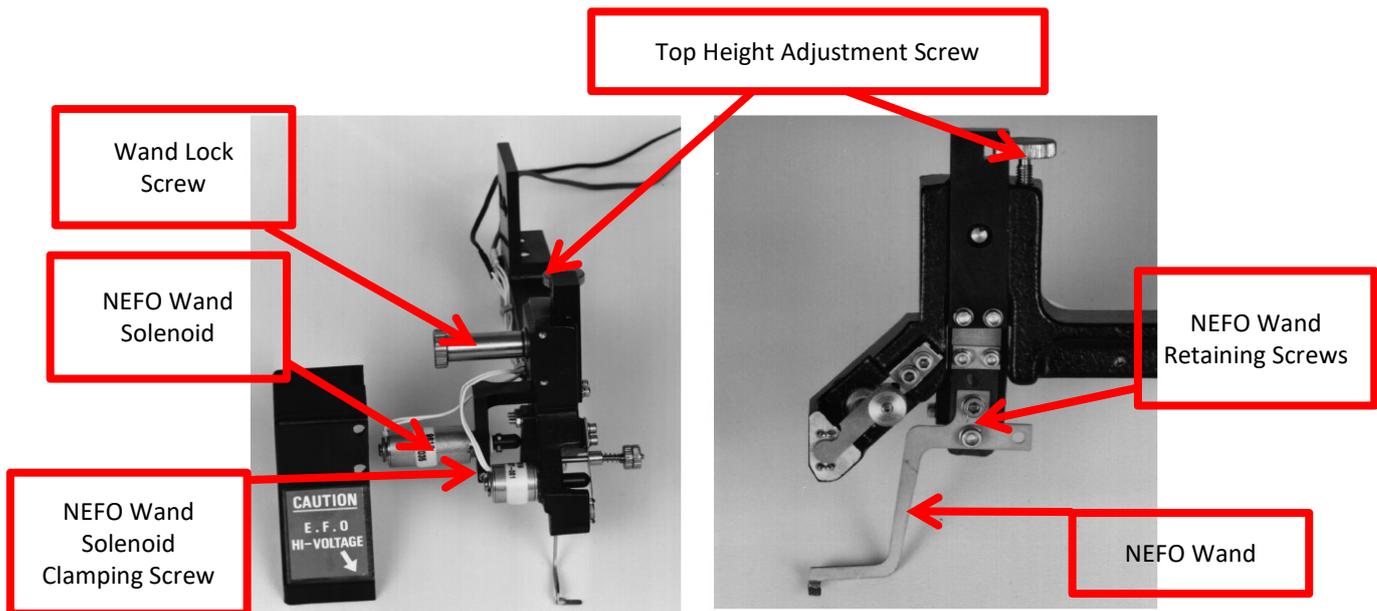


- SCOPE: Instructions on how to setup the position of the NEFO on all MPP Manual Ball Bonders.

- Specific Precautions for Manual Ball Bonders with NEFO!**
- Do not touch the NEFO wand of wire during bonding or when manually firing the Negative Electric Flame off (NEFO). The machine produces a HV spark between the NEFO electrode wand and the wire. This can cause an electric shock if contacted during the NEFO firing process. MPP recommend that people suffering from abnormal heart conditions or have pacemakers fitted do not operate or service the equipment.
- The NEFO wand assembly and circuit consist of a power supply circuit and a movable Wand (Electrode) that is actuated by a solenoid. When a FAB (Free Air Ball) is created at the end of the Ball Bonding cycle, the NEFO electrode is charged with a Negative HVDC charge and the NEFO solenoid pushes the Wand under the bottom tip of the capillary. The resulting spark passes from the wire to the Wand, melting the tail of the wire into a FAB. The NEFO Wand returns to its Wand Reset Position, ready for the next bonding cycle.



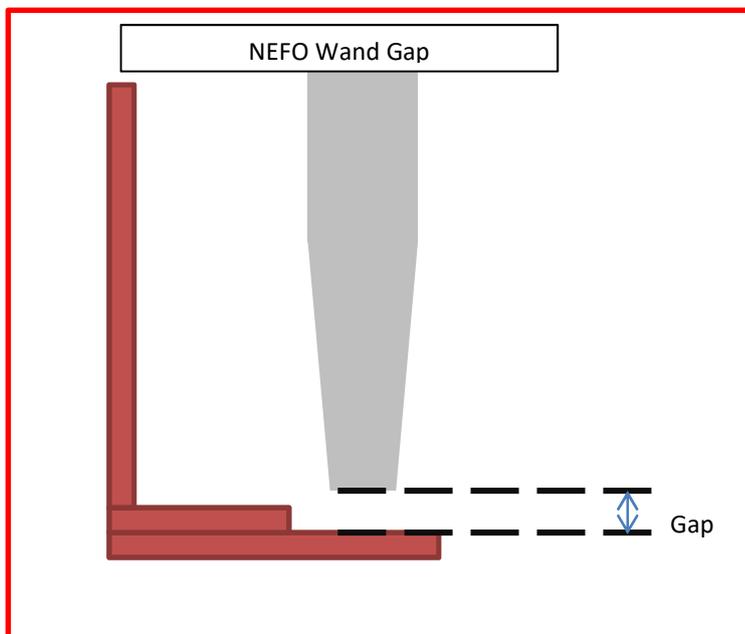
- The wand needs to be adjusted for Gap (Height), Reset Position, Overtravel and for Lateral Position.

- **Gap (Height)**

- To adjust the Gap between the Wand and the wire.
 - ❖ Turn on the Bonder and make sure the Bonder is in the Reset position (1st Bond indicator illuminated).
 - ❖ Loosen the NEFO Lock Screw.
 - ❖ Turn the Top Height Adjustment Screw until the NEFO Wand is at the recommended distance underneath the Capillary tip.
 - ❖ Tighten the Wand Lock Screw.

	25u Au (Gold)	30u Au (Gold)	50u Au (Gold)
NEFO Wand Gap between Wand and Capillary Tip at reset.	500	570	625

- ❖ A rule of thumb is the greater the Gap the smaller the FAB (ball), increasing the Gap will also add more inconsistency to (FAB ball) sizes.



- **Reset Position**

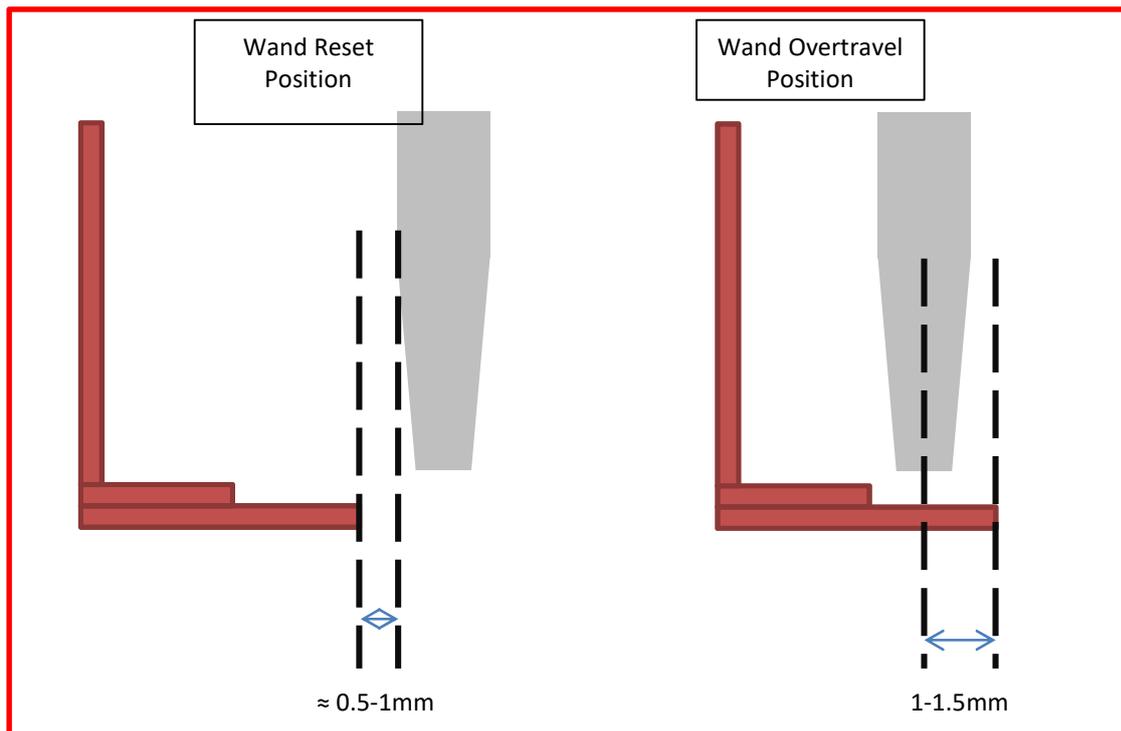
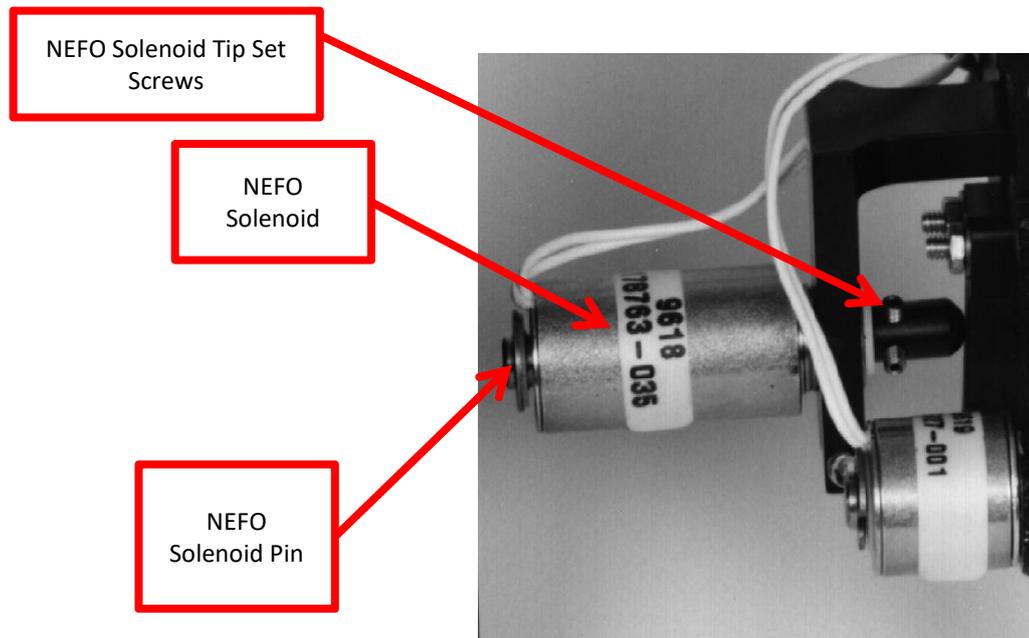
- To adjust the NEFO Reset Position.

- ❖ Loosen the NEFO Wand Solenoid Clamping Screw.
- ❖ Turn the solenoid so that the NEFO Wand is close to, but not touching, the capillary during the bonding operation. (Note. The NEFO wand may slightly touch the Ultrasonic Bonding Arm during overtravel).
- ❖ Tighten the NEFO Wand Solenoid Clamping Screw.

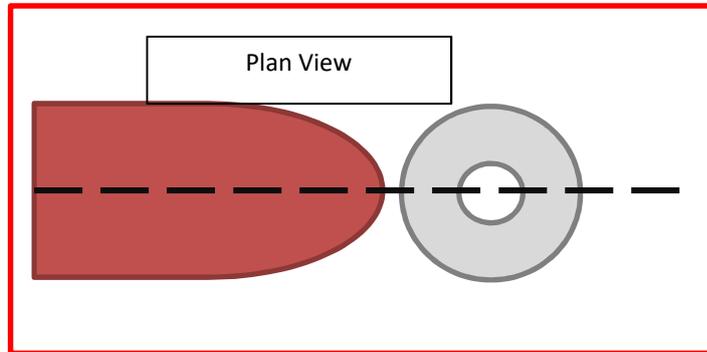
- **Overtravel**

- To Adjust the NEFO Wand Overtravel.

- ❖ Loosen the NEFO Solenoid Tip Set Screws (x2).
- ❖ Press the NEFO Solenoid Pin with your finger until the Circlip is fully pressed against the NEFO Solenoid Body.
- ❖ Move the NEFO Solenoid Tip with the NEFO Wand until the NEFO wand protrudes past the bottom of the capillary by 1 - 1.5mm.
- ❖ Tighten both NEFO Solenoid Tip Set Screws.



- **Lateral Position**
- To adjust the lateral position.
 - ❖ Loosen the NEFO Wand retaining Screws.
 - ❖ Tilt and manoeuvre the NEFO Wand until the Tip of the Capillary is central to the NEFO Wand.
 - ❖ Tighten the NEFO Wand Retaining Screws.



For further information on Micro Point Pro equipment:

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

ADAM MARSHALL
17 Nov 2017

IKB0022, REV 1
PATH: Wire Bonding – Manual Bonding – NEFO Wand Setup