



**ORTHODYNE[®]
ELECTRONICS**

Forming Strong Customer Bonds Since 1962

PRODUCT UPDATE

High Frequency Ultrasonic System for Large Wire Bonding

082604a

August 26, 2004

Now for All Orthodyne Large Wire Bonder Series

Controlled 80 kHz Ultrasonic System

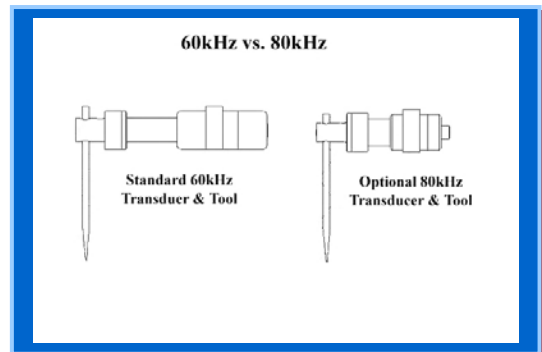
Since the beginning of ultrasonic wire bonding, 60 kHz ultrasonics has been the standard frequency. Higher ultrasonic frequencies have been used for small wire bonding (25 – 75 micron) with great success. In an effort to advance the technology for large wire bonding (100-500 micron), Orthodyne Electronics has developed a high frequency ultrasonics system for all large wire series bonders. After testing several frequencies, 80 kHz was a good compromise to improve bonding while maintaining a large process window.

Improved Bonding

80 kHz has the potential to improve quality and increase throughput. Although actual results may vary, applications testing has shown that 80 kHz requires less bond time and can yield higher shear tests with less deformation than comparable 60 kHz bonding. 80 kHz can also offer improved bondability on devices whose mechanical structure resonates close to 60 kHz, which can drain energy from the bonding process.

System Components

Orthodyne's new ultrasonic system includes an 80 kHz transducer with 40% less mass than the current standard 60 kHz transducer. The reduced mass assures minimized impact force during touchdown. On 3600 and 7200 machines, the newly designed Digital Ultrasonic Generator uses Digital Signal Processor (DSP) and Field Programmable Gate Array (FPGA) technology to offer tighter phase-lock loop control, internal diagnostics, greater thermal stability and an operating frequency range from 30 to 150 kHz. M360C machines use a specially designed 80 kHz analog generator.



80 kHz Low-Mass Transducer

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80 kHz Components for the 3600 and 7200 Series Bonders

Part Numbers	Description
72-50021	80 kHz Rear Cut bond head
72-50903	80 kHz Conversion Kit for rear cut bond head (60 kHz TO 80 kHz)
72-50011	80 kHz ALC Front Cut bond head
72-50905	80 kHz Conversion Kit for ALC bond head (60 kHz TO 80 kHz)
72-10917-01	Digital Generator Kit for single head machines
72-10917-02	Digital Generator Kit for 7200 dual head machine (includes two generators)
72-50921-03	Tool Height Gage 2.5" Tool
168073	Cutter Height Gage Rear Cut (Same as 60 kHz)
72-50931-01	Cutter Height Gage ALC Front Cut (Same as 60 kHz)

Note: 1. The 80 kHz option can be ordered to replace the standard 60 kHz with a new machine.
2. 80 kHz bond heads require the digital generator.

80 kHz Components for M360C Series Bonders

Part Numbers	Description
172004-01	80 kHz Rear Cut bond head (Can be converted to Front Cut with 172416)
172498	80 kHz Conversion Kit for rear cut bond head (60 kHz TO 80 kHz) Includes 80kHz Generator. May require Bond Head to be sent to OE for conversion.
177004-02	80 kHz ALC Front Cut bond head
172498-01	80 kHz Conversion Kit for ALC bond head (60 kHz TO 80 kHz) Includes 80kHz Generator. May require Bond Head to be sent to OE for conversion.
172496	80 kHz Generator Kit (Analog)
177401-03	Tool Height Gage 2.5" tool
168073	Cutter Height Gage Rear Cut (Same as 60 kHz)
168073-50	Cutter Height Gage Front Cut (Same as 60 kHz)

Note: 1. The 80 kHz option can be ordered to replace the standard 60 kHz with a new machine.

80 kHz Bond Tools common to all bonders

Part Numbers	Description
127184-10 to -20	2.5" 80 kHz Bond Tool for Wire Sizes 10-20 mils
127580-4 to -8	2.5" 80 kHz Bond Tool for Wire Sizes 4-8 mils (<i>Front Cut ONLY</i>)
127581-4 to -8	2.5" 80 kHz Bond Tool for Wire Sizes 4-8 mils (<i>Rear Cut ONLY</i>)

Ask your Orthodyne Representative for a Quote on these items to test if your application would benefit.