

Soldering:  
Electronic Components, Wires, and Circuits  
(SWR 5 October 2007)

Required tools and supplies:

- Soldering **‘iron’** or **soldering station**, with a **small tip**.
- Temperature-controlled soldering station is preferable (650 °F). Here’s a good choice: Digikey p/n WESD51, \$170.
- **Small** solder. A good choice is Kester p/n 24-6337-0018, available from Digikey, Mouser, Newark, and others. **DO NOT** use big fat solder for electronic work.
- A **damp sponge** for keeping the soldering tip clean.
- A **good wire-stripping tool**, sized for 20-28 AWG wire. Available at electronic parts houses, or at good hardware stores (Marshall’s Hardware off Miramar Road). Imperial p/n TE-180 is a good choice. Get a good one. **Don’t get a cheap Radio Shack one**. Spend \$10-20.
- **Small bench vise**. “Panavise” is by far the best: Digikey p/n 303PV plus the base, Digikey p/n 300PV. Total cost \$45. This is to hold your work as you solder.
- If you can’t get a Panavise, get some kind other kind of small bench vise, or some type of holder so that you have two hands free to do the actual soldering. But try for the Panavise.
- **Heat-shrink tubing**, and a heat gun to shrink the tubing. Important.
- **“Solder-sucker”**. For removing solder from an existing connection.

Some working suggestions:

- **Heat the work** (wires or connections) first, then apply the solder to the heated work.
- To help heat the work, **apply a small amount of solder** to the **soldering iron tip** before touching the tip to the work. This will improve the heat transfer and get the work heated quicker.
- **Keep the soldering tip clean** by wiping it frequently on the damp sponge.
- When soldering wires to connectors, **first ‘tin’ the bare wire and the connector** with a small amount of solder. Then solder the connection. In most cases you won’t need to add any more solder to the connection.
- **Solder contains lead** and other harmful components. Have good ventilation when soldering, and try not to breathe in the fumes. Even the lead-free solders may contain other harmful components.
- For safety, **use safety glasses** to prevent a splash of hot solder or other materials from injuring your eyes.
- **Solder is NOT glue**. Everything has to be heated up to temperature for the solder to flow correctly over the connection and make a good electrical contact.
- Use heat-shrink tubing when soldering to connectors. This will help prevent shorts, and will give better mechanical support to the connection.