# Opening the vacuum chamber shell

1. Switch off everything and wait until the base plate reaches room temperature.
2. Disconnect the cables from the moxa which is underneath the vacuum chamber. The cables are all labelled. This is to create more space beneath the vacuum chamber.

A picture containing cable, electrical wiring, electronic engineering, electronics

Description automatically generated

1. Push the metallic box underneath the vacuum chamber to the right to create more space and allow reaching of the screws underneath the vacuum chamber.
2. Find a key with the right size to loosen the screws on the vacuum chamber

in this sequence:

|  |  |  |
| --- | --- | --- |
| a) | b) | tool |

Close-up of a machine

Description automatically generated A picture containing machine, engineering, pipe, machine tool

Description automatically generated A small screwdriver with a blue handle

Description automatically generated with medium confidence

1. Start with the ones at a): The most difficult one to unscrew will be at the bottom. For this you need a longer tool (pictured on the right). Then go to b) and unscrew only the screws that hold the shell of the vacuum chamber. Do not unscrew those that hold the linear actuator in the middle.
2. Once the screws are out, the shell will move slightly but it is securely held so it will not fall off. Carefully slide the shell to the right. The actuator is on the right and it is hanging on the metal piece fastened to the metal part (as shown in the figure), this way it will not easily fall.
3. Next, separate the trap from the linear actuator. To do this, detach the stainless tubing that goes to the trap. They are two, one at the front and one at the back.

A picture containing machine, engineering, auto part, indoor

Description automatically generated

Metal fastening

Stainless tubing

1. Loosen the screws that hold the metal fastener in order to allow this separation.
2. Detach the stand-off from the plastic casing that sits on the top of the linear actuator.
3. Disconnect the silver plate from the outer wall of the vacuum chamber.

A close up of a machine

Description automatically generated with low confidence

1. You will be able to see the thermocouple. It is the ceramic piece inside the standoff. Check that the thermocouple is not broken, if broken it needs to be replaced. If not broken, then you can test resistance through the green wires to see if there is a signal (images below).

A picture containing art

Description automatically generated with medium confidence

# Troubleshooting: Turry edit 21st Sep 2023

**Issue 1:** The trap reaches only around -100 °C while pressed against the Sterling cooler.

* Check older DAQ files and see when this issue occurred. Check irregularities in the minimum temperature measured. You can then trace back to find out what activities could have caused the issue. Probable activities include vacuum chamber opening or replacing anything that cojoins to the vacuum chamber e.g. the linear actuator or the Stirling cooler.
* The trap temperature should reach around -140 °C after the set time.
* Confirm that the thermal contact between the trap stand-off and the Stirling cooler base plate is ideal.