



# HIGH PRECISION APERTURES

- Pinholes with High Edge Definition and Roundness
- Slits with Exceptional Parallelism, Edge Definition and Straightness

The optical industries demand for better quality apertures, has led Pyser-SGI to introduce high definition pinholes and slits. Made to standard or custom designs, these precision apertures have excellent edge definition and exceptional shape accuracy.

With uses in refractometers and other devices, our apertures provide a well defined image without beam scatter (essential in quality laser benches). Ideal in the field of spectrometry, that demands high resolution spectrometer entrance slits, for greater wavelength definition.

The processes of electroforming foil products and vacuum deposition for glass products, are used to manufacture the aperture pattern required, with a very high degree of accuracy and repeatability.

Aperture sizes start from 1 micron for pinholes and 5 micron width for slits. Multiple and strip apertures can be supplied to customer specifications.

Pyser-SGI manufacture apertures in many types of metal foils and they can be fixed in mounts for added rigidity.

An alternative production technique where chrome is vacuum deposited on glass can provide users with aperture patterns of very high complexity.

# HIGH POWER APERTURES

We also provide high power apertures that combine the precision and flexibility of an electroformed product with the requirements expected of a heavy duty copper aperture suitable for many high power laser light control applications.

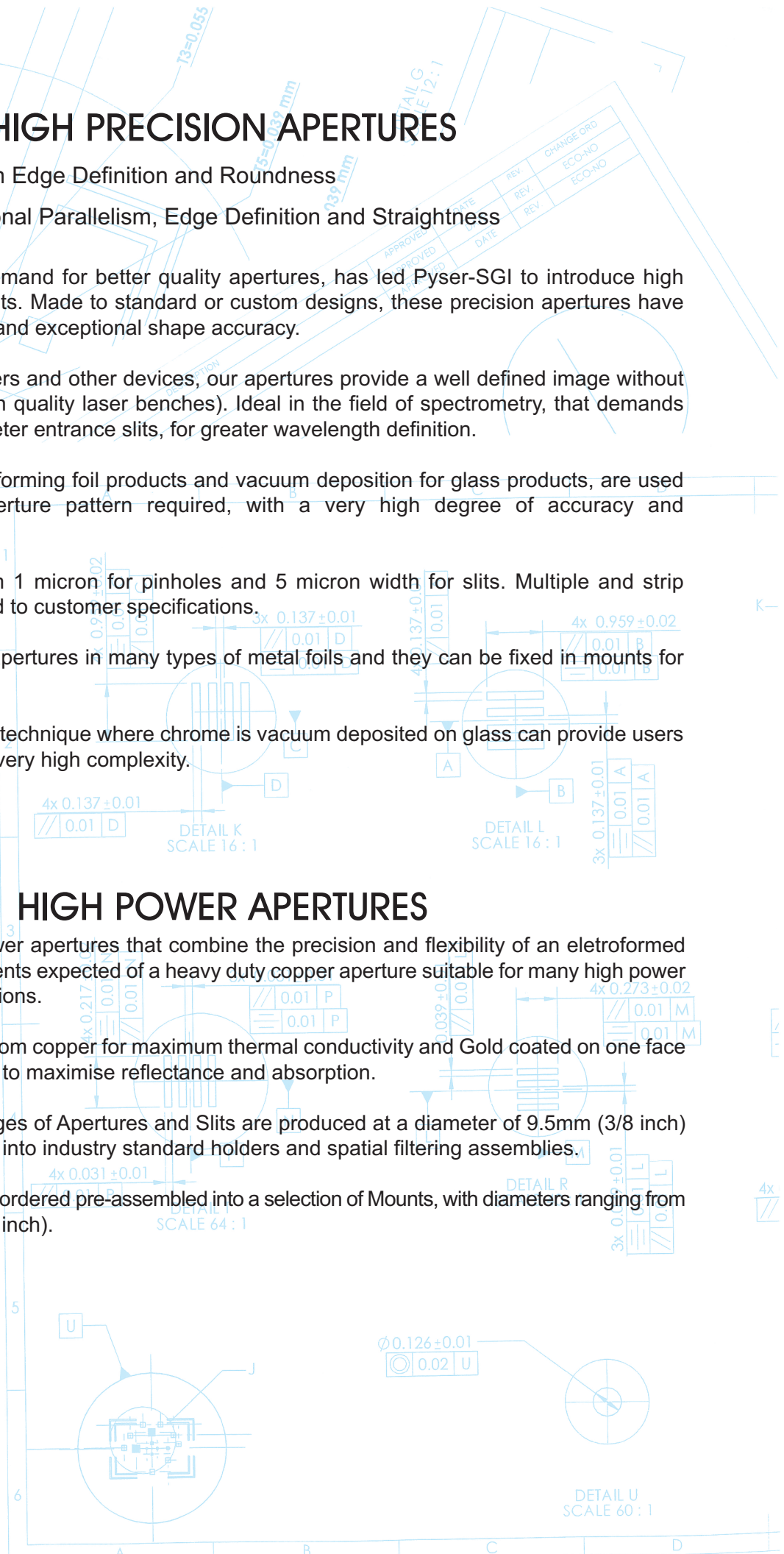
Precision electroformed from copper for maximum thermal conductivity and Gold coated on one face and blacken on the other, to maximise reflectance and absorption.

These High Powered ranges of Apertures and Slits are produced at a diameter of 9.5mm (3/8 inch) to enable direct mounting into industry standard holders and spatial filtering assemblies.

Alternatively these can be ordered pre-assembled into a selection of Mounts, with diameters ranging from 12.5mm (1/2") to 25mm (1 inch).

## NOTES:

- 1) DRAWING NOT TO SCALE
- 2) DIMENSIONS ARE IN MILLI
- 3) MATERIAL: COPPER
- 4) THICKNESS FOR  $\geq 0.05$  FOR  $< 0.05$ mm FOIL TH
- 5) FINISH - SIDE "A" - BL/ (HIGH EMISSIVITY TF SIDE "B" -



# CUSTOM DESIGN APERTURES & SLITS

In addition to Pyser-SGI range of standard Aperture products, we also offer an extensive and cost effective, custom design service.

We specialise in the manufacture of high resolution spectrometer slits for industrial, commercial and space applications.

The high precision offered by our electroforming technique, offers a tremendous advantage to those requiring the best edge definition and parallelism, along with complete flexibility to select any required aperture or slit size.

We can work in numerous materials and provide a mounting and alignment service. Materials include:- Nickel; Copper; Gold; Titanium; Molybdenum; Aluminium; Stainless Steel; Copper/Rhodium.

Select from a wide range of standard products – that include the ability to select your required aperture size, rather than the nearest standard.

If you have a special application in mind, then send us your design or specification, for us to quote against. Alternatively, we will be happy to discuss your requirements with you, to find a practical manufacturing solution to suit your needs.

Please contact us with your design requirements and we will be pleased to assist



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# STANDARD STOCKED APERTURE PRODUCT RANGE

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## High Precision Electroformed Round Apertures

Full range of precision pinholes in a choice of mounts/holders. Select your preferred aperture size from within the range.

## Unmounted long slit foils

Selection of slit widths [5 to 1000 microns] with lengths up to 7.5mm long. Normally supplied as unmounted 10mm diameter copper foils. Can be provided with 16mm aluminium mount/holder.

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## High Precision Electroformed Rectangular Slits

Full range of precision slits in a choice of mounts/holders. Select your preferred slit size from within the range.

## Optical Slits

High optical density opaque chrome on optical quality glass discs.

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## PRODUCT APPLICATIONS

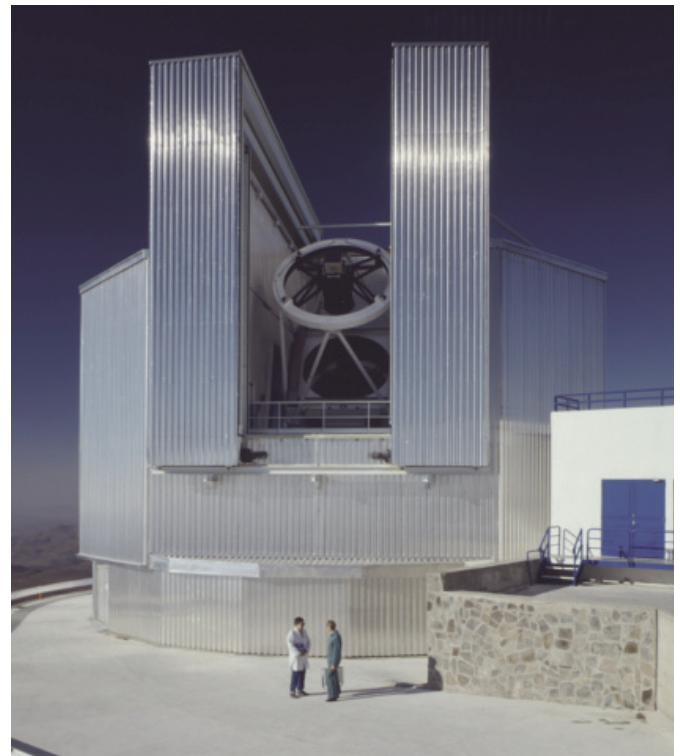
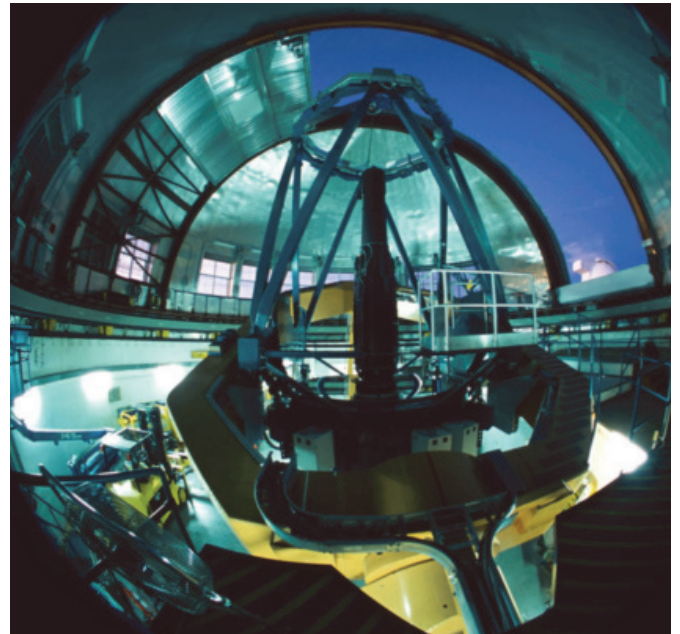
- Spatial Filtering
- High power laser light control
- Gas/Liquid flow control
- Spectrometry
- Fibre optics
- Astronomy
- Molecular beam masks
- Particle counters

- Pinhole cameras
- High quality diffraction patterns

### Q switching applications

- Photometers (Slits)
- Monochrometers (Slits)

# Science and Industrial Applications Worldwide



images courtesy of [www.topfoto.co.uk](http://www.topfoto.co.uk)

# HIGH PRECISION ROUND APERTURES

## (Pyser-SGI 'C' Range)

- Precision Electroformed Apertures
- Nickel construction
- Blacken one side
- Precision construction
- Sharp edge profile
- Foil Thickness  $19\mu\text{m}\pm 5\mu\text{m}$
- Any Aperture size available - specify
- Mounted in 16mm diameter black anodised aluminium holder
- Optional holders also available (12.7mm, 25mm diameter) - please ask

### Precision Circular Aperture

Part Number	Model	Size	Size Tolerance	Roundness
04D00900	C 1	0.001mm (1micron) diameter	+0.5 $\mu\text{m}$ /-0	0.5 $\mu\text{m}$
04D00901	C 2	0.002mm (2micron) diameter	$\pm 0.5\mu\text{m}$	0.5 $\mu\text{m}$
04D00902	C 5	0.005mm (5micron) diameter	$\pm 0.5\mu\text{m}$	0.5 $\mu\text{m}$
04D00903	C 10	0.01 (10 microns) diameter	$\pm 1.0\mu\text{m}$	0.5 $\mu\text{m}$
04D00904	C 25	0.025mm (25micron) diameter	$\pm 1.0\mu\text{m}$	1.0 $\mu\text{m}$
04D00905	C 50	0.05mm (50micron) diameter	$\pm 2.0\mu\text{m}$	1.0 $\mu\text{m}$
04D00906	C 100	0.1mm(100micron) diameter	$\pm 3.0\mu\text{m}$	3.0 $\mu\text{m}$
04D00907	C 250	0.25mm(250micron) diameter	$\pm 4.0\mu\text{m}$	3.0 $\mu\text{m}$
04D00908	C 1000	1.0mm(1000micron) diameter	$\pm 5.0\mu\text{m}$	3.0 $\mu\text{m}$
04D00999	C ???	Selected Diameter		

Select Aperture size in microns  
 Circular Aperture @ 65 microns diameter = P/N 04D00999 C65



# HIGH PRECISION RECTANGULAR SLITS

## (Pyser-SGI 'L' Range)

- Precision Electroformed Slits
- Nickel construction
- Blacken one side
- Precision construction
- Sharp edge profile
- Foil Thickness  $19\mu\text{m}\pm 5\mu\text{m}$
- Any Slit width size (length fixed to nearest standard available) - specify
- Mounted in 16mm diameter black anodised aluminium holder
- Optional holders also available (12.7mm, 25mm diameter) - please ask

### Precision Rectangular Slit

Part Number	Model	Size	Size Tolerance	Straightness over length
04D00950	L2	0.002mm wide 1.0mm long	+0.5 $\mu\text{m}$	0.5 $\mu\text{m}/\text{mm}$
04D00951	L5	0.005mm wide 1.0mm long	$\pm 0.5\mu\text{m}$	0.5 $\mu\text{m}/\text{mm}$
04D00952	L10	0.01mm wide x 1.5mm long	$\pm 0.5\mu\text{m}$	0.5 $\mu\text{m}/\text{mm}$
04D00953	L25	0.025mm wide x 1.5mm long	$\pm 1.0\mu\text{m}$	0.5 $\mu\text{m}/\text{mm}$
04D00954	L50	0.05mm wide x 2mm long	$\pm 2.0\mu\text{m}$	0.5 $\mu\text{m}/\text{mm}$
04D00955	L100	0.1mm wide x 2mm long	$\pm 3.0\mu\text{m}$	0.5 $\mu\text{m}/\text{mm}$
04D00956	L250	0.25mm wide x 2mm long	$\pm 3.0\mu\text{m}$	0.5 $\mu\text{m}/\text{mm}$
04D00998	L ???	Selected Width		

Select Aperture size in microns  
 Rectangular Slit @ 65 micron width = P/N 04D00998 L65



# Un-mounted long slit foils

[Pyser-SGI 'LW' Range]

Selection of slit widths [5 to 1000 microns] with lengths up to 7.5mm long normally supplied as unmounted 10mm foils, blackened one side. Can be provided with 16mm aluminium mount/holder.



Pattern	Description	Order Code
LW5	Rectangular slit 0.005mm wide x 3.0mm long	04D00980
LW10	Rectangular slit 0.01mm wide x 3.0mm long	04D00981
LW25	Rectangular slit 0.025mm wide x 5.0mm long	04D00982
LW50	Rectangular slit 0.05mm wide x 5.0mm long	04D00983
LW100	Rectangular slit 0.1mm wide x 7.5mm long	04D00984
LW250	Rectangular slit 0.25mm wide x 7.5mm long	04D00985
LW500	Rectangular slit 0.5mm wide x 7.5mm long	04D00986
LW1000	Rectangular slit 1.0mm wide x 7.5mm long	04D00987





# Optical slits on Glass

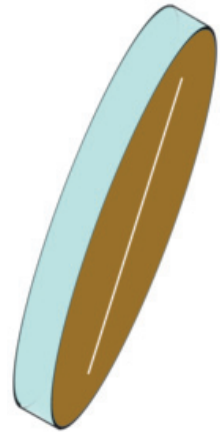
[Pyser-SGI 'LG' Range]

High optical density opaque chrome on optical quality glass discs.

Used as Spectrophotometer entrance and exit slits or Imaging and alignment applications.

Manufactured using photo-etched chrome on optical glass, allows the use of longer slits than air type. Some transmission frequency limitations can be imposed by substrate.

*Note: The efficiency of such fine apertures can be noticeably affected by dust particles. They should be stored in dust free envelopes and, when necessary, cleaned ultrasonically.*



Pattern	Description	Order Code
LG5	Metal filter slit on glass 0.005mm wide x 10.0mm long	04B01000
LG10	Metal filter slit on glass 0.01mm wide x 10.0mm long	04B01001
LG25	Metal filter slit on glass 0.025mm wide x10.0mm long	04B01002

Many other Slit/Aperature sizes and pattern types are available to your design upon request.

Chrome coating is applied to substrate, providing an opaque layer with optical density (typically OD4+). Standard optical substrates include Crown B270 of soda lime, green float glass. Alternatively specified optical glasses can be provided, such as BK7, Sapphire, Quartz and Fused Silica.



[pyser-sgi.com](http://pyser-sgi.com)



# Pyser-SGI Graticules Division

High quality precision Apertures, Micropatterns and TEM specimen grids for Industry and Science

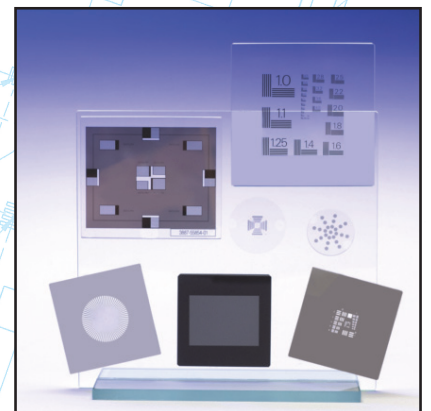
Products ranging from Special Custom Designed Microstructures to our advanced fine lined, high accuracy calibration grids and scales.

With over 60 years of experience, we also have a vast catalogue of standard products to call upon including products now accepted as international industry standard patterns.

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# Applications

Here are just a few examples of the applications where Pyser products are being used.

## Metrology:

Encoder disks, linear gratings, positional calibration plates, calibration scales and grids, screens

## Analytical Instrumentation:

Calibration targets, precision slits, pinholes

## Military:

Binocular reticles, gunsight reticles (day and night), boresights, targets, resolution charts

## Microscopy:

Eyepiece reticles, stage micrometers, calibration standards

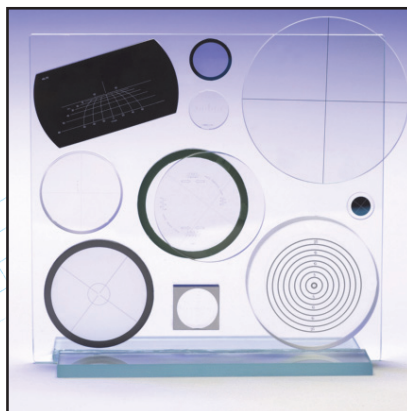
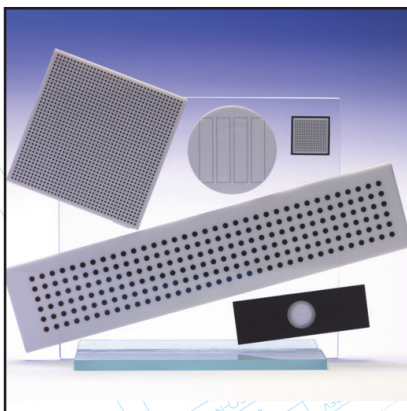
## Research:

Resolution charts, targets, precision apertures, bacterial examination and culture growing.

## Quality Control:

Calibration standards, scales and grids, precision apertures, asbestos analysis.

## Electron Microscopy:

 TEM grids, aperture plates

# Other products



Please contact Pyser-SGI Limited



Pyser-SGI Limited reserves the right to amend these specifications. Visit our website on [www.pyser-sgi.com](http://www.pyser-sgi.com) for further information on the complete range of products available from Pyser-SGI Limited.



**PYSER - SGI LIMITED**  
 Fircroft Way, Edenbridge, Kent,  
 United Kingdom, TN8 6HA  
 Telephone: +44 (0)1732 864111  
 Facsimile: +44 (0)1732 865544  
 Email: [sales@pyser-sgi.com](mailto:sales@pyser-sgi.com)  
[www.pyser-sgi.com](http://www.pyser-sgi.com)  
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