Crimping Reading Assignment

Read entire reading assignment (including diagrams) before starting crimping.

Crimping is often used within system assemblies to electrically connect chassis-mounted components to circuitry on a PCB via multi-pin connectors (also called headers).

It is important to remove (strip) the appropriate length of wire insulation jacket before crimping with wire strippers. As shown in Figure 1, approximately **1/8"** of insulation should be removed from the wire with wire strippers. When positioning in the crimper tool, only bare metal strands should be placed between the larger, forward tabs and only insulation jacket should be between smaller, rear tabs of the crimp.

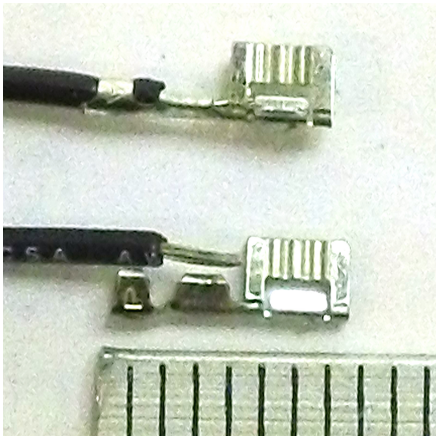

Figure 1. Completed crimp with front and rear tabs folded over wire correctly (top); and appropriately stripped wire before crimping (bottom). (Scale graduations are $1/16^{th}$ inch)

A special tool called a **crimper** is used to simultaneously form the front and rear crimp tabs onto the bare wire strands and plastic insulation. The bare metal contact with the front tabs creates an electrical connection while the rear tabs clamp over the jacket to make a strong mechanical connection. Crimper tool operation may be demonstrated by your instructor or TA.

The most common error when crimping is placing the crimp too far in the crimp holder of the tool – preventing the stripped wire from being clamped by the front tabs. Visual inspection will reveal this because the front tabs will not be folded over the wire. You can usually place the crimped wire back in the tool correctly and crimp again – this time successfully.

Crimping correctly results in both tabs folding tightly over the wire as shown in the top of Figure 1. All crimped wires **must** be **inspected visually** before inserting into connectors.

Once wires are crimped and inspected, they can be inserted into the appropriate slot of the plastic connector body – oriented with the metal locking tab aligned with the connector body slots (see Figure 2). The locking tabs will 'click' into the slots thereby securing the wire in the plastic connector body. Once secured in the connector, crimps can only be removed by carefully releasing the locking tab with a sharp tool (such as an Xacto knife) while tugging the crimped wire outwardly. Your instructor or TA can assist with crimp removal technique, if necessary.

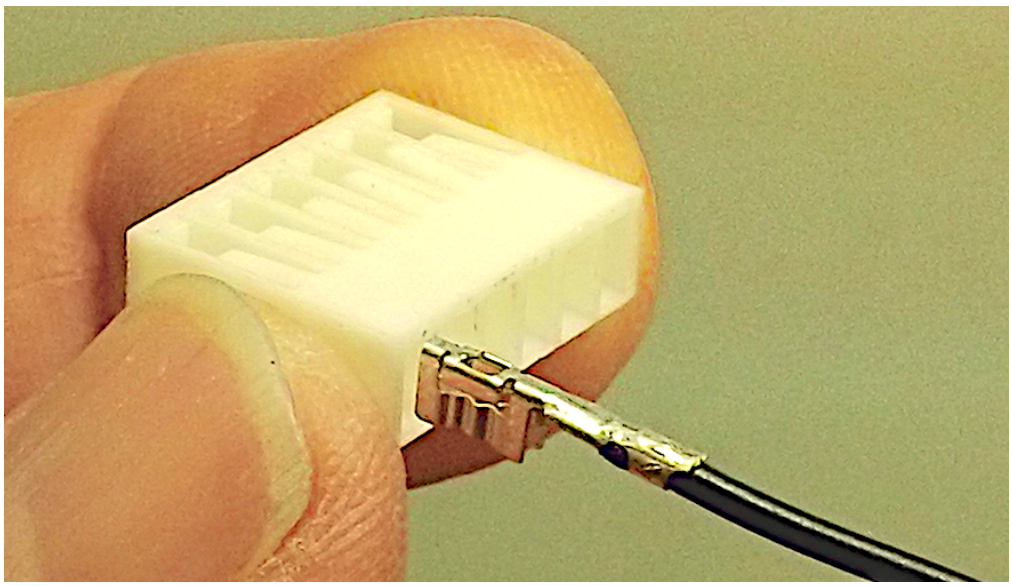

Figure 2. Correct alignment of the crimped wire while inserting into the slot of the connector.

After making all crimps, inspect visually and check for electrical continuity (i.e. good electrical connection) of all crimp connections with a continuity checker. If you have never used a multimeter in continuity test mode, ask the instructor or a TA for assistance.

Review Questions:

1. Crimping is often used to:
2. Only _____ should be between front crimp tabs in order to make a good electrical connection.
3. Only _____ should be between rear crimp tabs in order to make a good mechanical connection.
4. The purpose of the crimp's metal locking tab is to:
5. After crimping a wire, check for:
6. The tool used to crimp wires.
7. What length of insulation should be stripped form the wire end to be crimped?