

DETAILED SPECIFICATIONS FOR “DIE BONDER”

Die Bonder equipment is used for attaching the bare chips using Epoxy/Eutectic die bonding technologies. It includes interchangeable tool head assemblies for dispensing and bonding. This machine can be used for dispensing the epoxy and for pick up and placement of dice/preforms with vacuum capillary tools.

1. Main system

- a) Epoxy and Eutectic attachment.
- b) Compatible mechanical Arm based mechanism shall be provided for both operations of pick up & place and Collets.
- c) Die Placement accuracy shall be ± 0.5 mil ($-12.5\mu\text{m}$) or better.
- d) Provision for Die rotation (360 degrees) during placement time.
- e) Interchangeable tool head assemblies for bonding of either epoxy or eutectic methods.
- f) Battery back-up RAM memory.
- g) Bond force should be provided 10g to 175g or better.
- h) XY Movement range –minimum 6” x 4” or more.
- i) Z tool range -0.56” or more.
- j) Z encoder resolution- 0.002” or better.
- k) All mechanism to be provided above the work plane to enable rework.
- l) Radiant tool heat, mechanical scrub motion for the bond head with provision for programming both amplitude & no. of repetitions.

2. Micromanipulator

- a) Microprocessor controlled Dual Counterbalanced, single lever X-Y-Z Manipulator and 8:1 ratio.
- b) Controls for the operation of the vacuum for the picking and placing the die/preform & Die rotation and should also controls the dispensing of the epoxy or the scrub cycle.

3. Integrated Dispenser

- a) Compatible for Epoxy and Eutectic bonding.
- b) Provision for programming the amount of epoxy to be dispensed and elevation of dispensing (Pressure/ Time dispense).

4. Work holder

- a) Heated non-rotating Plate/surface of 6”x 4” or more with temperature Controller-ambient to min 400°C and Provision for heating ramp.
- b) Provision of micrometer in order to move the axes manually and adjustable height for variable cavity packages through a range of minimum 90mm to maximum of 160mm.
- c) Mechanical/Teflon clamping with adjustable back stop to hold Hybrid flat packages and substrates of various sizes ranging from 0.25 to 4.0 square inches and vacuum support with vacuum hole. Compatible vacuum pump for holding the work piece as well as to pick the devices.
- d) Waffle/Gel pack holders should have included with rotating 2”x 2” fluoware support and rotating die mirror presentation.

5. Work Platform size

- a) Minimum size of 14”x 12”.
- b) Provision for adjusting the height vertically through a range of 0.62”, 0.09” above and 0.53” below in the nominal work elevation, by a single thumbscrew and with planarity control.
- c) Planarity control with three-point adjustment.

6. Microscope

- a) ESD Protected Stereo zoom microscope with fluorescent shadow less illuminator.
- b) Zoom range-0.8x to 4.0x or better.
- c) Magnification range 10x-60x with eyepieces 15x or better.
- d) Working distance 100mm minimum (Z- direction).
- e) Must be focused on sample stage with proper illumination system.
- f) Field of view minimum 30mm.
- g) Microscope mounts stay in focus with height adjustment.

7. **Camera**

- a) Video Camera resolution >5MP or better.
- b) Standard C-mount adapter for digital cameras.
- c) HDMI port and/or any other port for connection to VDU system.
- d) Frame rate-24fps or more.

8. **Video Display unit(VDU)**

- a) Size-27" with at least 1920x1080 resolution.
- b) VDU shall be integrated with microscope.

9. **Display Screen**

- a) Prompt screens for setting the programmable machine parameters.
- b) Set bonding parameters during bonding.

10. **Quote for Vacuum Pick up tools, Die collets and epoxy dispensers in slabs of 1-10, 11-20 and 21-30Nos. as per list below.**

Pick up tools to pick up the bare silicon chips of sizes ranging from 15 to 400 Square mils and also should access the deep cavity packages ranging from 0.62" to 1.2" depth.

Vacuum pick up tools-

- Teflon tips for corresponding Die sizes:

- a) 0.006-0.012-0.62 inch(10nos)
- b) 0.006-0.012-1.2 inch(10nos)
- c) 0.010-0.018-0.62 inch(20nos)
- d) 0.010-0.018-1.20 inch(20nos)
- e) 0.015-0.030-0.62 inch(10nos).

- Rubber tips for corresponding Die sizes:

- a) 0.006-0.012-0.62 inch(10nos)
- b) 0.010-0.018-0.62 inch(10nos).

- Hand held Rubber/Teflon Pressing setup tools:

- a) 0.100-0.120-6 inch (10nos)
- b) 0.150-0.180-6 inch (10nos).

- Pyramidal / 4 side Die Collets-Rubber tips for corresponding Die sizes.

- a) 0.100-0.100-0.010-0.62 inch(5nos)
- b) 0.150-0.150-0.015-0.62 inch(5nos)
- c) 0.170-0.170-0.015-0.62 inch(5nos).

- Epoxy dispense needles to dispense epoxy to the pad size of 30 to 250 square mils required.

- a) 0.006ID,0.0120OD(2nos).
- a) 0.0125ID,0.0250OD(2nos).

11. **Electrical requirements:** 220V AC Typ. 50Hz Supply, single phase. Protection against Electrostatic Discharge for the equipment should be provided.

12. **Environment Condition**

- a) Temperature 20°C to 40°C.
- b) Humidity 40% to 60% non-condensing.

13. Compatible Vacuum pump for equipment to be provided and same to be considered as a part of equipment.

Terms & conditions:

14. **Spares and Accessories:** Supplier shall provide all essential operating accessories.

15. **Spares parts support:** The supplier must assure supply of spare parts for minimum of 10 years after installation of the system.

16. **The offer may please be submitted in two parts.** Technical (Part A) and commercial (Part B) bids shall be offered in two separate envelopes. A copy of the blank price bid (without numbers) shall be included in the technical part.

17. **One to One Compliance:** The supplier shall provide printed catalogue of the system providing detailed specification and one to one compliance table as per the technical specifications. The offer should be complete with compliance for each of the specification, Offering features, Safety features and optional items. Indicating merely 'Yes', 'No' or 'OKAY' in the compliance statement will not be considered
18. **Heritage:** The quoted model shall be from reputed manufacturer for whom it is a regular/ standard product. Any quote from first time built systems will not be considered. It Shall have a heritage of at least of 5 years. Supplier shall provide the reference of the list of customers having similar equipment elsewhere in India. If required, demonstration of the system should be arranged.
19. **Authorization:** Item must be supplied by original manufacturer/ authorized distributor. In the case of distributor, a copy of authorization letter from their manufacturer must be enclosed.
20. **Warranty:** Minimum 12 months of Warranty from the date of installation & commissioning by the supplier shall be provided.
During warranty period uptime of the machine shall be more than 95% (operative). The supplier should attend the breakdown of the machine within two weeks. If the breakdown of the machine is not rectified within two weeks, warranty period will be increase proportionately for the corresponding period. Lodging, boarding, Travel etc., for the service engineer has to be borne by the supplier only.
21. **Instruction manual:** Two copies including installation procedure and service manual with details regarding operation and maintenance of the system shall be provided. Supplier should provide the Certificate of Compliance also.
22. **Installation & Training:** Supplier shall depute his engineers at URSC for installation and demonstration of the equipment. Supplier should provide training to Engineers at URSC for operation and maintenance of the equipment. Lodging, boarding, Travel etc., for the service engineer has to be borne by the supplier only. The equipment shall be deemed installed after successful commissioning and demonstration of the equipment and training of URSC engineers in performing basic maintenance and routines on the system. Vendor should quote for all the necessary items for smooth operation of the machine which may not include in the above mentioned specifications.

Note:

- i) Machine should be catalogued equipment & quote for first time-built systems will not be considered.
- ii) Details of same equipment installed/ supplied to be provided.