

Spectra –MG80

Ken Harrison June 2011

(Corrected April 2014)

Introduction

The MG80 was initially conceived and trialled as a “Monk-Gillieson” configuration. (See Diffraction Grating Handbook, p78).

The aberrations introduced at the 90 degree total angle proved too extreme. The concept was then upgrade to provide an entrance slit and collimating lens.

The whole instrument (with the exception of the simple grating support), is based on using and assembling standard off-the-shelf components.

General Construction

The Surplus Shed adjustable slit is mounted in a T thread spacer which in turn is mounted on a longer T thread spacer which has a x0.5 reducer lens (80mm fl.)fitted. A Vixen flip mirror housing is used to support the grating assembly (See later) and a T thread to M49 adaptor are used to fit a Zuiko 50mm lens for imaging.



Assembled MG89 with Canon Camera



Components used in the assembly of the MG80

Grating fitment and assembly

A small section of 20mm x 1.6mm aluminium flat bar (Item 5) was bend to approx. 40 degrees and mounted as shown on a small brass hinge

A 2.5mm hole was drilled and tapped M3 for the adjusting screw and a small weak spring introduced.

The 3mm custom rear plate (Item6) was hand cut to fit the rear opening of the Vixen flip mirror body.

The 30mm sq., grating was then fitted to the aluminium angle as shown with double sided tape. (Note the direction of the blaze arrow.)

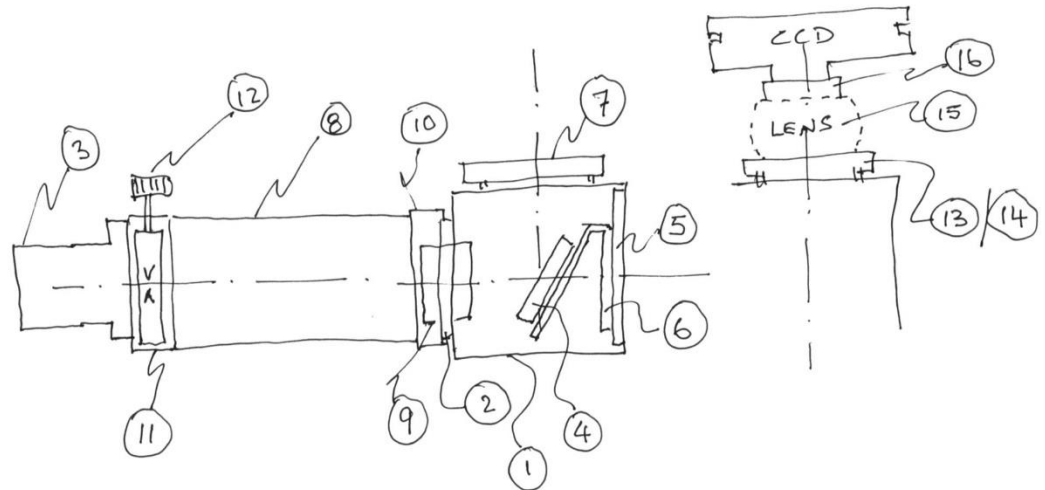


Grating holder assembly

Parts List

SPECTRA - M G 80
(SEE PARTS LIST FOR DETAILS.)

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JUNE 2011.



Kent

Base Unit

- 1 Vixen Flip Mirror Body (mirror and nosepiece removed)
- 2 6mm T thread spacer (male to female) (Baader # BA T2V 15)
- 3 1.25" (or 2") T thread nosepiece (Baader # BA 2458105/ #BA 2408150)
- 4 Optometrics 300 l/mm, 30mm x 30mm blazed (500nm) reflection grating
- 5 Replacement rear plate (DIY)
- 6 Grating support frame (DIY)
- 7 T2 adaptor for CCD/ camera (Baader #BA2458010 or Baader # BA 2458125?)

With Adjustable Slit/ Collimator/ Imaging lens

- 8 T thread spacer – 75.2mm long (Collimator tube – See Notes)
- 9 ATiK x0.5 1.25" filter reducer lens (80mm fl, f3)
- 10 Baader T thread to filter adaptor (#BA 1508030)
- 11 15mm T thread spacer (to hold slit) (Baader # BA T2V 15) (See Notes)
- 12 Surplus Shed adjustable Slit mechanism, #1570D
- 13 Telescope Service T thread to 48mm filter thread adaptor (TSM48-T2)
- 14 Camera step-up rings to suit camera lens (i.e. 48 – 55mm)
- 15 50mm f1.8 camera lens (E.g. Pentax/ Zuiko/ Canon etc)
- 16 Camera lens to 1.25" adaptor (or lens to T thread to suit CCD) (DIY or Mogg)

With Beamsplitter guider

- 17 Modified Vixen Flip body with “microslide” beamsplitter/ pellicle (See Notes)
- 18 T thread Spacers – to suit guide camera requirements

NOTES:

Item 5

This replaces the nosepiece assembly on the Vixen flip. The T thread ports are used to mount the nosepiece/ collimator and the imaging system.

Item 6

This holds the grating at the required angle to give optimum spectral coverage.

Item 8

Can be configured using a 40mm T thread spacer (# BA T2V 40) and the Baader T thread – 1.25” /T thread adjustable adaptor (#BA 2458010).

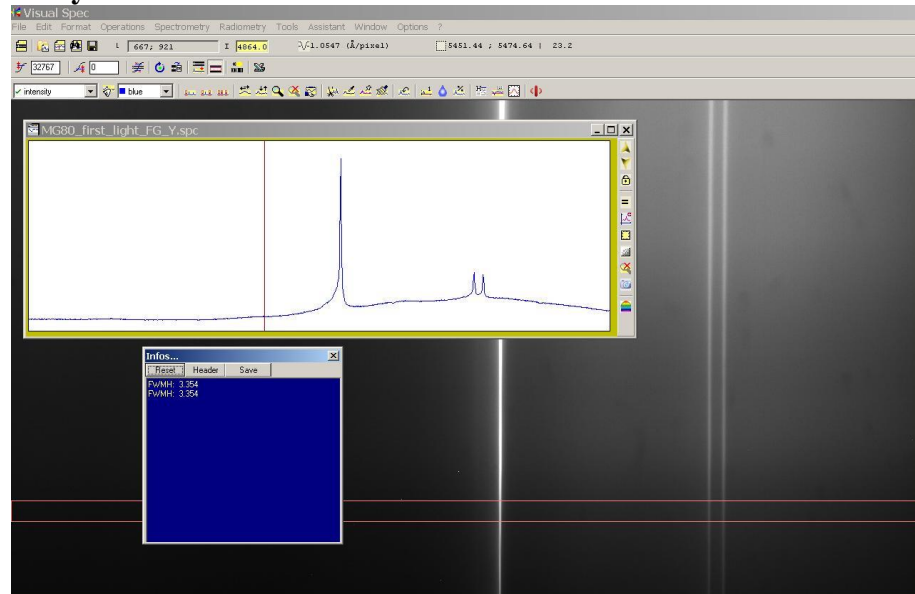
Item 11

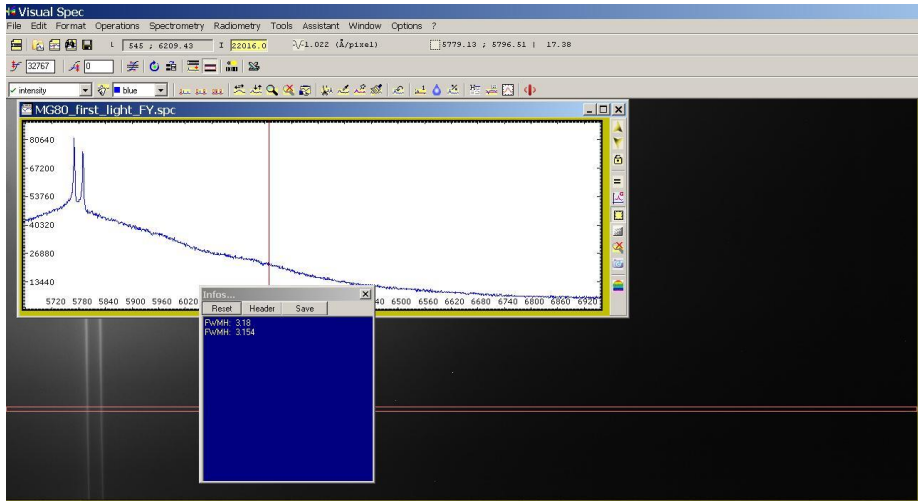
This can be modified to hold the S/S slit. See “Astronomical Spectroscopy for Amateurs”, p 186.

Item 17

This can be modified to hold the beamsplitter. See “Astronomical Spectroscopy for Amateurs”, p 220.

Early Results





Suppliers

T thread adaptors

<http://www.telescope-service.com/baader/adaptors/adaptors.html#T2>

<http://www.teleskop->

[express.de/shop/index.php?manufacturers_id=39&sort=&XTCsid=mas033kttbjvd23ptiu0sg8d33cmsrg&filter_id=122](http://www.teleskop-express.de/shop/index.php?manufacturers_id=39&sort=&XTCsid=mas033kttbjvd23ptiu0sg8d33cmsrg&filter_id=122)

Vixen flip mirrors and reducers

<http://www.modernastronomy.com/accessories.html#accFocalReducers>

Adjustable slits

<http://www.surplussed.com/>

Reflection gratings

<http://www.optometrics.com/>

Camera lens adaptors

<http://moggadapters.com/astro/adapter.asp>