

Weller WLC100 Electronic Soldering Station



One day you walk to your workbench, you flick the switch on your soldering station and the red light comes "ON", indicating that everything is okay. Ten minutes later, when you are ready to solder you find that the soldering pencil is not hot at all. What?! After the usual frustration period of confusion and bad words you decide to investigate and fix the problem. After all, you are a techie or technically inclined and "you can fix anything!"

Well, read on. I was in a similar situation and attempted a 'quick-fix'; NOT! I did NOT THINK of checking the soldering pencil first. (*Tony failed to realize that the HEATER is the most common element of any soldering iron or station that fails!*) I started to take the one visible screw out from the bottom cover plate. The other two screws are hidden underneath the rubber feet at the left edge. The circuit board inside the base unit is small. I pulled the knob off and removed the nut holding the switch to the body. I marked the wiring on a piece of paper and took the printed circuit board out all the way. Earlier that afternoon we had brown outs and power-failures that afternoon - so my first thought was a defective DIAC. I tested the DIAC with an instrument called a "Huntron Tracker". It showed okay.

Okay, on to the TRIAC. The TRIAC tester showed that the component was switching and holding its state. So this part was okay. Finally, it occurred to me to check the heating element of the soldering pencil itself. Yes, the iron's heater was open (infinite resistance). Murphy's Law at work again! I could have saved myself a lot of time by thinking FIRST, instead of taking the station apart impulsively. Oh well, LESSON LEARNED!

The Weller® WLC100 is a cheap and well built, soldering station and works really well for most of my applications. This station served me for about 6 years of 7-hour a day -- so fantastic service. Power output is adjustable from 5 to 40 Watts via a potentiometer on the front panel. This station is supplied with a ST3 1/8" screwdriver tip. This 1/8" tip is suitable for almost many common tasks (e.g., connectors, point-to-point wiring).



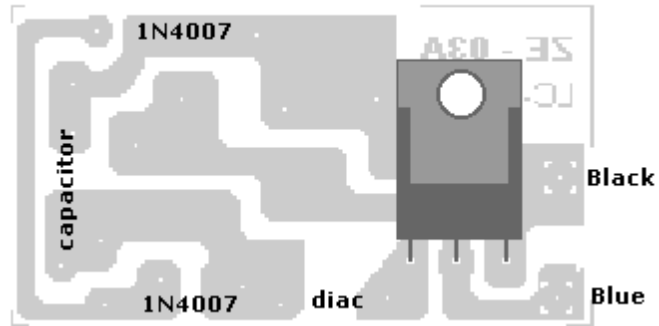
I was unable to locate the replacement iron (SPG40) or the replacement heater (HE40) for my older WLC100 model. I was forced to purchase a new station, not really expensive though, as they are still a good buy around \$55.00 CDN in my area.

I have drawn the component lay-out for the printed circuit board (*next page*), which measures about 1-7/8 inch by 1-inch; circuit schematic and parts list. This document may help in repairing your own station by identifying key components or replacement parts – if and when that time comes.

Printed circuit board layout for the Weller®WLC100 base unit

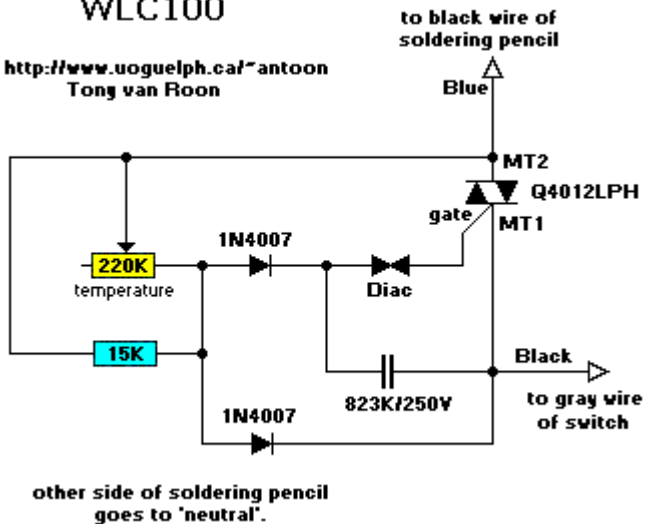


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WLC100

<http://www.uoguelph.ca/~antoon>
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Parts List:

R1 = 15 Kilo-Ohm, brown-green-orange, 1/8 Watt, 5%

P1 = 220K potentiometer

C1 = 823K, 250V

D1, D2 = 1N4007

D3 = DIAC, bilateral trigger type

Q1 = *Q4012LPH, TRIAC, 400V/25A, Made by Teccor

Notes:

Unlike the Weller® photo at the top of this article, newer versions do not have the iron directly wired into the base unit. Newer versions (at least 2002 or later) of the WLC100 model now have a 120 volt receptacle (outlet) on the left side of the base for the soldering iron (referred to as WPC300 base unit). This allows the base unit to be used other Weller® 120 VAC stick irons (grounded and ungrounded models).

***CAUTION:** The TRIAC has an *isolated tab*, so if you need to substitute make sure to use the same type. Two replacements for the Q4012LPH are available: Q4015L5 or the NTE6020.

Replacement Parts for Weller®WLC100:

SPG40 – Weller® replacement soldering iron for the WLC100 station

WCC104 - Replacement tip cleaning sponge

HE40 - Weller® Replacement heater (40 watt) for the SPG40 iron

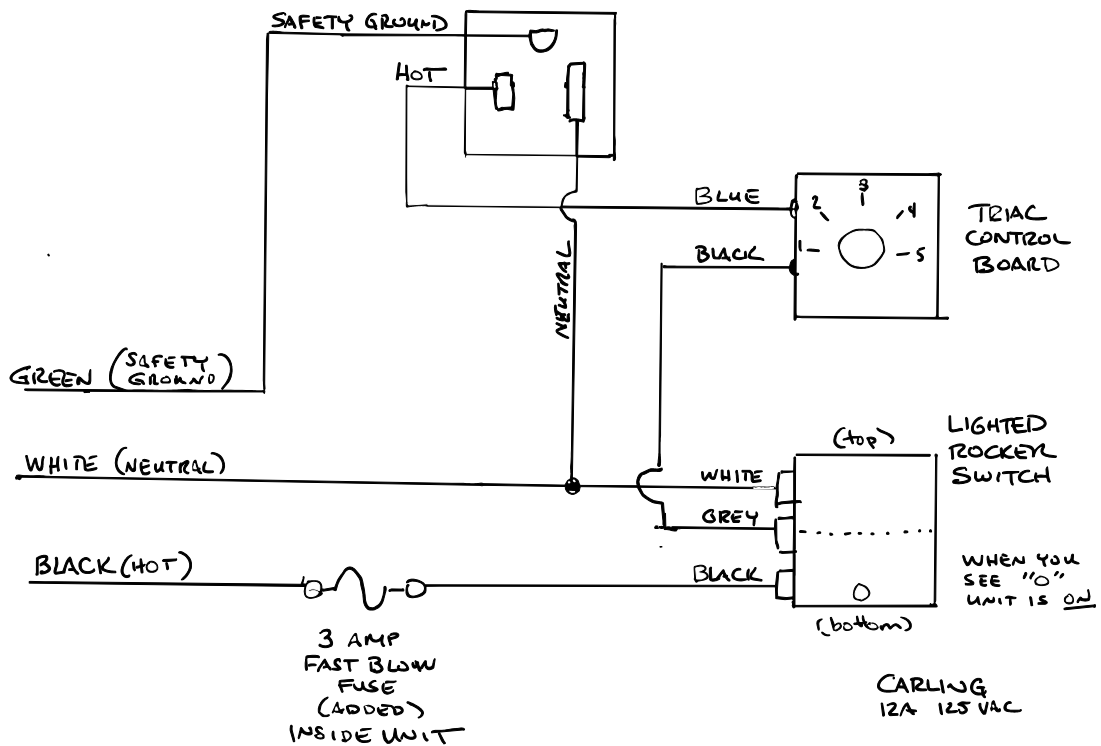
ST1 - Weller® Screwdriver Tip 1/16" (1.6 mm)

ST3 - Weller® Screwdriver Tip 1/8" (3.17mm)

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Weller® WPC300 Base Unit
 5 to 300 Watts Power Controller, 120v



"TEN COMMANDMENTS" FOR ELECTRONIC SOLDERING EQUIPMENT

- I.** Thou shall not remove tip from soldering iron when power is "ON". Causes heating element to rise in temperature to approximately 1300 F resulting in thermal shock and reduced heater life.
- II.** Thou shall maintain a damp (NOT drenched) iron sponge (preferably with de-ionized water).
A drenched sponge will bring the temperature of the tip down too drastically, causing thermal shock and reduced tip life.
- III.** Thou shall not disconnect soldering iron from base unit when power is turned "On". Disconnecting or reconnecting the soldering tool from the base unit with power applied may cause a short between non-compatible pins resulting in damage to the base unit or pencil.
- IV.** Thou shall maintain a coating of solder on working area of soldering iron tip. Protects the tip from oxidation.
- V.** Thou shall never drop soldering iron while heated. Dropping the soldering tool while heated may cause thermal/mechanical shock to the heater, sensor, or tip (fractured plating).
- VI.** Thou shall not throw soldering iron into soldering tool stand. See Commandment V.
- VII.** Never use soldering iron as a crowbar or pry tool. Could chip or pit finish on tip -- rendering it useless.
- VIII.** Using sharp or serrated objects to remove tip from soldering iron is forbidden. See Commandment VII.
- IX.** Honor thy "KGB" (Known Good Base). Do not plug a non-working soldering iron into a KGB. Could cause damage to the base.
- X.** Thou shall turn station down to lowest setting during daily usage when not being used. Turning the station down during non use periods will prevent severe thermal cycling of the tool. However, tools not being used for extended periods of time should not be left on indefinitely.