

Replacement Filaments for Electron Microscopes

The filaments supplied by TAAB are made in specially designed jigs to ensure accuracy and reproducibility. High ductility tungsten wire is used to minimise strain in the wire. All filaments are stress relieved by flashing in a vacuum at temperatures above the normal operating level. They are then checked for accuracy of centring. Filament assemblies with alignment screws are set up under a light microscope to ensure they are ready for immediate operation in the EM.

F086 Filaments for **AEI** and all **Cambridge/LEO** microscopes except S2A and S4-10 box of 10

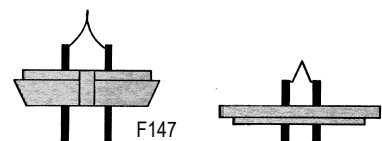


F086

F085

F085 Agar filaments for **AEI** microscopes. Box of 10

F147 Filaments for **JEOL (K type)** box of 6



F147

F146

F146 Filaments for **Philips** box of 10

F087 Filaments for **Siemens** microscopes, **Cambridge S2A, S4-10** and **Cam scan** Single - packed in individual transit tube



F087

F087/1 Filaments as above but packed 20 filaments in special wooden box

F148 Filaments for **ISI/ABT** (2 pin) box of 10

F201 Filaments for **ISI/ABT** (3 pin) box of 10

F202 Filaments for **ISI/ABT** (Bent 2 pin) box 10

F203 Filaments for **Hitachi** (HU series), box of 10

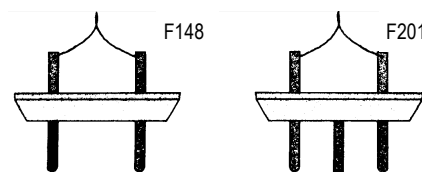
F192 Filaments for **Hitachi** (H, S, and X series) box of 10

F198 Filaments for **Zeiss** box of 10

F204 Filaments for **Amray** (except model 1200) box of 10

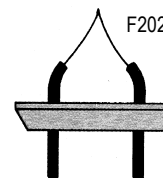
F205 Filaments for **JEOL** (GC type) box of 10

F096 Filament retaining washer for filaments in **Stereoscan S600** each



F148

F201



F202

Filament Repair Service

Most filaments can be accepted for repair provided the bases are in good condition. If the insulators need replacement these will be changed (if available) and charged in addition. Repaired filaments are given the same exacting care as new filaments. All are pre-flashed in vacuum to promote stability in operation and those filaments on bases provided with adjustment screws are subsequently re-centred under the light microscope. The filaments sent for repair must be in a suitable transit box or tube.

F149 Refilamenting **Siemens** type

F150 Refilamenting **JEOL** type

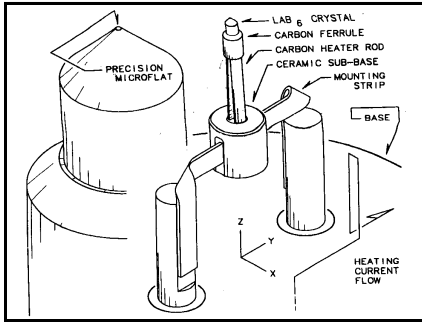
F151 Refilamenting **ISI/ABT**

F206 Refilamenting **Amray**

F207 Refilamenting **Philips**

F208 Refilamenting **Hitachi**

Lanthanum Hexaboride Filaments



Kimball Physics single crystal lanthanum hexaboride cathodes are available for most makes of electron microscopes and other electron beam instruments. These are tiny tips (15 μ m diameter) of lanthanum hexaboride mounted on the end of a single, stress-free carbon heater rod held in place by a carbon ferrule.

In the SEM the extra brightness provided by these filaments promotes better imaging resolution and an improved signal to noise ratio. For microanalytical applications the extra probe current density available using the LaB₆ emitter facilitates the use of finer probes and gives improved counting statistics. For TEM imaging LaB₆ is largely used in applications where high brightness and a low energy spread are required; hence LaB₆ is particularly advantageous for high resolution studies. Lifetimes in excess of six months are regularly achieved in commercial SEM's and TEM's with suitable gun vacuum. LaB₆ is a very economical way of improving the microscope performance but for best results and longest filament life the vacuum in the vicinity of the gun should be of the order of 10⁻⁷ Torr. Operational guide lines for the use of LaB₆ cathodes are available on request.

F209 On Philips base

F210 On Siemens base

F211 On Cambridge/LEO base

F212 On JEOL base

F213 On Zeiss base

F214 On ISI/ABT base

F215 On Hitachi base

F216 On Amray base

F217 On VG base

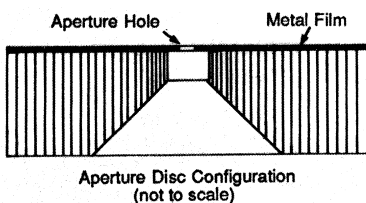
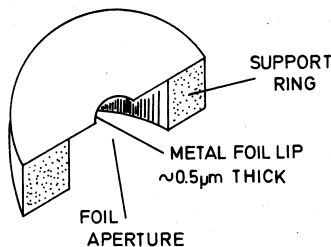
EM Apertures

Thin Film Apertures

Thin film gold apertures are slow to contaminate due to the film "running hot" in the electron beam and to the small critical edge. Optimum working conditions are therefore maintained for a longer period.

They may be cleaned *in-situ* when necessary by exposure to the focused electron beam. Time is saved as down-time is minimised as the vacuum is undisturbed and re-alignment is unnecessary. Thin film apertures are of course more fragile to handle than other apertures and can be irreparably damaged by abrasion or if subject to a sudden rush of air into the vacuum system. All aperture diameters are close tolerance ($\pm 1\mu$ m).

Do not use thin film apertures in the condenser lens due to danger of melting.



Ordering information:

Please quote base number followed by hole size required.

3mm x 0.25mm apertures available in 10, 15, 20, 25, 30, 40, 50, 60, 70, 75, 80, 90, 100, 200, 500 μ m.

2mm x 0.6mm apertures available in 10, 15, 20, 25, 30, 40, 50, 60, 70, 100, 200 μ m.

Examples

T193-100 3mm \varnothing aperture with 100 μ m hole

T193-20 3mm \varnothing aperture with 20 μ m hole

T195-100 2mm \varnothing aperture with 100 μ m hole

T195-30 2mm aperture with 30 μ m hole

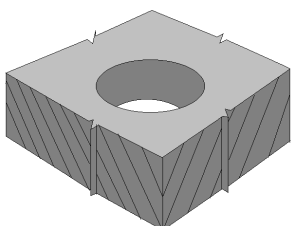
10mm \varnothing Disc Apertures for Zeiss/LEO

10mm \varnothing x 0.1mm thick apertures in molybdenum or platinum for Zeiss and Cambridge/LEO SEM's. Available in 20, 50, 70, 150, 200, 300, 400, 600 and 1000 μ m hole sizes.

Ordering information:

For **molybdenum** use prefix no. **A064** followed by hole size e.g. A064-0020 (20 μ), A064-0300 (300 μ), A064-1000 (1000 μ)

For **platinum** use prefix no. **A065** followed by hole size e.g. A065-0050 (50 μ), A065-0600 (600 μ)

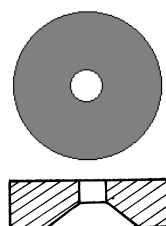


EM Filaments and Apertures

2

Disc Apertures

TAAB stocks a wide range of molybdenum and platinum (95:5 platinum/iridium alloy) apertures. These apertures are manufactured to the very highest standards of accuracy and cleanliness and they offer easy changeability and cleaning. Due to their ability to be heated to higher temperatures in a vacuum coating unit, molybdenum discs are easier to clean than platinum. An accepted way of cleaning platinum discs is to heat them in a butane flame with platinum tipped tweezers. Platinum apertures can be made with holes as small as 5µm whereas molybdenum is limited to 20µm. Some special apertures can be supplied in tantalum. The chart shows our currently stocked sizes but others may be in stock from time to time or can be ordered.



Disc Aperture Selection Chart

Metal Type & Description	5µ	10µ	20µ	25µ	30µ	40µ	50µ	70µ	100µ	150µ	200µ	250µ	300µ	400µ	500µ	600µ	750µ	1000µ
Molybdenum 2mm Ø x 0.6mm		•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•
Platinum 2mm Ø x 0.6mm	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•
Molybdenum 3.04mm Ø x 0.25mm		•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•
Platinum 3.04mm Ø x 0.25mm	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•
Molybdenum 4mm Ø x 0.2mm		•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•
Platinum 4mm Ø x 0.2mm		•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•
Moly 10mm Ø x 0.1mm		•	•			•	•	•	•	•	•		•	•		•		•
Platinum 10mm Ø x 0.1mm		•	•			•	•	•	•	•	•		•	•		•		•
Platinum 12mm Ø x 0.1mm			•			•	•		•	•	•			•				
Molybdenum 12.68mm Ø x 0.25mm	Spray aperture															•		•
Molybdenum 10.5mm Ø x 0.25mm	Spray aperture															•		•
Platinum 10.5mm Ø x 0.25mm	Spray aperture															•		•

Ordering Information: When ordering please quote base catalogue no. followed by hole size of aperture required.

Examples; **A056-0020** (2mm Ø Molybdenum aperture with 20µm hole) **A059-0400** (3.04mm Ø Platinum aperture with 400µm hole)

A056 2mm Ø x 0.6mm Molybdenum aperture

A057 2mm Ø x 0.6mm Platinum aperture

A058 3.04mm Ø x 0.25mm Molybdenum aperture

A059 3.04mm Ø x 0.25mm Platinum aperture

A062 4mm Ø x 0.2mm Molybdenum aperture

A063 4mm Ø x 0.2mm Platinum aperture

A064 10mm Ø x 0.1mm Molybdenum aperture

A065 10mm x 0.1mm Platinum aperture

A071 12mm Ø x 0.1mm Platinum aperture

Spray Apertures

12.68mm Ø x 0.25mm thick used in Cambridge/LEO S2A, S4-10, S180 & Camscan SEM's.

10.5mm Ø x 0.25mm thick used in all Cambridge/LEO except the above models.

A060 12.68mm Ø x 0.25mm Molybdenum spray aperture

A069 10.5mm Ø x 0.25mm Molybdenum spray aperture

A061 10.5mm Ø x 0.25mm Platinum spray aperture

12.68mm spray apertures also available with hole sizes 1500 and 2000µm

10.5mm spray apertures also available with 2000µm hole