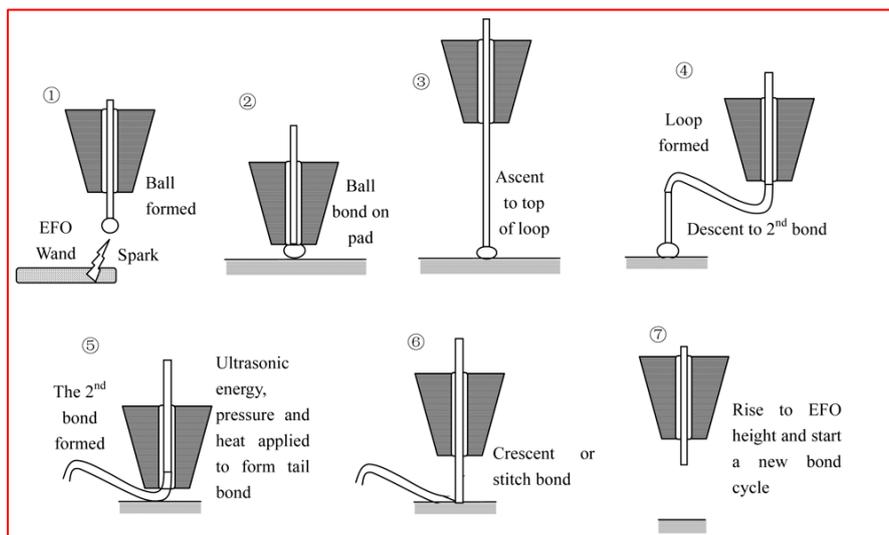


- SCOPE: Explanation of the ball bonding cycle for ultrasonically welding electrical interconnects in microelectronics.

The Ball Bonding sequence for both manual and automatic machines can be explained in seven steps:



- **STEP 1: BALL FORMATION**  
Spark from EFO wand melts wire to form ball for first bond.
- **STEP 2: FIRST BOND**  
Ball bond ready to commence. Tool brought over first bond position (X, Y) and down into contact with surface – force is pre-set value – ultrasonic energy applied for pre-set time to form first bond.
- **STEP 3: LOOP HEIGHT**  
Tool is raised to pay wire out from spool (clamps open) to loop height value.
- **STEP 4: LOOP FORMATION**  
Tool moved to second bond position (manually or automatically).
- **STEP 5: SECOND BOND**  
Tool brought into contact with surface – second bond made as step 2.
- **STEP 6: TERMINATION**  
Following 2<sup>nd</sup> bond, tool moves up to pre-set height (tail), clamps close and break off wire at 2<sup>nd</sup> bond heel.
- **STEP 7: BALL FORMATION**  
Automatic repeat of step 1 to begin cycle again.

For further information on ball bonding equipment and consumables:

<https://www.inseto.co.uk/microelectronic-equipment-kands-auto-ball-bonders.php>

<https://www.inseto.co.uk/microelectronic-equipment-mpp-manual-wire-bonders.php>

<https://www.inseto.co.uk/microelectronic-materials-coining-ultrasonic-bonding-wire-and-ribbon.php>

<https://www.inseto.co.uk/microelectronic-materials-kands-bonding-tools-and-dicing-blades.php>