

HP 10544A schematic errors

The published schematics for the HP 10544A oscillator and for all but the earliest version of the 10544 [no suffix] contain errors in the heater regulator circuit.

NOTE: All part designations below refer to the portion of the 10544 circuit on A3, the "10544-60016 OVEN CONTROLLER ASSEMBLY" (i.e., to A3Q4, A3F1, etc.).

The regulator pass transistor, Q4, is shown installed backwards, and the OVEN MONITOR output and base resistor are shown connected to the wrong sides of the pass transistor, respectively.

Note that edge connector Pin 14 is the +24v (nominal) heater supply voltage, and Pin 15 is the heater return (ground). As drawn (by HP), the flyback diode internal to Q4 would simply conduct and the heater would see the full supply voltage (less the diode drop) at all times -- the regulator control amplifier would have no control over the heater voltage. Oops, HP!

Also, current flow in the circuit goes from Pin 14, through fuse F1, through the pass transistor, and then through the heater element to ground. As drawn, the OVEN MONITOR output is taken from the high side of the pass transistor (the junction of the fuse and the pass transistor). In this location, the heater monitor would be at the heater supply voltage at all times. Instead, it should be shown connecting to the low side of the pass transistor, where the OVEN MONITOR output shows the actual voltage across the heater element.

Finally, R11, which is the base-emitter resistor for Q4 and the collector load resistor for Q1, must connect to the high side of the pass transistor, not to the low side as drawn.

In order to conform to the actual production oscillators (and to present a circuit that actually works), appropriate changes should be made to the schematic provided by HP. A schematic with these corrections and some annotations can be found elsewhere on this page. The file name is:

"HP_10544A_schematic_further_corrected_and_annotated.pdf"

Enjoy,

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