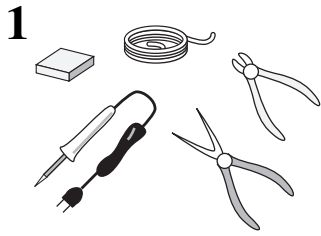


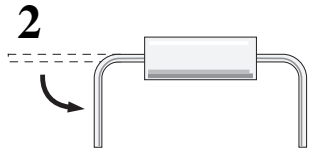
How To Solder

If you have never assembled electronics you should read about the basics before you begin. The steps below outline the basic procedures for preparing, soldering and inspecting many kinds of electronic components. With a few tools and a little patience you will have no trouble assembling, testing and displaying your kit.

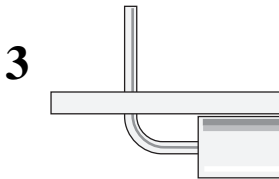


1 - Basic tools needed: Soldering iron, small sponge, electronic solder, needle nose pliers, side cutters. Optional: Spare soldering iron tip, flux remover.

Plug in the iron, and moisten the sponge with water. When hot, "tin" the soldering iron's tip with a small amount of solder (replace the tip if old or corroded). Wipe the tip across the wet sponge from time to time to keep it clean. A clean, well-tinned tip does best.

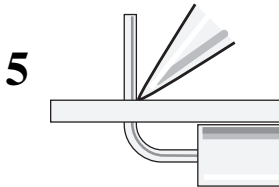


2 - Bend the component leads to fit the holes on the board.

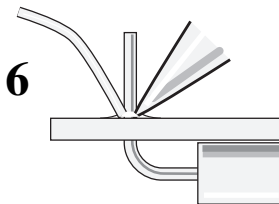


3 - Insert the component, observing any special orientation it may require. Bend the leads enough to hold the part flush against the board, but do not over bend.

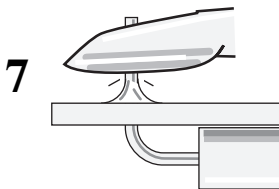
4 - Wipe the tip clean and tin with a small amount of solder.



5 - Heat the joint by placing the soldering iron's tip against both the component lead and the circuit board pad.



6 - After a moment of heating, touch the solder to the lead & pad only. (If touched to the iron it will blob up.) When the solder flows, remove it and hold the tip in place for one second. Remove the iron without moving the part or board and let the joint cool.



7 - Trim excess component lead with the side cutter. Parts with short leads do not need to be trimmed.

8 - Inspect the joint.

- A good solder joint blends the lead and pad smoothly together, and has a smooth, bright finish.
- If the joint looks like a ball, a blob, if it bulges or bridges to other pads, remelt it, and remove the excess solder with the soldering iron.
- If the joint looks fuzzy or dull it is a "cold" solder joint. Remelt it, and let it cool (without moving) to a smooth, bright finish.

Optional: After finishing all soldering, you may wish to clean the board to remove any flux residue. Use a commercial flux remover, and follow its instructions.