

How to assemble D-Subminiature connectors

If you are planning to wire avionics or aircraft electrical systems, you will become very familiar with the D-Subminiature connector, commonly called D-Sub. D-Sub connectors are durable, inexpensive, easy to work with and available in a large variety of sizes from literally thousands of distributors. Even Radio Shack sells them.

While these connectors are available in both solder and crimp style, we will only be dealing with crimp style here. The solder type are much more labor intensive, hard to service in the field, and more prone to wire breakage than crimp style. The crimp style pins are available in two types, one is manufactured by forming the pin from a flat sheet of metal, and the other pin type is machined into a more solid pin. We don't recommend the formed pin, only the machined type. While more expensive, they will outlast all other types if correctly assembled.

The next consideration is the type of crimp tool to use. It is absolutely critical to select the right tool. Remember that some night in IMC at 10,000 feet is not the time to find out that your \$ 2.00 flea-market bargain crimper meant for TV antenna cable doesn't do a very good job on machined D-Sub pins. The two most popular brands are Daniels Manufacturing and Astro Tool.

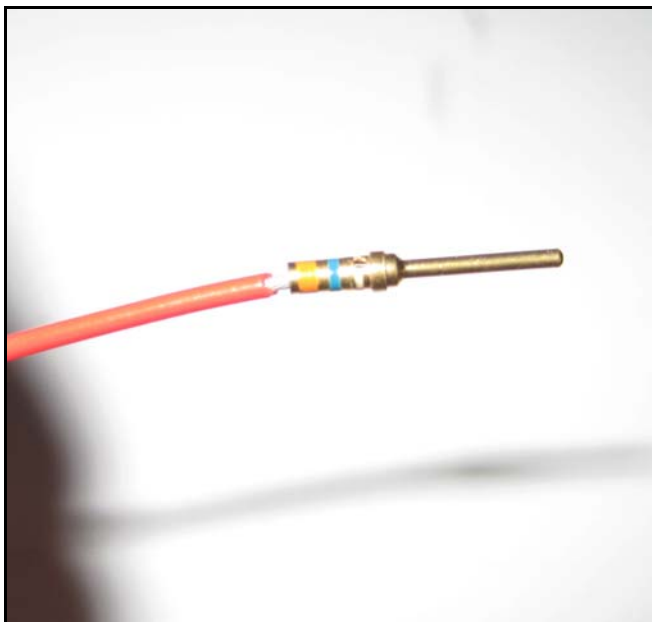


This is an Astro Tool crimper frame part number 615717, and pictured are three positioners (one in the crimper, two in the background). Positioner P/N M22520/2-08 is used for standard D Sub pins and sockets, M22520/2-06 and M22520/2-09 are used for high-density pins and sockets.

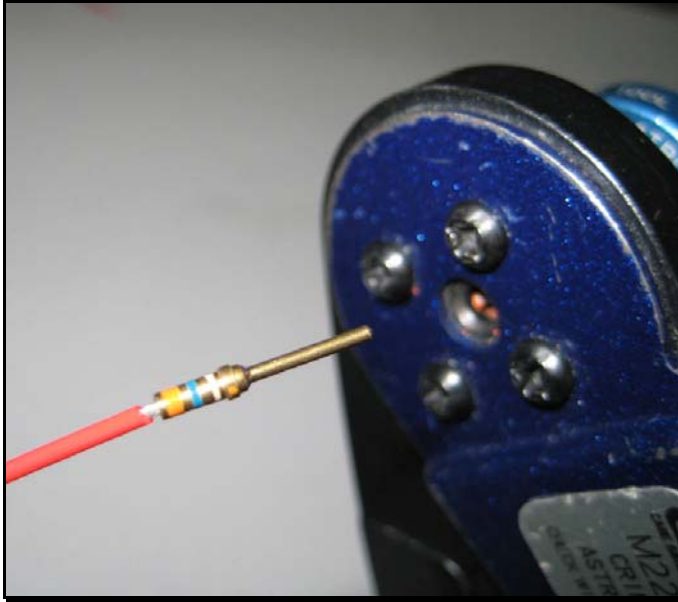


The top of the positioner is labeled with the correct crimp setting for the type of wire that you are using. It is very important to follow this and not over crimp the pin onto the wire. Over crimping always leads to the wire breaking off of the pin.

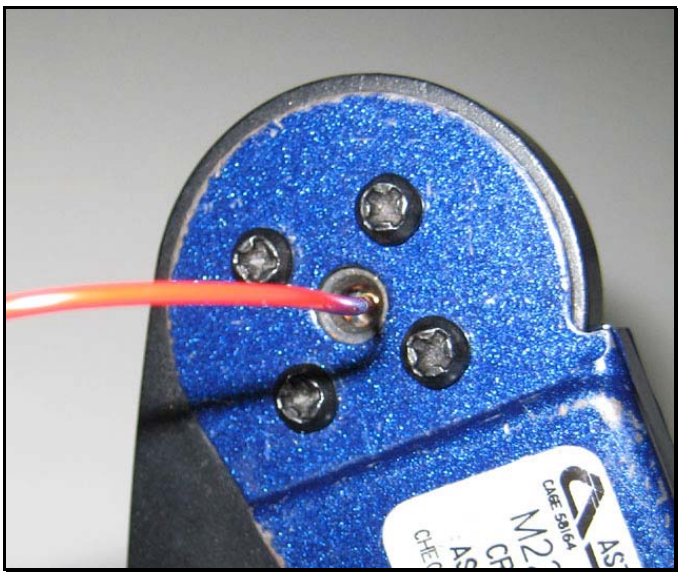
When you go shopping for a crimper, you will find that they are not inexpensive, usually several hundred dollars for both the crimper frame and positioners (positioners set the proper location on the pin where the actual crimp will occur). Do not be tempted to use a cheaper alternative. Considering how much the airplane cost, the engine, the accessories, not to mention the avionics, a few hundred dollars invested in order to assemble your connectors properly is nothing. Also don't forget to check eBay or other surplus auction sites or locations for used tools.



This is a male D-Sub pin placed onto a stripped wire, ready for crimping. Notice that there is a little bit of stripped wire extending from the back of the pin. This is critical to maintain flexibility of the connection after crimping.



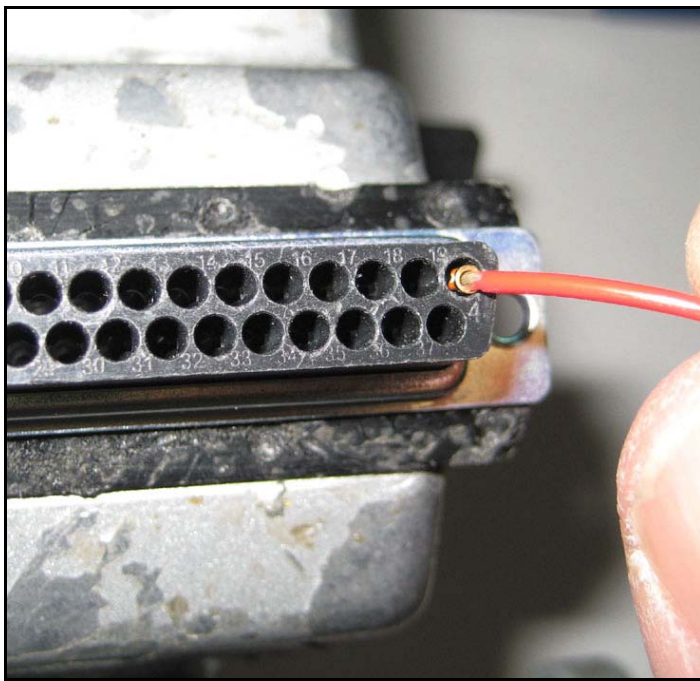
The pin going into the crimper.



Pin fully inserted and crimped.



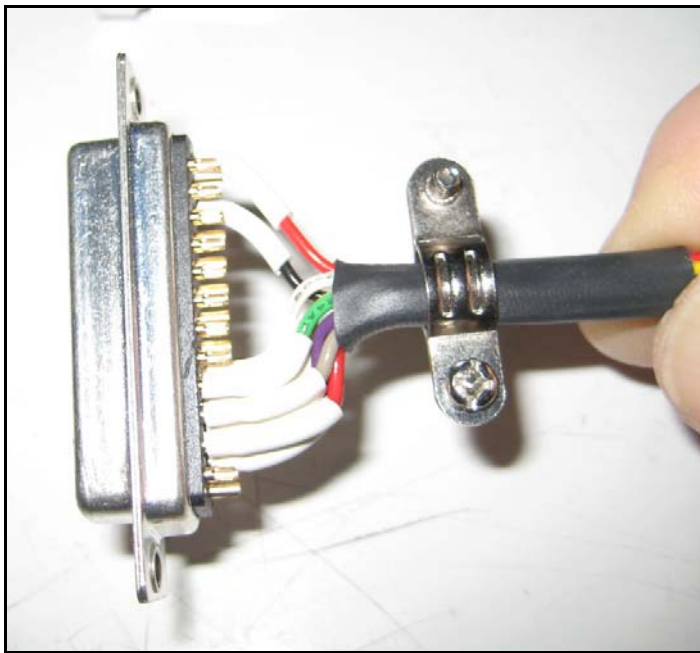
This is the pin properly crimped. Notice the small hole in the side of the pin barrel, this is an inspection hole. The wire strands should be visible in the hole after crimping.



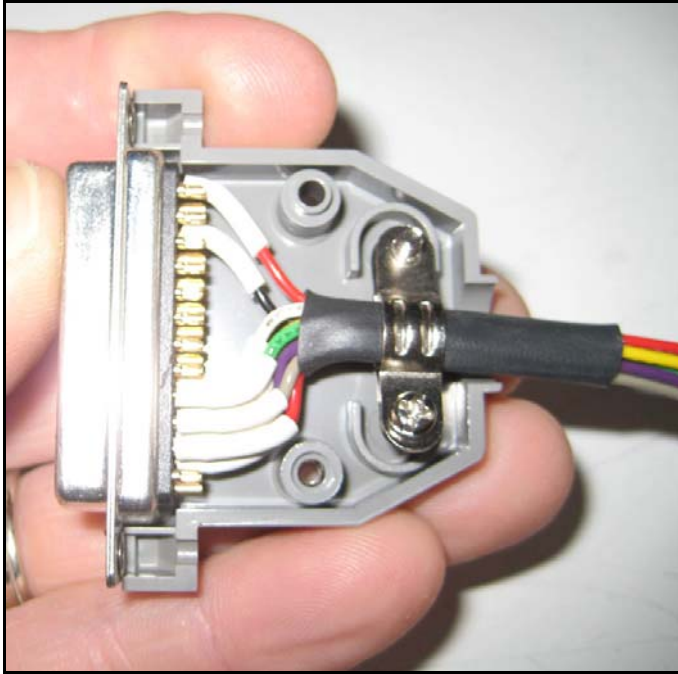
The pin being inserted into the connector. You will hear a "click" when the pin is fully engaged. Hold the connector and gently pull on the wire to make sure the pin is locked in place.



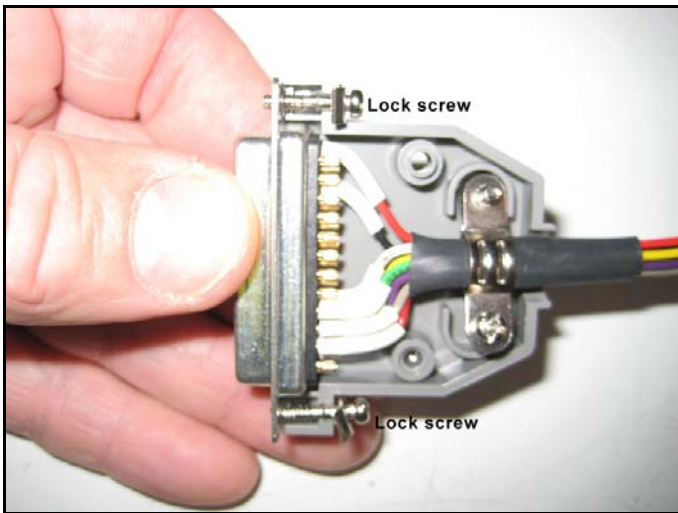
When all wires are inserted, the connector hood can be installed. These are the components of the hood.



Start by installing the strain relief. You must place a piece of tubing under the strain relief to protect the wires.



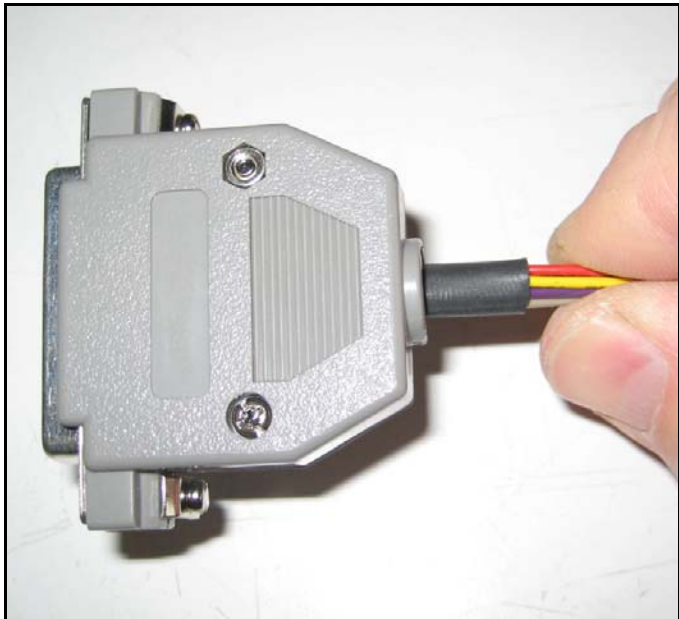
Now place the connector into one of the hood halves.



Next place the two lock screws through the holes in either end of the connector.



Now place the other hood half in place and insert the two screws through the halves, then install the nuts and tighten.



Here is the completely assembled connector and hood.