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Grand Blanc High School Robotics Team
2015 Electrical Deliverable
Wiring Challenge – Strip and Crimp a Wire



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Mentor(s) to ask if you have questions about this Challenge: Clinton Bolinger or Cathy Fillwock

Gather the following Materials:

1. One piece of wire from the **SCRAP WIRE RECYCLING BIN** in the back room that is 6 to 8 inches in length. **DO NOT USE NEW WIRE FOR THIS CHALLENGE.**
2. ONE of the Cutter/Crimper Tools and only TWO connectors (that match the gauge wire you selected) from Wiring Challenge Supplies Kit (NOT one of the Component Board Kit), located on the black shelf in the Conference room. **Leave the bin in the conference room.**

Challenge Instructions:

- a. Watch the “How to strip and crimp” video tutorial on YouTube, here: <https://youtu.be/-WN-1BkjkAc>
- b. Use the materials that you gathered from the wire recycling bin, along with the connectors and tools from the Supplies Kit to strip and crimp BOTH ends of the wire.
- c. Ensure that a proper crimp has been made:
 - a. The connector should match the gauge of the wire
 - b. No strands of wire should be exposed around the base of the connector
 - c. A “pull, push, pull” test should be administered on BOTH ends to guarantee the connector will not come loose.
 - i. Hold the wire securely in your non-dominant hand
 - ii. Pull the terminal as hard as you can with your dominant hand
 - iii. Push the terminal as hard as you can with your dominant hand
 - iv. Pull the terminal as hard as you can with your dominant hand
 - v. If the terminal comes off or moves, you must re-do the crimp.
 - vi. If your terminal remains in tact, you have made a good connection.

Engineering Notebook Entry Instructions:

- a. In your Engineering Notebook, draw a picture of the wire you terminated, and indicate:
 - a. Color and Gauge of wire used
 - b. Type and color of connector used
 - c. Location of crimp(s)
- b. Use COMPLETE SENTENCES to answer the following questions:
 - a. Why is it important to use the “pull, push, pull” test when terminating a wire?
 - b. As the gauge of the wire increases, what happens to the diameter of the wire? (This question may require research this on the internet)
 - c. Use the attached document to determine the following:
 - i. What gauge wire is used for a 40A (amp) circuit?
 - ii. What gauge wire is used for a 20A (amp) circuit?
 - iii. What gauge wire is used for a 30A (amp) circuit?



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To Complete Your Challenge:

1. Ensure that your Engineering Notebook entry is complete first.
2. Bring your Engineering Notebook and your terminated wire to one of the Mentors listed on the first page of this challenge to have it signed.
3. Ask the Mentor to approve your Engineering Notebook entry and have your deliverables checklist validated.
4. You may keep your wire if you want. If you choose not to keep it, please put the wire back in the recycling bin.
5. Put all of the unused supplies and tools into the designated container, and return the kit to the appropriate place in the conference room.
6. Place these instructions back in the orange binder in the conference room.
7. Leave your workspace cleaner than it was when you found it.