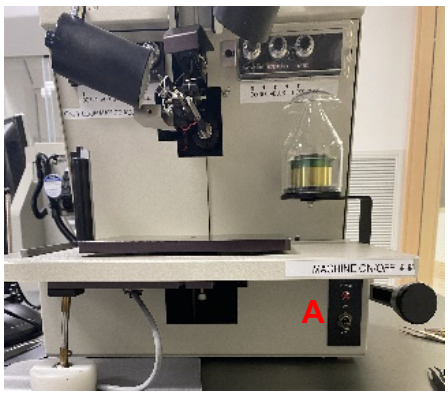
The wirebonder has mechanical pinch points and the tip of the bonding mechanism is sharp. Care should be taken when mounting samples and handling small and sharp parts to avoid being cut. Safety glasses must be worn at all times in the lab.

User Qualifications and Responsibilities

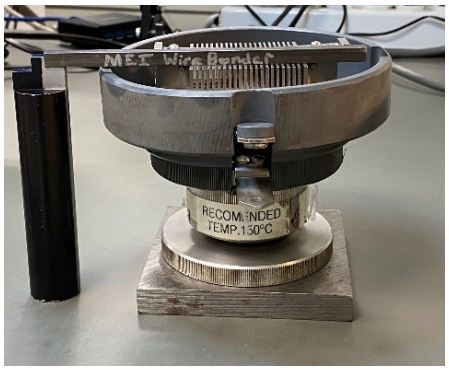
- In person, hands-on training is required to become qualified to use the wirebonder. A sample is not required for training.
- MIT.nano supplies tweezers at the tool, but it is best for users to have their own tweezers because the shared tweezers may be damaged from improper handling: 5ASA are recommended.
- Users may be required to replace bonding capillary/rethread wire.

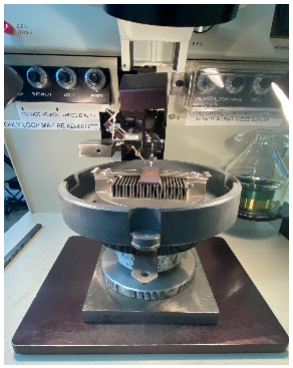
MIT.nano	Wirebond-Ball-MEI User Standard Operating Procedure	
	Last revision: 06/7/2023	Version: 1.0 Tim Turner

Operating Procedures



1. Engage tool in Coral.
2. Turn on the power switch (**A**), located on the front lower right hand corner of the machine.
3. Set work holder height:
   a) Use silver side of height gage.
   b) Adjust height of work holder, so that it is flush with silver side of height gage when work holder is placed on the steel spacer plate.
4. Mount sample on work holder.
5. Carefully place spacer plate and work holder on the wirebonder stage.
6. Adjust Focus/Zoom so that bonding area is in focus. (The tip should be visible in the upper view of the microscope.)
7. Using the lever on the right hand side of the tool, slowly lower the bonding tip down to the pad you want to make the 1st bond.
8. Push down on the lever until it reaches its stop, and then slowly allow the lever to return to its original position.
9. Move sample to 2nd bond position and repeat bonding procedure.





Adjusting Loop Height

1. Make 1st bond
2. Adjust Loop dial (**B**) to desired height (0.5-7)
3. Make 2nd bond

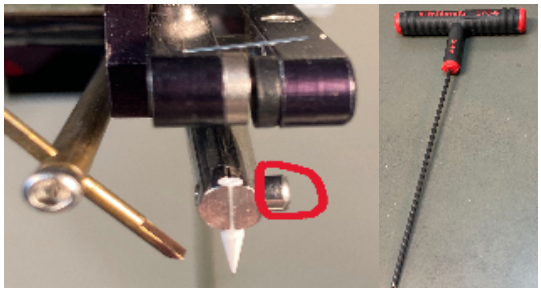


Appendices

Replacing the Capillary

New capillaries are stored in left hand drawer.

1. Using the hex wrench, loosen the screw holding the capillary.
2. Remove old capillary, and throw away.
3. Remove new capillary from vial, install in transducer arm, so top of capillary is flush with the top of the transducer arm.
4. Tighten screw with wrench, being careful not to over tighten.



Threading Capillary

If the wire breaks or needs to be threaded after a capillary replacement, use the following procedure. This can be somewhat difficult, be patient and take your time.

1. Using tweezers with good tips, hold the wire about 1” from the end and carefully angle it down into the top of the capillary and start feeding it through.

2. When the wire starts to come out of the bottom of the capillary, release it.
3. Grab the end of the wire that has come through the capillary and pull it through so that 2” of wire extends beyond the capillary tip.
4. Feed the wire back through the guide above the capillary and make sure it is between the clamp pads (**C**).
5. Press and release the red “EFO” button on the front panel of the tool. This will create a “ball” on the end of the wire.
6. Make a couple of test bonds.
7. Any problems can be resolved by staff.

