

CIS RGA Filament Replacement



Determine Filament Status
Changing Filaments
Testing Replacement

Changing Filaments

How do we know the filaments need changing?

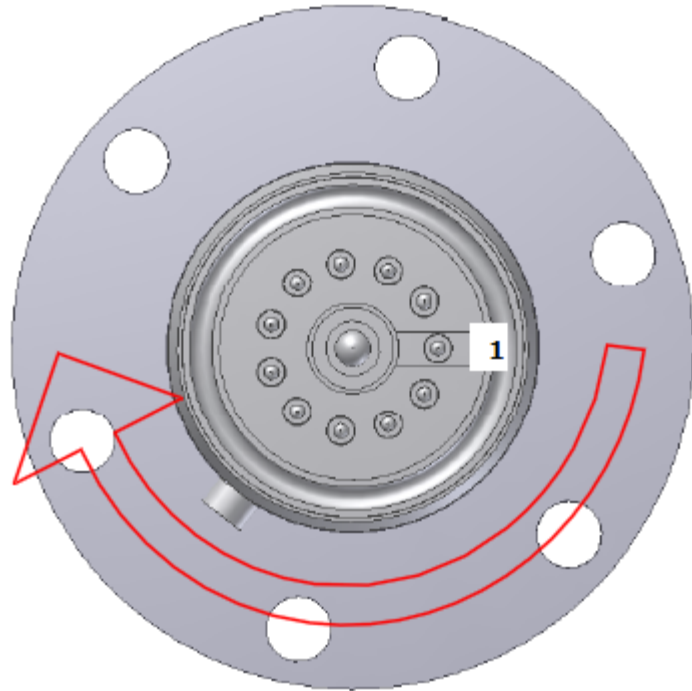
- On screen warning tell us in the Process Eye Professional Status Window.
- Ohm Test Indicates Open Circuit

Check Filaments with a DVM



- Before removing the analyser check the filaments with a DVM.
- Dual Independent Filaments
- Pins 4 to 8, 8 to 10 and 4 to 10 should be short, Pin 8 is the filament common.

Analyser Pin Numbers



- Pin 1 has the earth tab to the centre pin shield.
- Pins are numbered in a clockwise direction.

Pin Descriptions	
Pin	Connection
1	Earth
2	Source plate
3	Electron Multiplier
4	Filament 1
5	Extraction plate
6	Suppressor plate
7	RF.1
8	Repeller plate / filament common
9	No connection
10	Filament 2
11	RF.2
12	Collector

What You Will Need

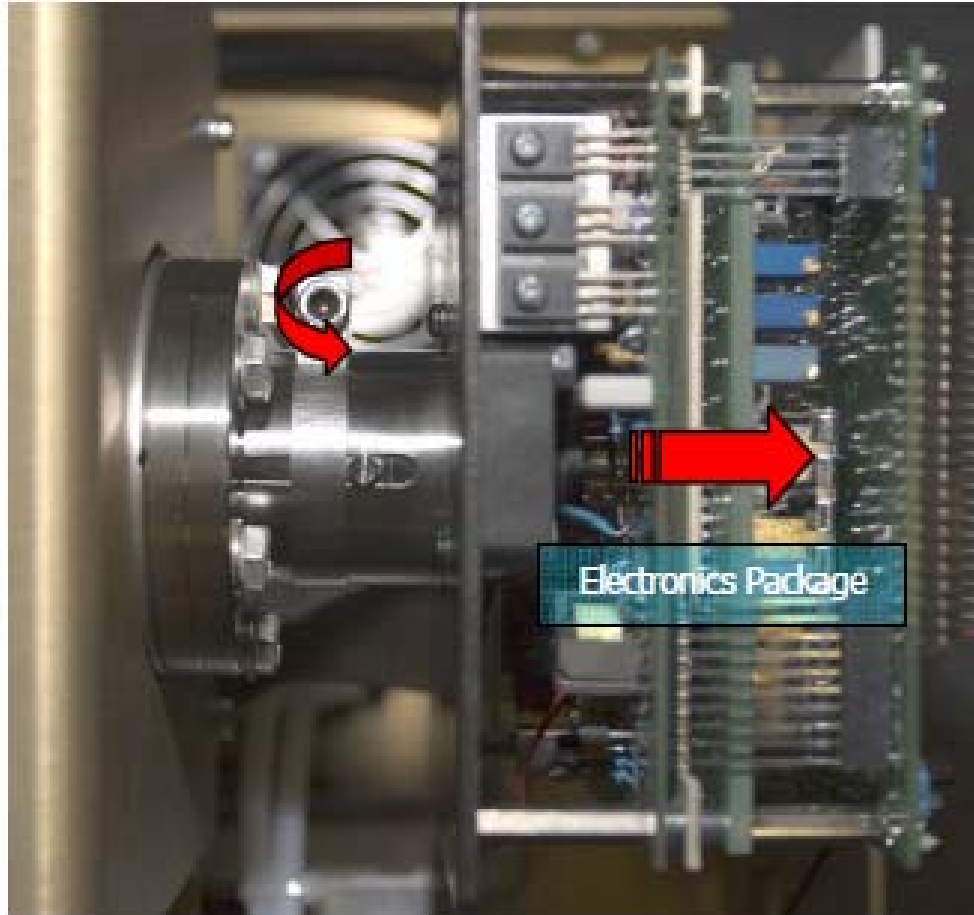
- New filament
- New copper gasket CF3
- Cleaned Needle nose pliers
- Cleaned Tweezers
- Cleaned Small Screw Driver
- Glove or finger stalls.
- Small container.
- DVM



Removing The Analyser

- **Remove the power.**
- **Remove the control electronics.**
- **Remove the six bolts.**
- **Carefully slide out the analyser.**
- **Support the analyser securely on a clean bench.**

Remove the Control Electronics



Losen Allen Bolt

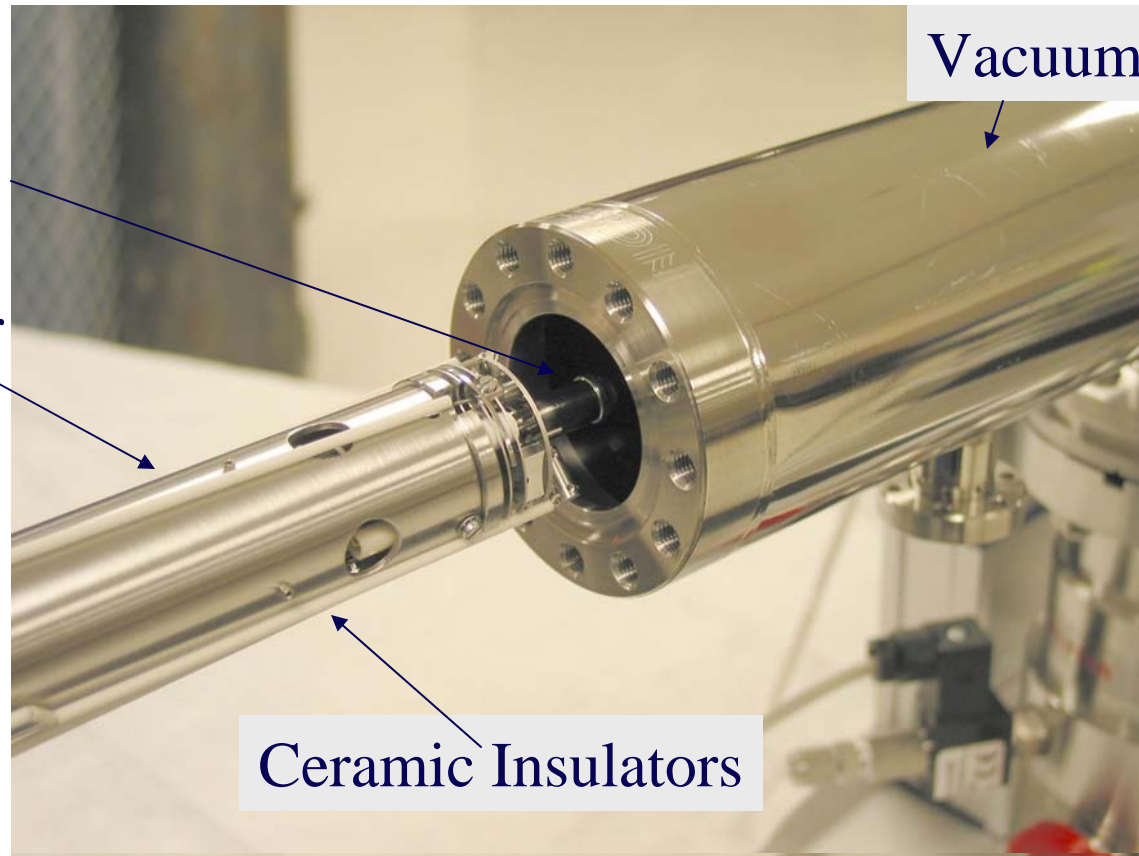
Manifold Assembly, RGA Sensor Removal

RGA Sensor
Inlet Coupler

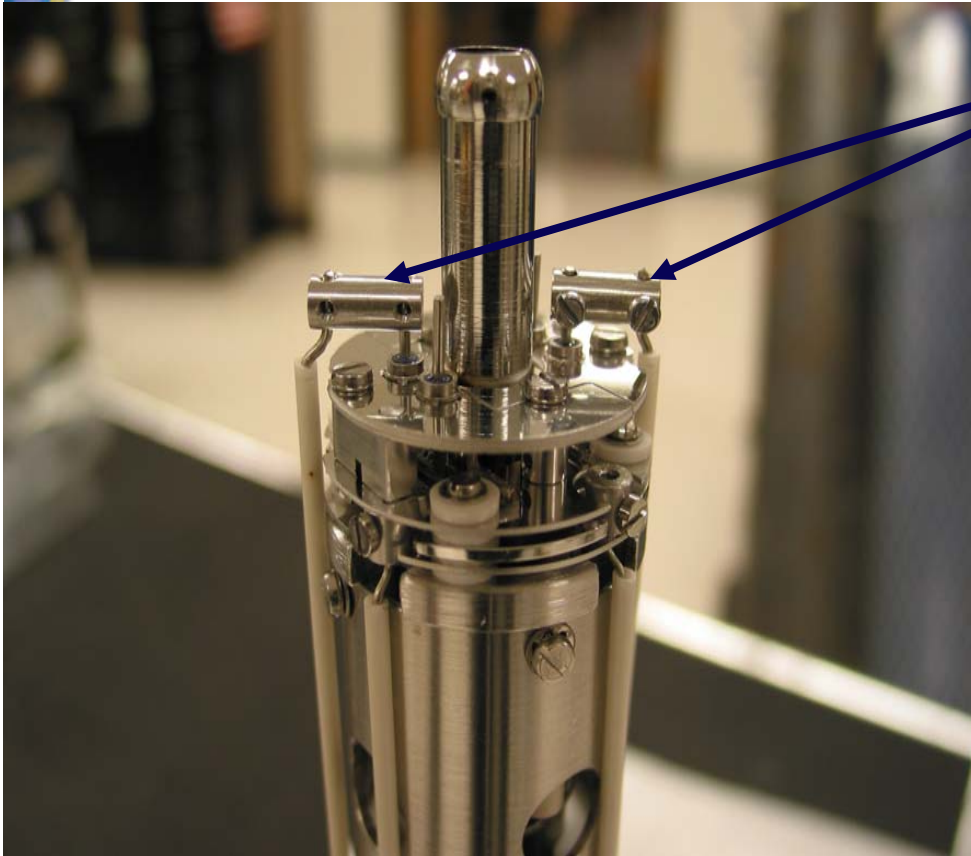
RGA Sensor

Vacuum Chamber

Ceramic Insulators

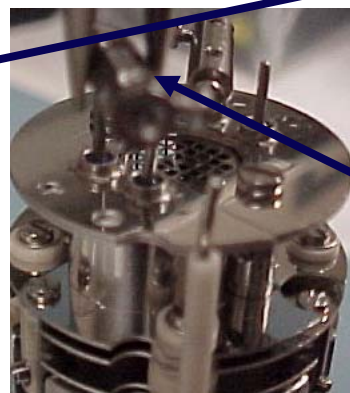
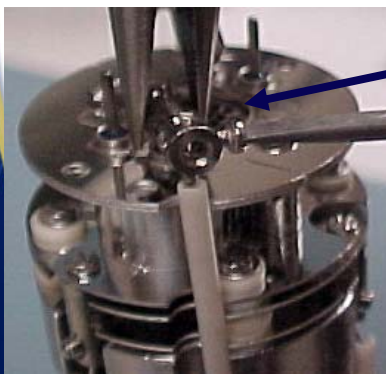
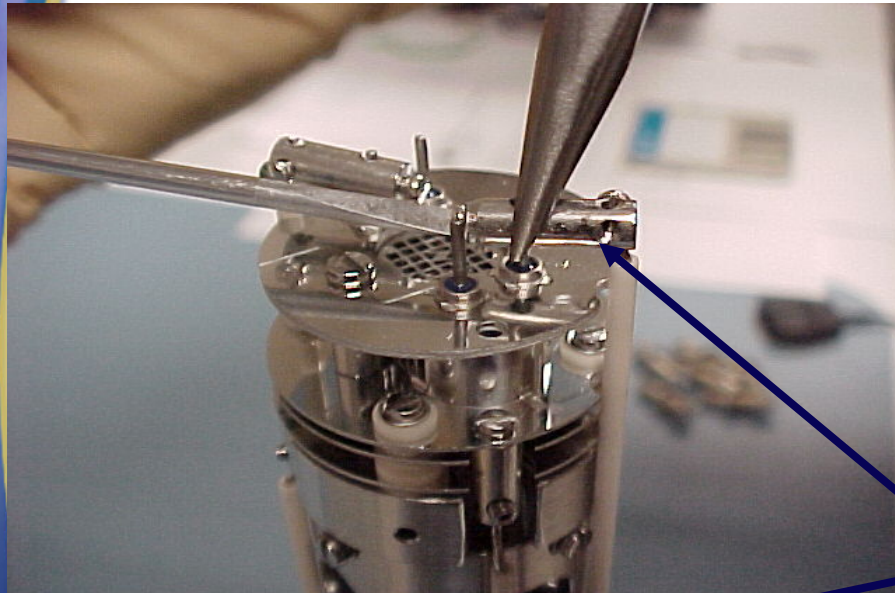


Locate the Barrel Connectors



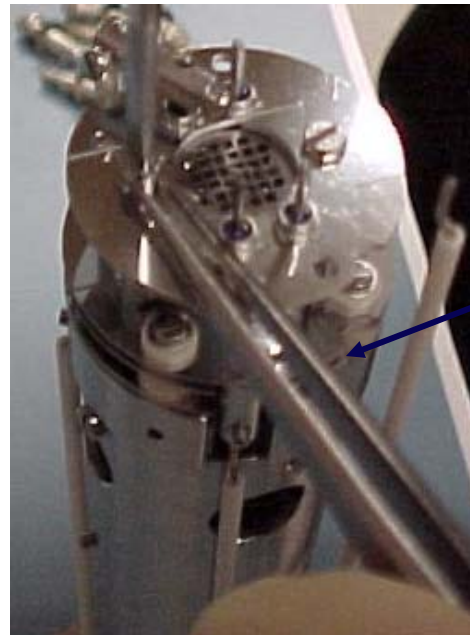
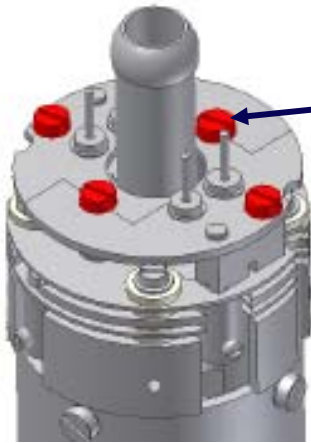
- Note the position of the filament barrel connectors.
- Leave the old Cu gasket in place to protect the knife edge sealing surface.

Remove the Barrel Connectors



- Note these picture are representation of the procedure that is required.
- Hold the filament barrel connector with pliers, slacken the two screws but do not remove them.
- Lift away the barrel connector.
- Repeat for the second barrel connector if required.

Remove the Filament Plate Screws

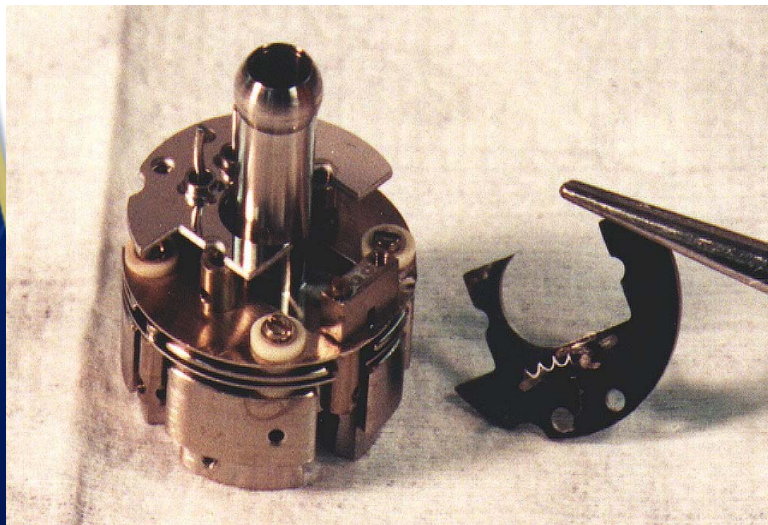


- Slacken the four screws until the tweezers fit under the screw head.
- Continue to un-do the screw then lift away with the tweezers.

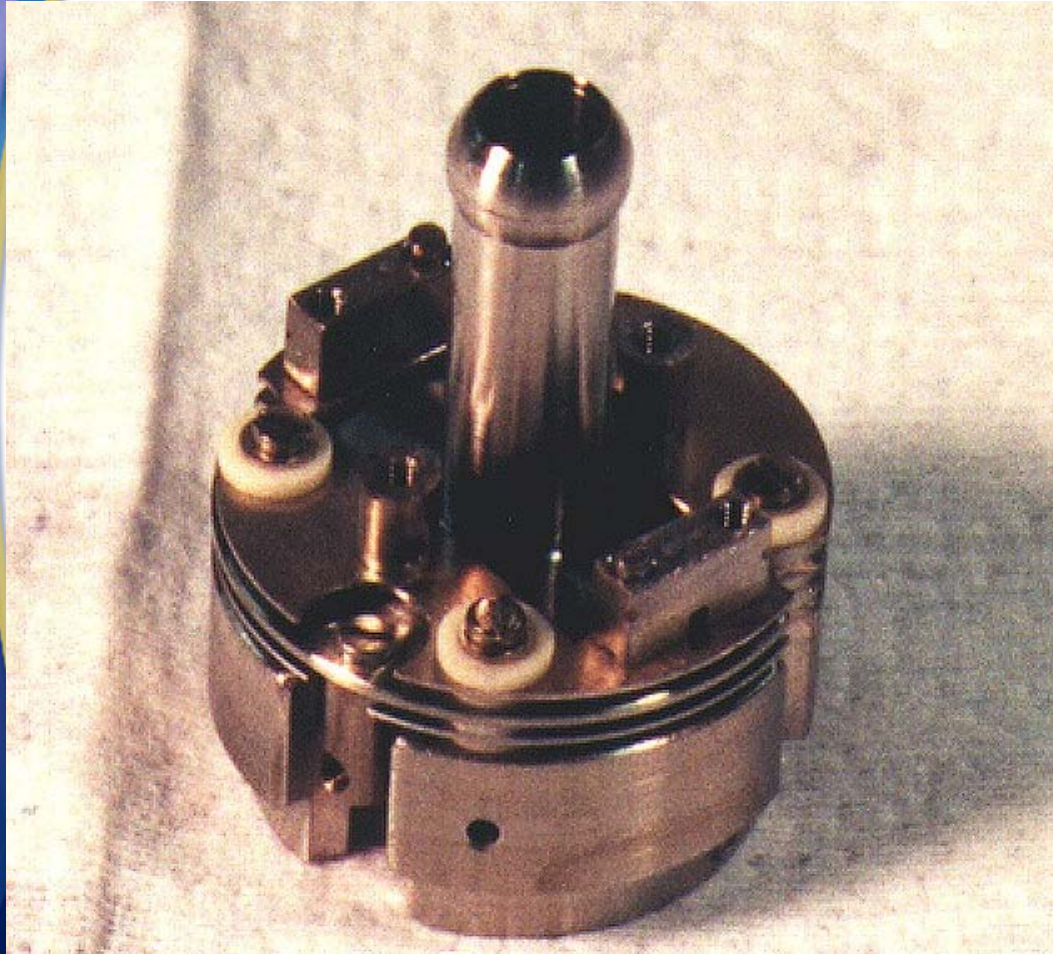
Remove the Filament Plate



- With the tweezers hold the filament and lift it away from the analyser.
- Remove second barrel connector if required and remove second independent filament.

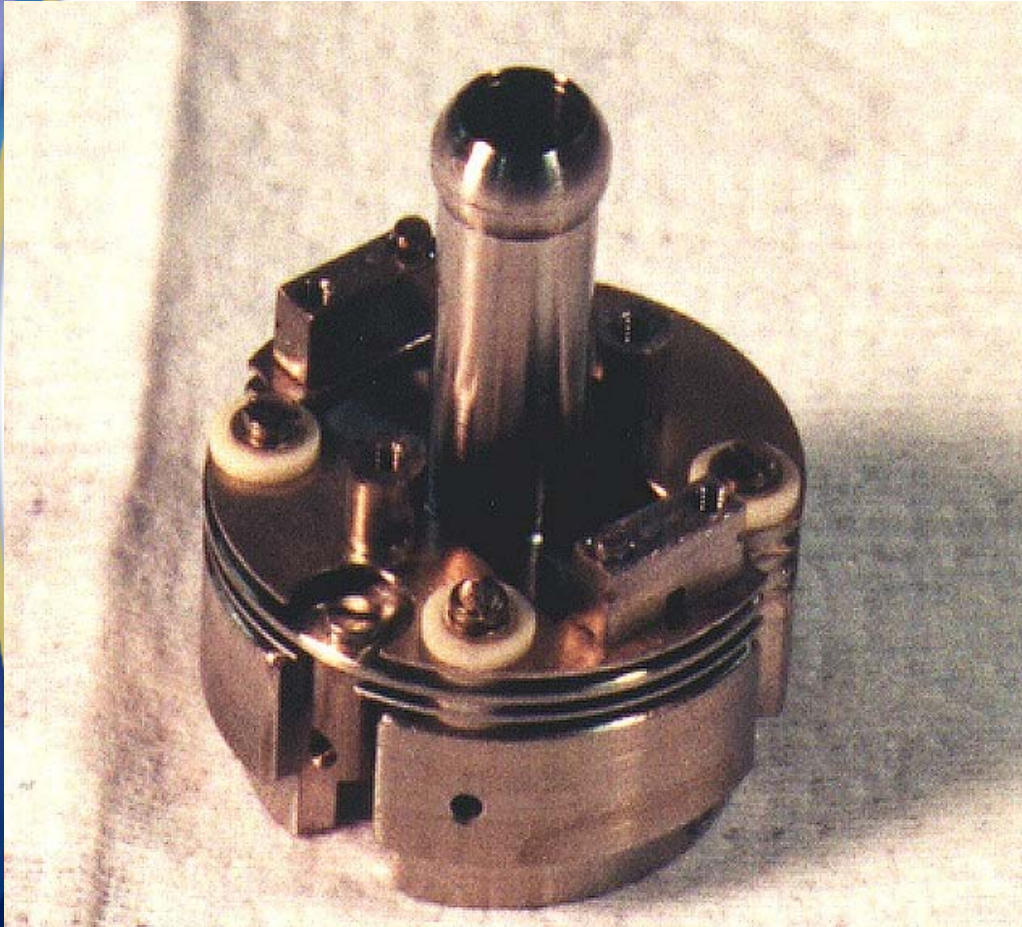


Examine The Ion Source



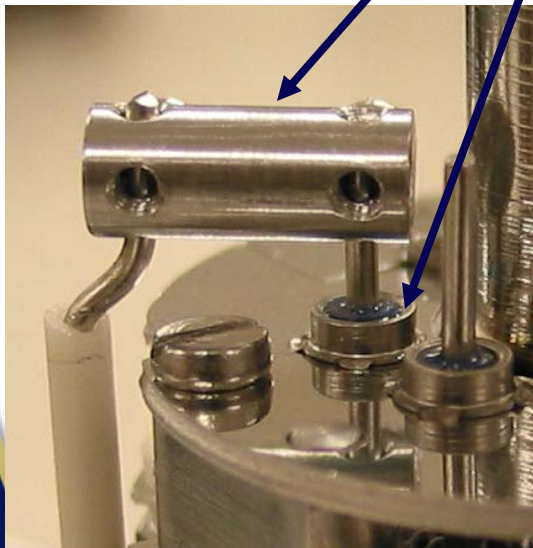
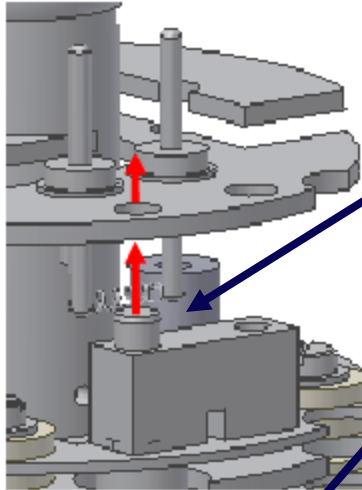
- Ion burns are normal.

Look For Contamination



- Powdery deposits are bad news.
- Cleaning may be required

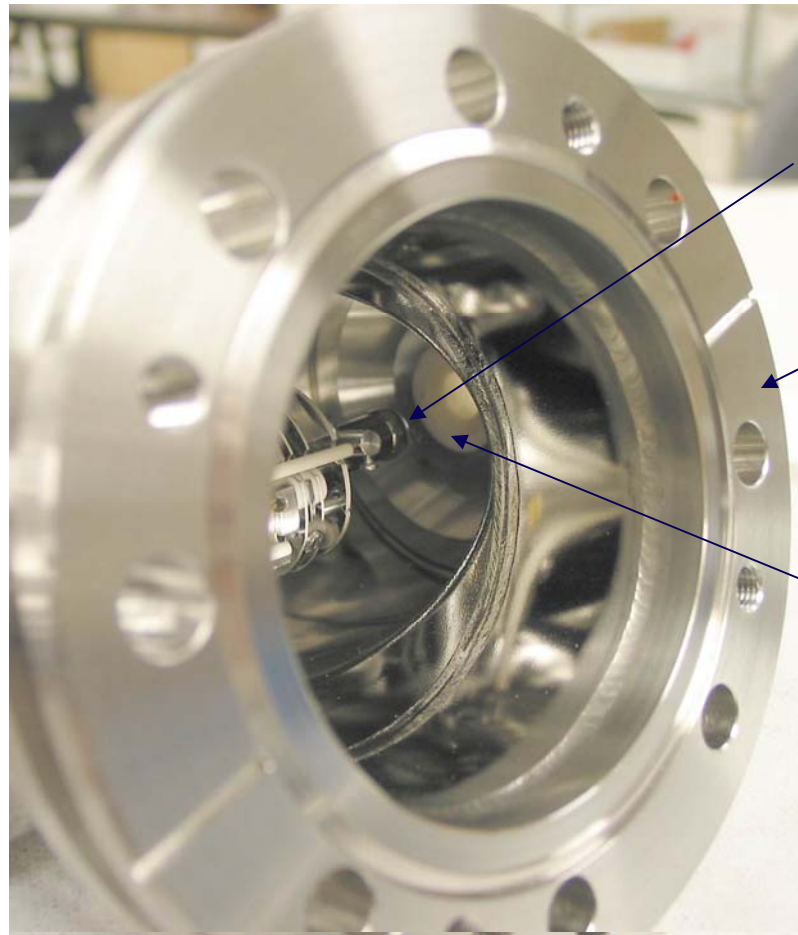
Fit New Filaments



- Place new filament assembly onto the filament repller block using the alignment guide pin.
- Insure that the barrel connectors are tightly attached to the filaments leads. Do not short the barrel connectors to the metal shield around the filament feed through by pushing it down to far.
- Once fitted check the analyser with your DVM.
 - Check for short circuits on all pins except filament leads.
 - Check the filaments are good.
- Re-install the analyser with a new 2.75" CF copper gasket and attach the control unit and all the additional cables.
- Power up the Cirrus to restart the turbo and foreline pumps.
- Leak Check the RGA unit and run a bakeout cycle.

Manifold Assembly, RGA Sensor Inlet Coupler

•During installation insure that the inlet coupler slides into the ceramic inlet assembly located at the end of the vacuum manifold.

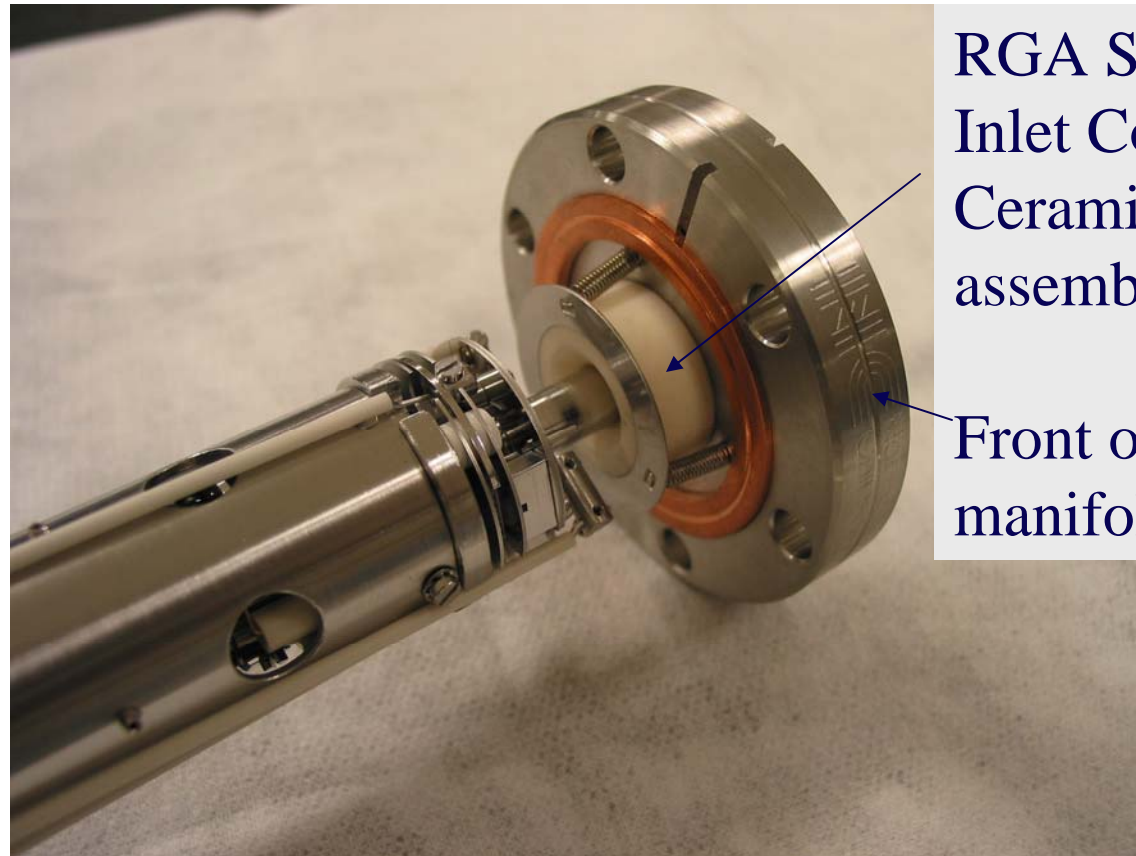


RGA Sensor
Inlet Coupler

Turbo Pump
Flange

Ceramic
Inlet Assembly

Manifold Assembly, RGA Sensor Inlet Coupler



RGA Sensor
Inlet Coupler and
Ceramic inlet
assembly.

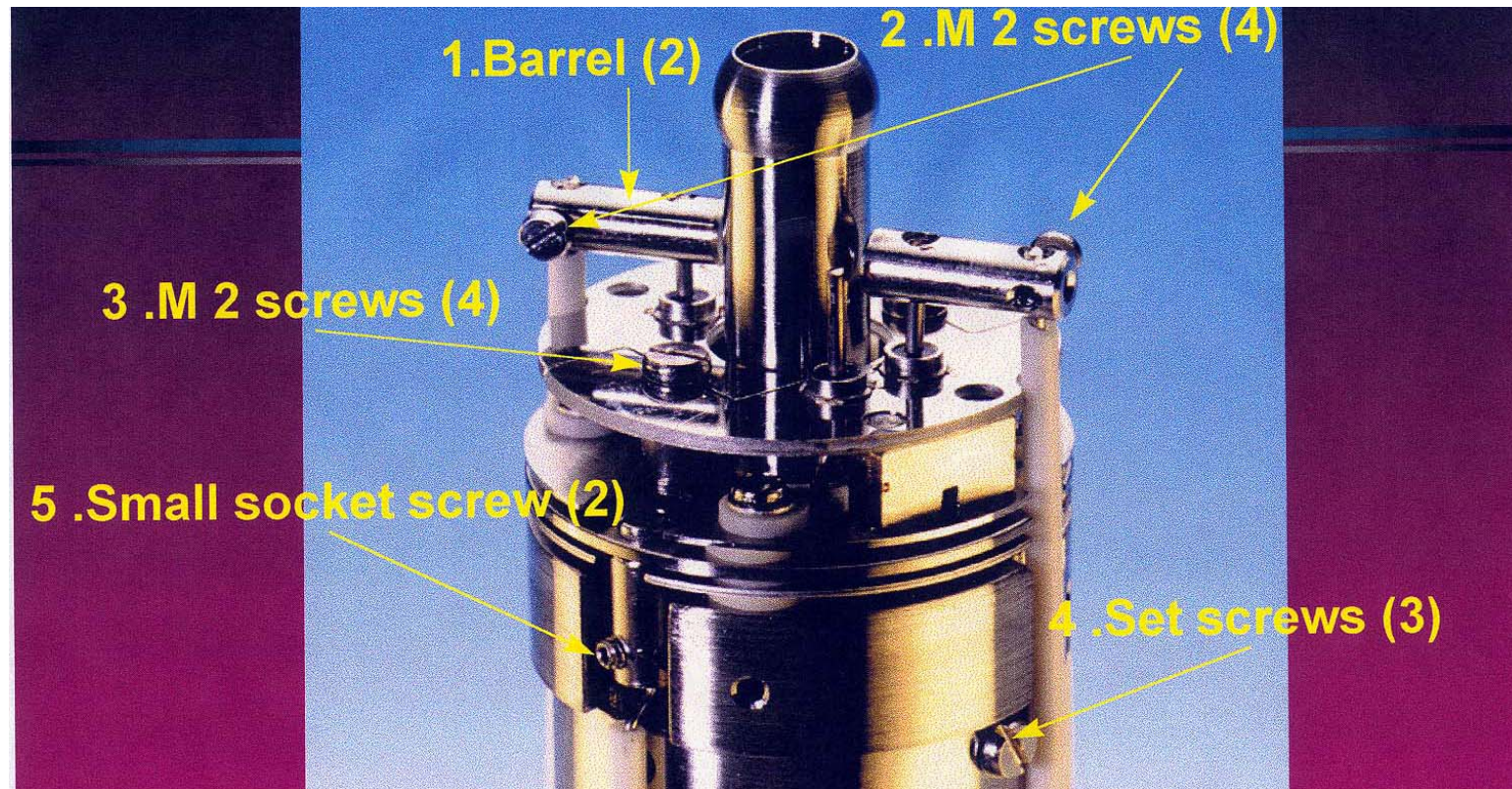
Front of vacuum
manifold

DVM checks



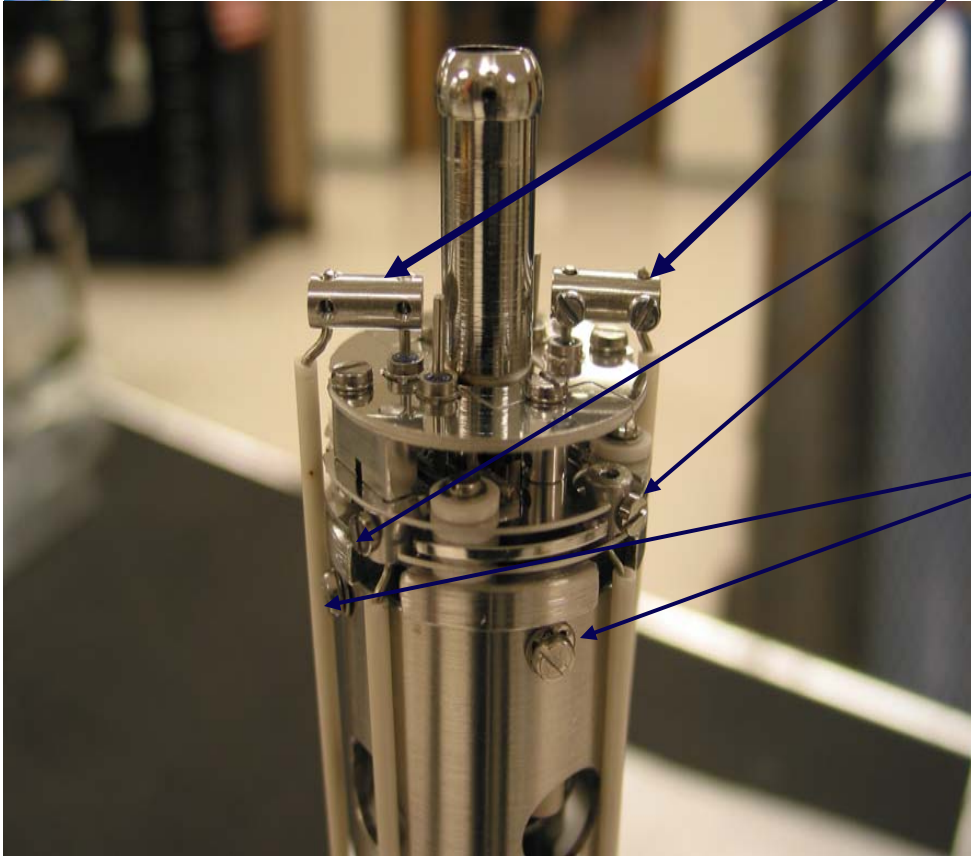
- With the DVM set to ohms check for the leads filaments for continuity (pins 4,8,& 10)
- Check that the filaments are not shorted to any other part of the analyser
- Install the analyser with a new copper gasket.

Removing The Ion Source



- Remove the filament connectors and support screws (#1,2,&3)
- Loosen but do not remove the set screw on each of the 3 source-plate barrel connectors (#5).
- Remove the 3 screws around the side of the analyzer support tube (#4).

Ion Source Removal and Replacement



- Remove the filament leads and barrel connector

- Remove the other three electrical connectors by loosening the attachment set screws.

- Loosen and remove the ion source base screws and lift the ion up and away.

Lift Away The Ion Source



- Hold the source with tweezers.
- Lift straight up to clear wires.
- You can now replace the ion source as a complete assembly.



!! DO NOT TOUCH !! Quadrupole Rods



- Do not touch anything in the rest of the analyser.
- Replace the ion source in the reverse order being careful to insure that the electrical connections are tight and that the ion source is seated squarely over the mass analyser.

DVM Checks



- With the DVM set to ohms check for the leads filaments for continuity (pins 4,8,& 10)
- Check that the filaments are not shorted to any other part of the analyser
- Install the analyser with a new copper gasket.