

HV 3 Pole Cable assembly.

Components.

3 Pole CPE connector (ref 28.002.512-020)

4 core HV cable (see Ref 1)

TRS 19-6mm internally coated with hot melt (ATUM 19-6), L = 70mm.

TRS 8-4 standard Raychem. L = 30mm. SCEM 04 86 62 120.1

TRS 9-3mm internally coated with hot melt (ATUM 9-3), L=50mm?

x4 TRS transparent dia 9mm SCEM 04 76 48 159.9

Ground connection 0.5mm², black, cable L= 250mm

M6 lug for ditto. SCEM 04.76.22.306.0

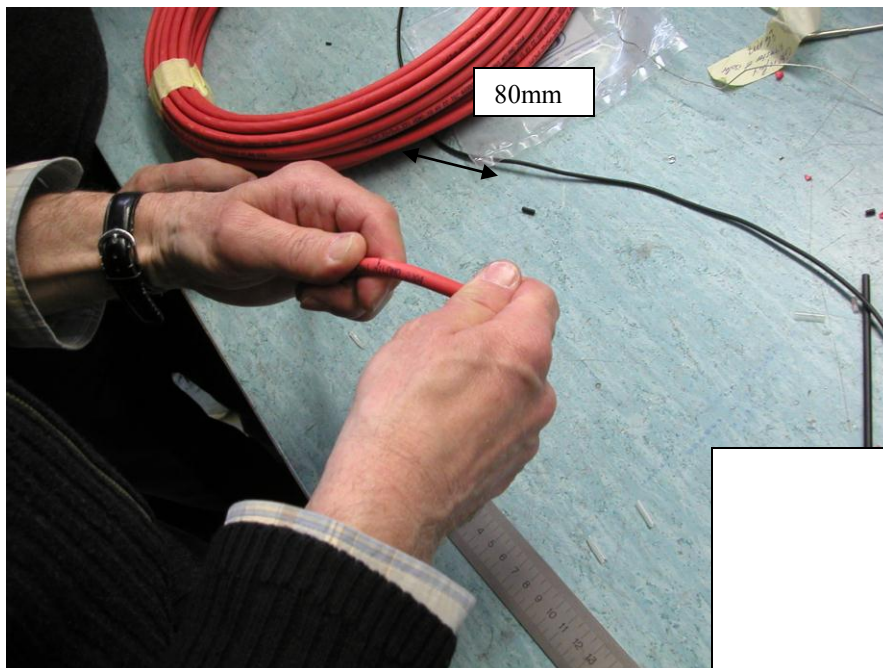
Stycast 2651-40 & catalyzer LV23

Labels

Procedure

Denude the red sheath from the cable to a length of 80mm.

Use the specific tool (illustrated below) to partially section through the external sheath. Do not cut through it, rather break the remaining material by bending as shown below.



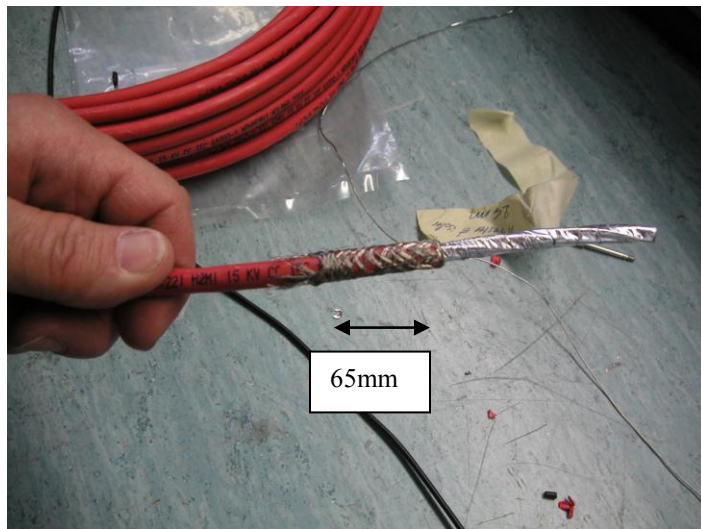


- An example of a good cable stripper. Weidmuller AMI 900150

Proceed to pull back the braid to a distance of 65mm as shown below



The result must be smooth and clean with no loose ends.



Remove the flame shield from the inner conductors using small sharp snips. Do not damage the insulation on the wires.



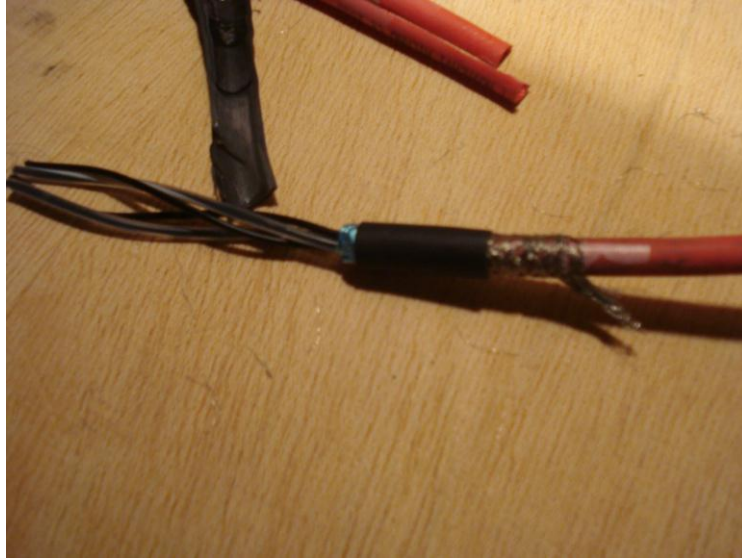
Pull out the strands of the shield braid approx. 15mm from the end using a scribe. Twist the ends together for soldering to the ground wire connection.



Ground connexion

Rounded with no loose ends

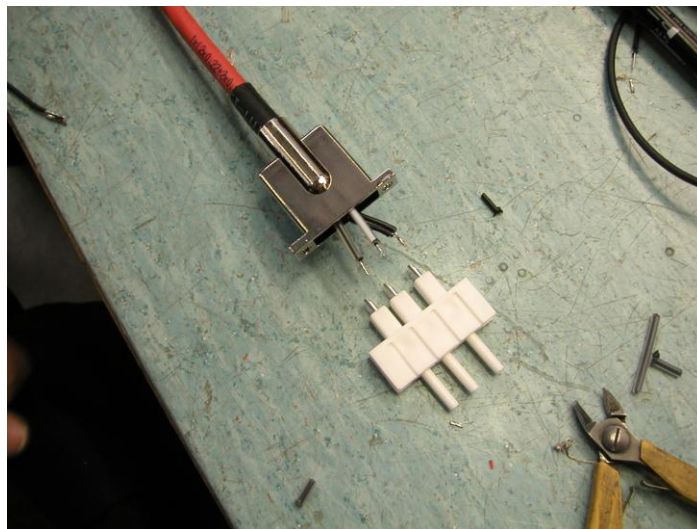
Place the 4 types of thermo-retractable sleeve [TRS] on to the cable as shown.



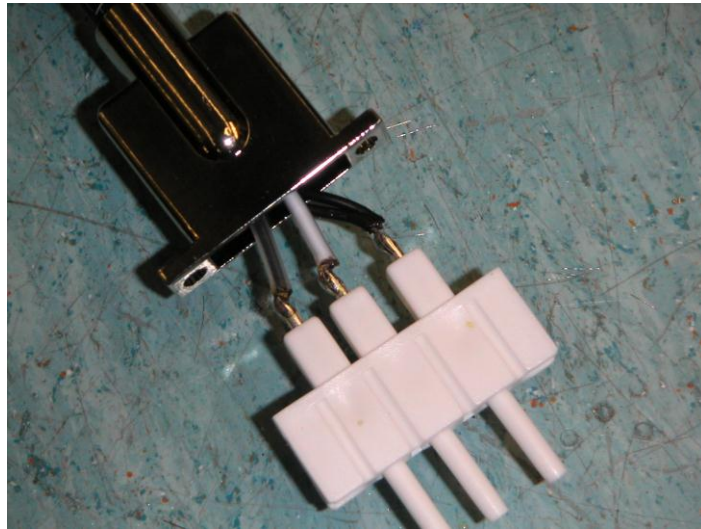
Solder on the ground wire.

Cut the thicker conductors to 27mm and the two 0V lines to 30mm length. Using the Thermo denuder [Hot Weezers] strip the individual wires overall length of 5mm at their ends. Twist the two black thinner wires together. Thread the white cable through the two black cables as it will connect to the centre pin of the connector.

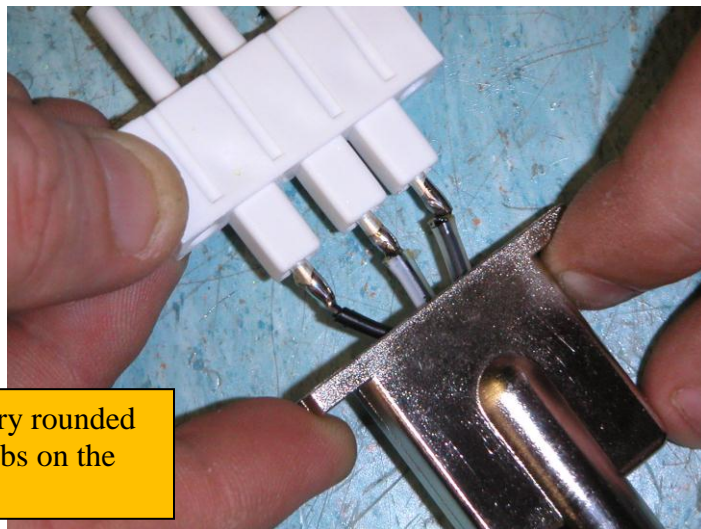
Thread the prepared cable end through the housing as shown below.



Prepare to solder on the connector. Use a temperature of 280degC and a large 4mm nib. Use solder with 2% Ag (SCEM 29.20.01.362.9) DO NOT tin the pins. Hold the connector gently in a small vise. Heat the bottom of the pin wire location placing the correct cable in its slot and solder using plenty of solder. Heat for a SHORT time to create large rounded solder blobs. Remove the iron asap leaving NO SPIKES. There must be no loose unsoldered wires. Check to see that no solder traces/ blobs have fallen onto the connector base. Slight damage to the wire insulation, as illustrated, is tolerable. If the solder blobs on the pins are not fully rounded and wetting the outside of the pin they can be touched-up.

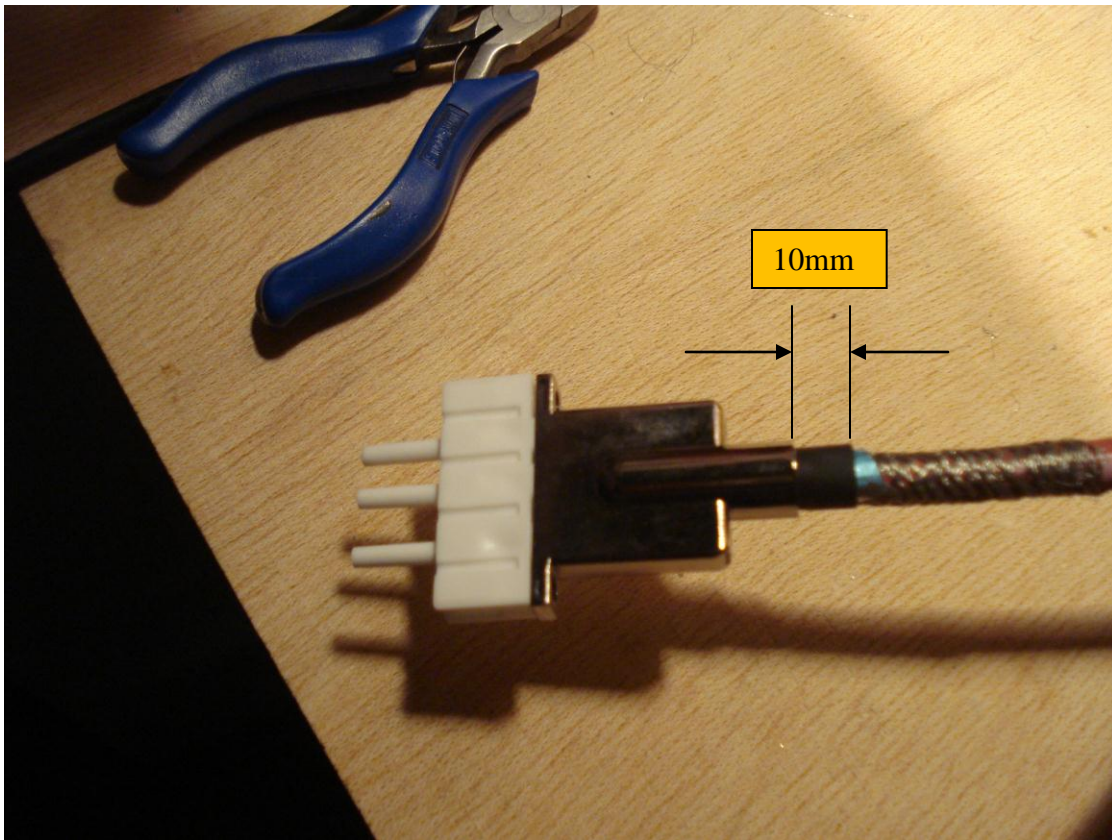


Gently slide the housing down the cable so to mate the housing and base.

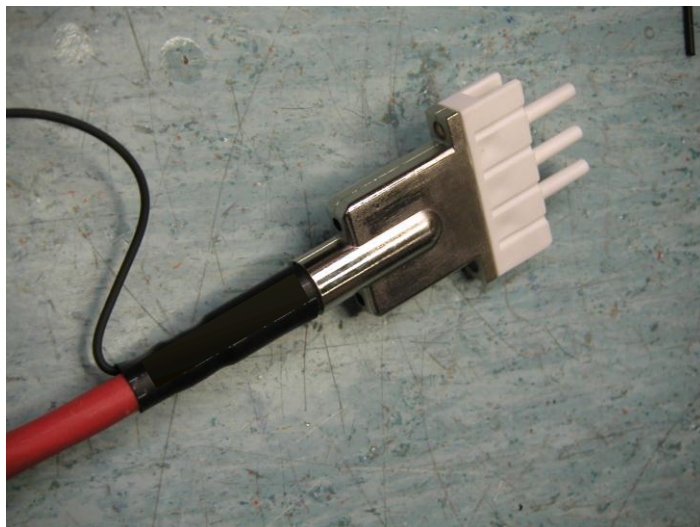


Notice very rounded solder blobs on the pin ends

Secure the two elements together using the hollow screws and their flat sided nuts. Do not yet circlip the centre securing screws. Position the TRS (8-4mm) in the rear of the housing ensuring that there is at least 20mm inside by measuring 10mm outside.



Position the smaller TRS 9x3mm over the ground wire and up against the housing entry circular lip. Do not put it onto the outside of the housing. Heat to full retraction using the hot air gun set to #5 on the Model Raychem Thermogun 1460W @ No6 or Steinel HL 2010E to 260-280degC.



Position the large (19 x 6mm) internally coated TRS over the ground wire and up against the shoulder of the connectors housing. Using the Hot air gun as before heat the TRS, starting from the connector end. Solder on the ground connection lug.



HV Potting

Set up to inject the potting compound

Tools and material required. Have plenty of paper wipes ready to hand wear fine protective gloves.

Carefully set up the electronic balance with a resolution of 0.1gram.

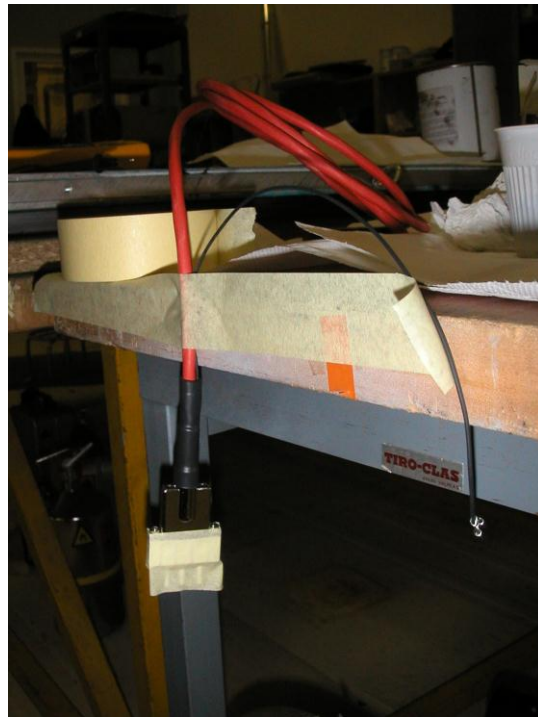
STIR THOROUGHLY the black Stycast 2651-40. If necessary heat using an infrared light to obtain a fluidity that will pour readily from the container. It should have a viscosity of 30Pas. This is difficult and must be repeated each day.

Pour an adequate amount into a PP or PC disposable beaker but at least 40grams. Using a syringe of 40ml and 1.6mm needle remove 20ml of the LV23 catalyser. add 18% of the previously measured component. Mix in to the black component stirring vigorously to ensure a through mix. Heat if necessary. The mixture should become extremely fluid, far more than before. It has a viscosity of 2200cP@25°C.

Remove the needle from the syringe and use another one 25mm in length. Take care not to perforate your epidermis. Remove the plunger from the syringe. Pour sufficient mix into open end the syringe but not filling over the maximum graduation mark, obviously obturating the other end with your paper protected finger !

Place the plunger over the open end and invert holding the plunger securely in place. Push the plunger beyond its initial stop while allowing the air to escape. Catch the few drops with the paper. Place the needle back onto the syringe.

Position the cable and connector vertically using paper tape.



Tape up the interface between the base and housing to ensure no leaks of epoxy. The epoxy must continue to drip easily (and annoyingly) from the needle.

Inject through the 2 holes in the top of the housing, inserting the needle fully but carefully so as not to damage the insulation of the cables. The connector is pulled over at

an angle so that one of the fill holes is slightly higher than the other and the lower hole is used for injection. The force on the syringe is quite high. Fill completely the housing to the brim and allow any bubbles to escape, continuing to compensate for any loss in level. Add a few drops more as the epoxy retracts on reticulation.

The 'drying' times are

16-24hrs @20°C

All this procedure has to be carried out while the mix is VERY fluid. Time is short, 20 minutes and temp is $>20^{\circ}\text{C}$

References

CPE; <http://www.cpeitalia.it/en/>

Catalogue;

<http://rpc-cms-re4-upscope.web.cern.ch/rpc-cms-re4-upscope/RPC/Services/HV/CPE/HighVoltageConnector.pdf>

Ref 1

HV cable;

1 x (2x0.22 + 2x0.22) H2M1 15kV CC IEC 60332-1 Novacavi Milano

Glossary;

TRS Thermo Retractable Sleeve.

Ian Crotty 10 April 05

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Modified 12 Dec 2012