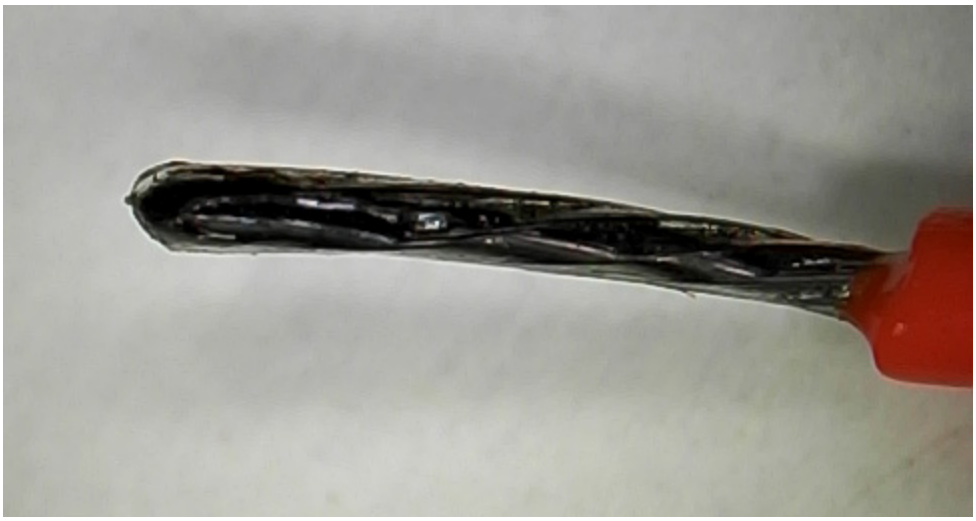
RetroTone®

Knowledge Skills Supplies Services

Wire Stripping and Tinning



A Build Em'Out™ Project

RetroTone®

Knowledge Skills Supplies Services

Table of Contents

Table of Figures

Step 1 Wire Specifications

Many pedal makers use 24AWG wire. The AWG designator stands for American Wire Gage. It tells you the thickness of the wire. The 7 x 32 in the parts list tells you that the core is made of 7 strands and the 32 describes the AWG of the individual strand. This is important to know because there is a danger that we can accidently cut into the 7 strands when you remove the plastic jacket.

Figure 1 - Wire Specifications

The strands are not bare copper. Each strand is pre-tinned and the strands in the bundle are individual. The pre-tinning prevents the wire from oxidizing while the wire sits in the warehouse. The tinning process combines all 7 strands so it can be easily soldered to the connector.

Step 2 Stripping the Wire

The photo below shows three common types of wire strippers. The graduated stripper is probably the easiest to use and gives the best result. The notches in the jaw are calibrated for common wire thicknesses including the 24AWG used by many pedal builders. The fixed stripper is adjusted by the screw on the handle. When the jaws are closed, the screw stops the jaws from closing all the way. You have to adjust it through trial and error. These are great if you are stripping a lot of the same wire. These are a favorite with electricians. The cutters should only be used in an emergency when no other strippers are available. It is really easy to cut into the outer strands and damage the core strands.

Figure 2 - Types of Wire Strippers

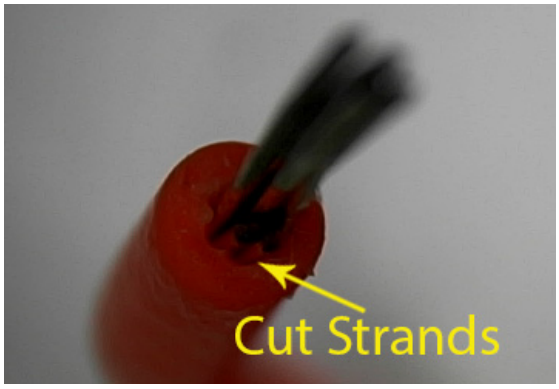


Figure 3 – Close Up of Cut Strands

Be careful not to damage the strands. It decreases the wire strength and can allow contaminants to infiltrate the wire bundle inside the plastic jacket.

Put the wire in the slot marked 24 and take off about ¾" of the plastic jacket as shown in the photo below. Once in the stripper, pull the wire from the long end and pull the stripper off the other way.

Figure 4 - Stripping the Insulating Jacket

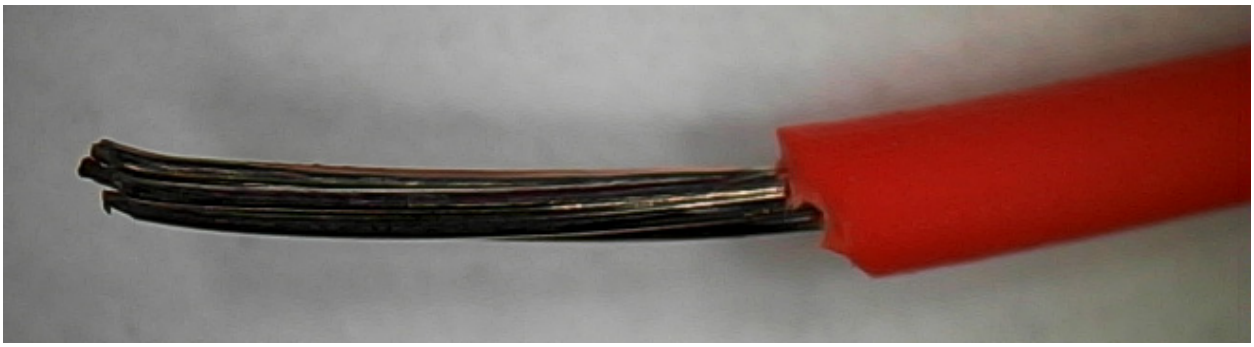
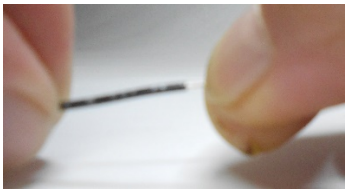


Figure 5 - Nicely Stripped Wire

The next step is to put some solder on the exposed wire. This step is called tinning the wire. It puts a light coat of solder on the wire to help conduct heat and allows the soldering to go faster so there is not excessive heat when you bond the wire to the connector.

An extra step to keep the wire in a bundle is to lightly pinch the bare wire with your finger tips and twist the wire from the jacket with your fingertips just a little bit. This keeps the wire strands together when you tin it.



Step 3 Tinning the Wire

The following photo shows a simple way to hold the wire when you tin. Hold the solder iron under the wire and hold the solder above the wire. Put the solder iron in the center of the wire. Heat rises so you get the best heat transfer to the wire from the soldering iron. You want to do this operation as fast as you can to prevent the wire from burning the insulation. You also want to use just the right amount of solder. Often, it is much less than you think.

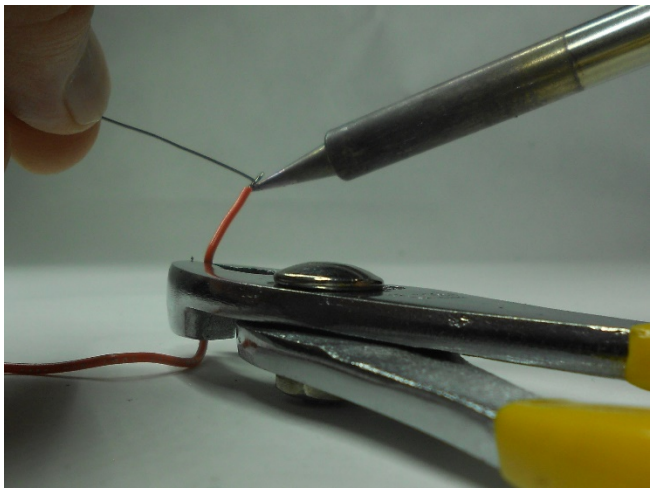


Figure 2 - Holding the Wire

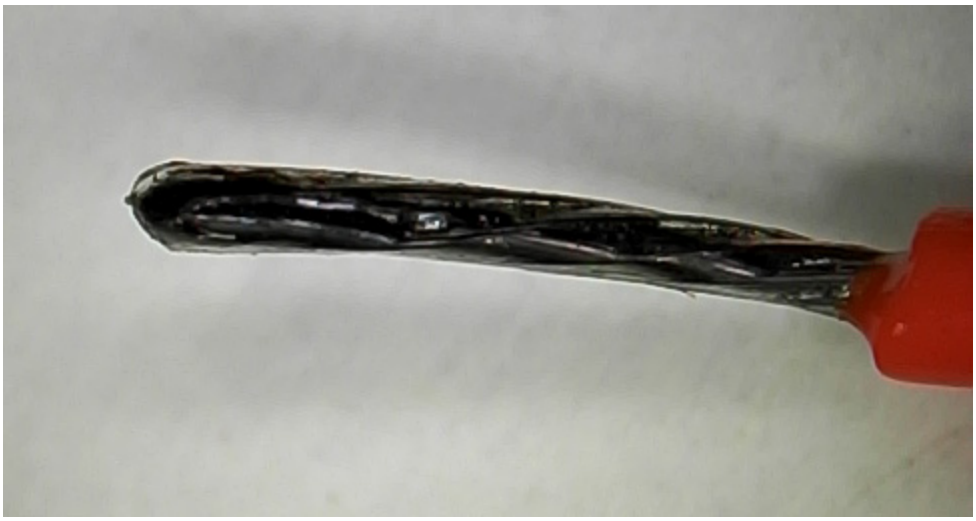


Figure 3 - Nicely Tinned Wire

Notice that you can see the individual wires in the strand bundle. The insulation is slightly melted but not burnt. It takes a little practice to get it right. The next two photos show the most common mistakes.

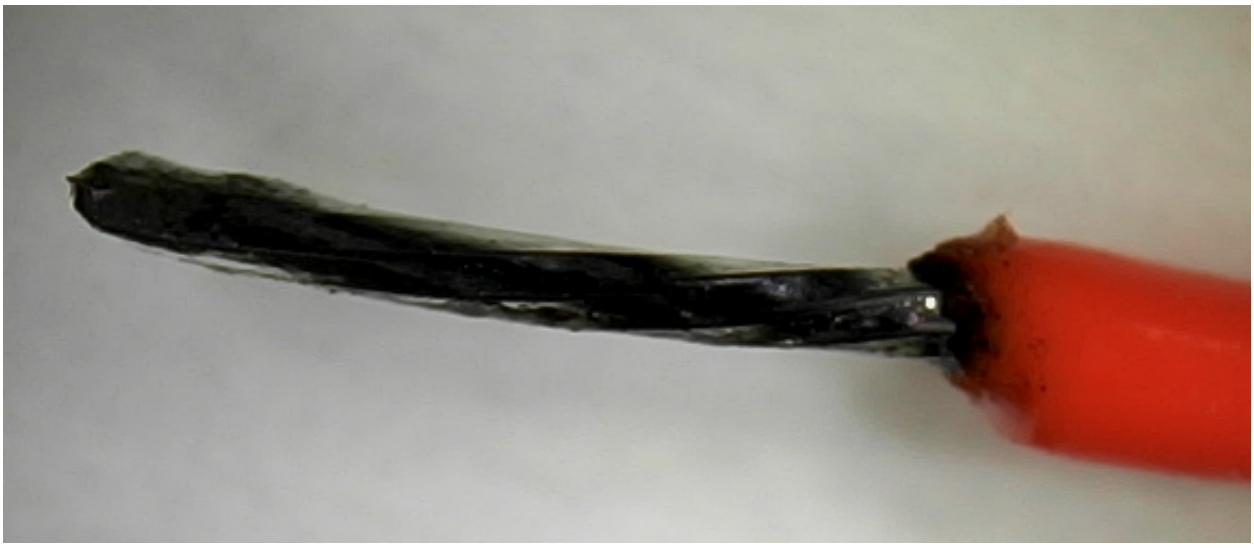


Figure 4 - Slightly Burned Insulation

Figure 5 - Too Much Solder

The last step in preparing your wire is to put a hook on the end. This hook will give a solid mechanical bond to the connector.

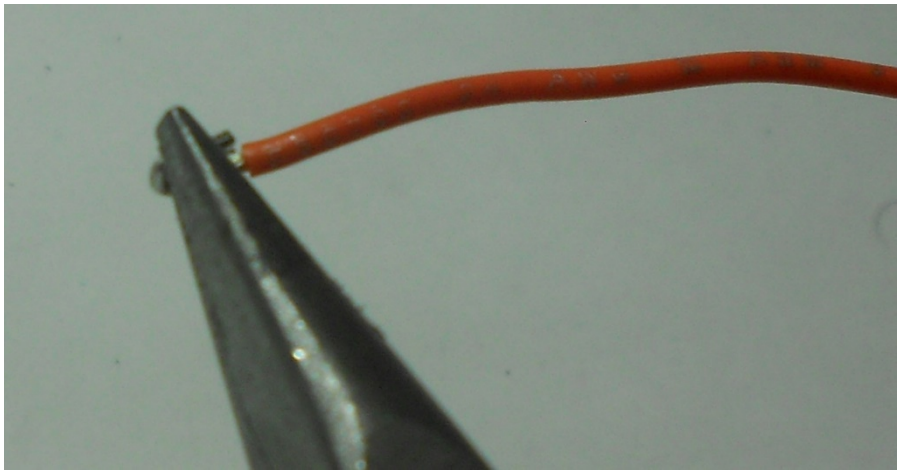


Figure 6 - Hook End for the Tinned Wire

Grip the very tip of the tinned wire with your needle nose pliers. Bend the tinned part of the wire around the tip of the needle nose pliers. Below is a close up of two completed wires.

Figure 7 - Wires Tinned and With Hooks

These wires are ready to go.

Step 4 Solder Wires to Connector

The following set of photos show the steps to solder a wire onto the typical ¼" connectors. The first photo shows the orange wire loop going through the tip solder tab on the connector.

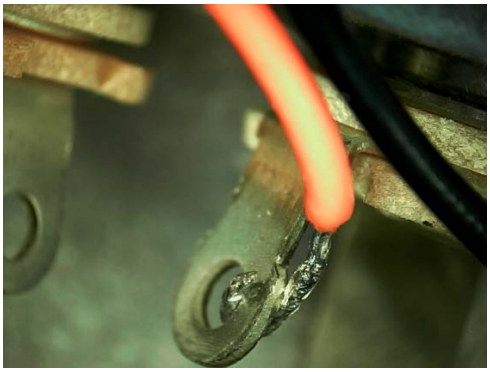


Figure 8 - Wire Loop On ¼" Jack

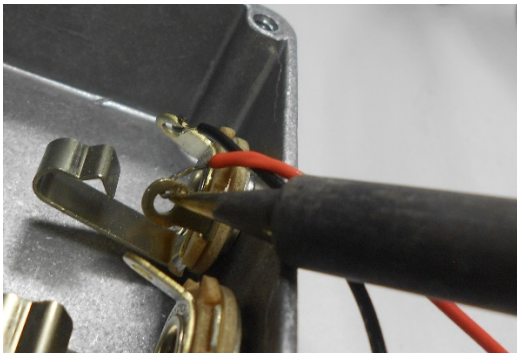


Figure 9 - Solder Tip Placement

Figure 10 – Wire Soldered On ¼" Jack