2. Building the Enigma-E

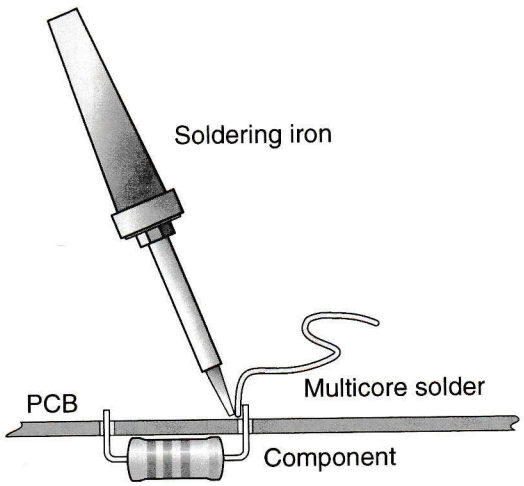
This chapter provides a step by step guide in building the **Enigma-E**. Please read this chapter carefully before you start using your soldering iron. You are first asked to check all components. Please do this carefully, using the next paragraphs as a guide. If one or more item is missing, please check again. All DIY kits have been checked and re-checked prior to shipment, so it is very unlikely that a component is missing. If you still can't find it, contact us at **enigma-e@xat.nl**.

Once you've checked all components, you are ready to start building the main PCB. We'll start with the lowest components first, followed by the slightly higher ones, and so on. Don't connect a power source to the PCB, until you are told to do so.

2.1 Soldering

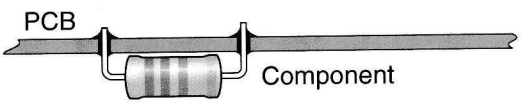
Soldering is not difficult. However, if you are completely unexperienced, or if it has been a long time ago since you've last soldered electronic components, you may whish to practice a bit on some old PCBs and components. If you still don't feel confident, ask an electronics hobbyist for assistance. There are many electronics enthusiasts around and most of them will be delighted to help you out.

The PCB in the kit is of professional quality. It contains tracks on both sides and the holes are *through plated*. The latter is particularly useful as it will help the solder to flow better, resulting in a better connection. Use a good soldering iron of about 40 Watt or less. If the iron is too hot, you are likely to damage the components. If it's too cold, it takes too long for the solder to start flowing, which may also cause damage. Always use appropriate multicore solder. Don't use solder paste or solvents.



Always place the component as close to the PCB as possible, unless the text in this manual advises otherwise. Next place the PCB upside down on a solid surface. Place the multicore solder between the soldering iron and the leg of the component and gently push the soldering iron against it.

The solder will now start flowing and within a second the hole in the PCB will be filled, like this:



You may want to bend the legs of the component a little bit, to ensure that they stay in position when you turn the PCB upside down. Don't bend the legs too much! Some components get easily damaged when the legs are bent too far. Furthermore, it may result in badly soldered connections and may even lead to short circuits. **Never bend the legs of the LEDs**! You may also use the sponge to keep the components pressed to the PCB when turning the board.

Please note that the PCB has two sides. One side has got the numbers of all components printed on it. This side is called the **Component Side**. Unless stated otherwise, all components must be fitted at the component side. The legs of each component must be soldered at the other side of the board (at the soldering side). Please note that some components, such as resistors, have no polarity and may be fitted either way around. Other components, such as diodes, transistors and ICs, MUST be fitted exactly in the way it is printed at the component side of the PCB.