

Power Poles

Interoperability -- Why Anderson Powerpoles ??

In the rather frantic and hectic long days and nights of amateur radio emergency operations in the immediate aftermath of the September 2001 World Trade Center attacks; the need for a new and more reliable method of power connectivity arose.

The currently used standard Molex power plugs left much to be desired in the continuous operational mode. Their outside plastic covers became fused together from the heat generated over time in use.

Enter the Anderson Powerpoles with their reliable and even idiot proof connectivity. There are two main sizes that have become the defacto standard for the ARES amateur community; the 15 amp connector (for use with #16 and #18 gauge wire) and the 30 amp connector (for use with #12 and #14 gauge wire). There are of course the complete range in sizes from 10 Amps up to 180 amps available.

The identical connector halves are genderless -- making for ease and quickness of assembly with a minimum number of parts to keep on hand. The molded dovetail design allow you to configure customized assemblies with a wide variety to use in common ARES operations. With a wide range from cigarette lighter connections to automobile battery, solar power, and other power supply types to supply your radios; all connections can be made in a commonality with these small devices.

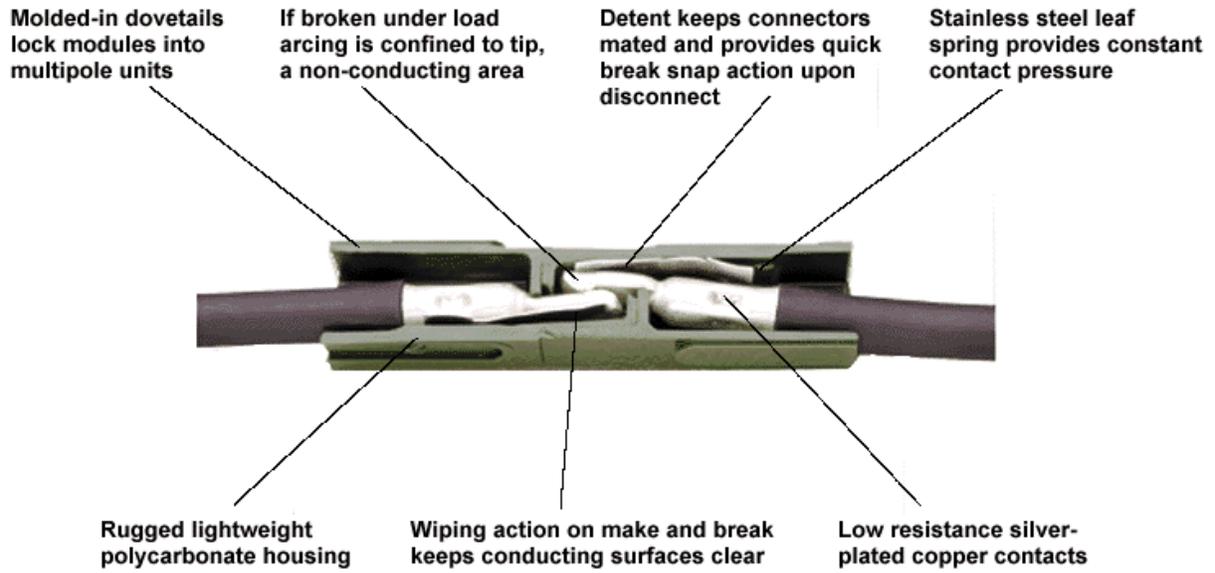
Housings should be mated, viewed from the contact side (opposite the wire side), with the hood up, tongue down, RED on the LEFT, BLACK on the RIGHT. High conductivity silver plated copper contacts give a minimal contact resistance at high current uses. The flat self-wiping contact surface provides for a make and break to keep conducting surfaces clean. Contact detents serve to keep the connectors positively mated in high-vibration applications and give a quick-break, snap action upon disconnect. The non corrosive stainless steel leaf springs will serve to maintain a constant contact pressure and serve in frequent connect/disconnect operations and an intermittent overloading situation. The durable and high impact resistant polycarbonate housings with a UL94 V-O housing material.

A 3/32" X 1/4" length roll pin is provided to secure the connectors in the desired configuration; though some desire to use a drop of super glue as a holder. An easy crimp routine for the wire to contact is to face the connector seam toward the concave side of the crimping tool. To remove the contact from the housing use a small blade screw driver or X-Acto blade to lift the front of the contact slightly over the detent in front and gently remove the contact from the rear of the housing.

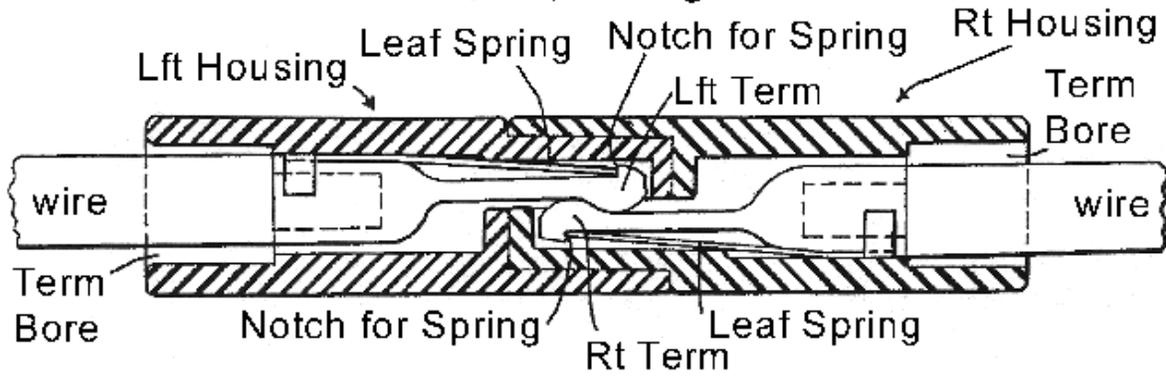
Make up and utilization possibilities are limited only by your imagination.

"When all else fails -- Amateur Radio works"

Power Poles



3,091,746 Fig 7



Power Poles

The Following is courtesy of <http://www.powerwerx.com/>

Powerpole General Assembly Instructions

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. Note that you can assemble the red and black insulated housings in other ways for special applications.



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

Before soldering or crimping the contacts on to heavy paired wire, orient the contacts so that they are both facing the correct direction so that they go in the housings without twisting the wire.

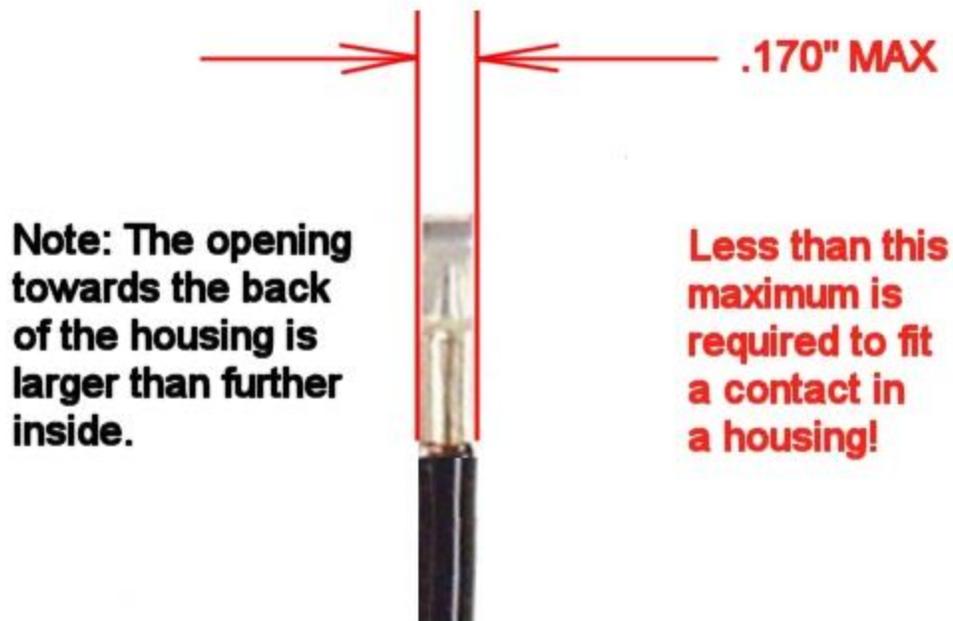
The plastic housings are held together with dovetail joints. Always slide these joints together! They will be damaged if you try to snap them together or apart. They ONLY slide together in one direction. This should be obvious by looking at them carefully.

Powerwerx recommends the use of slotted retaining pins. Others do not like the possibility of them falling out in service. If your application is critical and that you want to make the pairing permanent you can use a cyanocrylic glue (Crazy Glue) to hold the connector bodies together.

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 them. When they are inserted fully you should notice that the contact and it's wire "floats" slightly inside it's housing. When looking in from the front of the housing the contact tip should slide over the top of the internal housing spring. This is the clicking sound that you hear.

Be careful when crimping. You may make the contact out of round and it will not slide into the contact easily. This may occur with different types of crimpers and various gauges of wire. To fix this situation you may have to rotate the contact 90 degrees from the original crimping orientation and re-crimp either with the original crimper or a pair of pliers. In any case you need to make the barrel of the contact round again so it can slide in the housing.

Power Poles



YOU WILL NOT BE ABLE TO INSERT THE CONTACTS INTO THE HOUSINGS IF THEY ARE TOO WIDE AFTER SOLDERING OR CRIMPING!

Cutaway view of a Powerpole connector.

Note that the contact must fit through the gap between the housing and the spring and that the contact is snapped over the end of the spring.



Power Poles

CORRECT!

The contacts are in proper alignment and ready to push in. Listen for a click on each one to make sure they are fully inserted.



Power Poles

WRONG!

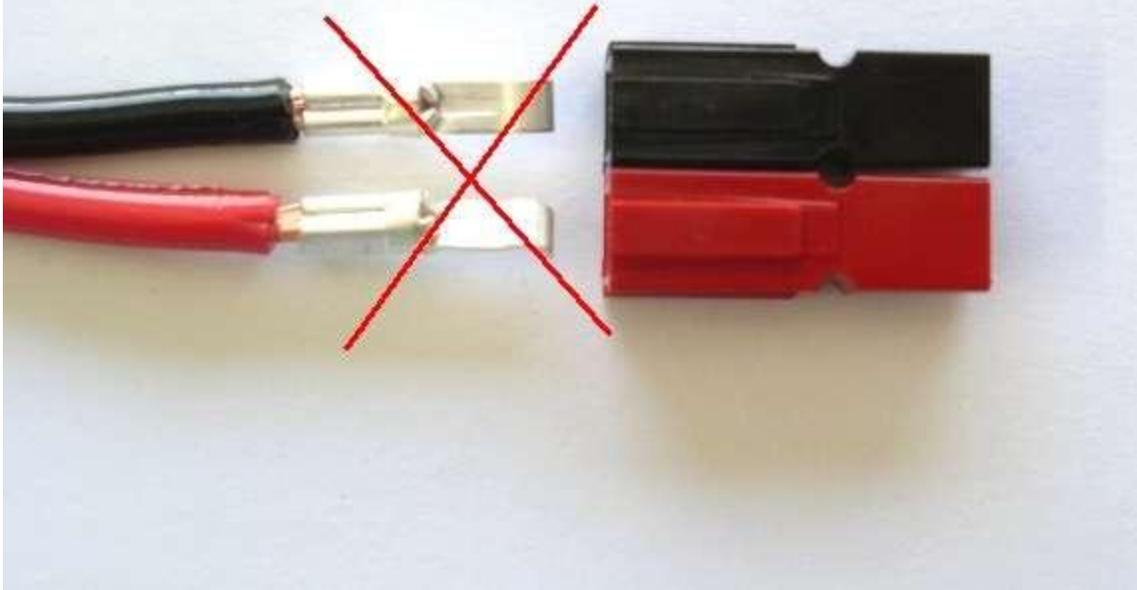
Contacts are up side down
in relation to the housings and
the colors are backwards.



Power Poles

WRONG!

Contacts are at an angle
and will be difficult or
impossible to insert.



Power Poles

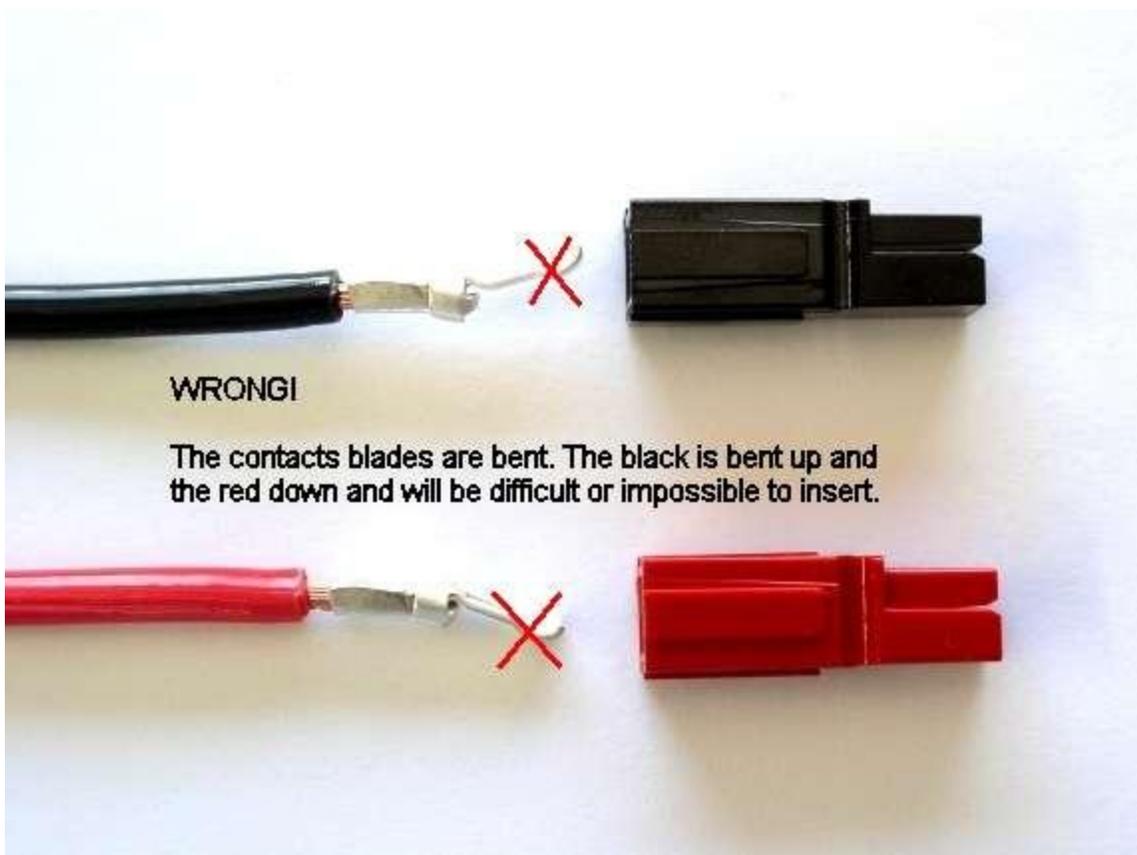


CORRECT!

The contacts are in proper alignment and ready to push in. Listen for a click on each one to make sure they are fully inserted.



Power Poles



Tug slightly on the assembled connector to make sure the contacts are locked in place. If you have trouble getting the contact to lock in to the housing you may have squashed the contact wider deformed it some how. Look at the side profile of the contacts before and after crimping, you may have to bend it back straight before inserting it in to the housing.

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 into the housing. If you get solder on the contact surface area 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 un-crimped pin. If the crimp is flattened out you will not be able to easily push the pin in to the body. If you bend the contact blade in relation to the crimp area you should straighten it before putting it in to the body.

It is possible to use larger or smaller gauge wire with the 30 and 45 amp connectors. The 30 amp contacts will work with difficulty with #10 wire if you cut the end cleanly and carefully put each and every strand of that wire in to the pin. It may be 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 receptacle of the contact to get a good crimp.

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 6 to 8 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.