

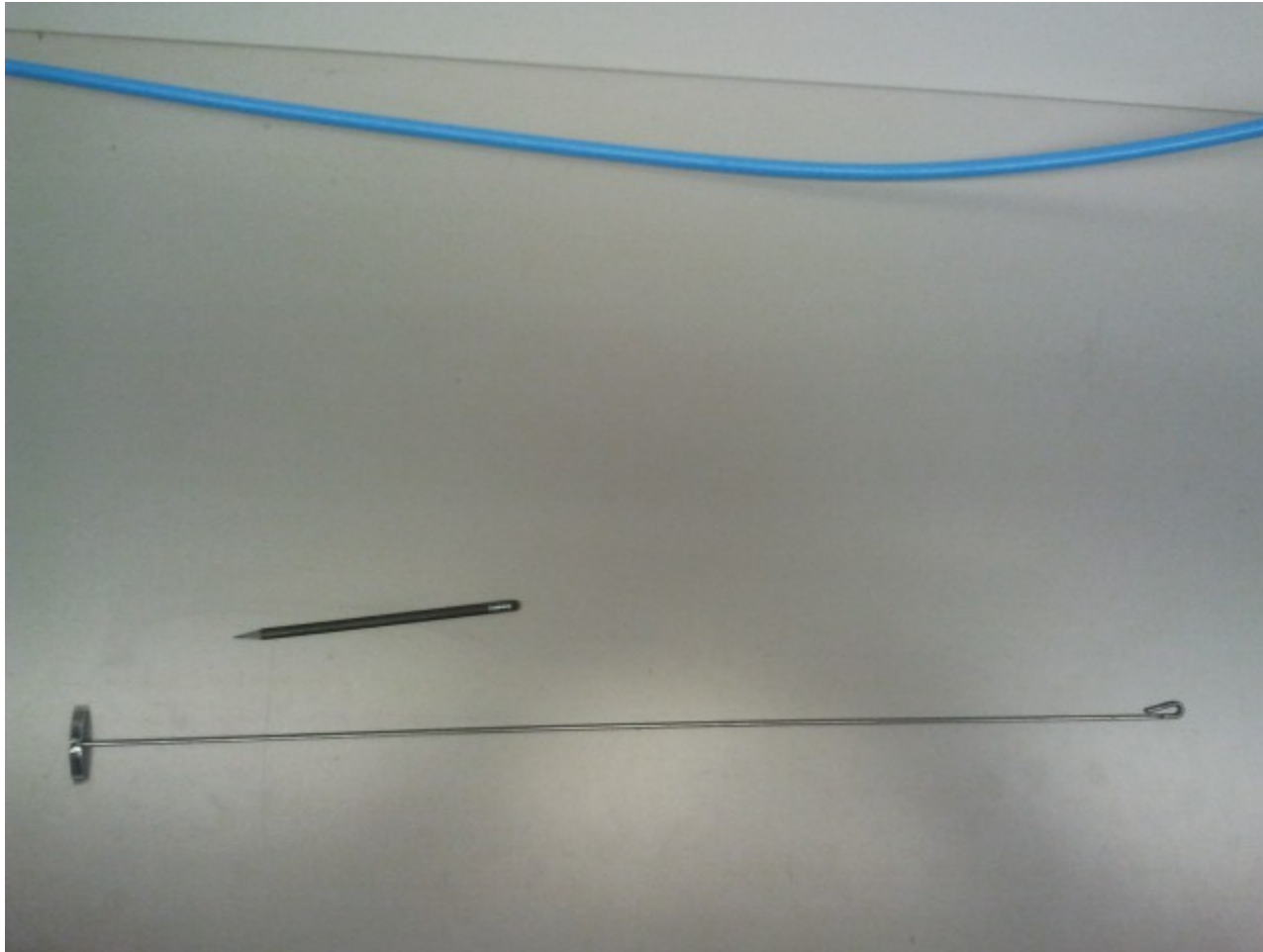
How to open the instrument and clean the mobility analysers

Instructions for the NALS user

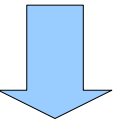
Written by Alessandro Franchin, University of Helsinki

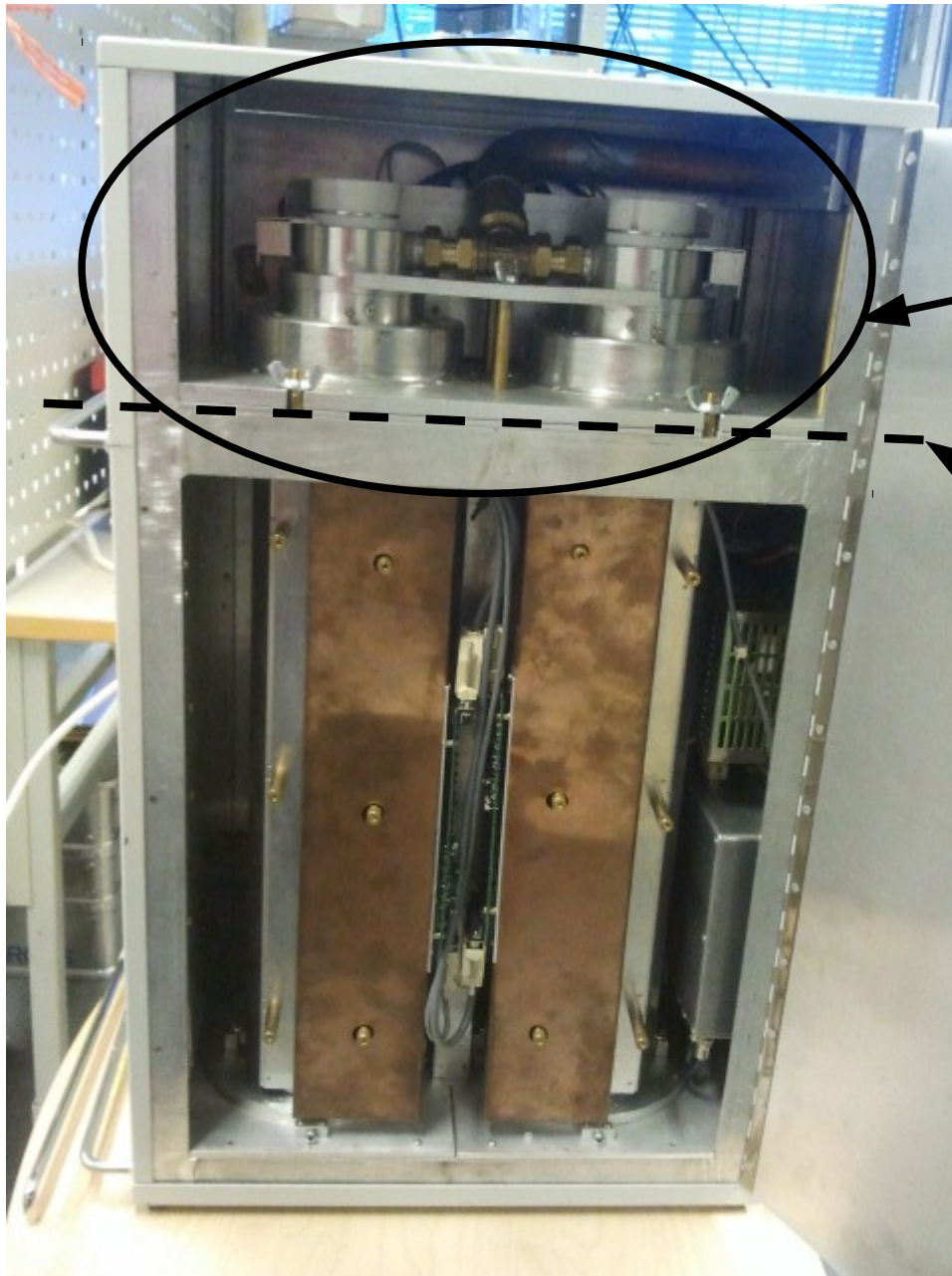
Modified by Hanna Manninen, University of Helsinki

This instruction shows how to clean the EM rings of the NAIS.
We will start with the easy way that implies that you have the cleaning rod available.
This is how it looks like:



In case you have it the cleaning it's going to take 15-20 mins, otherwise the procedure is a bit longer, but not too bad.

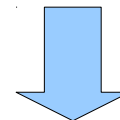




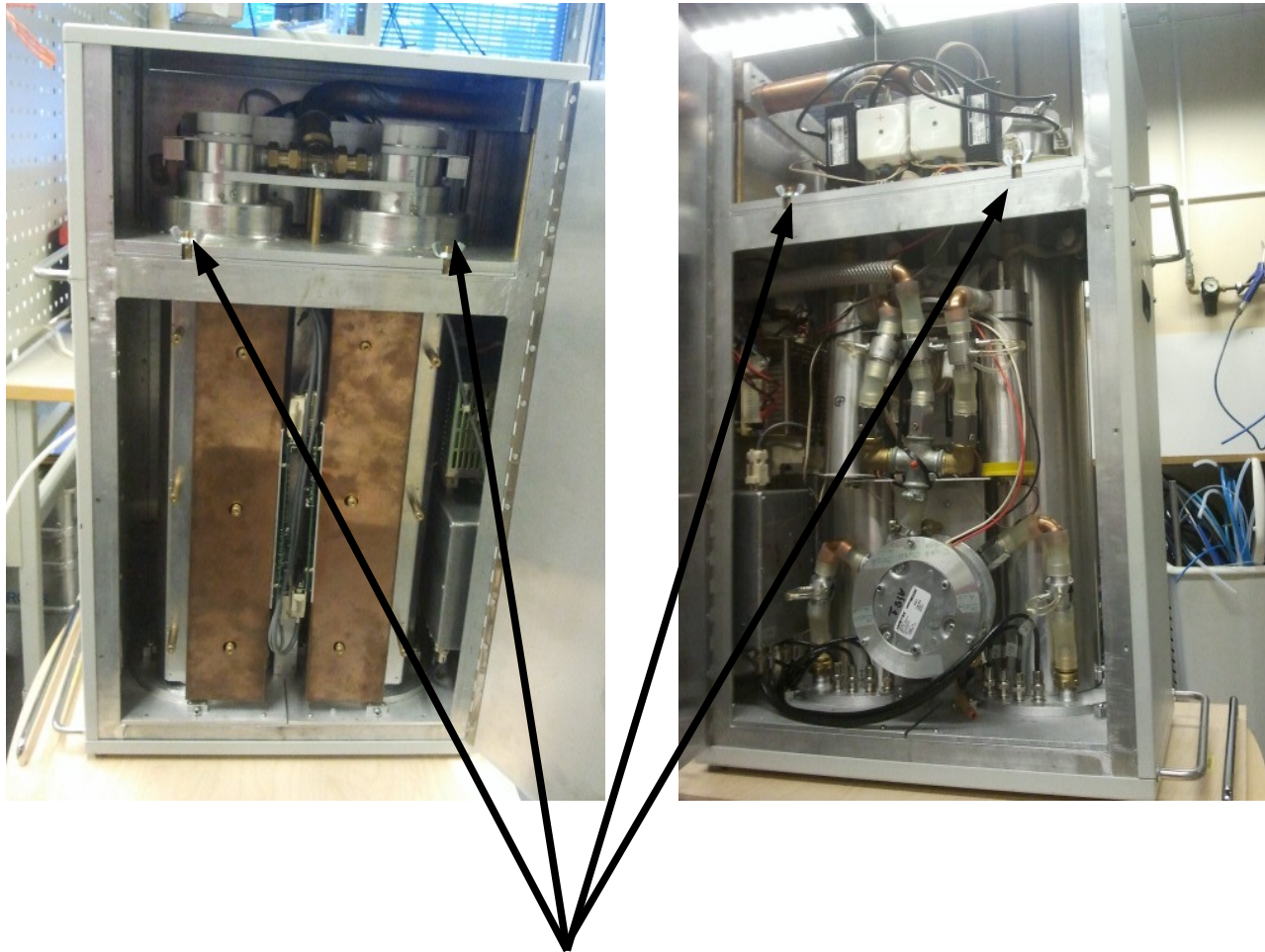
First you have to remove the **pre-conditioner unit**.

To do this we need to open the top and both side walls. Remove the screws that hold them In place.

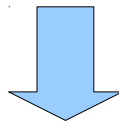
This is where the pre-conditioner part is supposed to detach.

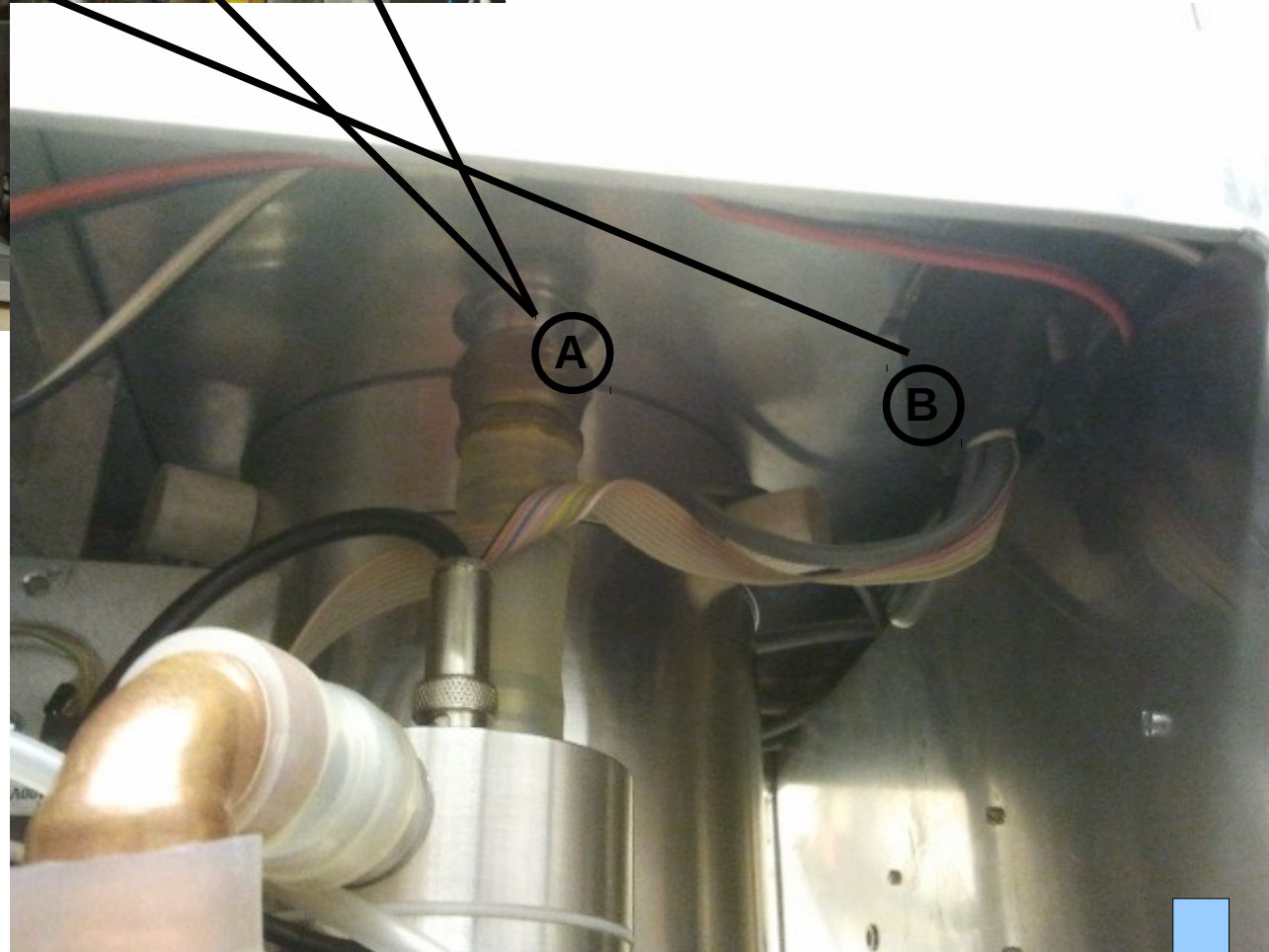
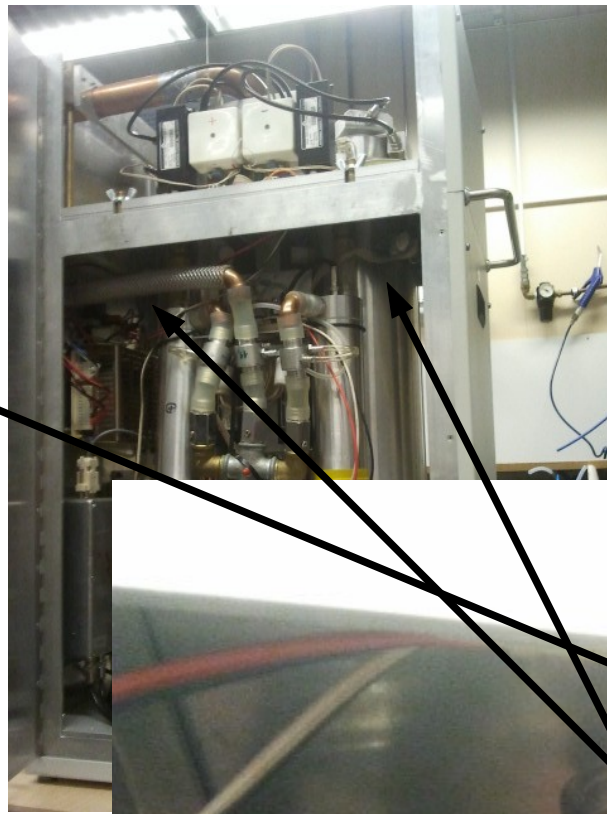


In this way both sides of the instrument are accessible.



Now unscrew these **butterfly** screws.

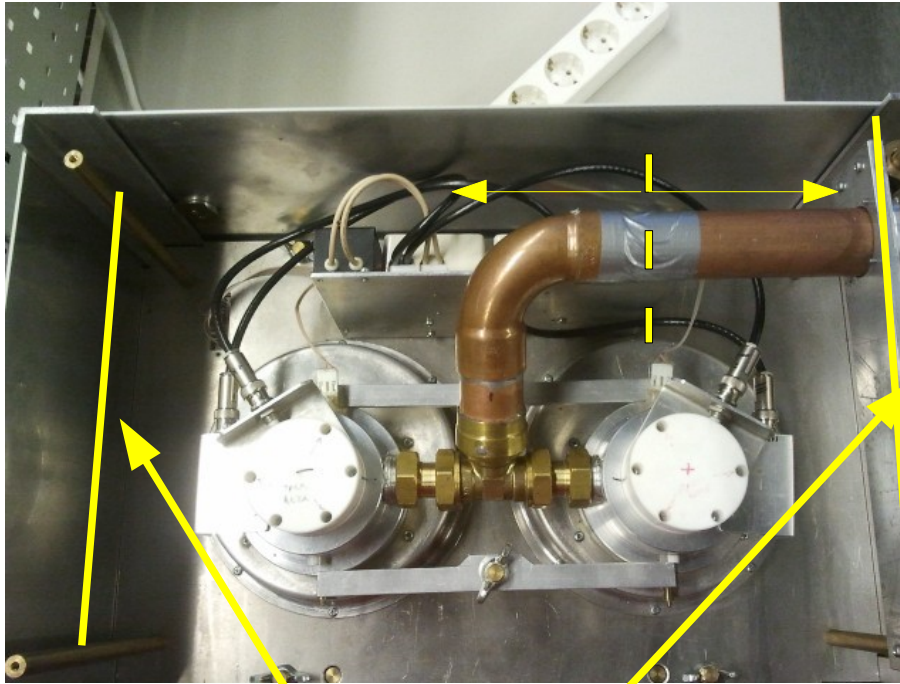




Unscrew the two pipes (A)
From each analyzer
You might need a wrench

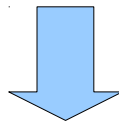
Disconnect also the
connector (B)

Now the top is free to be lifted.



Remember to disconnect the inlet before lifting the top Part.

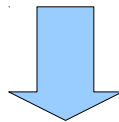
These are good points for lifting.

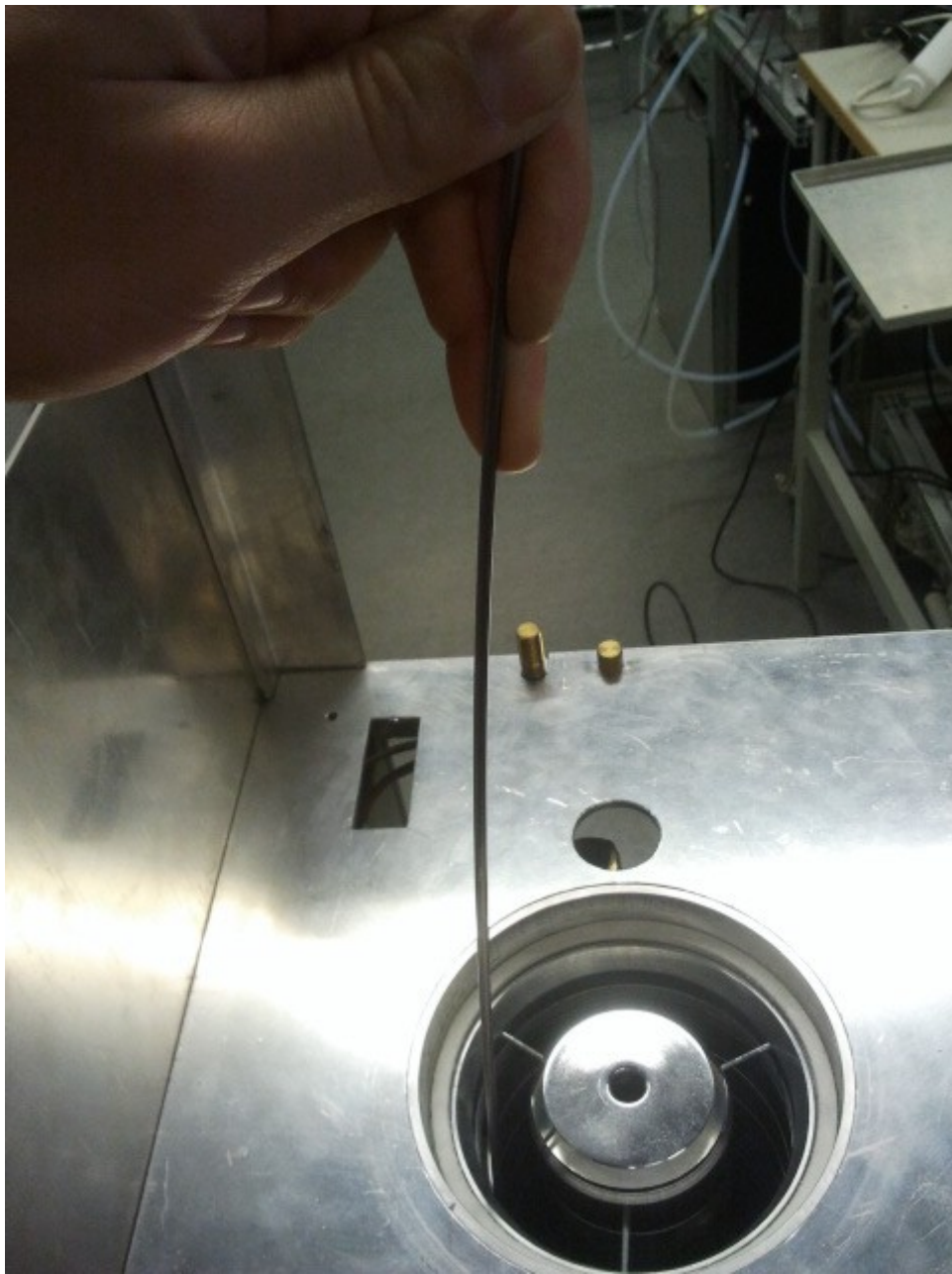




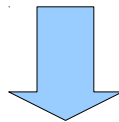
This is how it looks like once the top panel has been Removed.

If you have no cleaning rod skip to slide 9.





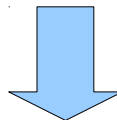
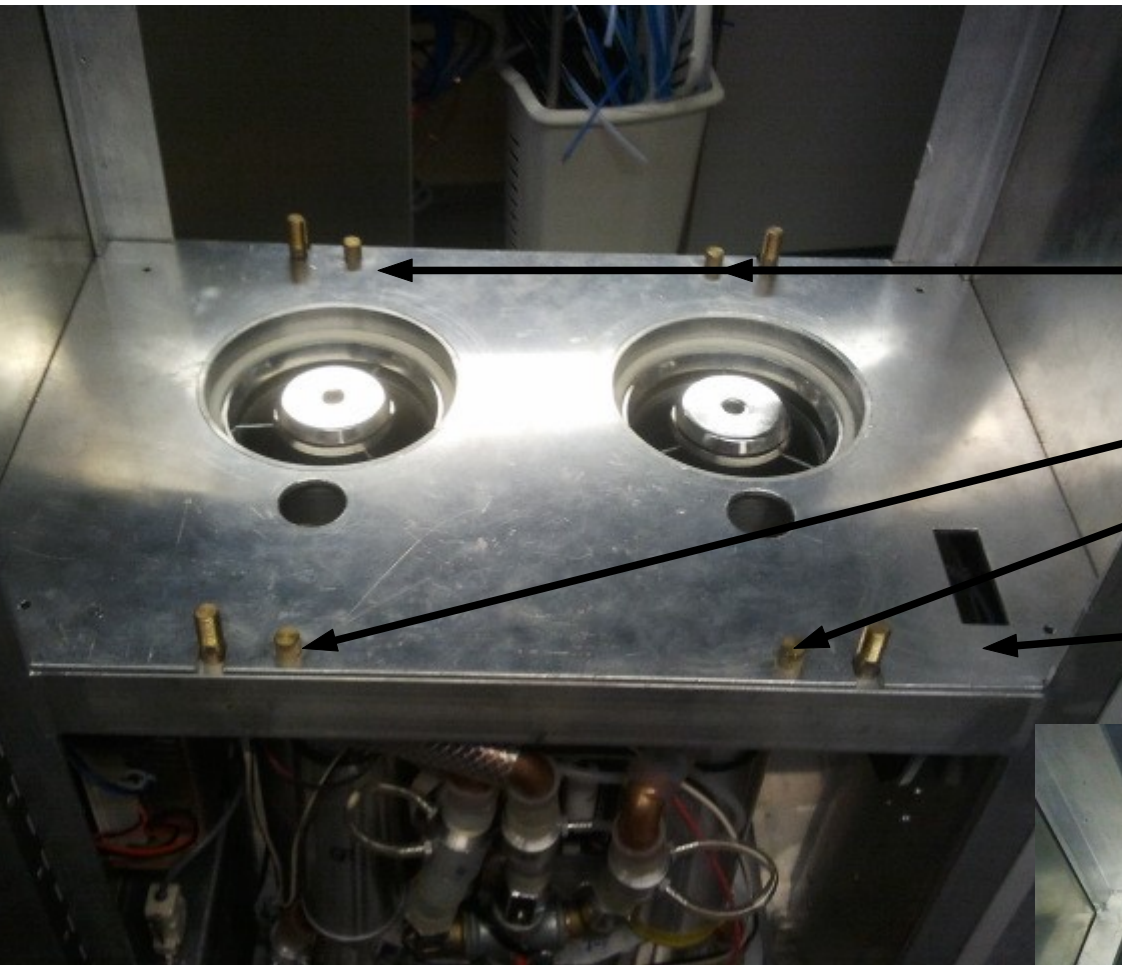
Clean with the rubber part the EM with vertical and tangential movements when done continue with slide 25.

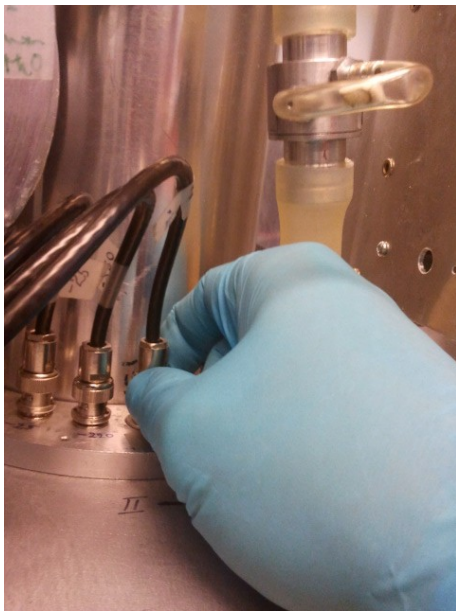


In case you don't have the cleaning tool
You have to remove the analyzers:

First remove these **screws**

And remove the **metal plate**.





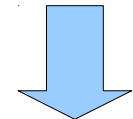
1- Disconnect the BNC at the base of the analyzer.

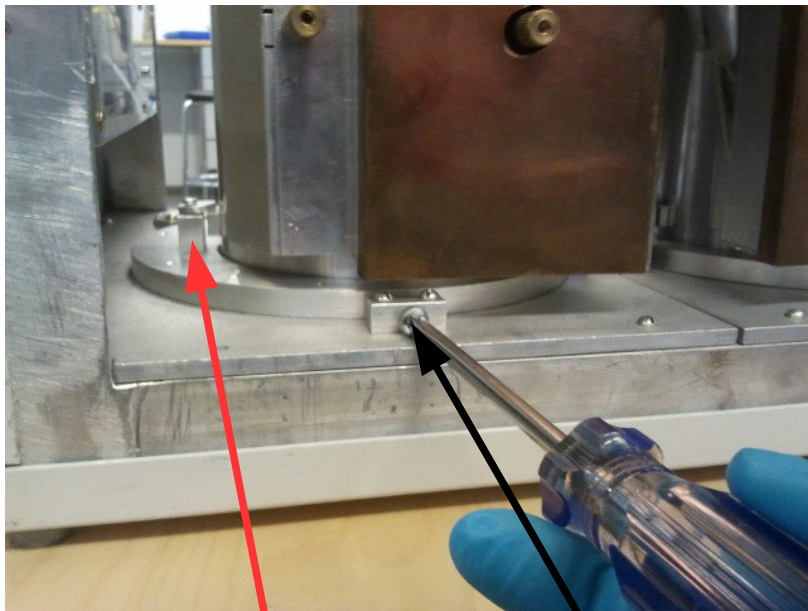


2- disconnect the sheath gas connector (it's next to the BNCs).



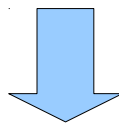
3 – disconnect the electronic connectors.





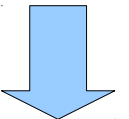
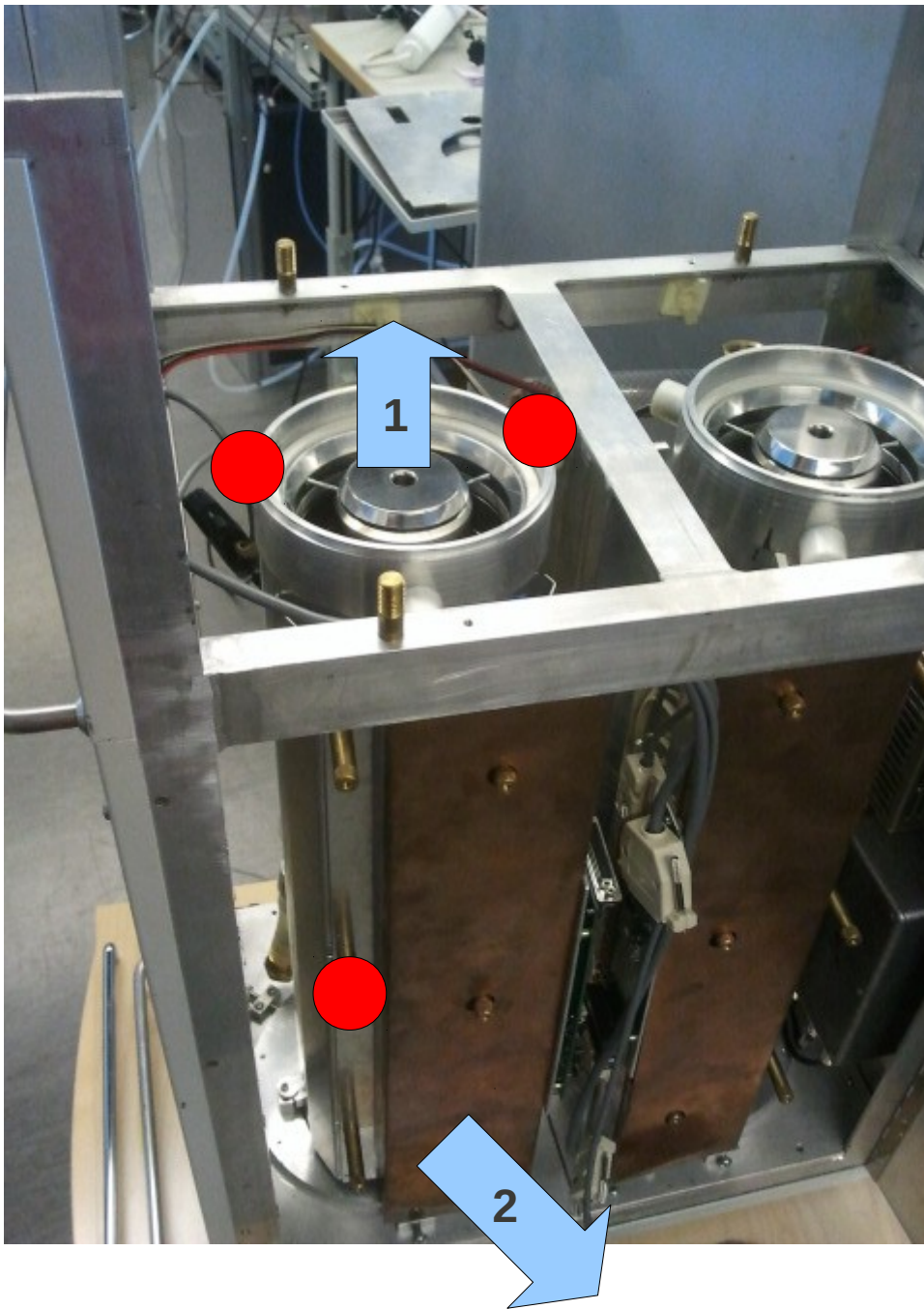
4- Open the **3 screws** that keep the analyzer
In place

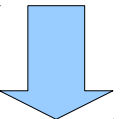
ATTENTION!! **do not** confuse them with the two that keep the outer
part connected to the inner one don't open those one yet!

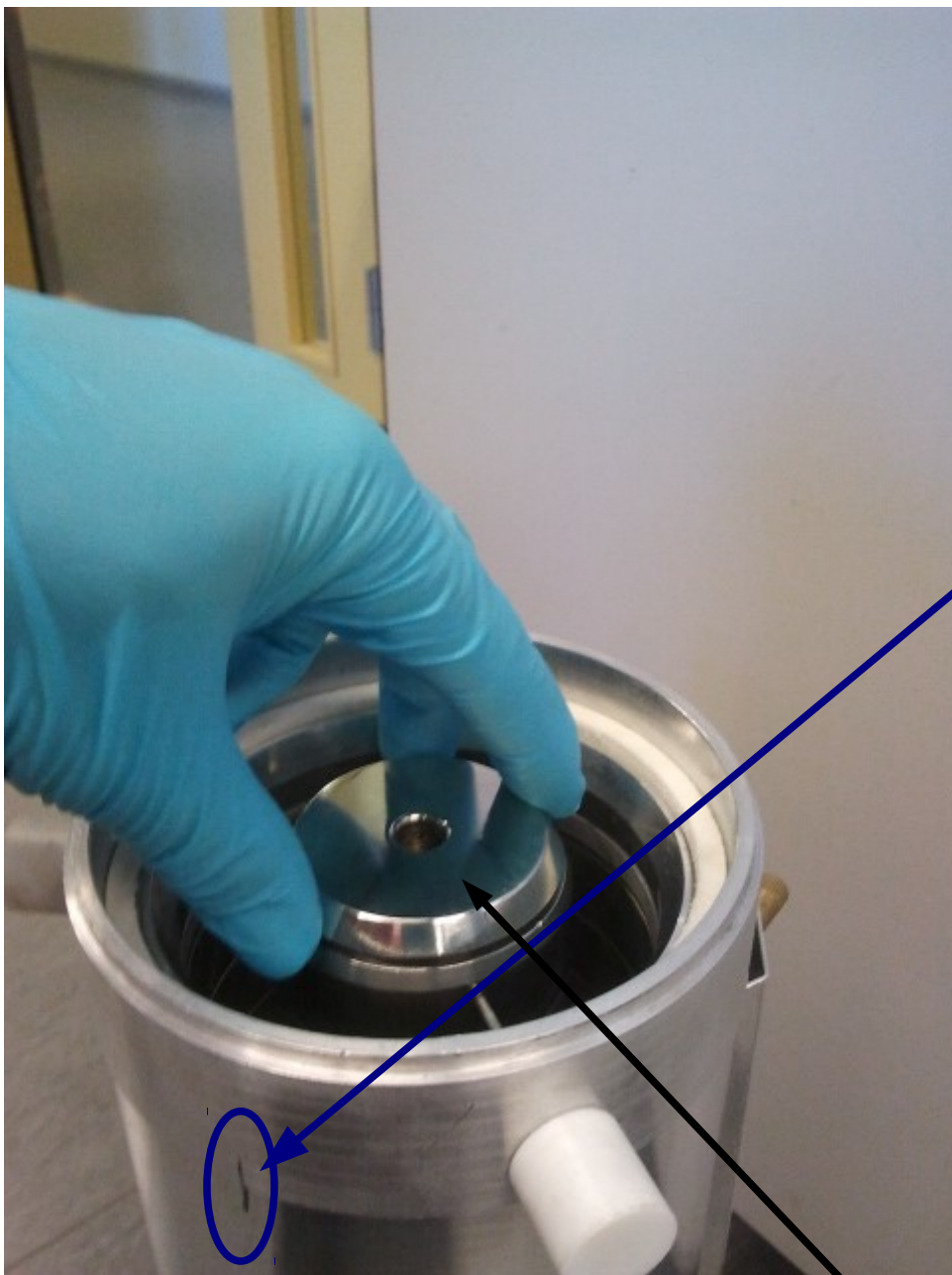


Lift the analyzer up (step 1) and then incline it and remove it from the rack through the lower gap (step 2).

The red circles ● are good points for holding the analyzer

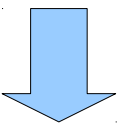
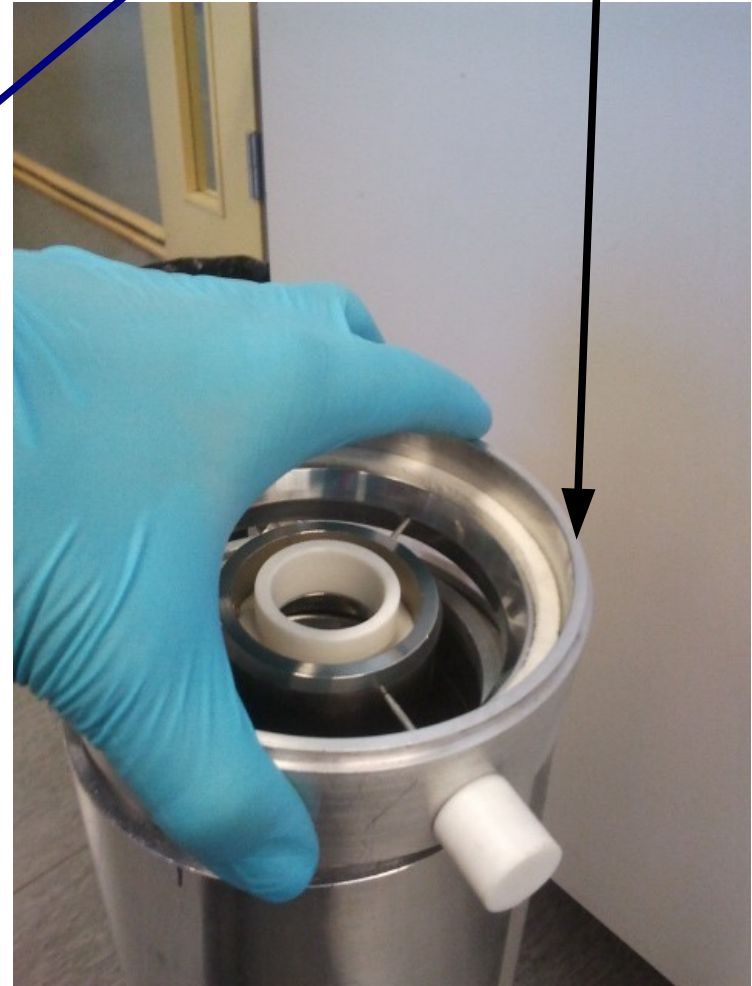


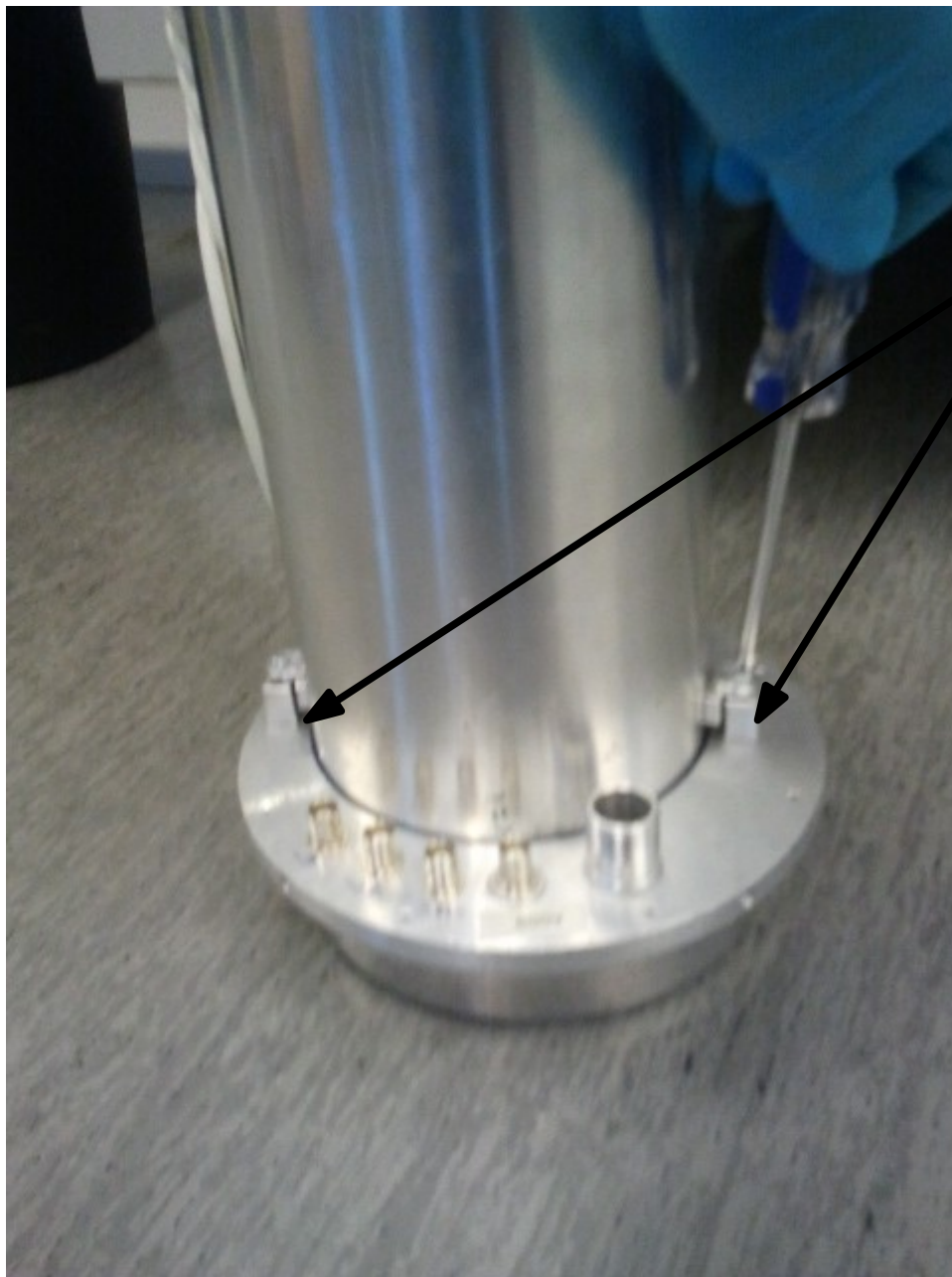




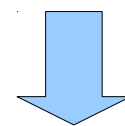
1- once the analyzer is out **unscrew the holder** of the central electrode.

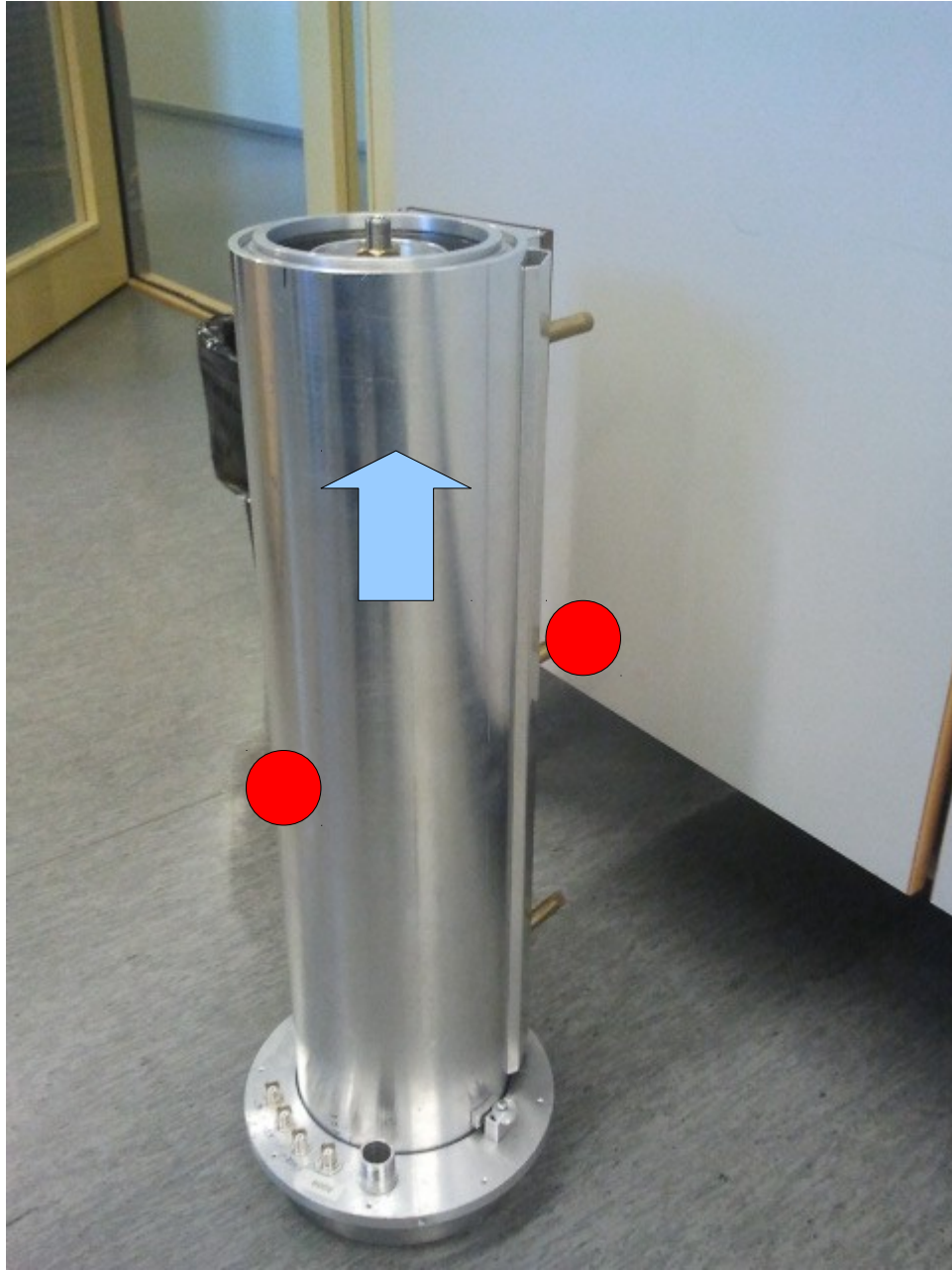
2 – then remove the **centering ring** (it can be quite tight). If not already present you could **mark a vertical line** across the ring and the analyzer with a permanent marker to be able to place them back in exactly same position.





Now unscrew the screws that keep the outer electrodes together with the inner electrode.

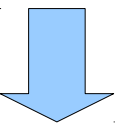


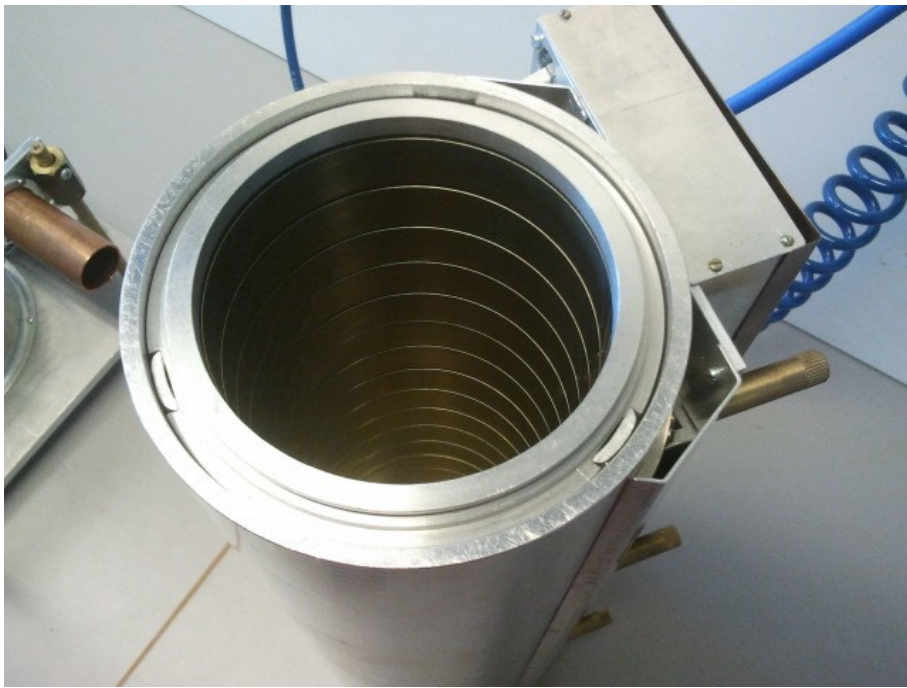


Now the outer part of the analyzer is ready to be lifted.

Take care not to scratch the inner electrode against the outer electrode

The red circles ● are good points for holding the analyzer

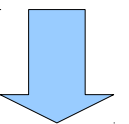


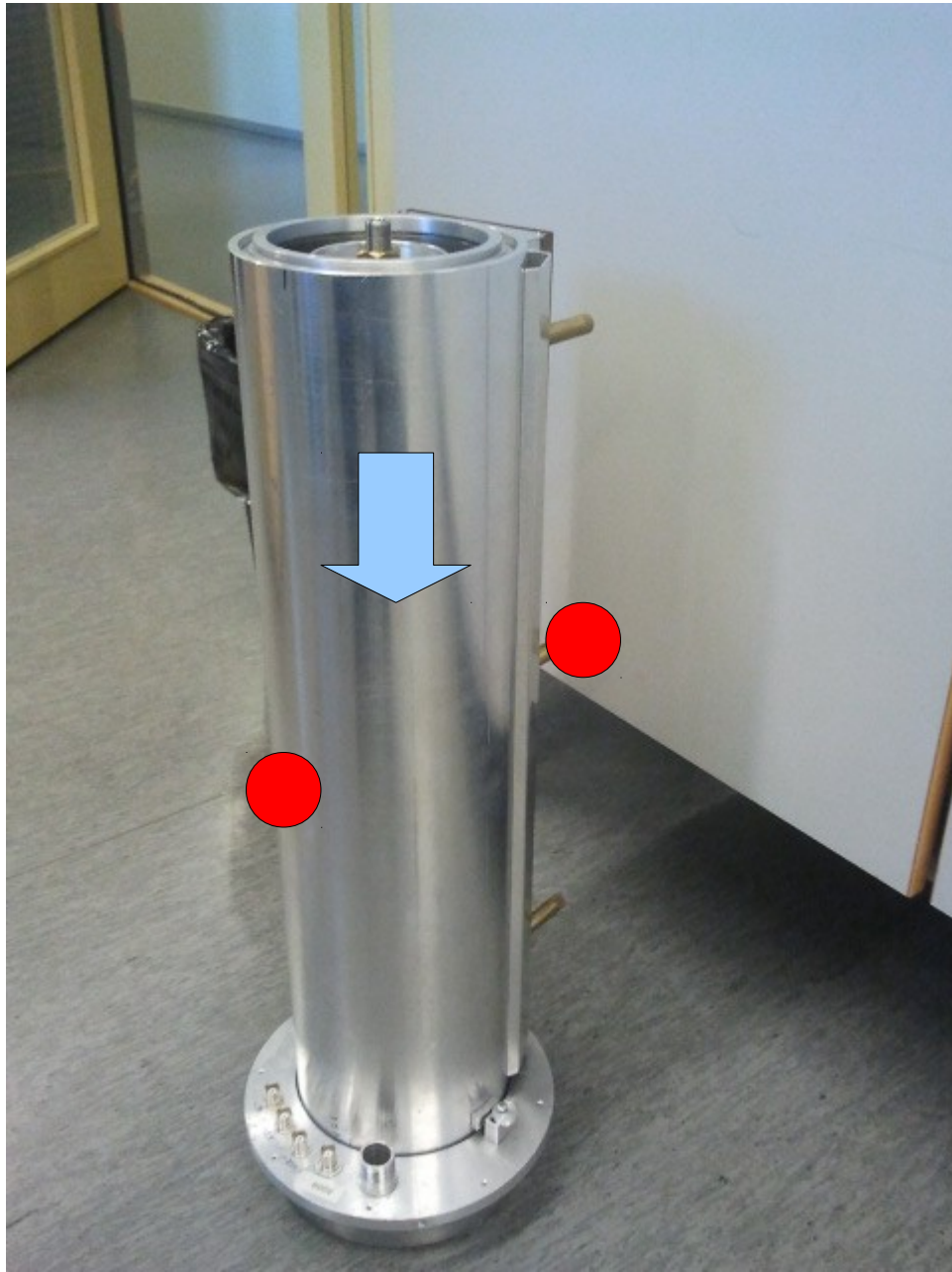


Now it's possible to clean the EM with a rubber glove or with wipes and Isopropanol.

Move from the center to the top with particular care to clean the gaps between the EM rings as well as their surface

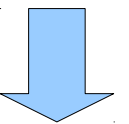
Flip the analyzer upside down and repeat the operation to clean the lower part.

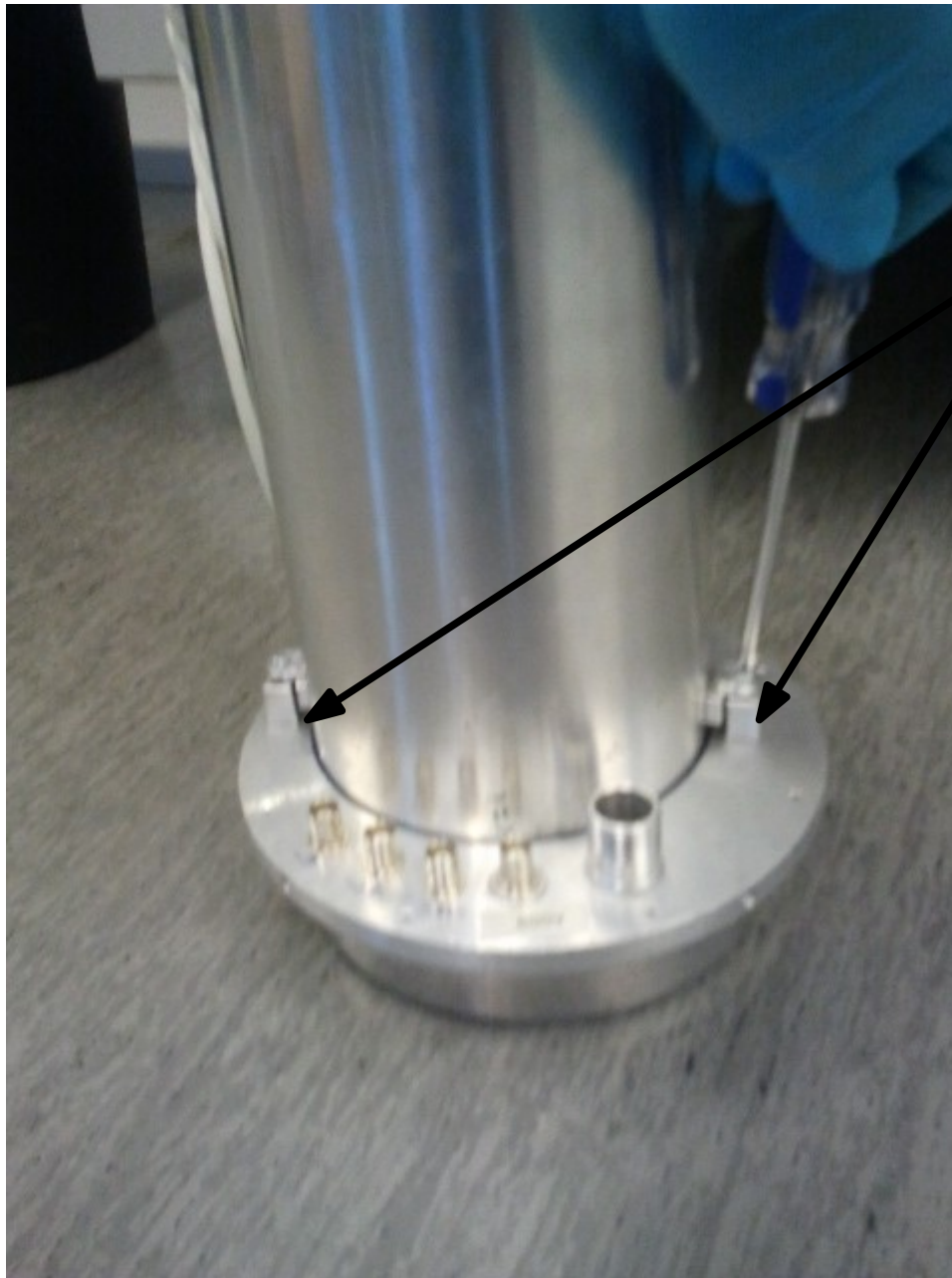




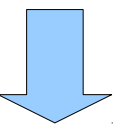
Reconnect the outer and inner electrode.
Remember that the smaller EM rings are at the top.

The red circles ● are good points for holding the analyzer.

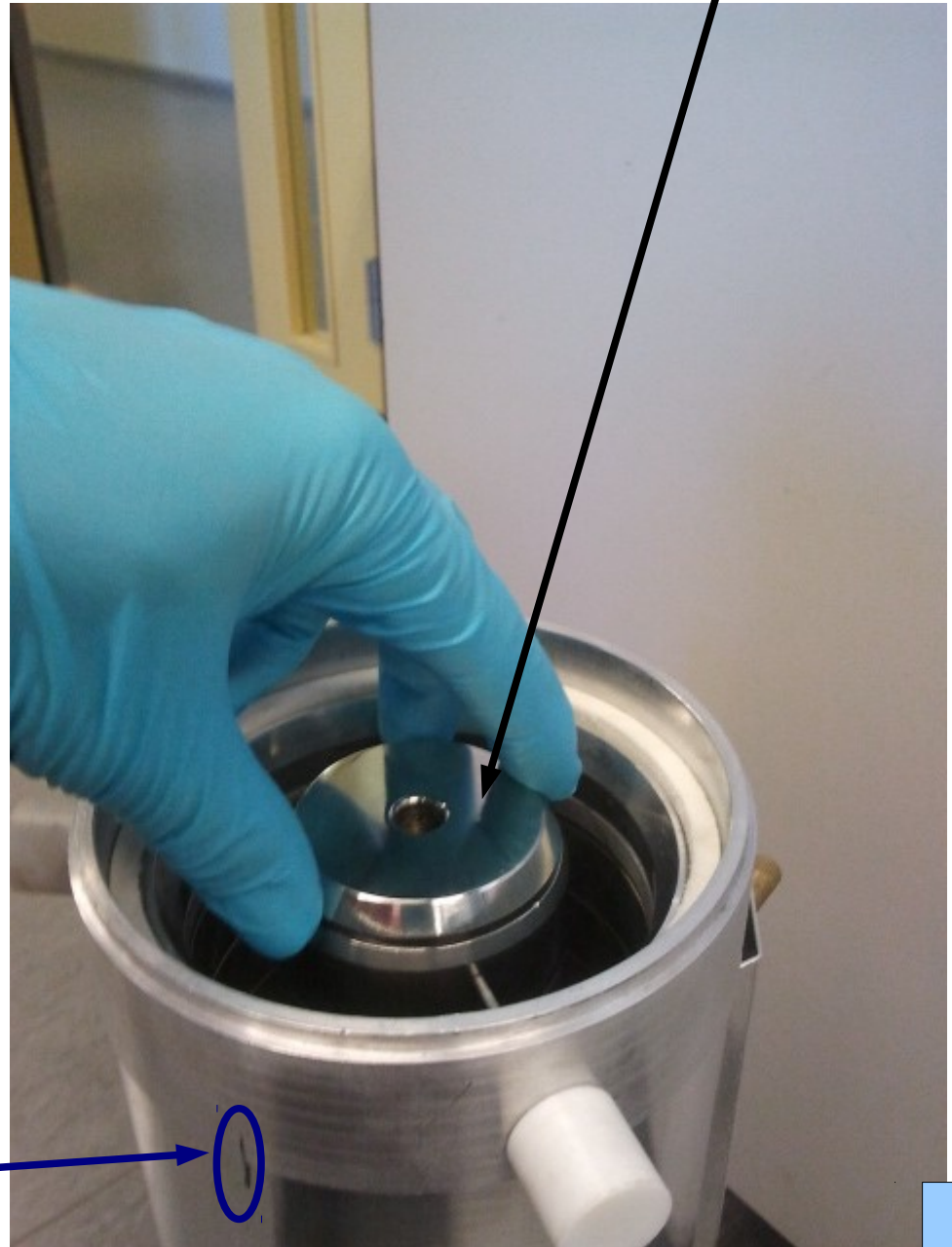




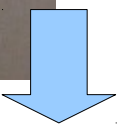
Fix the holders.



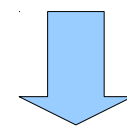
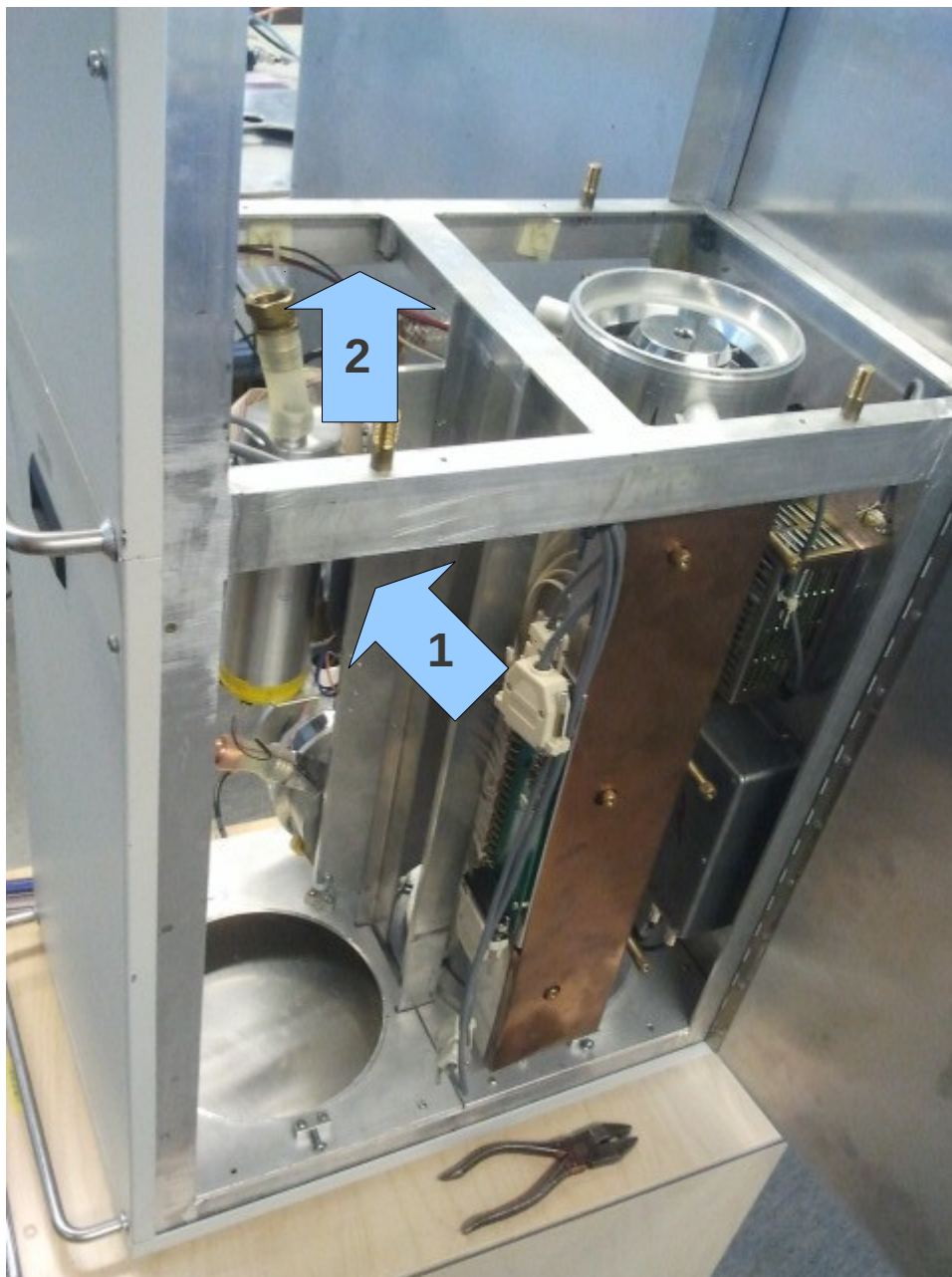
2 – place back the central **electrode holder**

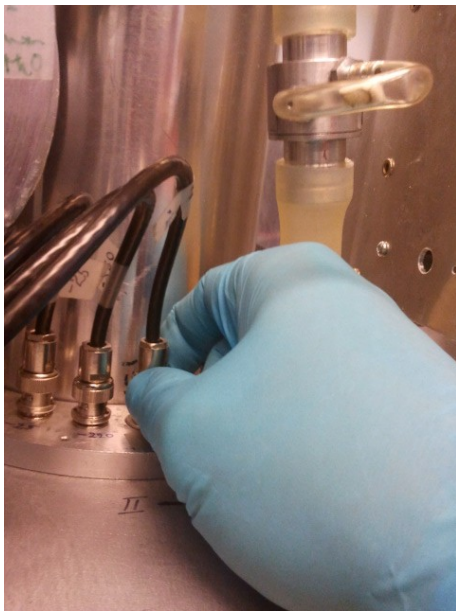


1 - Put back the centering ring
(mind the **markings**)



Put the analyzer back into the rack.





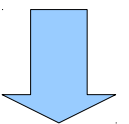
1- Connect the BNCs at the base of the analyzer.



2- connect the sheath gas connector.

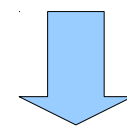


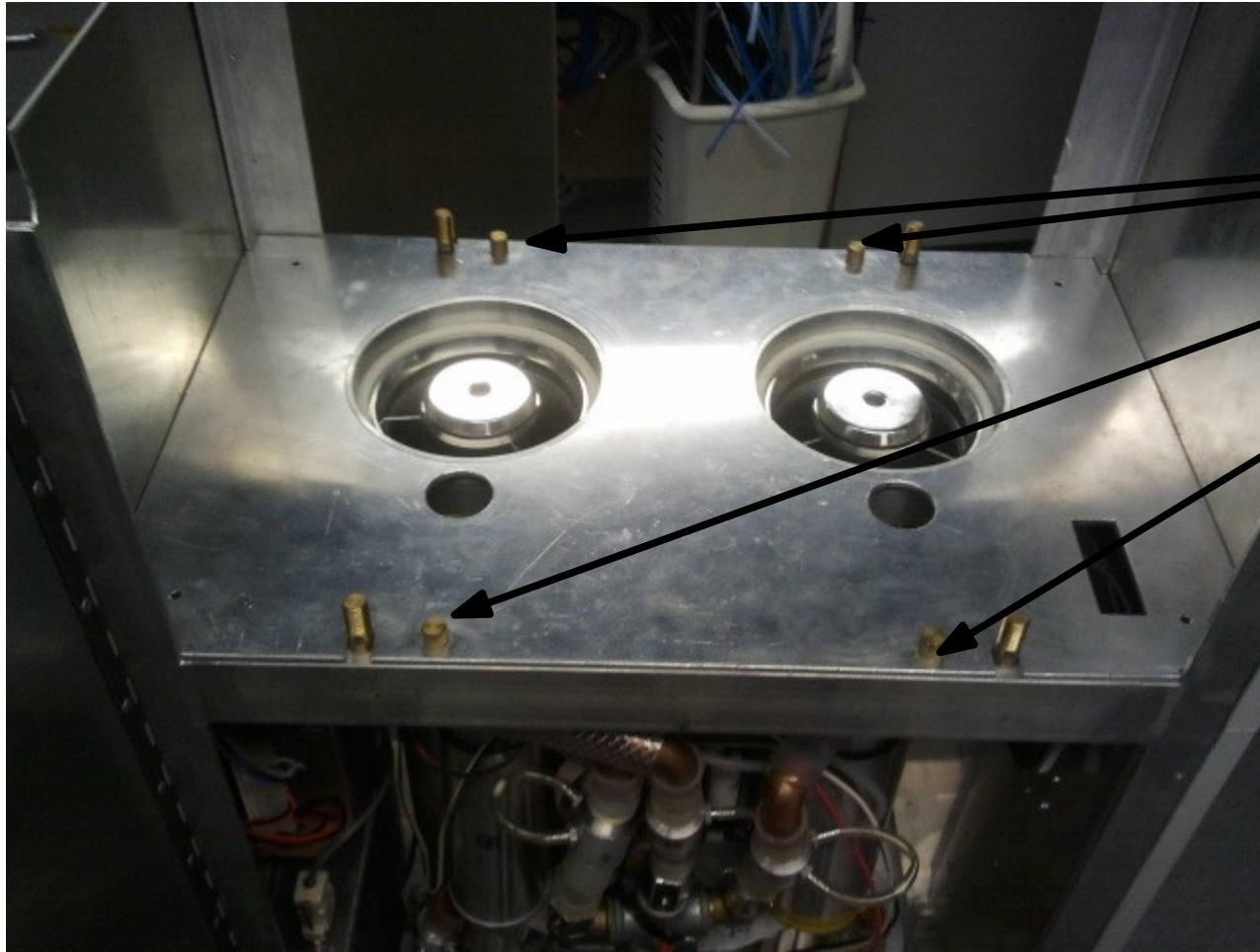
3 – connect back the electronic connectors.



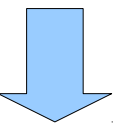


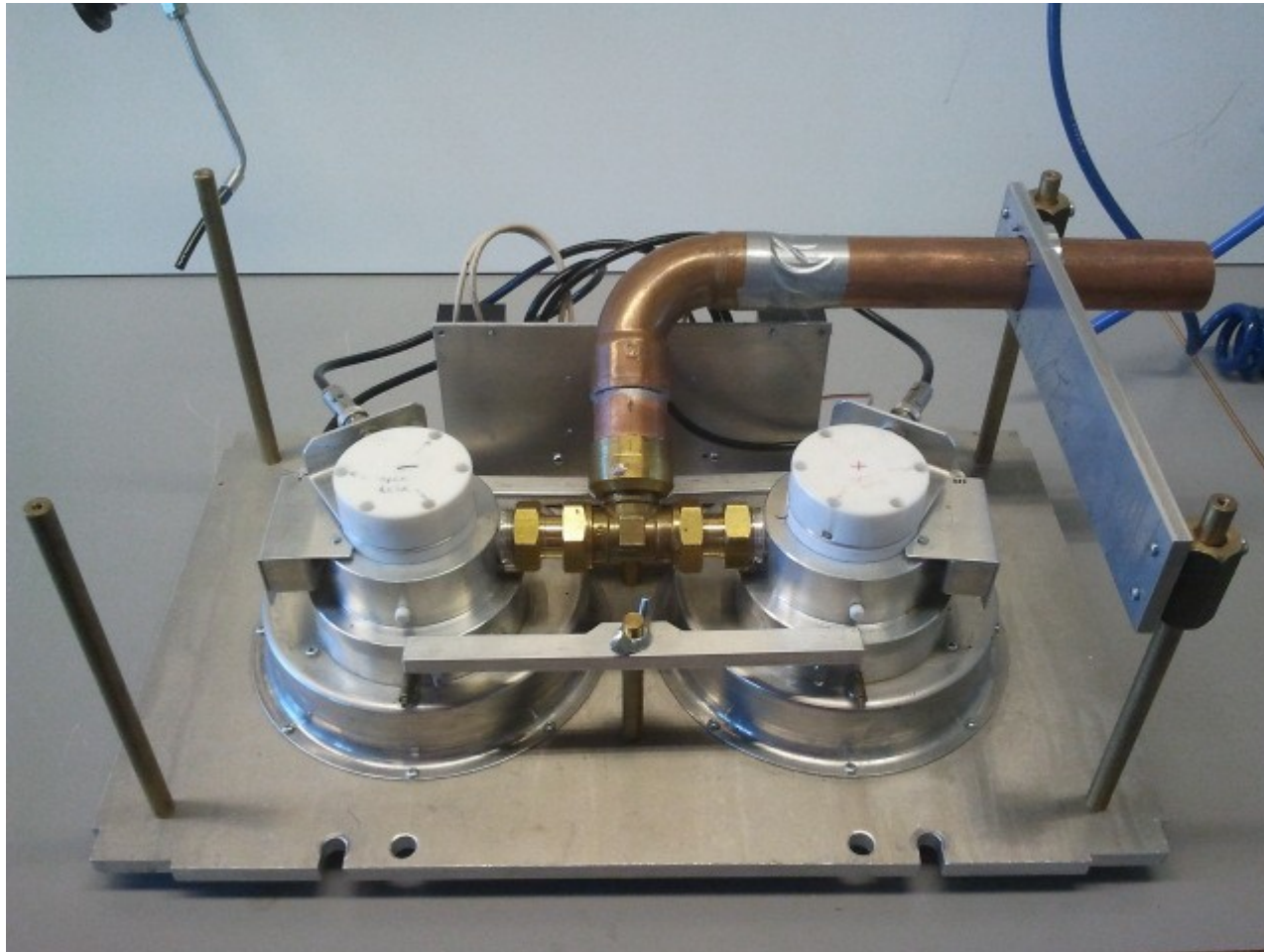
Repeat the procedure for the other analyzer (slide 10 to 22).



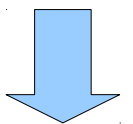


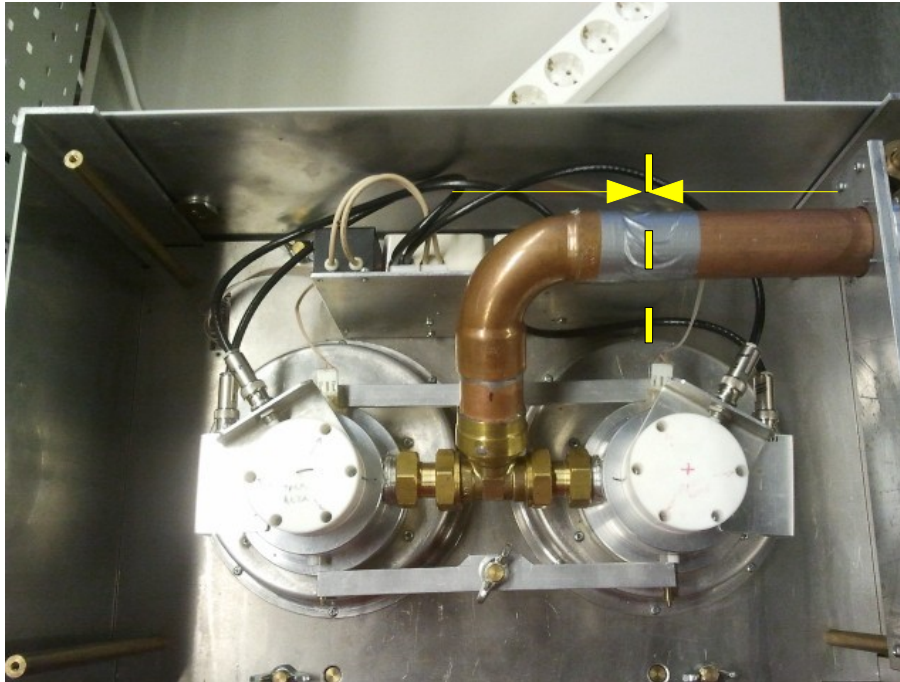
Put back the metallic plate and
fix it with the screws





Put back the top part
and fix it with the butterfly
screws.
Take particular care to
tighten them evenly.
So that the pressure on the
plate is equally distributed.





connect the inlet back

END