

## ON THE CARE AND FEEDING OF HOT AIR TOOLS

Note: 'Calibrating' hot air SMD rework tools are really a matter of measuring free-stream air flow. So to do properly requires more extensive and expensive test equipment than is readily available in most shops. The equipment and procedures cited below will give satisfactory results with a minimum of expense and time, once the operators become familiar with them. The ten percent error tolerance is based upon practice in the Hakko repair facility.

Note that only the Hakko 851 can be 'calibrated'; the 850 and 852 cannot. The large selection of nozzles, with differing sizes of expansion chamber, number of orifices, and configurations of orifices make 'calibration' in the classical sense meaningless. One can, however, measure the temperature of the air exiting the nozzle for different settings of the heat and air-flow controls to verify proper operation.

### Equipment required:

Hakko 191 thermometer or equivalent

Thermocouple probe for Hakko 191 (Hakko part number A1310)

Mounting frame as shown in Figure 1, or bench vises and a caliper accurate to 0.001 mm (digital preferred, e. g. Mitutoyo 500 series) may be substituted

'Standard' nozzle: A1124 (2.5 mm) for 850, 850B, 850D, 852; A1066 (2 mm.) for 851.

1. Set up as shown in the calibration setup drawing. You will find it on the next page. The 850 handpiece is shown, but that is of no consequence - you do the same for any unit. This procedure assumes the use of the mounting frame.

1. Set the frame on the bench or board and clamp down.
2. Place the probe into its holder. Do not over tighten.
3. Place the handpiece into its holder.
4. Set the gauge in the vertical position.
5. Slide the handpiece to the left until the nozzle just touches the gauge.
6. Now slide the probe to the right until it just touches the gauge. Secure.
7. Set the gauge in the horizontal position. You are now ready to measure temperature.

2. Turn on the unit.

- 850, 850B:
  - i. Set the temperature control to 5 and the air control to 6.
  - ii. Allow 2 minutes for the temperature to stabilize.
- 850D:
  - i. Set the temperature control to 5 and the air control to 6.
  - ii. Allow 2 minutes for the temperature to stabilize.
- 851:
  - i. Set the blow selector switch to High.
  - ii. Set the temperature control to 8 and the air control to 5.
  - iii. Allow the nozzle to heat for two (2) minutes.
- 852:
  - i. Set the temperature control to [ ] and the air control to [ ].
  - ii. Allow 2 minutes for the temperature to stabilize.

3. Read temperature on the 191.

- 850: It should read  $750^{\circ}\text{F.} \pm 10\%$  ( $400^{\circ}\text{C.} \pm 10\%$ ).  
850B: **It should read  $750^{\circ}\text{F.} \pm 10\%$  ( $400^{\circ}\text{C.} \pm 10\%$ ).**  
850D: **It should read  $750^{\circ}\text{F.} \pm 10\%$  ( $400^{\circ}\text{C.} \pm 10\%$ ).**
- 851: It should read 904 to  $1104^{\circ}\text{F.}$  ( $1004^{\circ}\text{F.} \pm 10\%$ ); that is 486 to  $594^{\circ}\text{C.}$  ( $540^{\circ}\text{C.} \pm 10\%$ ).

- 852: It should read  $750^{\circ}\text{F.} \pm 10\%$  ( $400^{\circ}\text{C.} \pm 10\%$ ).

#### 4. Evaluating the results.

- If the peak reading is within the limits given above, the unit is within tolerance.
- (850, 852) If the temperature is not within the limits given above, verify that the nozzle and probe are vertically and horizontally aligned. If they are, slowly move the handpiece back and forth until the temperature reading peaks. Do not move it closer to the probe than 1.5 mm. Should it remain out of tolerance, call American Hakko Customer Service and arrange for our Resident Wizard to fix it for you.
- (851) If the peak reading is not within the limits given above, adjust the calibration potentiometer as required. If the unit cannot be brought within tolerance by adjusting the calibration potentiometer, or consistently reads out of tolerance, call American Hakko Customer Service and arrange for our Resident Wizard to fix it for you.

#### NOTE

Verification of nozzle data given for the Hakko 850 and 852 may be done in the same manner. Check data against published values for the nozzle being used. The same procedure is followed.

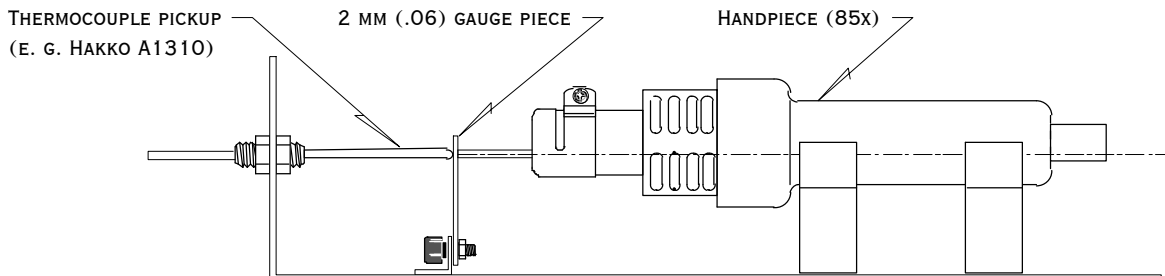


FIGURE 1. ONE POSSIBLE TEST SETUP.