

A Quick Overview of Anderson Powerpole Connectors for Portable Ham Radio Use

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This connector family is available in a huge range of sizes, including some huge sizes for very high currents. We are going to confine ourselves mostly to the smaller sizes usually described as 15, 30 and 45 Amp current levels. Also, there are 'knock off' components not made by Anderson. I recommend you avoid these and purchase the genuine article. If you buy your components from HRO or from Powerwerx you will get genuine Anderson connector components. This document will NOT be a complete tutorial on crimping and assembling, but should give you an overview.

Crimping tools are also available from multiple sources. The genuine Anderson crimpers are painfully expensive, but there are some very decent alternative crimpers. In this case I'm comfortable recommending the Tri-Crimp tool offered by Powerwerx directly (and through HRO).

Here are the basic components of the 15 / 30 / 45 amp system: (The illustration shows the 15 amp terminal size).



The plastic housings are available in a range of colors, but we generally use the red for +12V and the black for ground. The housings can slide and 'lock' together to form a pair, and in that form they cannot be inserted backwards. The roll pin illustrated can be inserted into the pair to lock them firmly into place. Some folks use a tiny dab of superglue instead – but be careful not to get this inside the connector or onto contacts. I find it is generally best to assemble housing pairs in advance – without the wire or contact inserted. They you can also verify that you don't have them backwards.

Here is an illustration of a pair of housings that is bonded together.



Each metal contact is in two halves. One half serves as a spring and is already in place within the housing when you receive it. The other half is the contact you must first crimp onto your wires. For this 15/30/45 Amp housing size there are three size contacts that you can use. You need to choose the correct contact to match the size (diameter or wire gauge) of the wire you will be using. And, of course, that wire gauge needs to be large enough for the current that you will be delivering.

Note that the housings themselves do NOT vary. You can use the same housing for either a 15, 30 or 45 Amp contact. Presently, housings run about \$0.37 each in red and black.

Anderson advertises the three contact sizes by current rating, but I prefer to focus on the wire gauge size that is suitable for each. If you use the wrong size contact you will either have trouble inserting the wire or you will have trouble with a loose crimp. Here are the three sizes:

15 Amp: 16 to 20 AWG wire

30 Amp: 14 to 12 AWG wire

45 Amp: 10 AWG wire

If you set the three contacts next to each other, you will notice very little difference at the spring-contact end of the part. The BIG difference is at the end where the wire crimps. The 15 amp has a small hole, the 30 amp contact a larger hole, and the 45 amp contact has a large u-shaped channel that the bare wire lies within and which is folded over the wire during crimping.

Once assembled, a Powerpole containing a 15 amp terminal CAN be plugged into an opposite part containing either a 30 or 45 amp terminal. Obviously the smaller wire in the 15 amp terminal will be rated to carry less current however. But the connectors do remain compatible.

It's probably worth noting that wire is THICKER when the AWG number is SMALLER. I.e., 10AWG wire is a lot thicker than 20 AWG wire.

Housing below shown with 15 amp contacts



Housing below shown with 30 Amp contacts –notice the only real difference is the slightly larger hole for the wire. The housings are identical.



Housings below shown with 45 amp contacts. Again, the housings are identical but the contact is different. Here you see the larger u-channel for use with thick 10 AWG wire.



The grooves and tab on the sides of the housings let them 'slide' together and mate into the pairs shown. You can do this initially without the locking pin or glue, and then check their polarity before inserting any wires by verifying that they mate with an already polarized connector on your go-box or

power strip. If you have them backwards, they won't insert into the other connector with red-to-red and black-to-black. So get them right. I usually do several pairs at once and store them that way.



A typical power port on a go-box. You can use this (or similar pairs on your DC power strip) to make sure you have the red and black housings arranged correctly before you insert the locking pin or any wires/contacts. If it's right, it will slide right in with red to red and black to black.

The overall work-flow of assembly is as follows, usually:

1. Assemble housing pairs. Make sure they are correctly polarized, otherwise dis-assemble them and reverse the order.
2. Install split locking pins into the small hole formed by the semi-circular opening in each housing where they slide against one another. This can be a little tricky, but practice makes perfect. IF you use super glue, do NOT let ANY of it run inside the connector. If you do, toss it. It will either bind up the leaf spring inside or it will contaminate the contacts. Let it dry for 24 hours before using.
3. Strip the wires
4. Insert the wire into the terminal of choice.
5. Slide the wire and terminal into the correctly sized pocket on the crimping tool, facing the correct way up.
6. Crimp the tool fully –the ratchet in the tool will not release until you bottom out. That is another reason to use the right size terminal for your wire gauge –you don't want to end up jammed up in the crimper. Be sure the wire doesn't slide out of the terminal while you are crimping.
7. Get terminals crimped on both wires before inserting into housing. If you have a problem you may have to snip both off to keep the length matching (for paired zip-cord type wires).
8. Insert the red and black wires into the red and black housings until they 'click' into place.
9. Re-verify the polarity is correct. Your radio will be expensive to replace!

Powerwerx sells a somewhat affordable crimping tool that works well with the 15, 30 and 45 amp terminals described here. It runs about \$45 dollars, does all three sizes. It is a good hobbyist alternative to the genuine Anderson tools. (\$264 for one that does the 15 and 30 amp sizes and another \$264 for one to do the 45 amp size). I use the Tri-Crimp and have no problems. I do NOT recommend using Powerpole connectors if you do not have the correct crimping tool.



Powerwerx Tri-Crimp, handles 15, 30, 45 amp contacts

Here are links to the products described here. (I have no business or personal relationship with Powerwerx of any kind, but I do recommend them to my friends. www.powerwerx.com). They also sell the same parts in various combinations and kits, as well as many other products.

<https://powerwerx.com/tricrimp-powerpole-connector-crimping-tool>

<https://powerwerx.com/anderson-powerpole-colored-housings>

<https://powerwerx.com/anderson-1332-powerpole-contact-pp15>

<https://powerwerx.com/anderson-1331-powerpole-contact-pp30>

<https://powerwerx.com/anderson-261g2-powerpole-contact-pp45>

<https://powerwerx.com/roll-pins-15-30-45-amp-powerpole-housings>

Last but not least, here is a GREAT tutorial on the actual assembly and crimping process.

<https://powerwerx.com/help/powerpole-assembly-instructions>

