

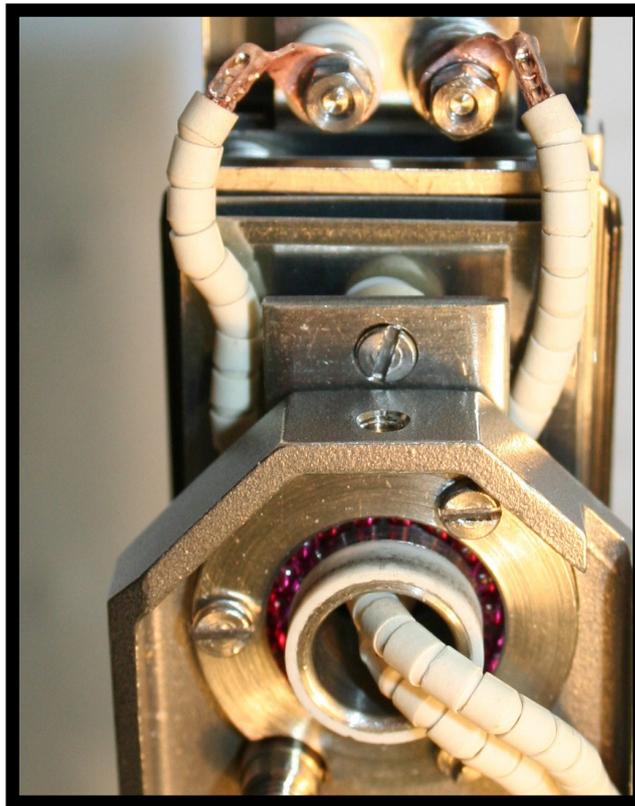


VACGEN

Assembly Guide

EBH Filament AS0036

VGS03-02T36



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DISCLAIMER

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Revision	Date	Comment	Initials
1			
2			
3			

Unit A, Swallow Business Park
Diamond Drive, Lower Dicker
Hailsham, East Sussex
BN27 4EL, UK



Assembly Information EBH Filament

IMPORTANT NOTE: The Filament is Thoria Coated, so use mask and gloves.

NOTE: There are two different setups, one with sapphire balls and one with ceramics.

Place a tray with a cloth below the Heater Assembly when taking apart, so not to lose the Sapphire Balls etc on the floor. **NOTE:** The later version has only ceramics and not sapphire balls, see drawings

1. Lift off the Thermocouple and remove the Heater Connections by undoing the M2 nuts. You will need a screw driver to stop the screw turning.
2. With the heater supported, place finger on sample plate and undo the two M2 counter sunk screws from the top plate. The WHOLE assembly will now be free, so take care.
3. With finger placed on the sample plate and gripping Filament Tray, remove the assembly, leaving the 3 Radiation Shields and 4 Sapphire Balls on the Back Plate.
4. With the Heater Assembly on the table, carefully remove the top plate to reveal the Filament and Support Rods. (Old heater has two pairs of rods supporting the filament, and the new heaters three pairs)
5. Lift off the Support Rods and undo the Filament Post and lift out the Filament.
6. Fit the three new Ceramic Rods if required.
7. Fit the new Filament, (With Keeper Bar still fitted), making sure the Filament is centred as good as possible, so it does not short during heating, as the filament expands.
NOTE: One filament post is in electrical contact with the tray, so the filament and tray are at the same potential.
8. Lay the three Ceramic Rods on the Filament
9. Fit the two support spacers.
10. Carefully place the Sample Plate on to the spacers, making sure the Ceramic Rods do not come out of the Slots.

Slight loss of filament coating does not affect the filaments performance.

NOTE: Wrap a copper wire (No more than 0.5mm soft copper wire) around the Tray and Sample Plate, which will hold it together and makes it easier to assembly. (See photo below)



12. Lay Heater Assembly on four Sapphire balls and make sure it's square.
13. Fit the two ceramics, washers and screws and tighten.
NOTE: On the version without sapphire balls, the tray sits on two ceramics.
14. When refitting Heater Leads, make sure the screw does not twist and damage the Filament.
15. Once you are absolutely sure the filament is centred, and the filament post supports nuts are tight, cut the Keeper Bar and remove the copper wire.
Note that a fine dust cloud will form, so when cutting wear a mask.

Recommended new parts: ZEBHRF Filament & ZEBHCSSK Ceramic Kit

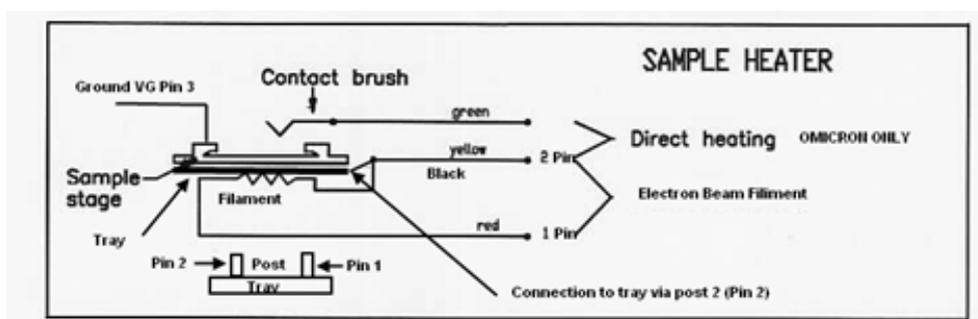
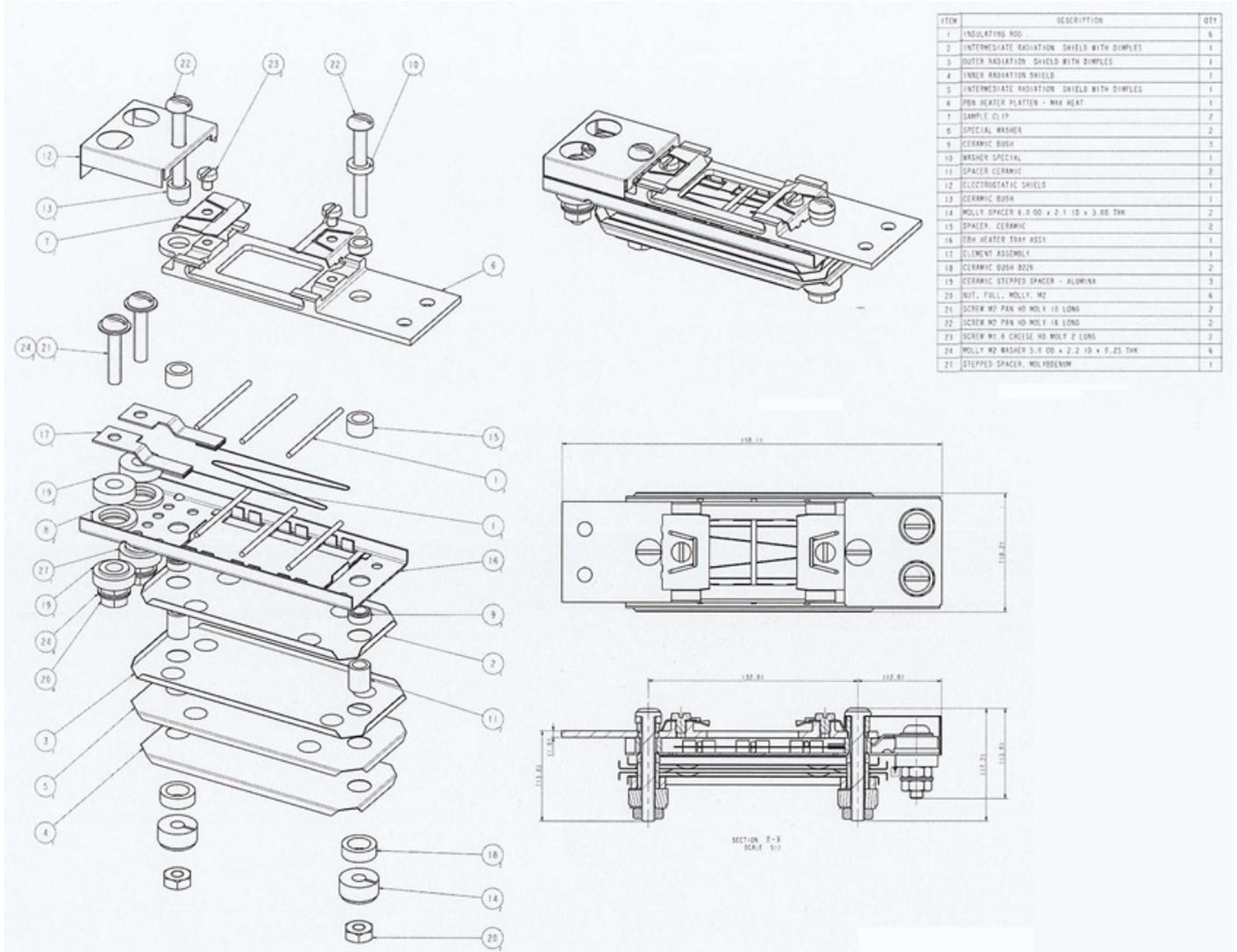
Old version (with Sapphire Balls)

22	Special Screw	4
21	Sample Clip	4
20	Special Washer	2
19	SCREW CSK M2X14	2
18	SCREW PAN M2X10	2
17	EBH Heater Platten Assy	1
16	Insulating Rod	1
15	Filament Assembly	1
14	CERAMIC BUSH D43704A	4
13	EBH Heater Tray Assy.	1
12	CERAMIC BUSH 8227TL	3
11	Special washer	2
10	Spacer Metal, see note 2	2
9	BALL SAPPHIRE 3/32	4
8	Spacer	1
7	Outer Radiation Shield	1
6	Intermediate Rad. Shield	1
5	Inner Radiation Shield	1
4	WASHER PLAIN M2 S/S	4
3	Backplate	1
2	Spacer	2
1	NUT FULL M2 ST.STL.	6

ITEM DESCRIPTION QTY



New version (no Sapphire Balls)





Out Gassing an EBH Filament

1. Set to a lowest temperature, 500°C.
2. Set to on, but no HT, leave this off.
3. Increase filament current slowly to a max of 1.5amps, to see if it heats.
4. This will also start the outgassing the filament.
5. Turn down to 1amp.
6. Switch HT on and watch temperature as it starts to accelerate, but do not touch the amp output until the temperature stabilizes.
7. If it does not reach the set temperature, then VERY SLOWLY increase the amps until it reaches its set temperature.
8. This will stop the wild temperature swings, as it has a steady current input. This will also prevent gas build up in the heater envelope, causing a flash over and possible filament failure.

Once the filament is conditioned

2.75 amps maximum

1.9 amps normal running

Flash heating 1200°C for 1 minute maximum

Continuous heating 900°C

Voltage 30 volts

Filament Iridium wire, Thoria coated

Resistance 0.5 to 1 ohm

