WEHEN WL-2402 Wirebonder (v. 1.1)

1. Purpose

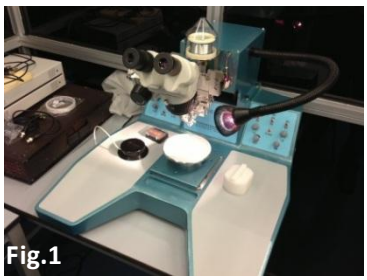
Fig.1

The Model WL-2402 bonder is an ultrasonic wedge wire bonder designed to bond wire leads between contact pads of packages, ICs, hybrid, microwave, and MEMS devices. The bonders are set up to use **25 microns (CCC, 1 MIL) diameter Al-1%Si wire**.

2. Machine Control Definitions

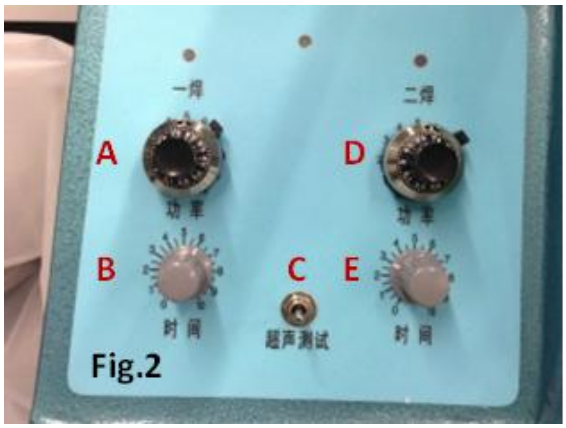

Fig.2

Fig.3

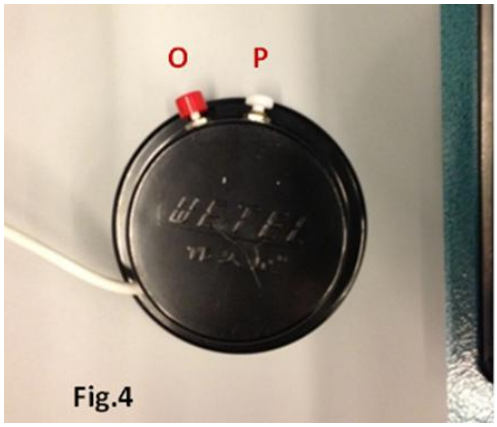

Fig.4

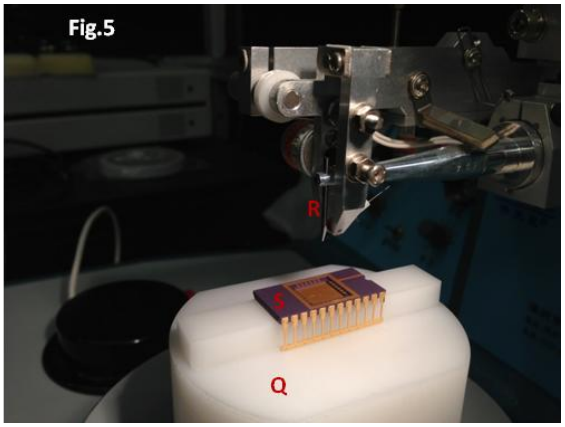

Fig.5

A: Ultrasound power adjustment for first bond
B: Ultrasound time adjustment for first bond
C: Ultrasound-Testing switch **(Never turn on for more than 3 second, will fry internal circuit!!)**
D: Ultrasound power adjustment for second bond
E: Ultrasound time adjustment of second bond
F: Auto/Manual mode selection switch
G: Bonding force adjustment for first bond
H: Loop height/length switch **(Only loop height is used)**
I: Force test switch
J: SET/LOCK switch
K: Bonding force adjustment for first bond
L: Reset (Retract wedge to start-up position)
M: illumination adjustment knob
N: Multifunction adjustment knob
O: Auto/Manual mode switch **(Do not use)**
P: Bonding button
Q: Work Holder
R: Wedge **(Do not hit this, specially the Tip!!)**
S: Bonding package

3. Equipment Operation

A. Pre-adjust the system height

(1) Check all switches are in correct position as shown in Figure 3.

(2) Power up the system by pushing POWER button on the left side of the machine. The LCD light and halogen illumination lamp will be on.

(3) Mount the bonding package on the work holder with double side tape. The die must be rigidly mounted to the package so that the ultrasonic energy from the bonding wedge can be transmitted to the die efficiently.

(4) Place a mounted dummy package directly underneath the wedge. At this moment, the binding head will be much higher than your package.

(5) Press Bonding button, the wedge will move down, touch the package and retract about 1mm

(6) Switch SET/LOCK switch to SET position.

(7) Press and hold the Bonding button, adjust the tip height by slowly turn the adjustment knob to appropriate position.

(8) Release the Bonding button to finish the first bond, adjust the height by the adjustment knob and slightly modify the position by moving the stage with manipulator, repeat step (8) to finish the second bond.

(9) Switch SET/LOCK switch back to LOCK position.

B. Wire-bond device

(1) Remove work holder from stage, be VERY careful that **DO NOT hit the wedge** (If the your bonding position is much lower than the surrounding, switch SET/LOCK switch to SET position, repeat A.(8) and set a higher position).

(2) Mount your device package on the work hold

(3) Place the device package under the bonding tip, be VERY careful that **DO NOT hit the wedge.**

(4) Aim the tip on the first bonding pad, and press Bonding button; first bonding will be formed.

(5) Aim the bonding tip on the second pad by moving the stage with manipulator, and make the second bond by pressing bonding bottom again.

Note: only move down in Y direction, so that the wire is directly underneath the tip. Otherwise, bonding cannot be made.

C. Adjust Settings (Optional)

Ultrasonic Power, Time and tip force can be adjusted by turning corresponding adjustment knobs on the left panel (Figure 2). Generally, higher power, longer time and larger force leads to stronger bonding, however, high settings also leads to damaged wire and your device. In most cases, a longer time is preferred over higher power for good bonding result. Another important factor affects the bonding process is the cleanness of the surface, a contaminated surface will be extremely difficult or impossible to bond. The recommended value of power and time is listed as following:

	Power	Time	Force
First Bond	2.5	6	3
Second Bond	3.5	3	3

D. Shutdown

When you have finished the wire bonding, you should do as follows:

(1) Raise the wedge by press Reset button

(2) Carefully remove the work holder, make sure you don’t hit the wedge.

(3) Switch off the power

(4) Clean the work area.

E. Thread the wire (Only when wire broken)

Only experienced users are qualified to thread the wire, please ask other user if you are not confident.

(1) Open the wire clamp on the wedge
(2) Pull off the broken wire from the tip, cut-off the tip and make a straight and clean end.
(3) Use sharp tip tweezers to insert the wire into the threading hole directly behind the tip.
(4) Once the wire can be seen on the other end of the tip, pull it off with tweezers
(5) Close the wire clamp, press the clamp joint (yellow arrow) and make sure the moving pin (green arrow) touch the screw.
(6) Make one additional bond to cut the excess wires.