



Relook at Rework: It Doesn't Have to Be Costly

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There appears to be a significant lack of understanding of the basic methods of SMT rework. One common misconception is that you need to spend thousands of dollars on expensive equipment along with specialized training. Most companies cannot justify this expense for low-volume rework. Consequently, many boards that could be reworked end up being scrapped.

In a typical rework situation, an engineer designing a prototype board may have to change an SMD, install a test socket, lift a pin for test, replace a chip component, install a modification, run tests with different SMD components, run a QC analysis by removing failed components, etc. A technician may have to change a defective SMD, install an upgrade, repair a bad connection, troubleshoot an inoperative board, or make a field repair on location, etc.

A contract manufacturer may have to change a component due to a manufacturing error, touch up solder joints after inspection, repair a board after going through the ATE (automatic test equipment), etc. All of these examples fall into the category of low-volume rework. In all of these cases, a fast, safe, easy, and affordable rework procedure is required that can be performed in-house. To send the board out to a rework specialist or to hire a trained technician would not be practical or economical.

Large rework runs are handled in a completely different manner. A thermal process must be set up with special equipment in order to duplicate results. The traditional conduction and convection methods require a complete inventory of tips and nozzles for all of the different configurations that presently exist. This type of rework requires a trained technician to run the production line. Hand soldering would certainly not be the solution.

Traditionally, the most difficult part of rework has always been removing the SMD from the PC board. The risk of inflicting damage has always been too great for many to even attempt. Most people who have tried and failed would never try again. A safe easy SMD removal solution has long been needed.

The Chip Quik® SMD Removal Kit is a new patented product that has revolutionized the rework industry. Now all SMDs can be removed safely and easily with a regular solder iron and minimal experience. Those who have never done rework can feel comfortable with this unique method. Chip Quik consists of a low temperature removal alloy in wire form with excellent wetting ability that melts at 136°F (58°C). When melted into the ex-

isting SMD connections with a solder iron, the alloy fuses into the interconnect alloy and the two combine to form a new alloy with a melting temperature below 200°F. With this lower melting temperature and an increase in thermal mass, the new alloy remains in a molten state long enough to safely remove the chip. While the solder iron temperature is not critical, 500°F or lower is recommended. At this low temperature all potential damage is eliminated. Cleaning of the pads before soldering on the new chip is of the utmost importance. To clean pads use a solder iron to apply heat while polishing each pad with a swab dipped in flux until thoroughly clean. Solder braid is not necessary and is not recommended because of the high temperature it requires. Complete desolder and clean up instructions are included in each removal kit. Soldering on the new chip requires some skill, but is not difficult.

The global demand to eliminate all lead from the PC board has made rework even more challenging. The new Lead-Free Alloys that are used in manufacturing have a higher melting temperature, making the potential for inflicting damage even greater. Chip Quik works just as well at these higher temperatures. To meet the new challenge, we have introduced a new lead-free formula in the SMD Removal Kit. This new product has been tested for rework on PC boards that were manufactured with the new no lead solders presently available in the industry. The results have been excellent. Now boards manufactured with lead free solder can conform with the new manufacturing requirements by using Lead Free Chip Quik.

The new generation of PC boards is more heavily populated than ever. Every bit of space available both top and bottom is utilized. Chip components and fine pitch SMDs keep getting smaller. Inserting a convection nozzle or a conduction tip into some of these dense areas has become nearly impossible. Higher temperatures applied to adjacent components for any extended time will surely inflict damage. In many cases the only way an SMD or chip component can be reworked is with a good old hand soldering iron, which means that in some very dense areas you can still gain access with a solder iron and Chip Quik to remove the chip at a safe low temperature.

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