

Understanding the Heat Output of your BGA Rework Station

When performing BGA component rework, it is important to know the actual heat that is coming out of the top and bottom heaters when setting up your profile. This is because the heat setting you put in your profile, is not always the actual temperature at your nozzle.

All BGA Rework Machines vary in their actual heat output. Even the same brands and models can vary from machine to machine, because of subtle differences in each unit.

The first thing to do is understand your machines actual heat. Some machines can be calibrated to match the heat coming out of the nozzle.

First, set up a test profile. Set the maximum temperature of top and bottom heaters at 300 C. Hold that temp for 300 seconds. Once both top and bottom have reached 300C for about 30 to 60 seconds do the following:

1. With the top heater in the upper position, measure the heat at the nozzle.
2. Do the same for the bottom heater.

Note the difference in the heat coming out of each heater or nozzle compared to the actual machine setting.

Example: Top nozzle machine setting is 300 C. The actual temperature measurement is 260C. A 40 C difference. Now you know that if you want a profile blowing say no more that 250 C on the body of a heat sensitive component, then your maximum top heater setting should be 290C.

Now with your top heater set at the actual maximum temperature that you require. You can adjust the bottom heaters to achieve the solders reflow temperature.

Ideally you can calibrate your machine so that the temperature set up in the software profile matches the heat at the nozzle if it has this option. If you have many working profiles and you re-calibrate your machine. You will need to adjust all those profiles for the difference in the new calibration.

It is important to have a good thermocouple and a calibrated meter. A thermocouple with a dirty end, loose connections, or slight pinches in the wire can provide considerable false readings.

On lower cost Hot Air BGA Rework Stations the top nozzle heat may vary with the distance of the nozzle from the PCB. Due to low wattage heaters some pack pressure may be needed. So, placing the heater nozzle close to a bare PCB while measuring the temperature output will provide a more accurate reading.