1 Feedthrough repair kit for ProboStat™

This document describes how to remove a broken or otherwise faulty electrical minicontact feedthrough from the ProboStat base unit, and replace it with a new.

For this purpose you need a tool kit and a pre-assembled contact+PEEK insulator with the appropriate compensation wire.

In addition you need a hammer (medium sized is best), a solder iron, and a tong.

The picture shows the parts that may be included in the kit.

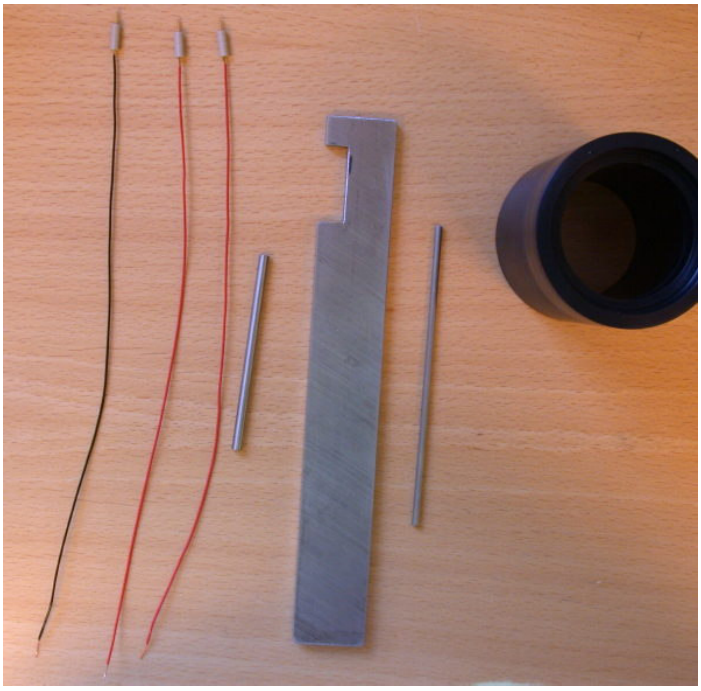

Figure 1-1. Feedthrough repair kit. From left to right: 3 contact+PEEK+compensation wire assemblies, insertion bar tool, flat hammer tool, extrusion bar tool, support ring.

1.1 Remove the old wire using a solder iron and a tong

Open the hexagon by removing one side plate using e.g. the screwdriver that came with the cell.

Identify the wire of the feedthrough to be replaced. Remove the wire from its contact point in the hexagon. Take notice of where it was connected.

Place the solder iron onto the (remains of the) feedthrough contact on top of the cell, while pulling the wire from the inside. Eventually, the soldering of the wire inside the feedthrough will melt and the wire comes off.

If you have problems to accomplish this, don't be afraid to use a more powerful solder iron, or to apply a little solder tin to improve heat transfer. Also, don't be afraid to destroy the PEEK insulator: It is fairly heat resistant, and will be replaced anyway.

1.2 Hammer out the old PEEK insulator

Place the cell upside down in the plastic support ring if you have one. If you don't have one, then fasten the outer flange well and have it standing on this.

Put the extrusion bar (the long, thin, steel bar) into the hole of the feedthrough to be replaced, where you pulled out the wire.

Place the flat hammer tool onto the thin bar. Be sure to use the little cavity of the hammer tool that fits on the steel bar.

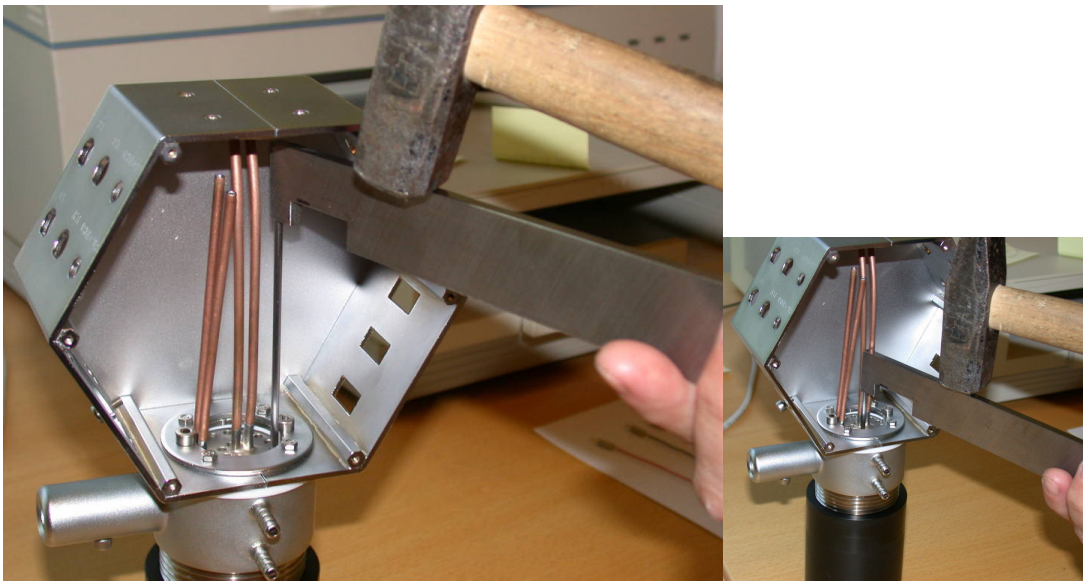

Figure 1-2. Hammer out the old PEEK (after wire has been removed). Left: outer ring feedthroughs. Right: Inner ring (pedestal) feedthrough.

Use a hammer of medium size. Hold the hammer tool with one hand while hammering down on it close to the cell hexagon. Hammer until the PEEK insulator falls out of the base unit.

If the hammering needs to be hard, and it is difficult to hold the tool with bare hands, we suggest that you support the far end of the tool on a steady metal object, as shown below, and use the hand just to keep it upright.

Figure 1-3. Illustration of how the flat steel tool can be supported on a metal object (lower right corner of the picture) instead of being hand-supported.

1.3 Insert new feedthrough assembly

Place the cell normally on the bench, without the outer flange.

Check that the hole for the feedthrough appears free of remains from the old PEEK insulator etc.

At least one of the hexagon sideplates must be in place in order to make the hexagon stiff enough to withstand the subsequent hammering.

Choose the correct replacement feedthrough assembly: This normally means that it should have the same insulation colour and approximate length of the wire as the one you removed.

Insert the wire end of the feedthrough assembly into the hole. Check the length to the connection point in the hexagon. If the feedthrough replaced is in the outer ring, you may cut the wire to better fit the length to the connection point. Do this already now to make the removal of insulation of the cut tip easier.

Inspect the insertion tool (shorter steel bar): It has a small hole in one end, and it has a faceted (flat) side.

Insert the small hole over the feedthrough male connector tip and hold the feedthrough vertical with it.

Turn the faceted side so that it faces the centre of the base unit. This ensures that you avoid destroying the centre gas tube if you are fixing a feedthrough on the pedestal, or it lets you hold the tool vertical and rest it against the pedestal collar if you are fixing an outer ring feedthrough.

Now, hold the tool firmly in a vertical position while you very gently start hammering on it. The first step is to make the PEEK insulator slip correctly and at right angle into the opening of the hole.

You must be sure to hit the tool correctly onwards. *The process takes full concentration and focus to apply the power correctly and to hit the tool straight at every stroke*. Any half-miss with the hammer can bend and damage the feedthrough connector.

After proper introduction of the PEEK in the hole you can start hammering harder. The metal walls of the hole may cut off PEEK rings as the PEEK enters. This is normal.

Figure 1-4. Hold the tool firmly, with the faceted side inwards, and hammer the assembly patiently all the way down.

Hammer the assembly all the way in, until the tool stops in the base unit. Peel off any PEEK leftovers.

In the hexagon, connect the wire to where the old wire was connected.