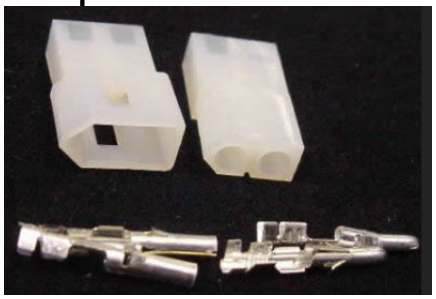
Anderson Powerpoles

Powerpole Assembly

(PowerWerx Insructions)

Seaching for a Standard

The old standard Molex 2-pin connectors could no longer hold up to the amp requirements of mobile and portable equipment so a reliable replacement was needed as specified below:



1. To handle ***30/45*** amps continuous load
2. To ***mate and un-mate quickly*** and easily
3. To maintain a ***reliable connection*** via friction
4. To grip wire securely ***without exposure to the power conductors***
5. To be assembled with a ***standard crimping tool*** (TRIcrimp)
6. To have ***silver-plated*** copper contacts for corrosion resistance
7. To have ***self-wiping design*** provides good electrical contact
8. To be ***small, lightweight, color-coded***
9. To be ***genderless*** connector works for both ends of conductor
10. To be ***stacked*** for multiple connections with single insertion
11. To allow **100,000** ***no-load insertions***
12. To allow **250** ***full-load hot plugs***

1999 OES BULLETIN

EMC204 DC Connectors Standard

To: Emergency Communications Units - Information Bulletin
To: Emergency Management Agencies via Internet and Radio
By: Auxiliary Communications Service (ACS) of the
California Governor's Office of Emergency Services

EMC204 DC Connectors Standard For release October 4, l999
Following the bulletins on Battery Power we were asked more about the cable connectors adopted for our ACS unit.

We recognize there are a variety of opinions, so this is what we've learned and decided. Whatever connector you use we recommend that you have several of them made up with the other end unconnected, but stripped bare ready to connect. That way you will have the clear opportunity to match whatever needs may unexpectedly occur.

At State OES ACS we use the **Anderson Powerpole for our standard use.** We do recommend them for use by County and City ACS, RACES and ARES personnel in California so there will be fewer problems when units are working under mutual aid in support of each other. Obviously it is not mandatory. For those who use a different connector we urge you acquire some Anderson Powerpole connectors and make up a few "jumper" cables to interconnect between yours and the Andersons (or vice versa). That's prudent planning and reduces the stress when in a tight situation. It helps to show others that you are professionally prepared for the unexpected.

1999 OES BULLETIN (CONTIN.)

For our purposes we use 15 or 30 ampere sizes; however, Anderson lists sizes of 10, 15, 30, 45, 75, 120 and 180 amperes.

The connectors come in Red and Black. Due to the way they are mated they are genderless, in that the mating process can be altered to those cases where someone wants red (positive) on the right and black (negative) on the left instead of the other way **(Red on left, Black on right)** when viewing from the contact end.

Most users find them easy to assemble, change and dissemble. They are cleverly designed. Until you use and assemble one it's difficult to appreciate how - and why - they work so well. They can be connected to the wire by either solder or crimp. Personally, I prefer solder. Just be frugal with it to avoid oversizing the pin that will be inserted into the rear of the connector. A small blade screwdriver can be used to assist the insert process when placing the wired terminal into the plastic connector halves.

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Thanks for your input to these bulletins. It's always a help.

Cary Mangum, W6WWW, State ACS Officer, State OES, CA
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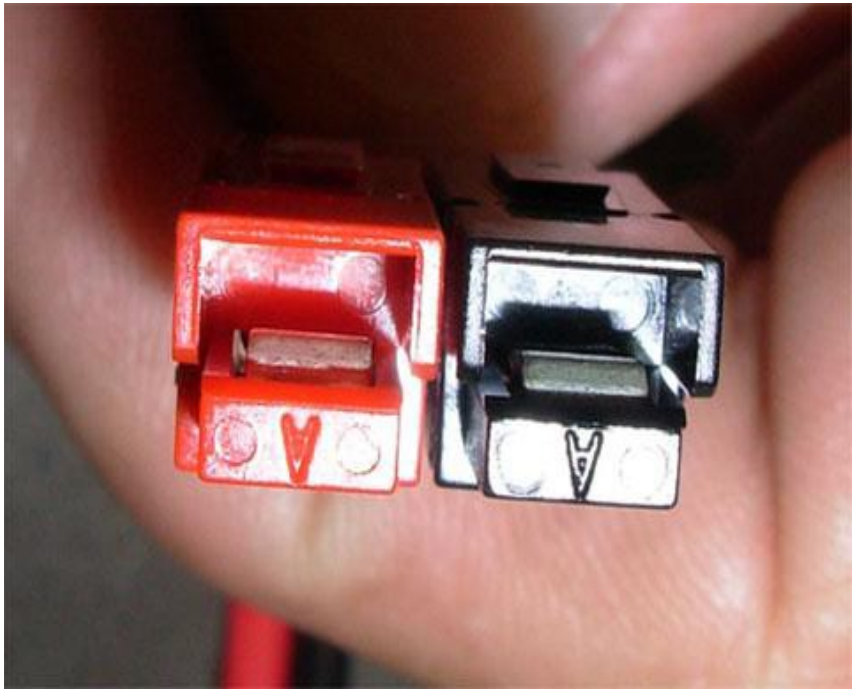
Why Use Powerpoles?

1. Declared the "**Standard**" 12 VDC emergency connector for *ARES/RACES, County, City and* State OES/ACS use by a 1999 bulletin from Governor's Office of OES.
2. They are **proven, reliable, high-amperage** connectors for all types of accessory equipment: radio, automotive, solar, USB, linear amps, etc.
3. Allow **interchangeability** of DC power between groups
4. Standard **polarity colors**: RED positive; BLACK negative
5. Correct polarity is maintained at either end of the **genderless** connections
6. Connectors can adapt to a variety of **wire gauges**
7. Can be **stacked** together vertically or horizontally to allow multiple connections with a single plug insertion
8. Universally **available** through internet and retail stores

Powerpole Identification

- **PP15/30/45**
- ***ALL PP15/30/45*** *are interchangeable with different barrel sizes.*



MOST POPULAR for Ham Radio

Powerpole elements

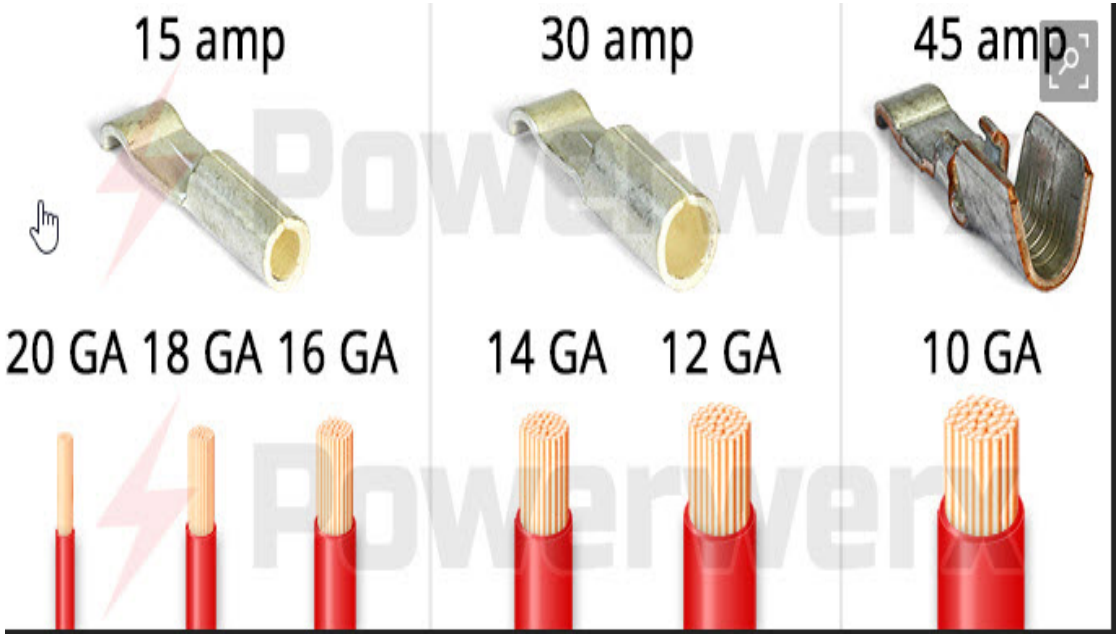
1. Fingerproof Rib
2. Housings
3. Contacts
4. Lock pins

PP 15/30/45 Different Barrel Sizes Available

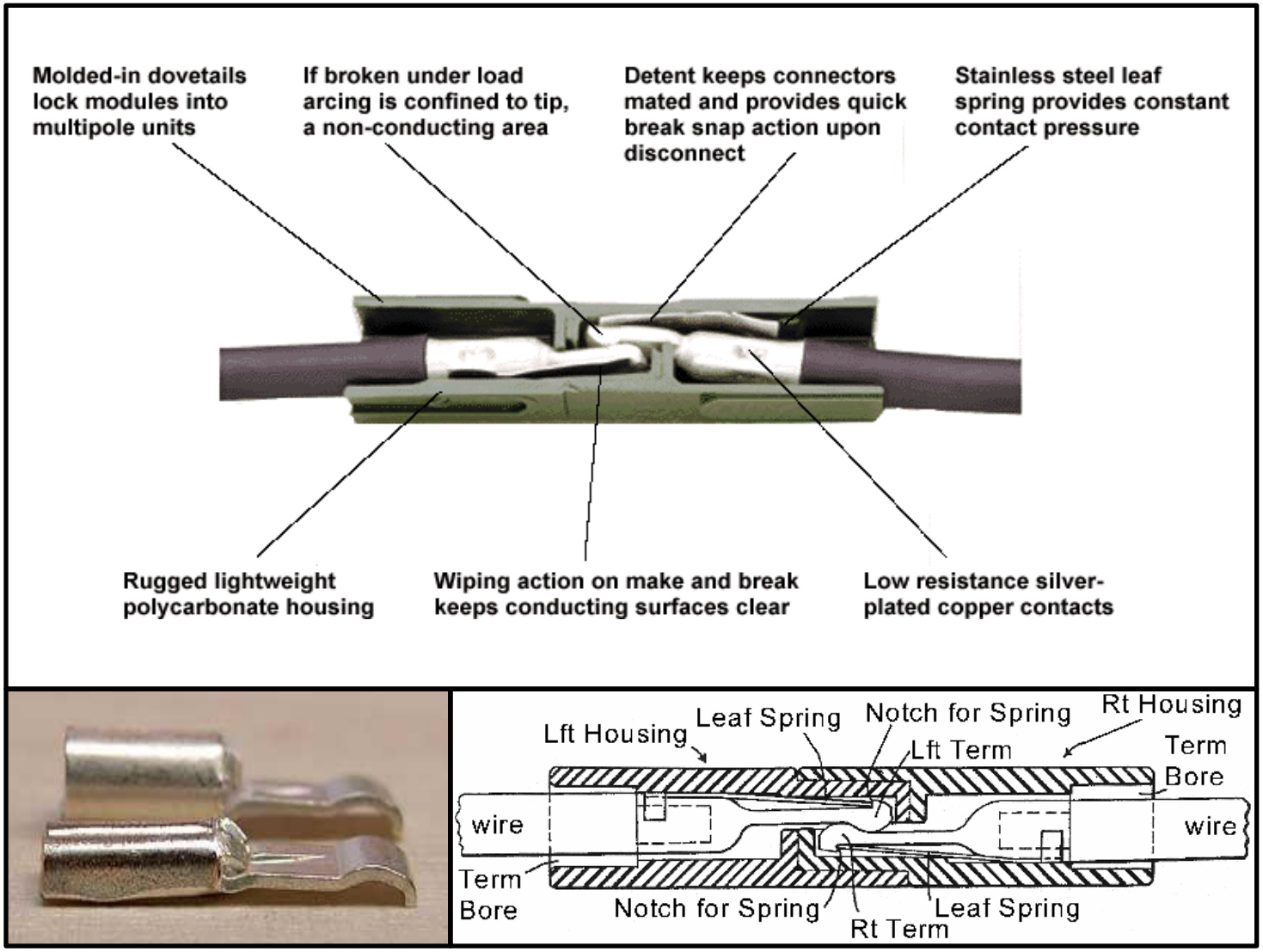
- 15/30- **Only** difference is the size of the wire **barrel** on contact
- 45A-Style of wire mount is different than the 15/30
- When connected, hard to distinguish other than wire gauge used.

45A **30A** **15A**

One housing design, THREE contact options



Anatomy of a Powerpole



Powerpole assembly tools

- Three basic tools needed
  1. Wire cutters
  2. Wire strippers
  3. Contact crimper*

Wire cutters

- Nothing fancy.
- Good and sharp
- Appropriate to gauge of wire your using.

Wire Strippers

- Good and sharp
- Appropriate to gauge of wire your using.

Contact Crimper

- **Crimping is the heart of the procedure!**
- Mess this up and you've botched the whole thing (the contact won't insert or the wire could pull out.)
- Three different styles of crimpers:
    1. Not-Recommended style
    2. If-you-have-money-to-burn style
    3. Just-right style

Not-Recommended Style

- Guaranteed to mess up-DO NOT USE.
- Inconsistent results
- Inexpensive…$12.99
- Overall rating, “0”

If-you-have-money-to-burn style

- Consistent results!
- Official APP crimper
- Only does 30 and 45A contacts
- **<u>$219.99!</u>**

Anderson Power Pole Crimpers

Just-Right Style

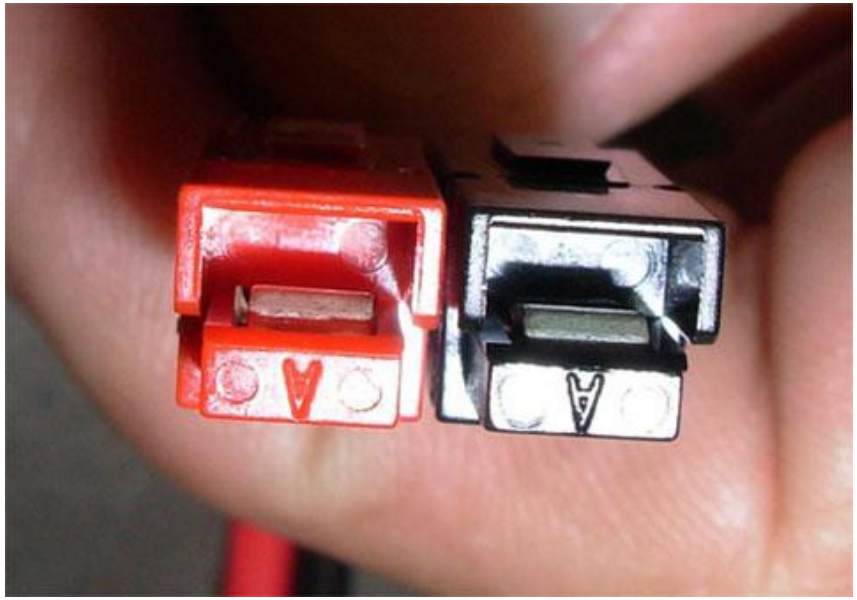
- TRIcrimp, Powerpole Crimping Tool

  Consistent results
- Does 15A, 30A & 45A contacts!
- **$39.95!**

Assembly procedures

HOUSING SELECTION

- RED + 12 VDC
- BLACK – 12 VDC

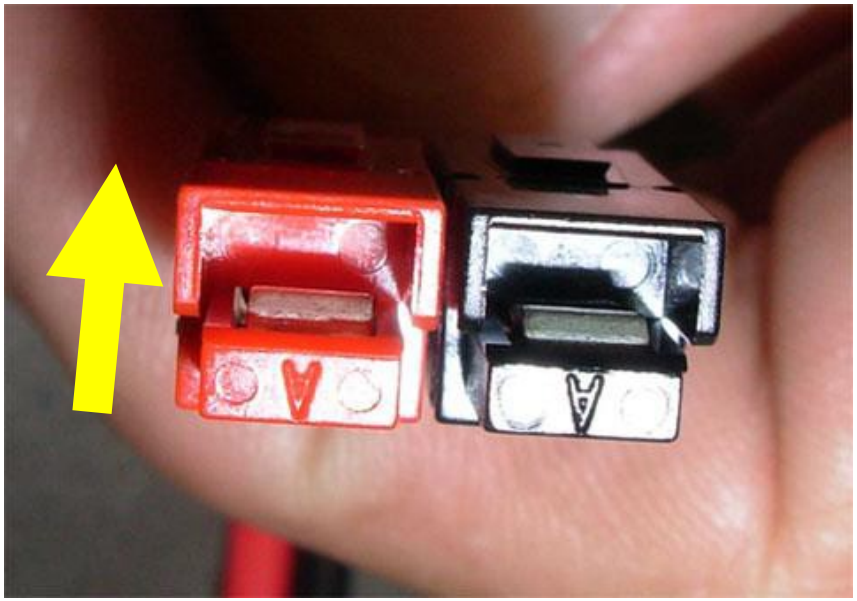


Correct ORIENTATION OF HOUSINGS

- Housing **orientation is VERY** important!
- Looking at **FRONT** of the housing:

1. Have the **fingerproof ribs UP**
2. **RED** on LEFT
3. **BLACK on** RIGHT

Housing Assembly



NOTE: These are the instructions that **PowerWerx** gives in their assembly guide on their web site.

Locking Pins?

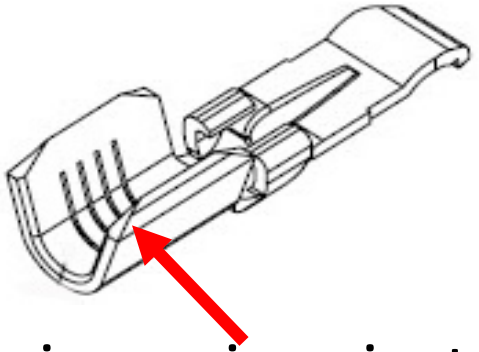
- Locking pins...
- **THROW THEM AWAY OR RECYCLE!**
- Can vibrate apart
- Steel and electricity not good partners.
- Just glue it!

CONTACT ASSEMBLY

1. Square off the wire ends
2. Separate conductors about 1/2 inch+
3. Strip conductors back approximately **5/16** inch
4. If stranded wire, twist the bundle to avoid whiskers
5. DO NOT TIN the wire ends with solder
6. Insert conductor into contact barrel. The insulation should be almost flush and bare wire barely seen out the back of the contact. Trim if needed.

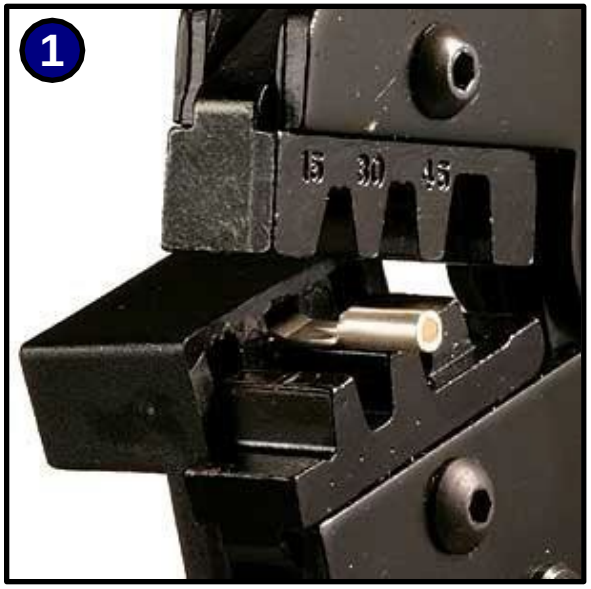
CONTACT ASSEMBLY(continued)

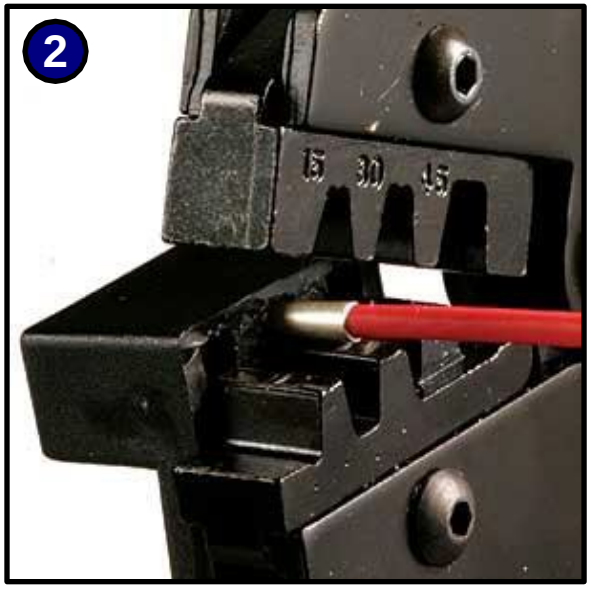
9. Insert contact “curve” down into crimper.
10. Squeeze one or two clicks to hold contact
11. Re-insert wire if necessary to align
12. FIRMLY SQUEEZE handle all the way thru the cycle and release.
13. Conductor done!
14. Note: For the **45A** contact:



You may need to squeeze the wire crimp wings just a bit to get it to a “U” shape to fit into the crimper.

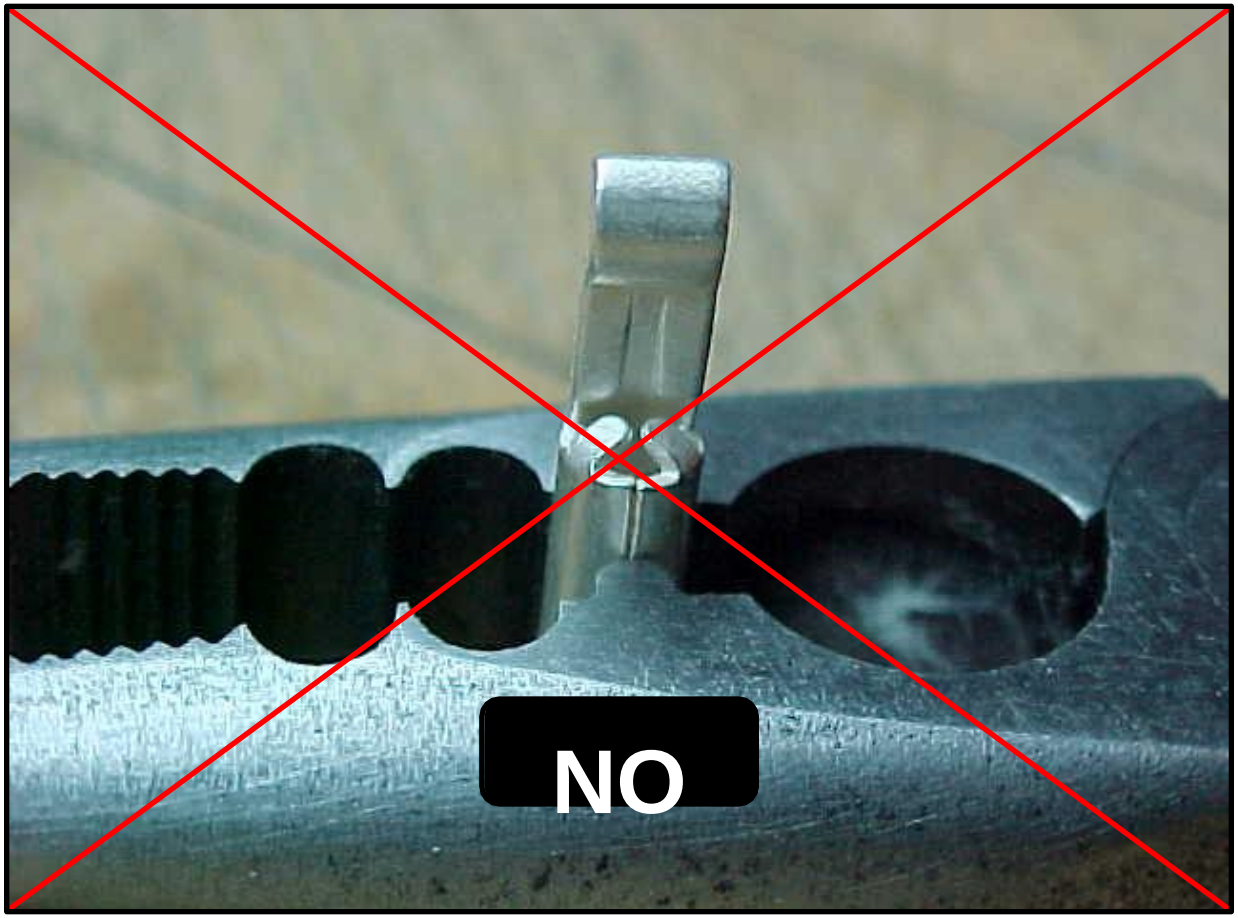
Powerpole Contact Assembly Procedure





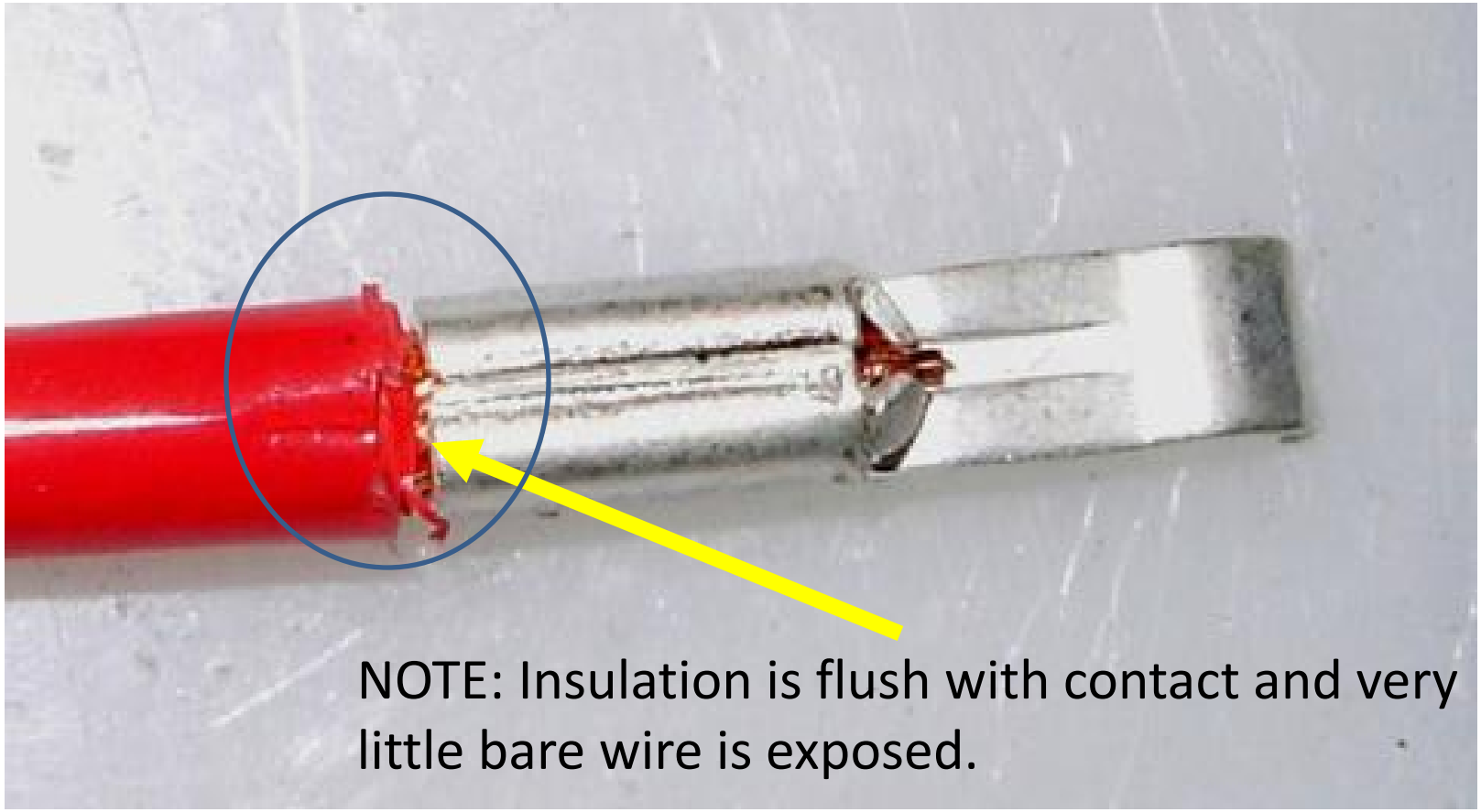
The “best” crimping tool for the money is the TRIcrimp, Powerpole Crimping Tool for 15, 30 and 45 amp contacts

Incorrect Crimping Technique

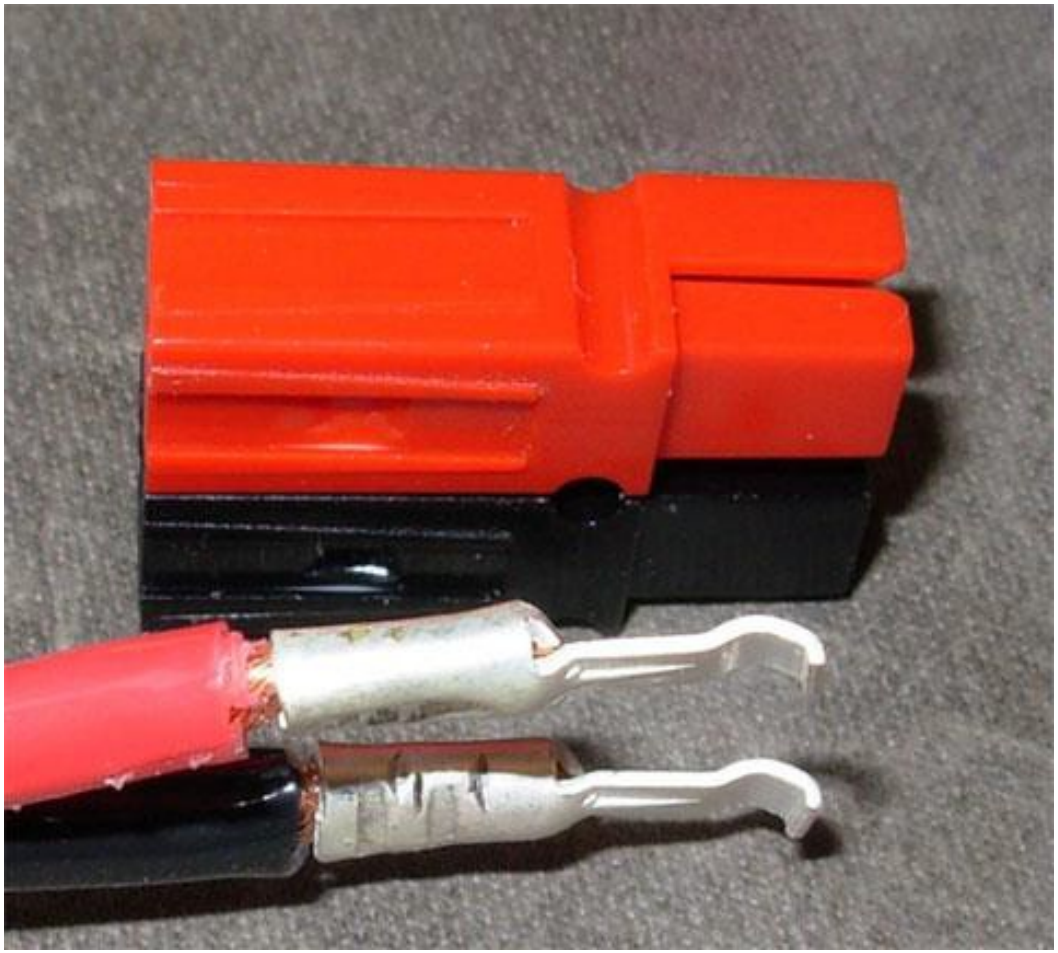


Regardless of the crimping tool used, the seam in the barrel of the contact must be against the rounded side of the tool's die.

Crimp Should look just like this!

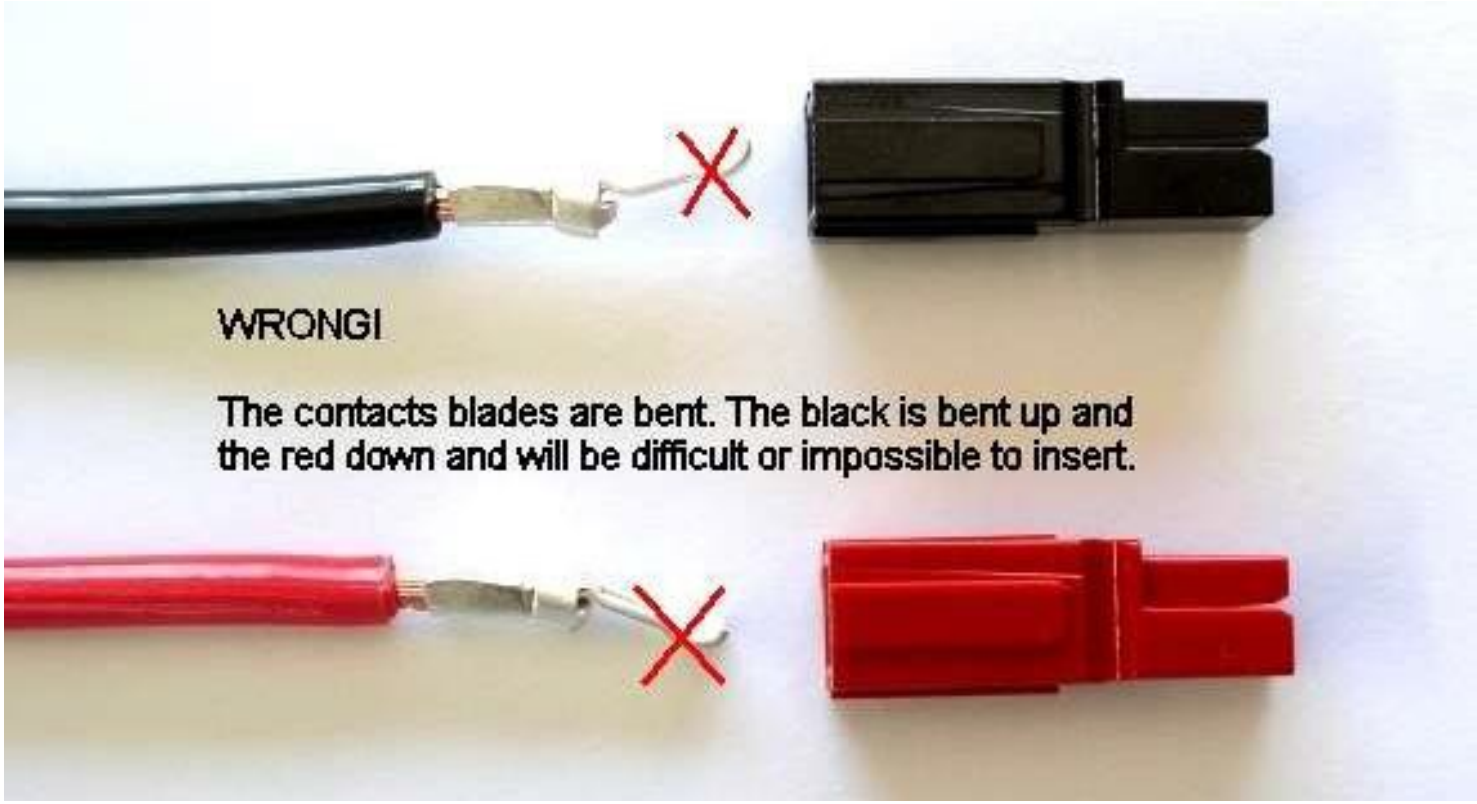


This is also the **correct orientation** for insertion into the correctly color coded housing!



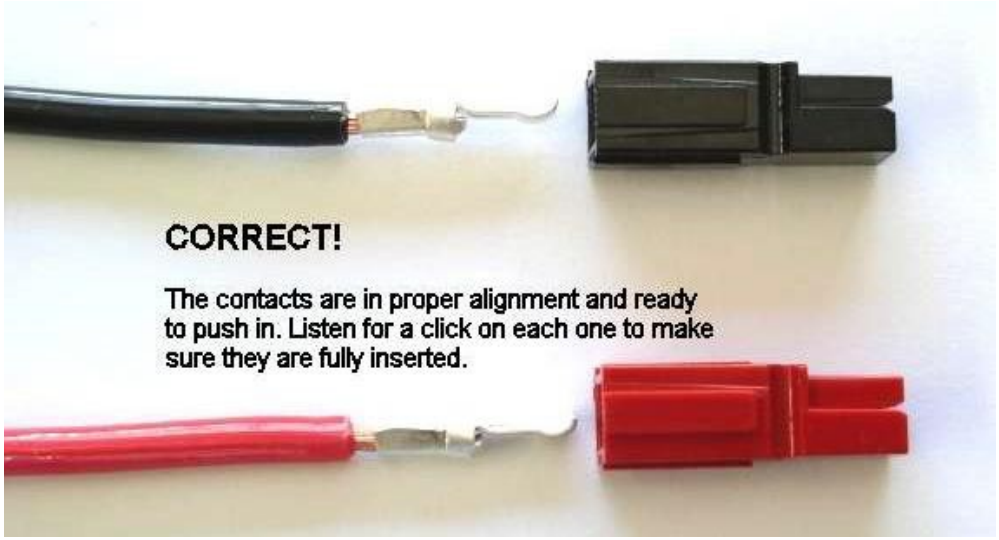
INCORRECT example

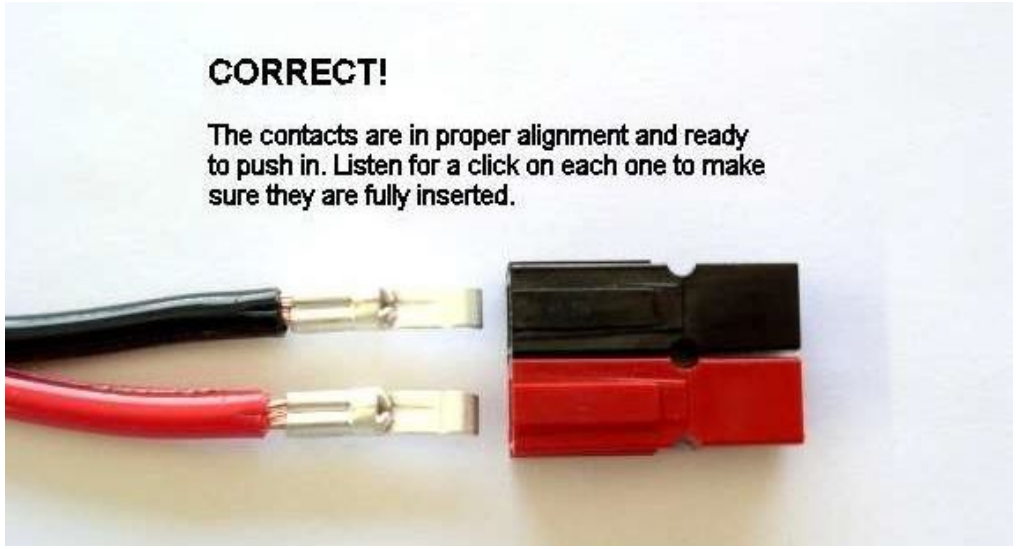
- Contact blades **bent.**
- Gently straighten them up.



CORRECT examples

- Contact **straight**
- Contact correctly **aligned**
- Contact correctly **polarized**
- Ready to insert

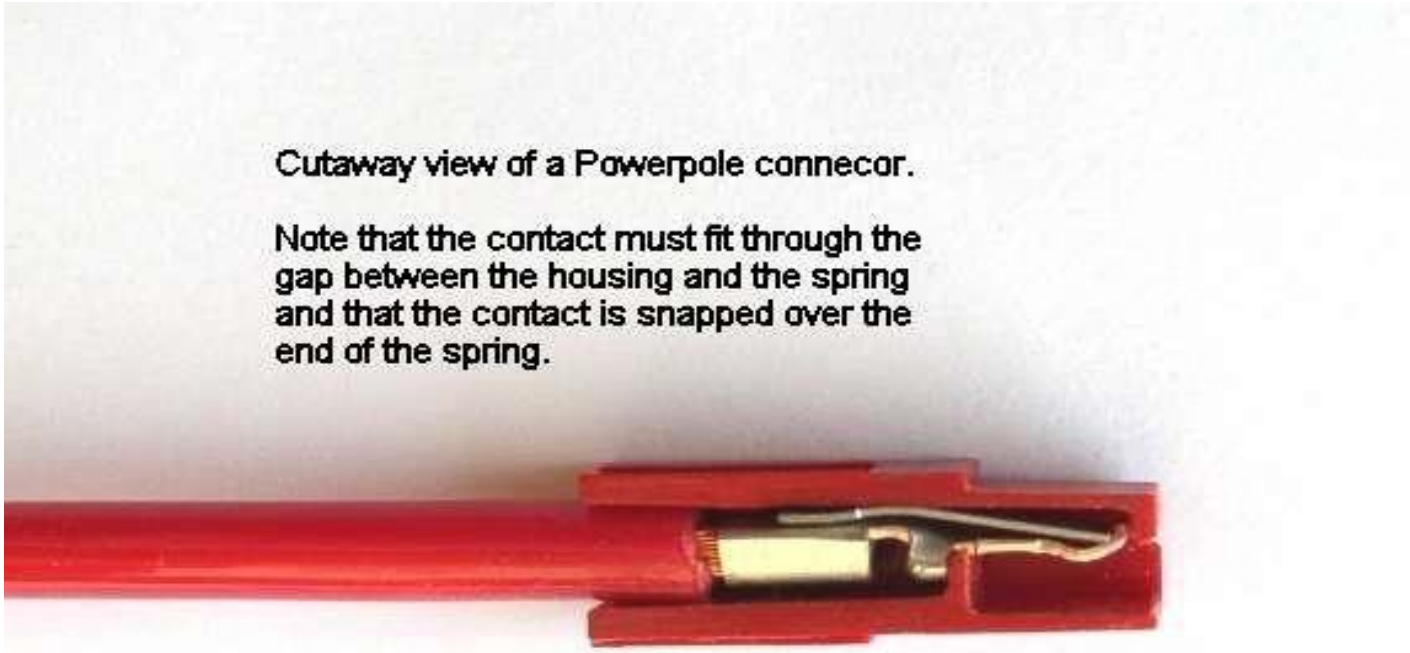




Final connector assembly

- Insert contact “curve” down towards the tongue ("A") of the housing
- Slide straight in until “CLICK” is heard or felt. (A small screwdriver may help insertion.)
- Tug back on conductor to verify lock
- DONE! One powerpole completed!
- Repeat with other conductor.

Cutaway showing contact locked into connector



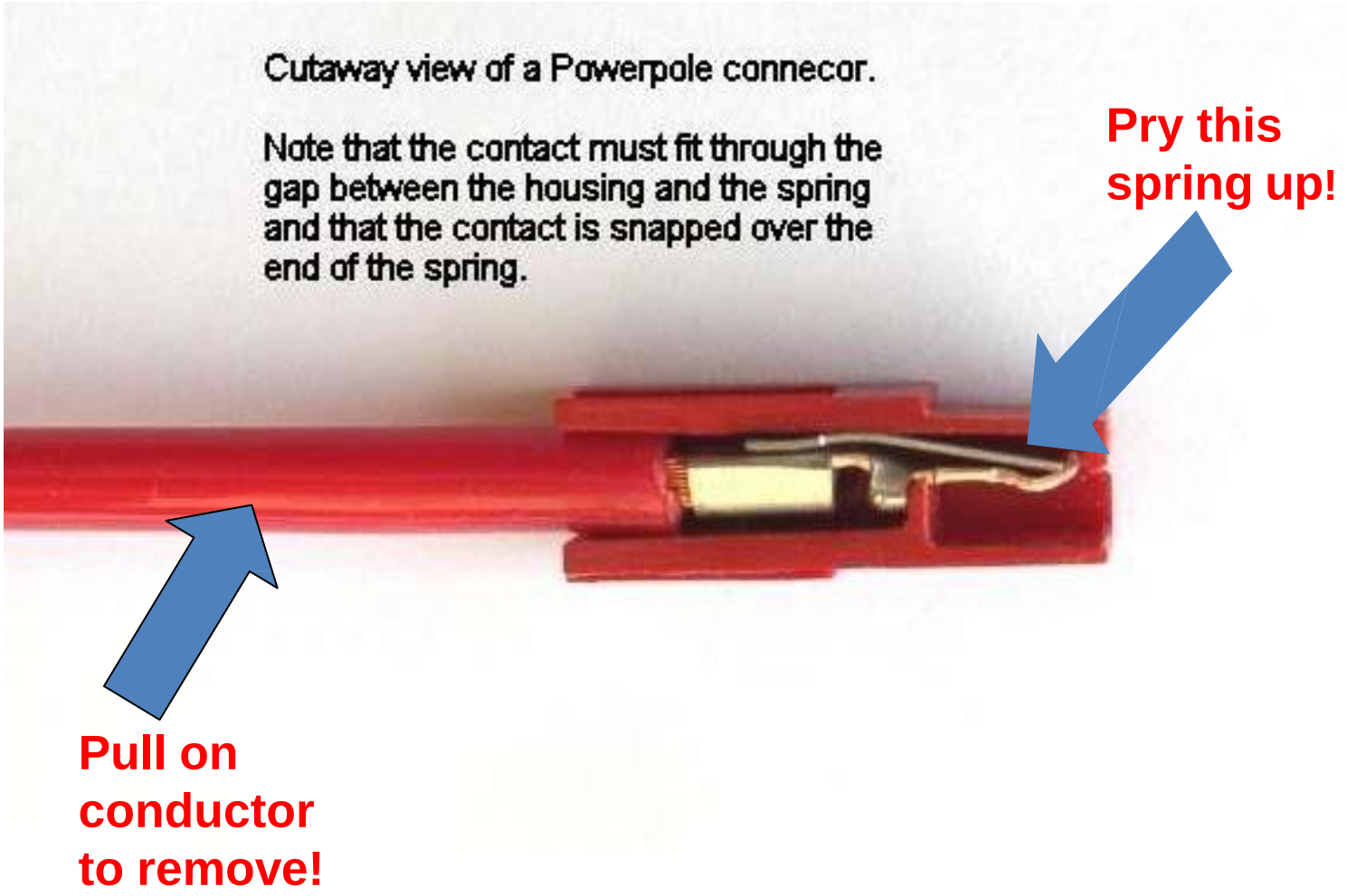
OOPS! I goofed up!

I need to remove the contact from the housing.

Contact Removal

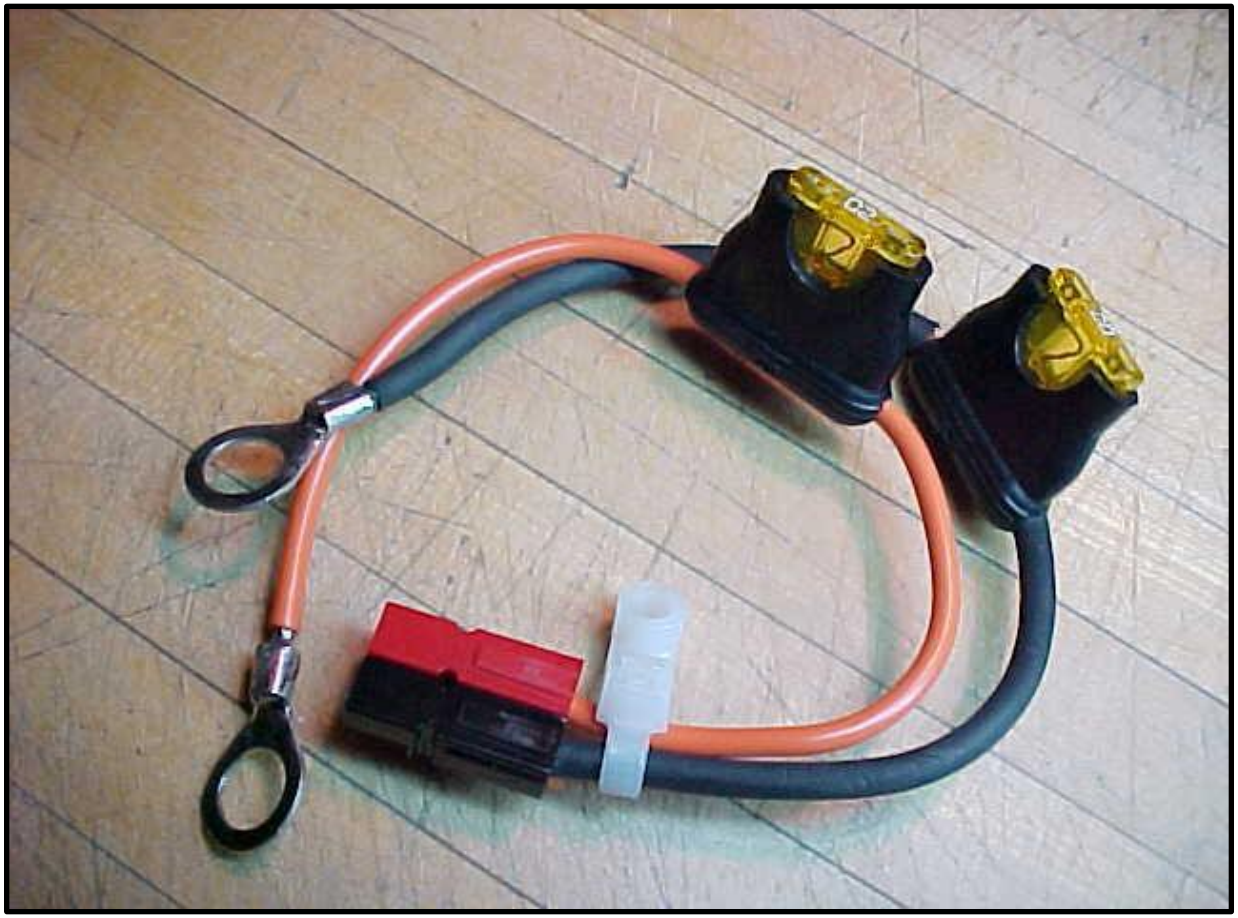
- A special APP tool is available to help remove the contact from the housing.
- BUT, **3MM flat blade screwdriver** will also do the same thing and is much cheaper.

Contact Removal

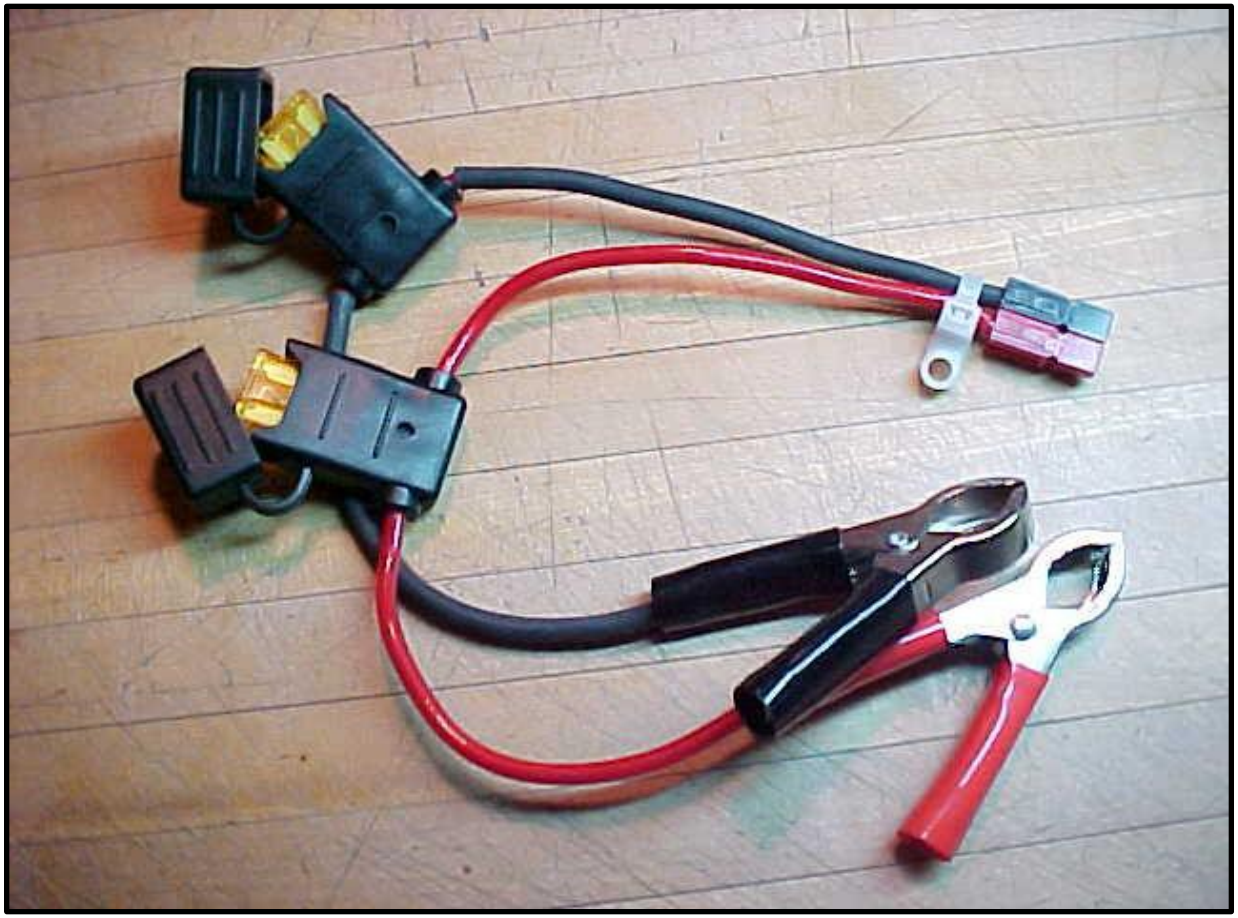


COMMON
15/30/45
POWERPOLE
APPLICATIONS

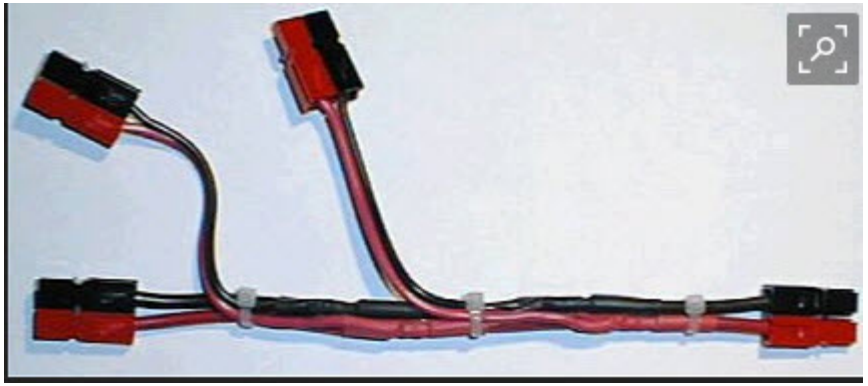
Eye Terminal Battery Connection with fuses



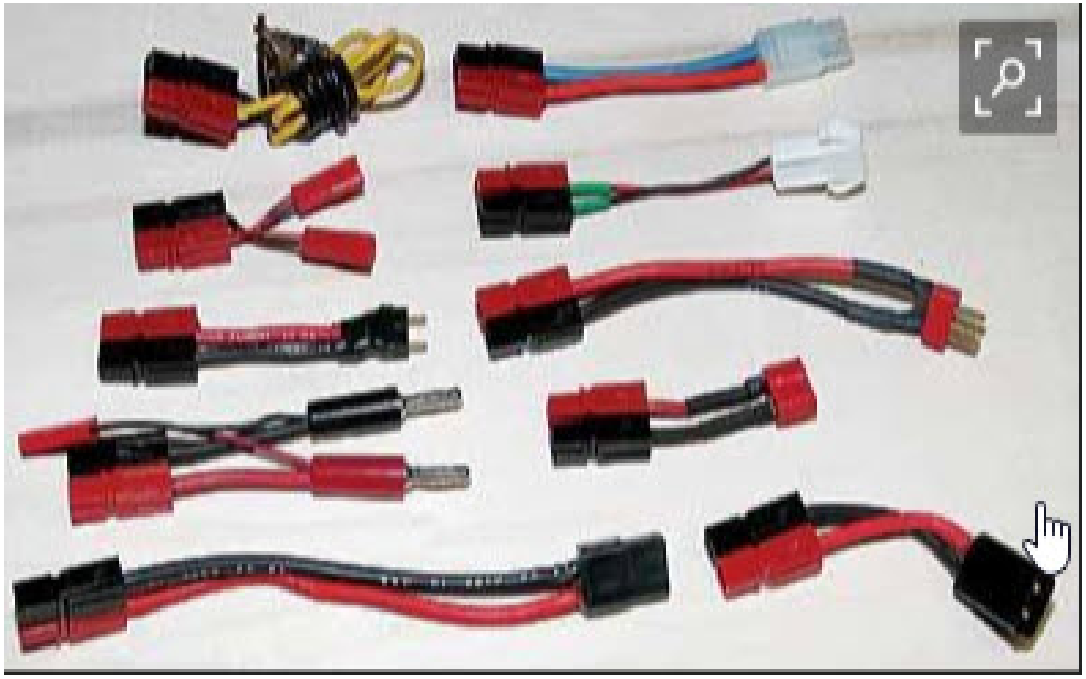
Fused Battery Clip



ONE -TO- MANY Outlets

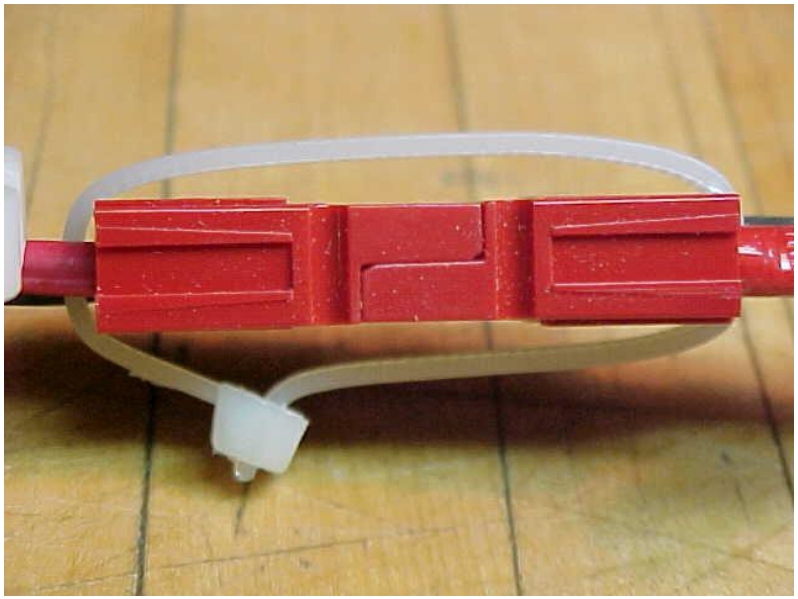


OEM RADIO CONNECTIONS



Popular YAESU “T” CONNECTOR

LOCKING THE HOUSINGS



D I Y

After Thoughts….

- The **15/30/45** Powerpole a good choice for ham radio but try a bit larger wire size such as **14-16 GA**
- The housings mate together side-by-side through **molded dovetails.**
- **Buy more contacts** than you will need for your project – crimping takes some skill.
- Keep your housings, contacts, wire, and crimping tool in your "**GO kit**." This way, you can make field repairs or even construct new cables on the spot.

WHERE TO BUY STUFF

Vendors include:

www.powerwerx.com

www.races.net/sca/powrpole.html

www.gigaparts.com

www.hamradio.com =HRO