

## Bump bonding

You can use standard Ball bonding tool for making Bumps.  
 The Ball size depends at Tail length, EFO power and wire size.  
 Recommended are: 400 Tail length, EFO power 90%

The ball size will never be smaller than three times wire size.  
 Example: for 25 $\mu$  wire diameter it is minimal 75 $\mu$  diameter Ball  
 The final Bump size depends to the bond parameters and bump tool.  
 In any case it will be bigger than the Ball size before bonding.

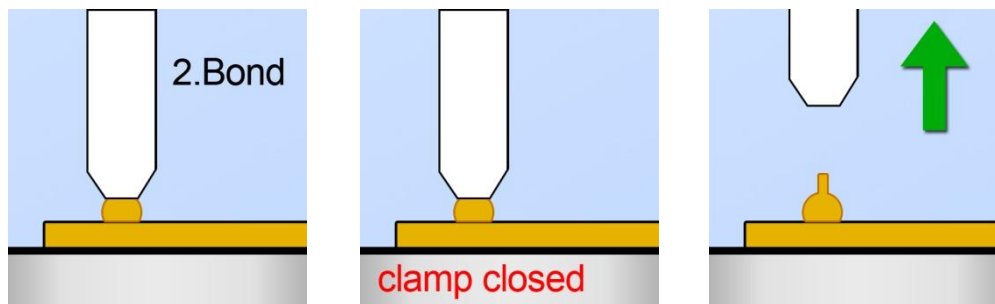
There are two possibilities to make Bumps:

### 1. Bump with Tail and Coin Tool for HB05 and HB16.

Change bondmode to "Ball Bump".

HB05 use the Bond1 Parameter for the Bump.

After the Bump bond the wire will be cut and the next Ball will be made.



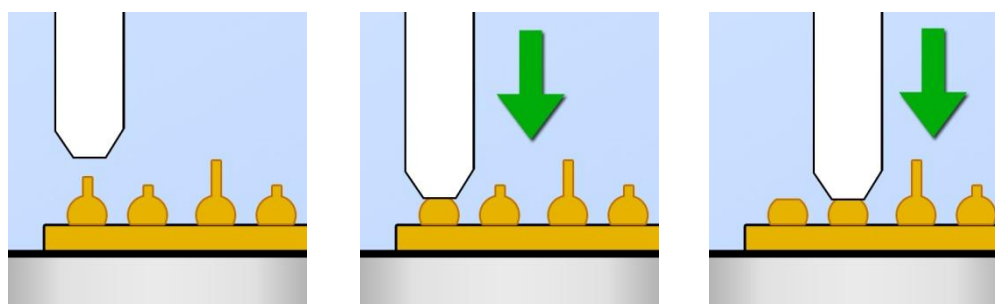
The wire will be break near above the Ball. The break point can be on different points after the ball. This leads to different wire lengths after the ball.

Some wires like HD6 from Hereaus are more constant about break point.

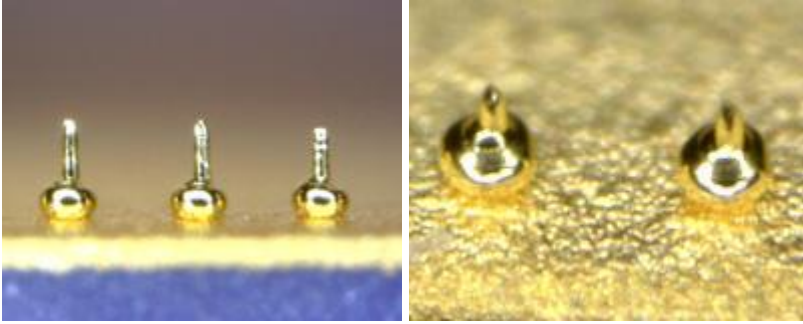
If you need flat Bumps you have to use a coin tool after making the Bumps.

Coin tool is complete flat, with no hole.

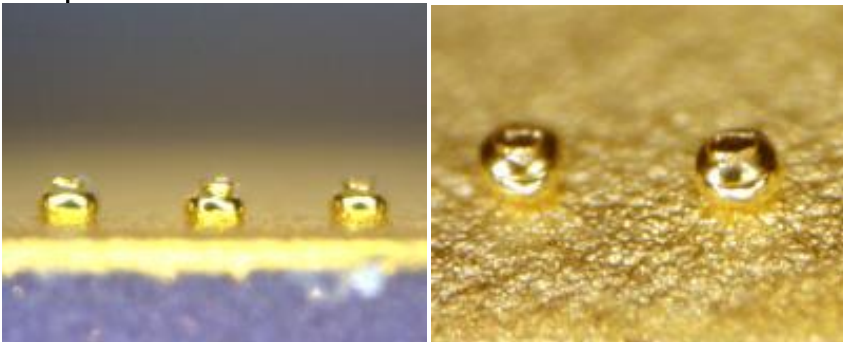
It depends at your application if you need a tail above the Bumps.



**Bump with Tail:**



**Bump without Tail coin tool are used:**



**Recommended equipment:**

- **25 $\mu$  gold wire**  
H70-21B / Bump Gold Wire 25 $\mu$  100m, HA3, El 0,5-2,5%, Bl. > 17 cN
- **„Standard-capillary“ for 25 $\mu$  gold wire**  
H61-2 / 1572-15-750 GM (19mm)
- **TAB / Coining Tool**



## 2. Bump with Tail and Coin Tool only for HB16.

Go to standard Ball bond mode and program a standard Ball-Wedge bond.

To get a Bump without a tail you have to make a small groove to the wire at tip of the ball.  
To get this small groove you have to make the second bond with very less parameters on the Ball.

Use a Tail between 400 and 500 and TableTear Mode.

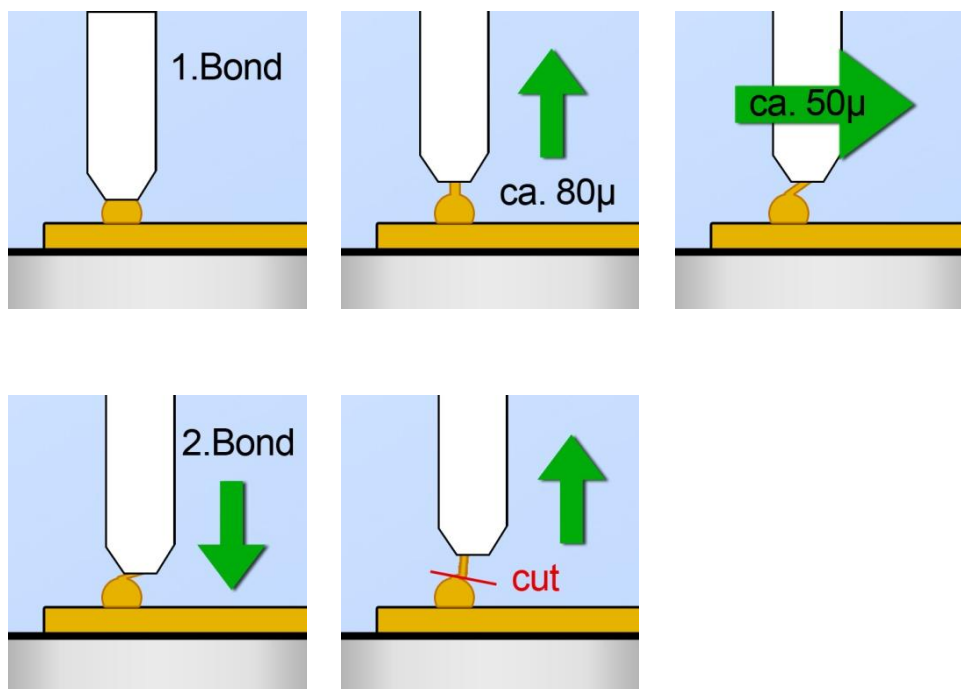
Parameters for second Bond about: 80 US / 200 Time / 150 Force

Use a Loop Program with: 80-120 Up / 50-80 Forward

The exact loop depends on the ball size.

**Second Bond parameters are critical for Bump height.**

**You have to try different Loop parameters and bond parameters to get a good and constant result.**



Recommended equipment:

- **25µ gold wire**  
H70-21 / Gold Wire 25µ 100 Meter, El 0,5-3%, Bl. > 11 cN
- „Standard-capillary“ for 25µ gold wire  
H61-2 / 1572-15-750 GM



**Security Bump bonding:**



Another application for Bump bonding is the "Security bump", in this method the Bump stabilized the second bond from a normal Ball-Wedge bonding.

