## Assembling The Printed Circuit Board

I mentioned in the beginning that the circuit board can be configured for three different Rangemaster versions. So I'll first walk you through installing the components that are common to all versions and then discuss the variants. Heat up and tin your soldering iron, wet your cleaning sponge and let's begin.

Since all of the builds use the same external pots and jacks, we'll first install the headers that will connect to those later. Find one of the 2-pin horizontal Molex headers, and set it in place in its holes at the top of the board where the DC power connector will plug in. Hold it in place with self-locking tweezers as shown, and solder in place.
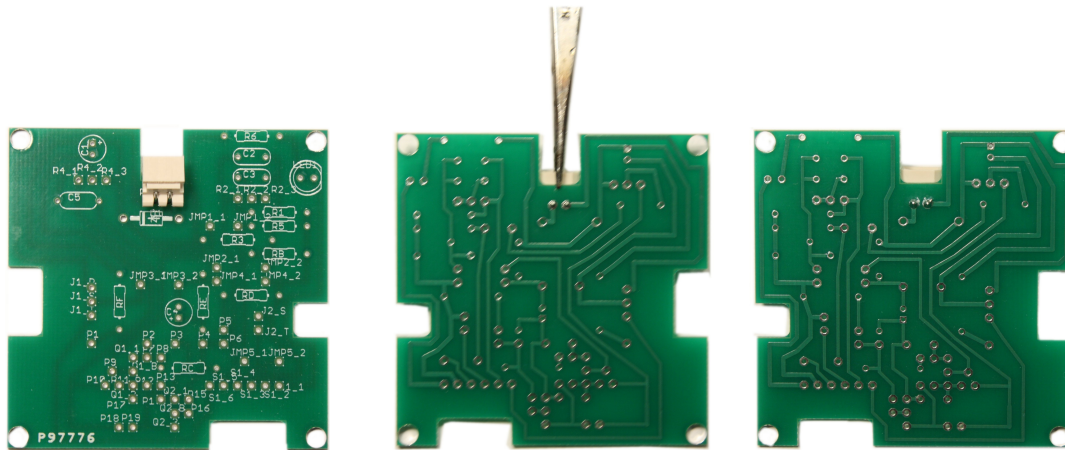

In the same way, place and install the other headers: 3-pin for the input jack, 2-pin for the output jack and 6-pin for the stomp switch.
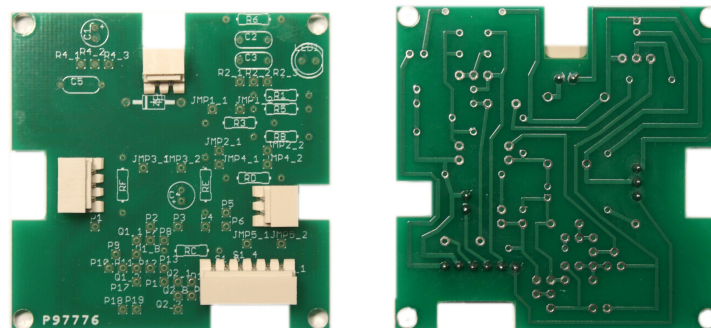
Now for the reverse-polarity protection diode, and the common resistors: R1, R3, R5 and R6. Using chain-nose plier, grab one lead of the diode about 1/16" from the body. Bend the lead sharply downward at right angles to the body of the component. Then do the same with the other lead. Refer to the silkscreened outline on the PC board, and be sure to orient the bar on the diode body correctly before installing it in its holes. Hold in place with self-locking tweezers, solder and trim leads on the bottom.
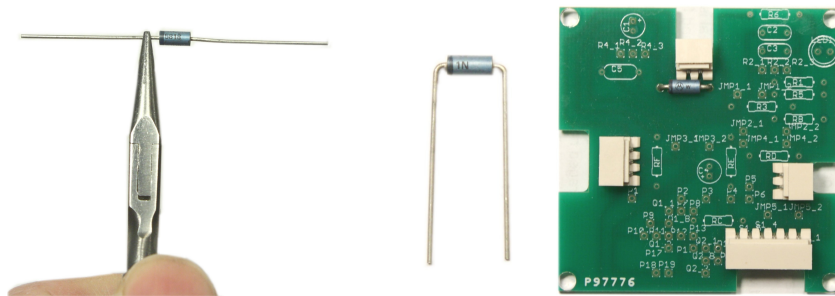
The resistors are installed in the same way, though they are not polarized and can go in either way. Only note that R3 needs to span more distance than the other three, so the bends in its leads should be at about 1/8" from each side of the body. It is perfectly OK to use the silkscreened outline on the PC board as a guide for getting the bends in the right places. Form the leads of all four resistors, install, solder in place and trim leads. Save the scraps of wire that are left, as we will use those later as jumpers.
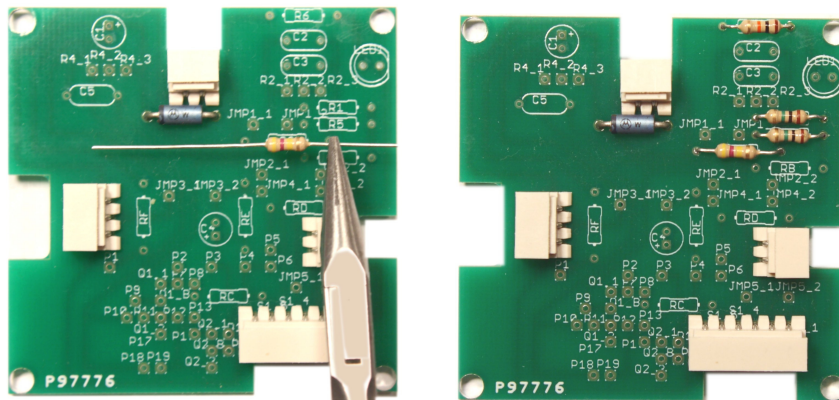
In designing a PC board, it is common to use short pieces of bare wire, called "jumpers" to avoid the expense of making a board with copper traces on both sides. Take one of the scraps of wire that (I hope!) you saved from the resistors, and bend it to exactly span the holes marked JMP1_1 and JMP1_2. Hold it in place with tweezers and solder. The pic on the right shows the locations of all five jumpers; form the rest and solder in place.

You may want to think of these as "fixed" or "common" jumpers, because they apply to all of the possible builds on this board. We will add other jumpers later that configure the board for the different Rangemaster versions.
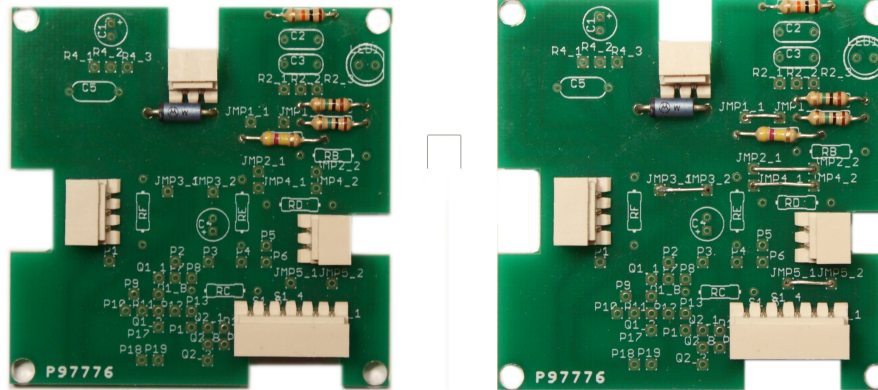
Install the poly film capacitors C2, C3 and C5. It is easy to confuse C2 and C3 because their lead spacing is the same, so pay close attention to the codes. C3 is 153, or .015 mf. They are not polarized. Then install radial electrolytic capacitors C1 and C4. These are polarized, so be sure to align them as shown in the right-hand pic. The band on C1 faces the bottom of the board, and the band on C4 faces the top.
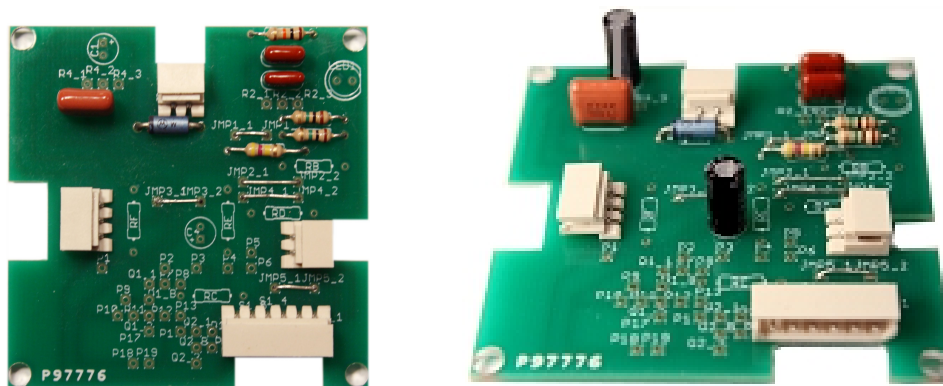
All of the common components are now installed. What you install next will depend on which Rangemaster version you are building.