Operations Manual
Wyandotte County / Kansas City, KS R.A.C.E.S
Chapter 5.1 DC POWER CONNECTORS

1. SCOPE

The Wyandotte County / Kansas City Kansas Radio Amateur Civil Emergency Service (RACES) along with the ARRL Amateur Radio Emergency Service (ARES) have adopted the Anderson Powerpole as the standard DC Power Connector for radio equipment.

2. ANDERSON POWERPOLE CONNECTOR SUPPLIERS

Because Anderson PowerPoles are not yet available at most electronic supply stores, the following is a partial list of suppliers that offer the Anderson Powerpole connector and related items. This list is not an endorsement or a required source.

Associated Radio
8012 Conser
Overland Park, KS 66204
Phone: 913-381-5900
Fax: 913-648-3020
e-mail: sales@associatedradio.com
website: www.associatedradio.com

WBØW, Inc.
P.O. Box 8547
St. Joseph, MO 64508
Phone: 816-364-2691
Fax: 816-364-2619
e-mail: wb0w@wb0w.com
website: www,wb0w.com

West Mountain Radio
18 Sheehan Avenue
Norwalk, CT 06854
Phone 203-853-8080
Fax: 203-299-0232
Website: www.westmountainradio.com

3. ANDERSON POWERPOLE CONNECTOR GENERAL INSTALLATION.

TIPS: Assemble the red and black plastic housings together correctly on the first try. They fit snugly and can be difficult to get apart. See the picture below for ARES /RACES standard orientation.

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Put the connector housings together before inserting the connector pins in, this is easier when using heavy paired wire.

Before soldering or crimping the contacts on to heavy paired wire, orient them so that they go in the housings without twisting the wire.

The plastic housings are held together with dovetail joints. Always slide these joints together! They will be damaged if you try to snap them together or apart. They ONLY slide together in one direction. This should be obvious by looking at them carefully.

The contacts go in the housings in only one way. Insert the contacts with their sharp edge down against the flat spring that is in the housing. They should slide in and click. If you do not hear a click or they are not fully seated, fix it. When they are inserted fully you should notice that the contact and it's wire "floats" slightly in the housing. If it feels tight it may not be snapped in fully. Tug slightly to make sure the contact is locked in place. If you have trouble getting the contact into the housing you may have squashed the contact wider or bent it.

When soldering the contact pins, be careful not to use too much solder. Keep the solder inside where the wire goes. If a blob of solder gets on the outside of the connector body you may have trouble putting the contact in the housing. If you get solder on the contact surface you will not make a good contact.

When crimping the contact pins use a crimp that contains the wire completely inside the pin and doesn't spread the connector apart. A good crimp is one where the dimensions of the crimped portion are no more than an uncrimped pin. If the crimp is flattened out you will not be able to easily push the pin into the body. If you bend the contact blade in relation to the crimp area you should straighten it before putting it into the body.

It is possible to use larger or smaller gauge wire with the 30 and 45 amp connectors. The 30 amp connector pins will work with #10 wire if you cut the end cleanly and carefully put each and every strand of that wire into the pin. It may be is easier to use 45 amp connectors on #10 wire. Using 16 gauge or smaller wire in a 30 amp contact requires that you double or triple up the wire to fill the crimp area of the contact and get a good crimp.

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A properly crimped contact should have a minimum hold on the wire of more than 25 pounds. A pair of connectors should snap together with 8 to 10 pounds force.

Last but not least, MAKE SURE you have the polarity correct before plugging in you equipment. "Measure twice, cut once" as the saying goes.

POWERPOLE INSTALLATION USING THE GARDNER BENDER TOOL Read above, the general instructions apply when using the Gardner Bender GS88 tool.

This tool is a very nice, inexpensive crimping tool; however, it was not designed specifically for Anderson PowerPoles. It is not a full substitute for a real Anderson crimping tool. The real Anderson tool is $150.00

Looking at the GB tool you will see it has three crimping dies and a cutter. We will refer to the dies as number one being closest to the cutter and number three being closest to the hinge.

You may use the cutters to cut the wire but you will need wire strippers to strip the wire. Using cutters to strip wire will probably nick the wire strands. Strip the wire insulation back 5/16", try not to nick the strands.

THE FOLLOWING IS PRIMARILY FOR 30 AMP CONNECTORS:
Put the contact over the wire making sure that all of the strands are inside the contact and the insulation is not. You will find it is possible to use up to 10 gauge wire in a 30 amp contact even though they are made for 12 to 14 gauge. The # 10 will have to be cut cleanly and you have to neatly twist it to get all of the strands inside. Wire smaller than # 14 will have to be doubled or tripled over to fill the contact recess and get a good crimp.

If you are using paired wire orient the wire with the red/plus wire on your right with the end of the wire away from you. Place the contact on the wire so that the sharp edge of the contact tip is down. Do both contacts this way and when crimped they will fit in to the plastic housing correctly without twisting the wire.

Put the contact into the smaller number one die. Center the crimp portion of the contact in the die with the rounded portion of the die up and against the seam on the contact and the tongue of the die directly opposite. Make sure that the wire is fully inserted into the contact and crimp down firmly. Crimp with almost, but not quite, full force without bottoming out the tool. You will notice that the crimp is now slightly wider than it was. Rotate the crimp 90 degrees and squeeze it again in the number three die but this time not as firmly. The idea is to make the width of the crimp just slightly less that it was uncrimped. Repeat the first crimp in the first die, but with less pressure.

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THE FOLLOWING IS FOR 45 AMP CONNECTORS:
The GB tool may also be used for 45 amp contact but an extra step is required. These contacts come with the crimp portion open in a spread out "U". It is helpful to close up the "U" slightly with the front edge of the number one die. Put the crimp in the die like the 30 amp but put the wire in after the crimp contact is held inside the tool. The 45 amp contacts will easily take # 10 wire and will almost take #8. You will most likely have a problem getting the number # 8 wire insulation inside the plastic housings. To use the 45's with the larger wire, # 10 or higher, you should use the larger # 2 die instead of the smaller # 1.
AGAIN, MAKE SURE you have the polarity correct before plugging in you equipment.