

SOLDERING TIPS

We've seen lots of goods soldering, and lots of bad soldering, so we've decided to put out a little information that covers the important concepts involved.

The tools you'll need are a soldering iron and stand, a damp sponge, and some solder. You should also have some basic hand tools, such as wire strippers, needle-nose pliers, wire cutters, and something to hold wire in place while a solder joint cools. You can use a small screwdriver for this, though there are plastic (or metal) tools sold specifically for this that you can buy through an electronics supply house.

Other nice things to have are a solder sucker and solder wick, both of which are designed to remove solder. A solder sucker is usually a tube with a spring loaded plunger; depressing the plunger "cocks" the tool, then it's held with its tip near the heated solder joint, a button on its body is pushed, and it uses vacuum to suck excess solder from a joint.

Solder wick is a copper braid that wicks up solder like a sponge. It won't remove as much solder as a solder sucker, but it does a better job of final cleaning. So both are handy to have for removing solder from a joint that needs to be re-soldered, or where some solder has dripped inadvertently and needs to be removed. The sucker removes the gross excess, while the wick removes the rest.

Soldering is easy, but it helps to use good technique. The first thing to know is that you need rosin-core solder, not acid-core. Acid-core solder is used for copper pipes, not Stratocasters.

Step 1 - Prepare the Joint

Don't hold the wire with your hands. For every joint, you need to find a way to hold the wire to be soldered in position without using your hands. Wrap the wire through the solder lug once to make it hold-on tightly on its own, or use tape to hold it in place, or lay a pair of pliers on it to hold it firmly where you want it, or use a mechanical soldering aid to hold it. Whatever works, but not your hands. When you make a solder connection and rely on your hands to hold the soldered wire steady while the joint cools, you will fail. No human hands are steady enough to hold the wire while it cools, you want it to remain absolutely motionless while it cools or internal fractures in the solder will be the result.

Step 2 - Clean the Tip

Use a good soldering iron, and keep the tip clean. You can use a damp sponge or a brillo-type tip cleaner, or whatever you find that works, but the tip must be cleaned before each and every joint. Solder produces a by-product called dross very, very quickly, and the dross fouls the tip of your iron, preventing good heat conduction, and introducing waste material into your solder joints.

Step 3 - Tin the Tip

Tin the tip of the iron with fresh solder immediately before you get on the joint with the heat. A tinned tip (one that's coated with solder) will provide for much better heat conduction than a tip that's clean but not tinned.

Step 4 - Remove the Excess Solder

Shake off the excess solder after tinning - you want the tip coated, but not dripping. We have fire-resistant containers beside our soldering benches, and we tap the barrels of our irons on the edges of these containers after tinning, which knocks the excess molten solder into them. You can use any fire-resistant container for this, such as knocking the solder into a tin can or ceramic container, but use care so as not to start a fire. The risk of a fire is very low, since solder melts at such a low temperature that molten solder is very unlikely to ignite even highly-flammable materials such as paper. But use care anyway: Tone Shapers, Inc. will not be held liable if you burn your house down!

Step 5 - Get on the Joint Right Away

As soon as you've gotten the excess solder off the tip, get right on the joint (by "joint" we mean the wire and the solder lug, or the wire and the back of the pot, or whatever it is you're soldering). Dross will start to form on the tip very quickly, so as soon as the tip is prepared, start soldering.

Step 6 - Heat the Joint

Heat the joint, not the solder. You want the joint to be hot enough to melt the solder. It's a given that the iron is hot enough to melt the solder, just feed a little into the tip and you'll see. But you want the joint itself to also be hot enough to melt the solder, so that if you feed solder into the joint, without touching the iron, then the solder will melt and be attracted right to the joint. You can watch the solder actually wick out onto the surface that you're soldering to, and this is what you want.

Step 7 - Fill the Lug


If you're soldering to a ring-shaped solder lug, then you'll want to fill it completely with solder, which will maximize the mechanical strength of the joint.

Step 8 - Get off The Joint

As soon as the solder has wicked to the joint properly, get the heat off the joint. Most components can stand a fair amount of heat, but some are more susceptible to damage than others, so no need to push your luck. Pots are fairly durable; it's highly unlikely that you're going to damage a pot by trying to solder a wire to its back, unless it's a cheap pot. But again, no need to push your luck, so as soon as you've completed the joint, pull the iron away and let the joint cool while the components remain motionless.

Summary

1. Prepare the joint
2. Clean the tip
3. Tin the tip
4. Remove the excess solder from the tip
5. Get on the joint with the heat right away
6. Get the joint hot enough to flow the solder
7. Fill the lug
8. Get off the joint and allow it to cool
9. Don't jiggle the wires before the solder cools

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