

HOW TO SOLDER

Why solder low voltage cable connections?

Extra low voltage current is "low pressure". To get full flow of current through the connection, oxidation-free connections are required to allow 100% conductivity for optimum performance. **No mechanical plain screw, scotch or gel click-on style of connection can achieve that in the long-term.**

Soldering will only be successful if your work is clean and oil free. The use of tinned copper cable rather than cheaper raw copper cable allows quicker & easier soldering now and in the future.

The tradesman-like neat & tidy method detailed below explains the simple task of using a soldering iron for low voltage garden lighting and pond pump installations.

For this exercise we are soldering the two conductors of the cables from a single 12V-24V AC low voltage garden or pond light to heavy duty Fig 8 Black PVC insulated low voltage cable, which has been laid and buried alongside the line of the garden lights.

The connections of the two cables from the light are made in the low voltage cable about 50mm apart to avoid any future possible shorting out. This method eliminates any need for insulation of the bared soldered connections as it is impossible for them to touch each other. The 12V-24V low voltage current in the wires is safe extra low voltage, giving no feel of electricity or safety risk if touched or even in water. Moisture or the elements have no detrimental effect on the connection or copper itself. Copper is very stable and will not corrode in a moist garden soil environment. This is the case with copper water pipe around your garden when placed above or below ground. The plain copper will brown off with oxidation but never corrode.

Connections can be underwater except for waterproof or totally sealed rated pond lights (or pumps) connected to the cable. In that case if the connection is not sealed, then upon switching off the light, as the light cools, water will be drawn down the cable strands. Water will eventually enter the light fitting or enter into the pump's iron core which will cause internal deterioration & failure of the light or pump. There are various methods to seal underwater soldered connections.

Please note: It is vital that opposing conductors are not ever allowed to touch. Touching can cause fires from sparks and hot spots. It will also damage to AC transformers & DC drivers or the internal electronics of LED lights. This method of soldering eliminates this issue.

NB: For neatness or eliminating ignorant client concern, heat shrink on the inline connection, or insulation tape on the light connections can be used.

Tools required to solder

- Soldering iron
- 1.6mm resin cored electrical solder
- A wet cotton cloth



Step 1.

Prepare the twin flex low voltage cable by carefully cutting away 10mm of the PVC insulation on both conductors, 50mm apart. Do not cut the cable and avoid any contamination of the bare copper wire with oily fingers or tool.



Step 2.

Push a clean nail through the super heavy duty cable to reduce the joining area. This means less heat is required from the soldering iron.



Step 3.

Pass the clean bared wires from the garden and pond light through the gap and carefully secure by twisting.



Step 4a.

Switch on the soldering iron. When hot, wipe the tip across the wet cloth.



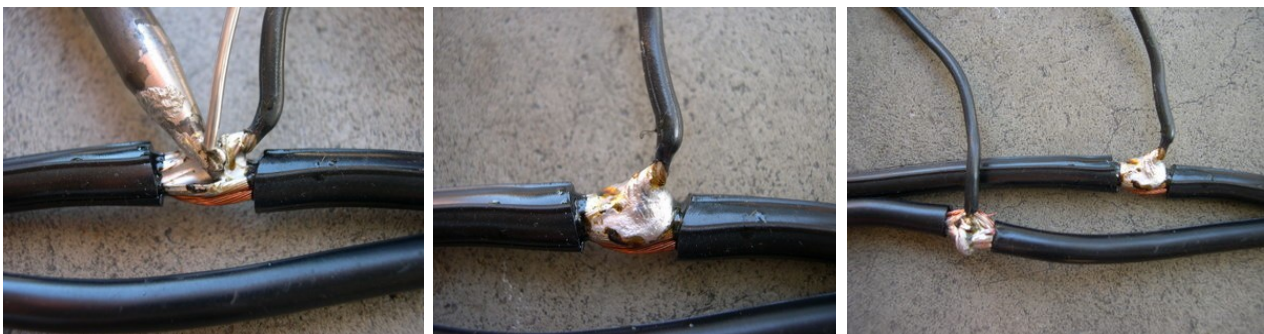
Step 4b.

Prepare (tin) the tip now by holding the resin cored solder on the tip. The resin will spread over the tip.



Step 5.

Hold the hot tinned soldering iron onto the twisted connection. Holding firmly in place, push the resin cored soldering wire onto the hot tip. The solder will begin to melt into the joint. Remove the soldering iron as soon as the molten solder has run smoothly throughout the joint. The connection is now complete. Repeat for the second connection.



NB: Correct preparation of low voltage cable, for end to end soldering. With this low voltage connection technique insulation is not required.

