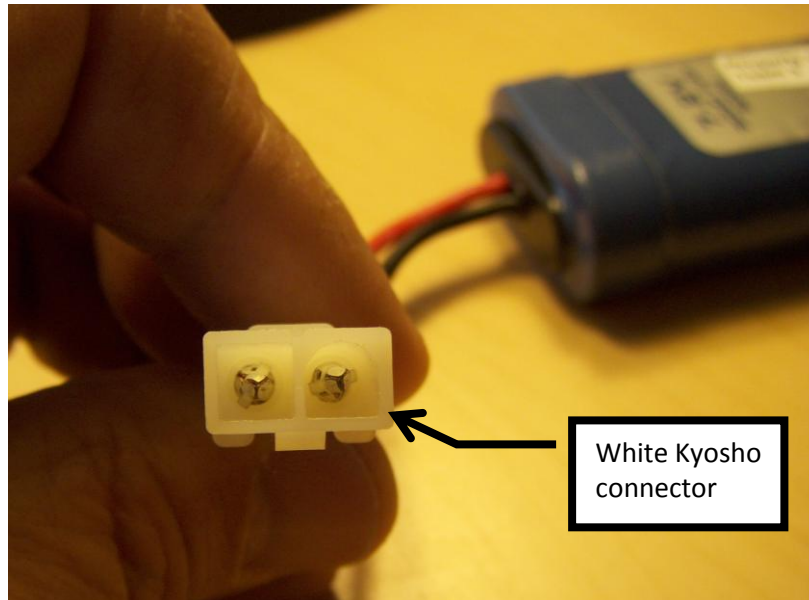


Changing Connectors on 7.2V Batteries

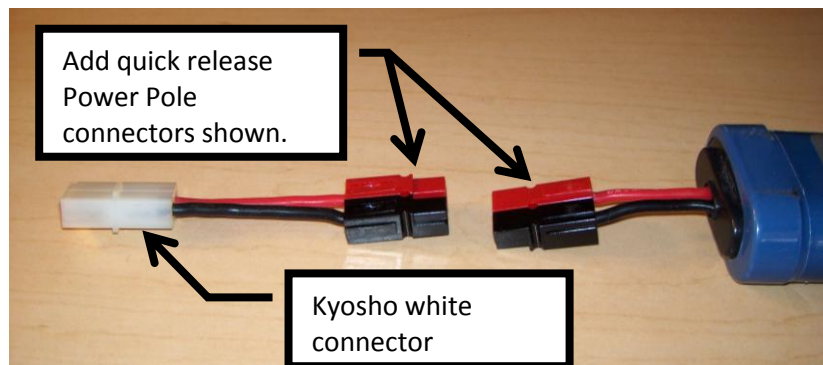
Objective:

Create a quick release connection to existing battery wiring to help prevent existing Kyosho white connectors from failing. They are somewhat delicate and have failed from repeated, heavy use. We wish to avoid this, especially in the middle of a competition!



Solution:

Prepare the following modification to all batteries using Powerwerx.com parts defined as follows. Once completed, this will allow the Kyosho white connector to stay connected to the VEX controller on the robot while batteries are being changed out for charging.



What is needed (per kit → modify two batteries/kit):

1. Four (4) pair (red/black) Anderson 30A Power Pole Connectors. *Note, these connectors are all identical with the exception of color and are unisex connectors (both male and female depending on orientation).*
 - a. <http://www3.towerhobbies.com/cgi-bin/WTI0095P?FVSEARCH=DTXC2302&search=Go>
 - b. <http://www.powerwerx.com/anderson-powerpoles/powerpole-sets/30-amp-red-black-anderson-powerpole-sets.html>
2. Two (2) 7.2volt 3000 mAHr batteries.
3. One (1) Crimping tool (highly recommended as shown below) or soldering iron (optional). *The following procedure reflects use of this tool and not soldering.*
 - a. <http://www.powerwerx.com/anderson-powerpoles/accessories/tricrimp-crimping-powerpole-contacts.html>
 - b. Suggested additional tools are also shown below:
 1. Utility knife.
 2. Heavy duty pliers.
 3. Wire cutter snipper.
 4. Narrow point (or small) screw driver.



Changing Battery Connectors:

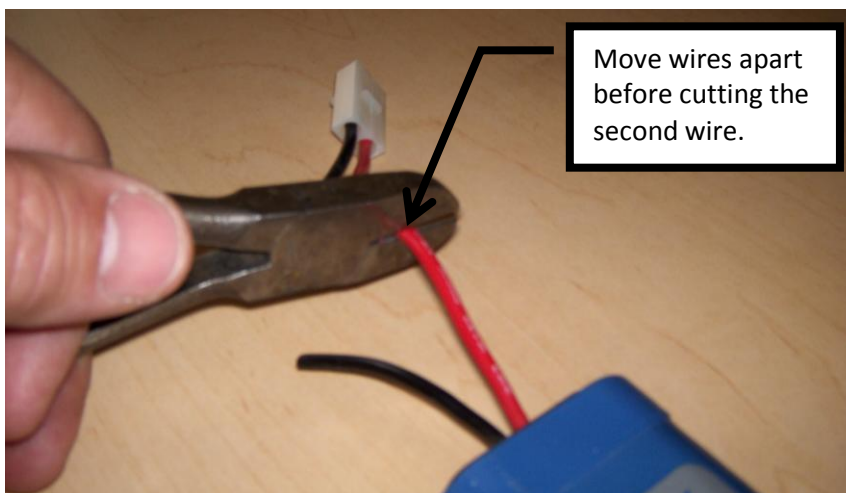
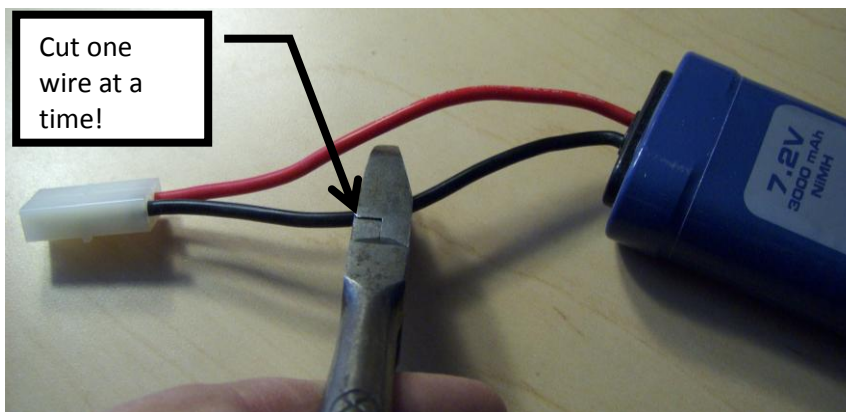
The following procedure should be followed carefully. After several batteries are successfully completed, you'll find that modifications can be accomplished in under 10 minutes per battery (assuming soldering is excluded), but under no circumstances should anyone ever rush through it. Some safety considerations are involved since electricity is present...*and we don't want this to be a shocking experience.*

***** Safety Cautions:**

Never cut both red and black battery wires at the same time, as that will short the battery and melt a notch in your wire cutter, and surprise the heck out of you!

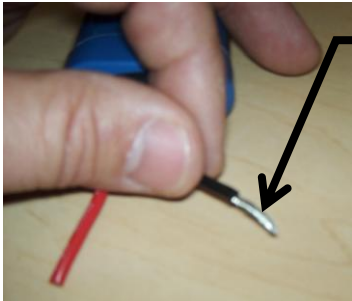
Don't strip the BLACK battery wire until the plastic housing is added to the RED battery wire otherwise the RED and BLACK wires ~~might~~ will touch and ~~make a spark~~ burn down your house with all the other BEST robot stuff in it.

1. Cut off the existing white connectors (ONE^{***} WIRE AT A TIME!) as shown below. Cut them off in the middle of the wire so that the white connector has about 1 ½" of wire left on it. Black and red wiring should always be cut to reflect equal lengths. Once both wires are cut, set it aside for "Creating Kyosho to Power Pole Adapter" later in this tutorial.

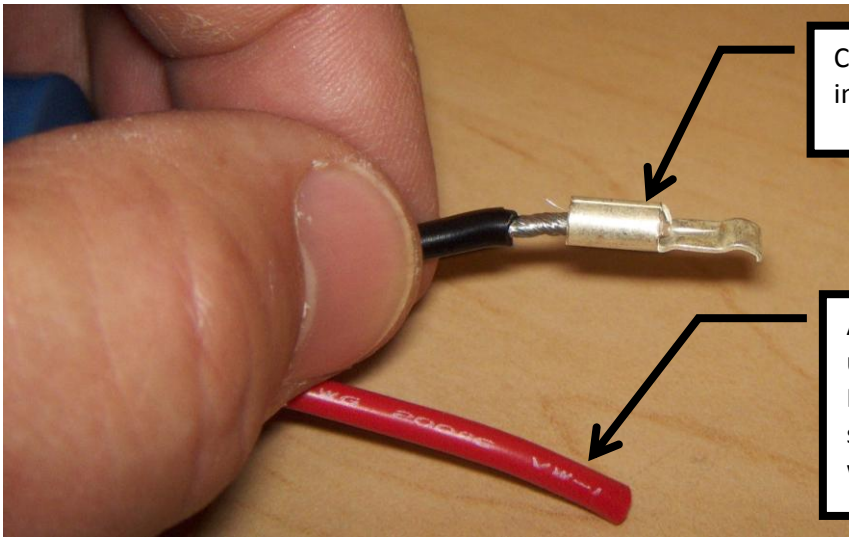


2. One WIRE at a time^{***},

- a. Start with the Black wire only and strip the end of the battery wire about $\frac{1}{4}$ " to $\frac{3}{8}$ ".

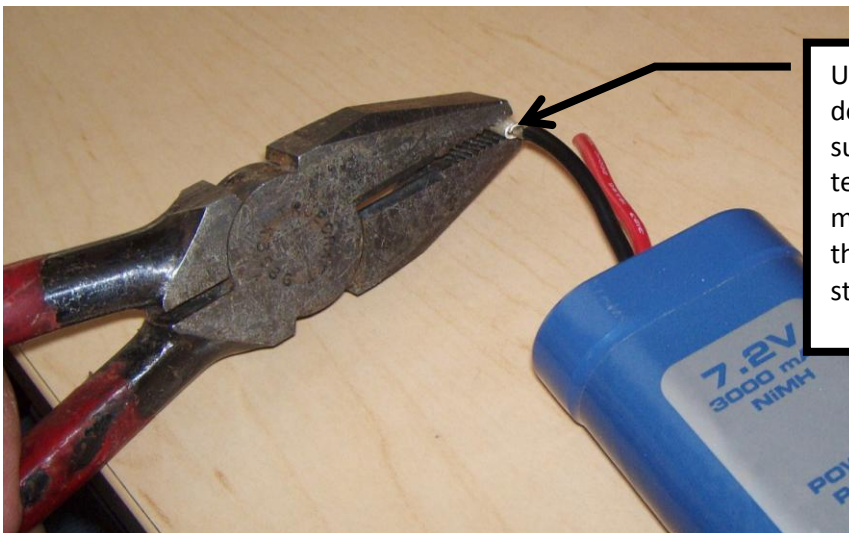


Strip the wire using the utility knife and twirl the end of the exposed wire. Twirling makes it easier to insert into the metal contact part shown below.



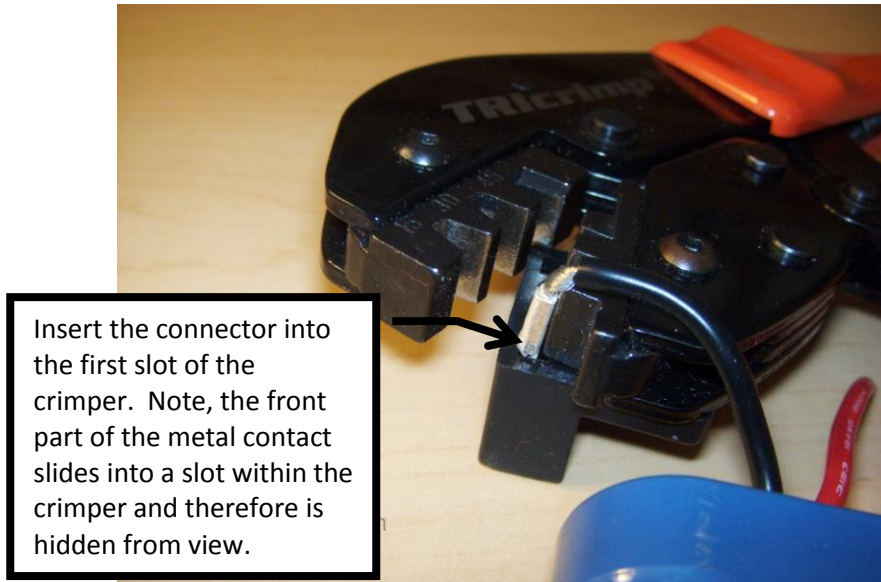
Carefully push the wire fully into the metal contact

Again, do not strip this wire until the black Anderson Power Pole connector is successfully added to the black wire above!



Use the pliers to crimp down on the metal contact sufficient to hold the wire temporarily in place. This makes it much easier to use the crimping tool in the next step.

- b. Now crimp the wire to the metal contact portion of the Anderson Power Pole connector as follows:



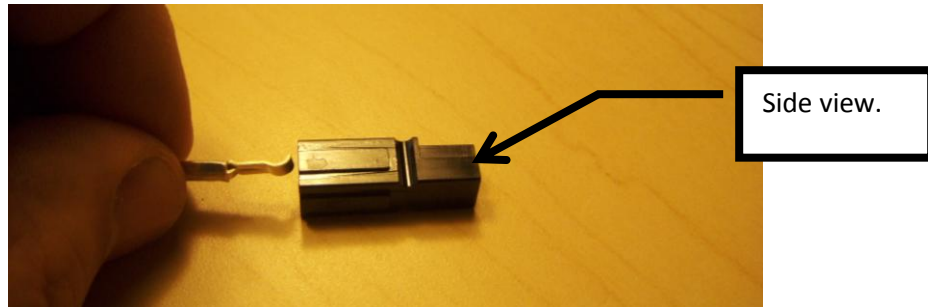
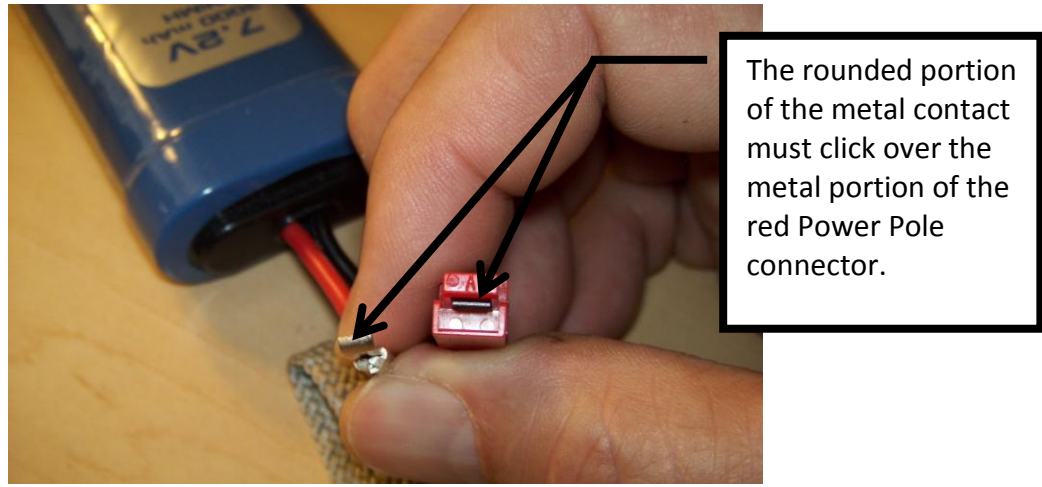
Once inserted, proceed to crimp down. Note, you must crimp down completely until the handles touch each other (you'll hear a slight click). The handles will not release until this is done! Be prepared that it will take some effort and you may need to use both hands. Once this step is finished, you may elect to solder the joint as well, but you'll find the crimper does a very good job when used properly.



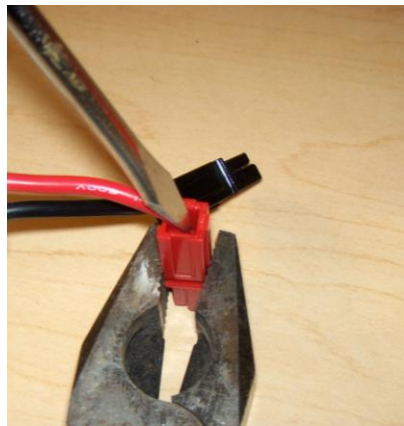
- c. Push the metal contact portion into the associated plastic housing until it snaps (red wire into Red housing, black wire into Black housing). Caution: Pushing in the metal contact is not as easy as it sounds...it's kinda like pushing on a rope, so please follow suggested instructions below to minimize the effort!

First, note the required orientation of the metal contact in order to "clip" to the power pole connector below as it slides in. Please reference installation

instructions from Power Pole if there are any further questions about orientation.

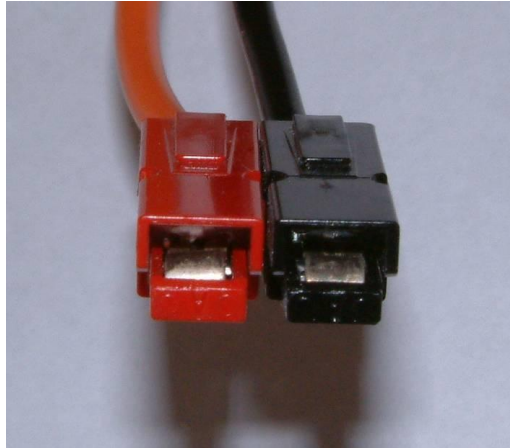


- d. Holding the Power Pole connector with pliers, use a small screw driver with a narrow tip to push on the back end of the metal contact until you feel it successfully clip in. Sometimes you'll hear it click, but not always. This is much easier than using your fingers!



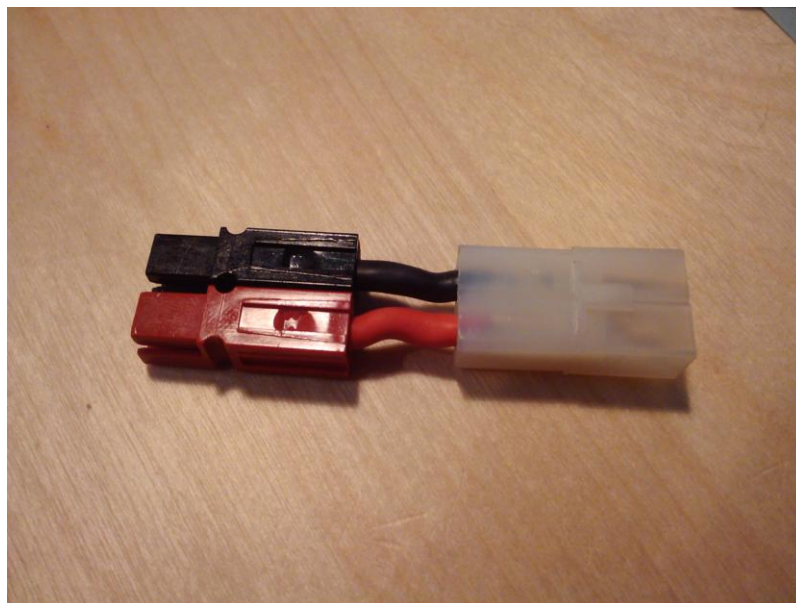
- e. Repeat steps b-d for the Red battery wire.

3. Slide the two halves (red/black) of the connectors together so that the orientation is as shown in the picture below.
4. Repeat for all batteries.



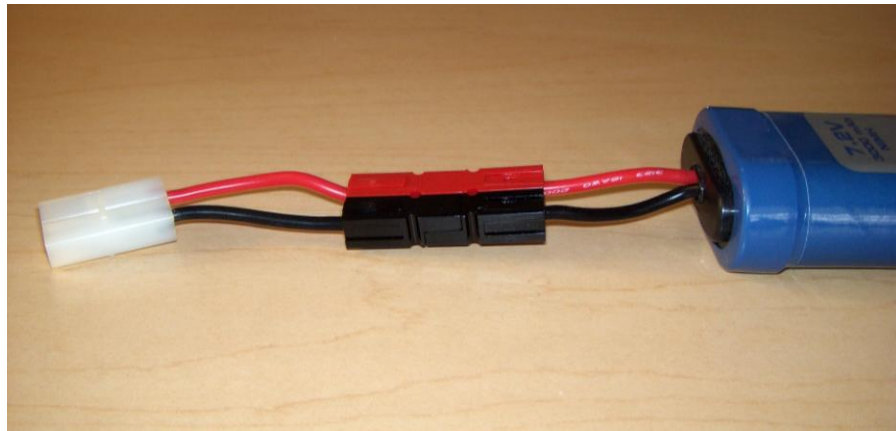
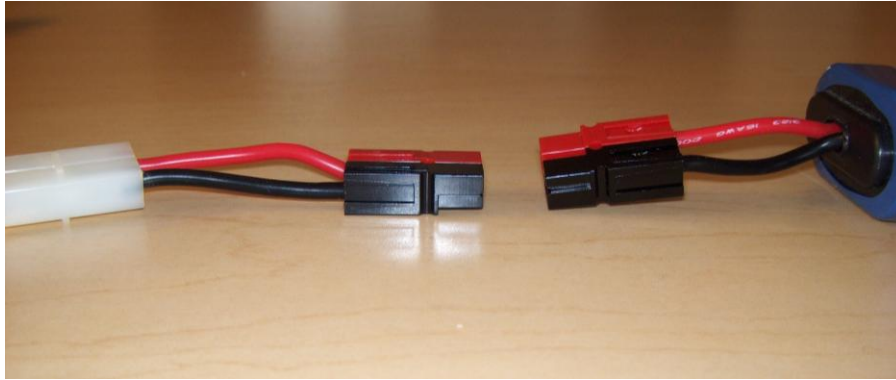
Creating Kyosho to Power Pole Adapters:

Following the same method describe above, add Anderson Power Pole connectors to the white Kyosho connector + wire that you removed from your batteries. Each kit will require two of these Kyosho to Power Pole adapters for the two batteries provided. When modifying these connectors, you need not worry about electrical safety concerns since the battery is not involved. Once completed, they should look like the following.



Final Connection:

Once completed you should be able to clip the two components together as shown below. Make sure you connect red to red and black to black.



Congratulations...you're done! Repeat the process for each battery.

