

## 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

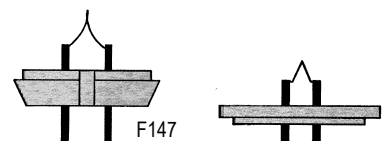


F086

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

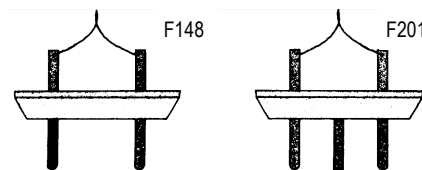
**F192** Filaments for **Hitachi** (H, S, and X series) box of 10

**F198** Filaments for **Zeiss** box of 10

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

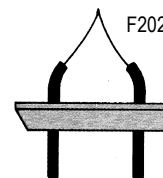
**F205** Filaments for **JEOL** (GC type) box of 10

**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

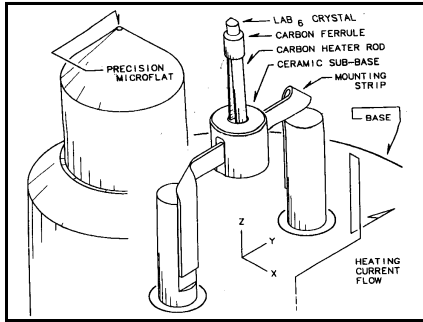
**F151** Refilamenting **ISI/ABT**

**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 $\mu\text{m}$  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 LaB<sub>6</sub> emitter facilitates the use of finer probes and gives improved counting statistics. For TEM imaging LaB<sub>6</sub> is largely used in applications where high brightness and a low energy spread are required; hence LaB<sub>6</sub> 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. LaB<sub>6</sub> 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<sup>-7</sup> Torr. Operational guide lines for the use of LaB<sub>6</sub> 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

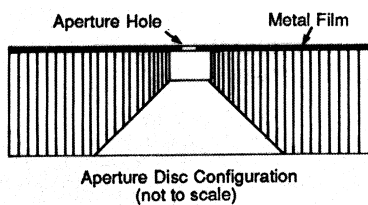
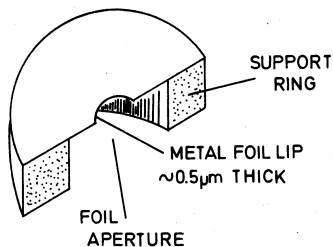
## EM Apertures

### 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 ( $\pm 1\mu\text{m}$ ).

**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 $\mu\text{m}$ .

**2mm x 0.6mm apertures** available in 10, 15, 20, 25, 30, 40, 50, 60, 70, 100, 200 $\mu\text{m}$ .

#### Examples

**T193-100** 3mm  $\varnothing$  aperture with 100 $\mu\text{m}$  hole

**T193-20** 3mm  $\varnothing$  aperture with 20 $\mu\text{m}$  hole

**T195-100** 2mm  $\varnothing$  aperture with 100 $\mu\text{m}$  hole

**T195-30** 2mm aperture with 30 $\mu\text{m}$  hole

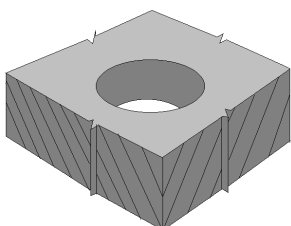
### 10mm $\varnothing$ Disc Apertures for Zeiss/LEO

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 $\mu\text{m}$  hole sizes.

#### Ordering information:

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

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

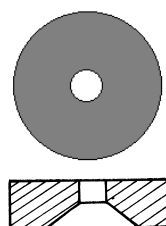


# EM Filaments and Apertures

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## 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