

CPN 503DR - Probe Electronics Disassembly

There are three points of failure of a CPN 503DR:

1. Display electronics
2. Cable
3. Probe electronics.

1. The display electronics will usually fail because of the LCD or counting mechanism. There are three screws on either side of the display electronics which need to be removed and the cable disconnected. The complete display electronics is then posted to ICT International.

2. The cables usually fail because they are frayed, particularly the end that is attached to the probe electronics and lowered down the hole. There is a stainless steel strain wire in this cable. The stainless steel strain wire takes the weight of the electrical connections. However, after being lowered and raised down the aluminium tube, it also weakens and eventually the electrical connections break. The cable cannot be repaired. The Cannon connectors are of military specifications and are filled with epoxy so it is impossible to repair a cable.

We ask the customer to return the cable to ICT as it is often helpful in diagnostic purposes. However we cannot repair it, only supply a new cable.

3. The probe electronics is the cause of perhaps 70% of all probe field failures. The probe electronics is in the black tube that is lowered down the aluminium tube into the hole. Contained in the black tube at the bottom is the source. The radioactive source with a half life of 457 years is in a double stainless capsule (double encapsulated stainless steel).

This capsule is in turn in a tungsten capsule and is welded into the bottom of the black tube. The black tube itself is made of aluminium.

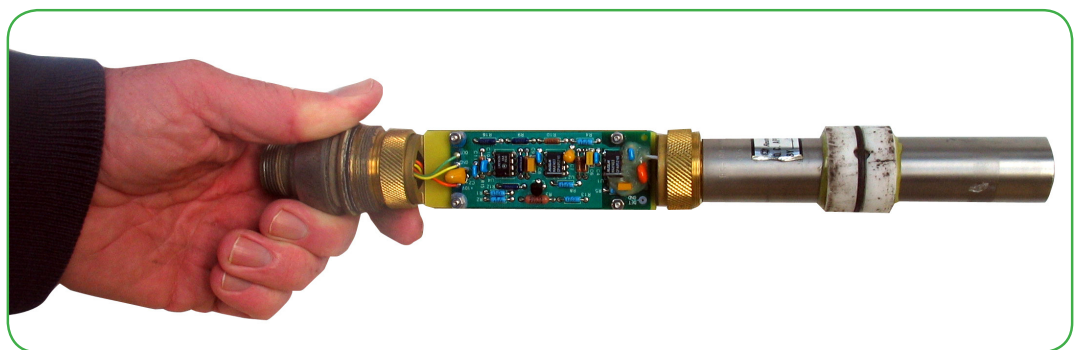
Then at the end of the process of removing the probe electronics, the black tube must remain in the probe in the normal position. This means the radiation source will be in the bottom of the black tube which is positioned in its normal position in the CPN 503DR body. The large square area at the bottom of the CPN 503DR body is full of paraffin and this is the shield for the source.

The probe electronics fail because the high voltage boards contained within the black tube usually develop hairline cracks from vibration. Most commonly from vehicle transport. Contained within the black tube is the detector and two high voltage electronics boards. To remove these from the black tube it is necessary to hold the top of the black tube with the left hand.

After disconnecting the cable, holding the brass and silver connections at the top of the black tube with the right hand and twisting with the right hand in an anti-clockwise direction. The aluminium tube is soft and the brass is hard. You need to hold the aluminium firmly and twist very strongly with the right hand in the anti-clockwise direction. The electronics will come free. After about six turns you will be able to pull from the black tube the two high voltage boards with the detector tube at the bottom. The probe electronics will pull out of the black tube now. This then should be put in a cardboard cylinder and posted to ICT International for repair.

To repeat, under no circumstances is the black tube to be mailed to ICT.

The black tube must remain in the probe body in its normal position and hence in the Radiation Shield.



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