

CTD - re-batterying and re-potting

Be aware that Lithium batteries are potentially explosive and should not be short-circuited or exposed to excessive heat!

Once you have removed the old battery, you should clean up the epoxy as best as possible to enable a good “bed” for the new battery and try to key the edges which will bond to the new epoxy.

Write the original tag number on the enclosed label and apply to the stainless steel battery reinforcing tube.

Before sliding the battery into the tube, raise the solder tags so they stand perpendicular to the end of the battery to avoid short circuit. Covering the + tag with insulating tape is a “good idea”. You may also want to isolate the tube with a bit of tape along the bottom edge of the stainless tube where the battery's + tag connects with the circuit board in order to avoid accidents while soldering.

Slide the battery into the tube and set in position ensuring the tube is hard against the curve of the epoxy. You may find that some quick-set epoxy resin or cyanoacrylate helps in positioning the tube.

Solder the negative end of the battery first. When soldering the + end, you should notice the LEDs on the front edge of the device flash. If the red LED near the + end of the battery lights instead, the solid fuse near the battery terminal has blown. This should be replaced with a 2.5A SMD fuse.

Roughen and clean the existing epoxy and battery tube with IPA or Acetone. You should avoid getting acetone on the label as this will likely remove the print... Cover the holes on the rear of the CT head with good quality insulating tape to ensure no epoxy resin can foul the pressure sensor or CT sensor coil.

Clean the mould with IPA. Insert the tag into the mould so that the CT head docks with the recess on the mould. If it appears to be necessary, you can provide further support with an adjustable lab clamp of some description.

Mix the epoxy resin and hardener at a ratio of 100 resin : 33 hardener by weight and stir well – without introducing too much air - for at least two minutes. If possible, the mixture should be degassed by vacuum or at the very least left standing for several minutes and perhaps the surface warmed with a hair dryer to allow surface air bubbles to dispel.

You should have two sizes of PVC tube. Cut a short length of the thicker tube to connect the 50ml syringe to a length of the thinner tube. You should use this apparatus to inject the epoxy into the hole in the side of the mould – this should help prevent any air being trapped below the battery.

Pour epoxy into the rear of the syringe and inject under constant pressure, again without pushing air into the mould. You may need to refill the syringe and this should also be done carefully to avoid trapping air...bubbles are bad!!!

The epoxy has a pot life of around an hour and will take ~24 hours to harden to the stage it is safe to remove from the mould. Full curing will take 36-48 hours and will benefit from a warm environment (45 deg C if possible). Major air pockets should be filled with additional epoxy before final curing where practical. However, slight imperfections can be roughened then cleaned with IPA or acetone and repaired with quick-set epoxy.

Good luck!

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