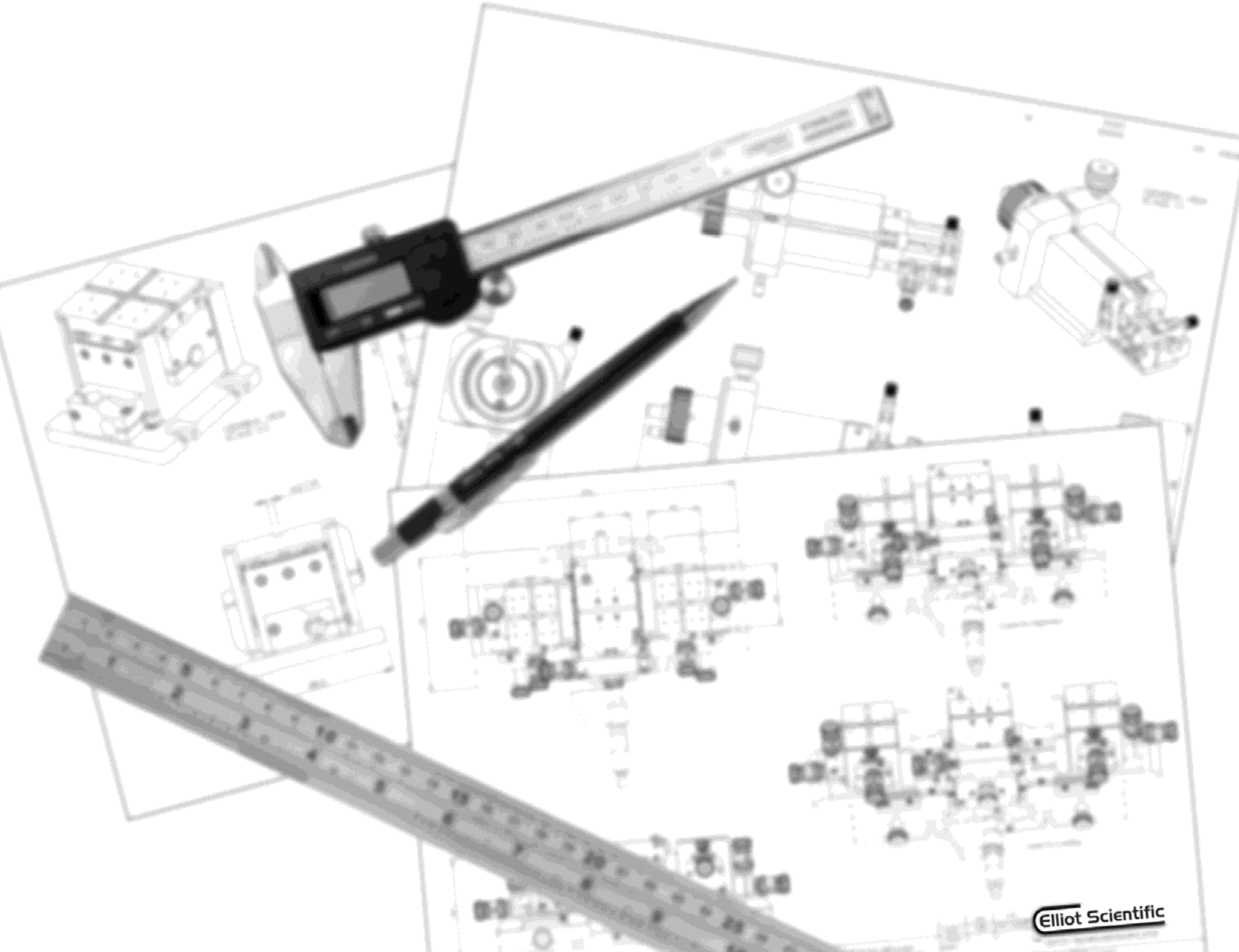
Fibre Launch Systems

Mini-Catalogue

2013



Company Profile

Elliot Scientific is a major supplier of Opto-Mechanic components and systems under the Elliot|Martock and Elliot Scientific brands to the Scientific, Research and Industrial communities. In addition, we supply world-class Laser, Cryogenic, Magnetic, Telecom and Datacom systems sourced from many British, North American, European and Far Eastern companies.

Elliot Scientific is uniquely positioned to assist customers by being able to:

- Supply competitive components and systems
- Source, integrate and manufacture complex systems
- Design and manufacture for Custom or OEM requirements

Elliot|Martock

Martock Design became a wholly owned subsidiary of Elliot Scientific in 2003 following thirty years at the forefront of design, development and manufacture of high quality precision instruments and equipment. That tradition continues today as we continually strive to improve and expand the ranges of Elliot|Martock and Elliot Scientific own brand products.

These include our award winning optical tweezer systems, the lab essentials mirror mount range, fibre positioning components, waveguide manipulators, automated alignment systems, micropositioners and other class-leading products.

All of our customers - from academic institutions and government agencies through to commercial researchers and industry - are provided with the highest levels of service backed up by solid technical support from our team of experienced engineers.

Solution Science for Research and Industry

We pride ourselves in offering Solution Science for Research and Industry. We employ the best-qualified staff and scientists to help you sift through the multitude of options available to get the equipment and systems that match your needs. That's ***Solution Science***.

Staff

We employ PhD level physicists, scientists and mechanical design engineers to assist you with your product search or application, and to ensure that our advice is correct and balanced. Many of the team have been with us for over ten years, bringing with them a huge amount of experience for you to tap into.

Quality

We have been BS EN ISO 9002 registered since 1993 and BS EN ISO 9001 registered since 2003. We understand the need for continual improvement in services and traceability, both in distribution and manufacture. Our commitment to this ensures our standards are the highest in our industry.

Catalogue & Custom Manufacturing

This catalogue only gives an overview of our extensive range. If you cannot find what you are looking for here, why not phone, fax or e-mail us. Many products have been supplied that started as ideas and concepts requested by customers requiring tailored manipulation systems. With our innovative design experience, we can offer unique solutions in opto-mechanical positioning and control systems. We are here to help you find the right products to meet your requirements.

Elliot Scientific Limited

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Registered in England No. 2460146

VAT Registration No. GB 540 1277 78

WEEE Registration No. WEE/DF0052TQ

Elliot Gold™ Series: Fibre Launch Solutions

MDE510 Fibre Launch System with High-Precision Adjusters

- 20 nm resolution with patented† high resolution adjusters
- Ultra-stable patented†† design XYZ flexure stage
- Suitable for singlemode fibre (125/250 µm cladding/jacket)
- Orthogonal alignment grooves
- 2 mm travel per axis
- 4.5 kg load capacity

Elliot Gold™ series fibre launch system comprising: 3-axis high-precision manual flexure stage with adjustable force fibre holder, objective lens mount with RMS thread, and small fixed bracket. Suitable for launching free space light beams into singlemode fibre.

All accessories are compatible with the Elliot Gold™ series flexure stages. The optical axis height is 18 mm above the platform surface and on the centre line of the location slot. Where necessary a locating tongue forms part of the accessory.

A standard clamp system is used and is supplied with the flexure stages and accessory platforms. The clamp set (MDE154) is available separately if required.

System Constituents:

MDE710 Adjustable force fibre holder

MDE330 Elliot Gold™ series XYZ High Precision Flexure Stage

MDE216 High precision manual adjusters (x3)

MDE154 Clamp Set

MDE150 Objective mount (RMS thread)

MDE148 Small fixed bracket

Specifications

Configuration	Right handed version
Fibre holder (Standard)	Double V-groove & clamp arms for 125/250 µm cladding/jacket fibre. Spring-loaded clamp arm force adjusts from 25 to 125 g
Fibre holder (Variants)	FC mount: Specify MDE510FC SMA mount: Specify MDE510SMA
Adjuster Type	Three high precision adjusters (Model MDE216) utilising a patented† lever system with rotary fine and coarse control
Stage travel	2 mm in X, Y and Z axes
Resolution	20 nm
Load capacity	4.5 kg
Arcuate Displacement	X axis 20 µm, Y and Z axes 14 µm (at maximum range of travel)
Optical axis	94 mm above the bottom of the stage
Objective mount	Removable stainless steel sleeve with RMS thread (0.800"-36). Allows on-axis adjustment and exchange of objectives or suitably mounted aspheric or ball lenses

Options

Left-handed version (to special order)

Custom sized V-grooves

† Patent Nos. GB 2152616B & USA 4617833

†† Patent Nos. GB 2129955B & USA 4635887

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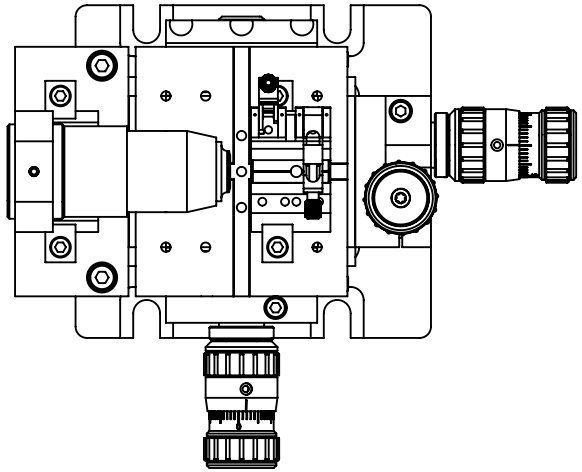
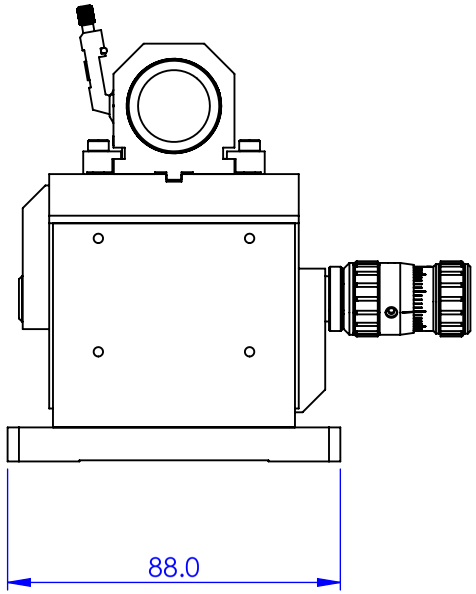
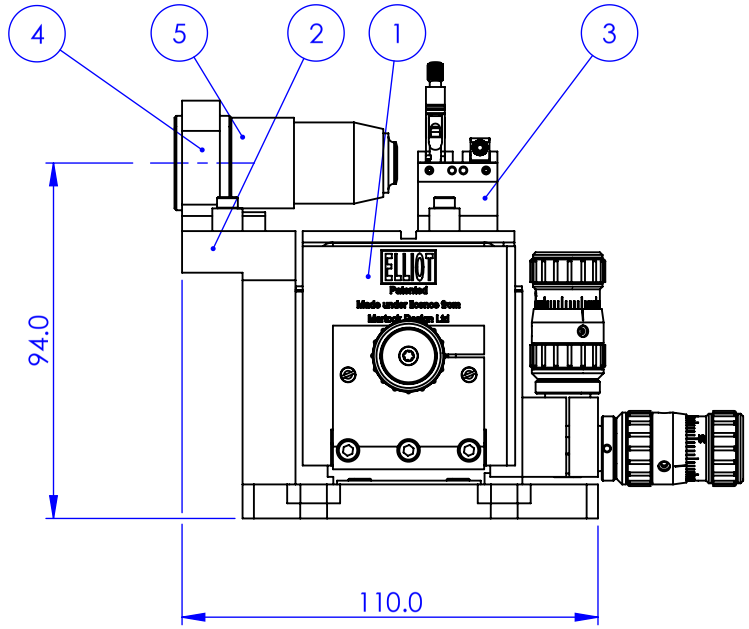
REVISIONS			
REV.	DESCRIPTION	DATE	APPROVED

PART NO.	ITEM NO.	QTY.	DESCRIPTION
MDE122	1	1	XYZ STAGE WITH MDE216 ADJUSTERS
MDE148	2	1	SMALL PLATFORM ASSEMBLY
MDE150	4	1	OBJECTIVE MOUNT
MDE173*	5	1	ES OBJECTIVE
MDE710	3	1	FIBRE HOLDER

* MDE173 not included in MDE510







DIMENSIONS ARE IN mm
GENERAL TOLERANCES: ± 0.1
ANGULAR TOLERANCES: ±
SURFACE FINISH:
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	NAME	DATE
AUTHOR		09/08/2010
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MATERIAL

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Elliot Scientific

TITLE
FIBRE LAUNCH SYSTEM

SIZE A4 | DWG. NO. MDE510

SCALE:1:2 | THIRD ANGLE PROJECTION | SHEET 1 OF 1

Elliot Gold™ Series: Fibre Launch Solutions

MDE511 Fibre Launch System with Simple Adjusters

- Suitable for multimode fibre (125 µm)
- Orthogonal alignment grooves
- 200 nm resolution with 2 mm travel per axis
- 4.5 kg load capacity
- Ultra-stable patented† design XYZ flexure stage

Elliot Gold™ series fibre launch system comprising: 3-axis simple manual flexure stage with basic fibre holder, objective lens mount with RMS thread, and small fixed bracket. Suitable for launching free space light beams into multimode fibre.

All accessories are compatible with the Elliot Gold™ series flexure stages. The optical axis height is 18 mm above the platform surface and on the centre line of the location slot. Where necessary a locating tongue forms part of the accessory.

A standard clamp system is used and is supplied with the flexure stages and accessory platforms. The clamp set (MDE154) is available separately if required.

System Constituents:

MDE711 Fibre holder

MDE330 Elliot Gold™ series XYZ High Precision Flexure Stage

MDE217 Manual adjusters 0.25 pitch (x3)

MDE154 Clamp Set

MDE150 Objective mount (RMS thread)

MDE148 Small fixed bracket

Specifications

Configuration	Right handed version
Fibre holder	Single V-groove to suit 125 µm fibre with magnetic clamping arm.
Adjuster Type	Three imple manual adjusters, 0.25 pitch (Model MDE217)
Stage travel	2 mm in X, Y and Z axes
Resolution	200 nm
Load capacity	4.5 kg
Arcuate Displacement	X axis 20 µm, Y and Z axes 14 µm (at maximum range of travel)
Optical axis	94 mm above the bottom of the stage
Objective mount	Removable stainless steel sleeve with RMS thread (0.800"-36). Allows on-axis adjustment and exchange of objectives or suitably mounted aspheric or ball lenses

Options

Left-handed version (to special order)

Custom sized V-grooves

† Patent Nos. GB 2129955B & USA 4635887

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Elliot Gold™ Series: Fibre Launch Solutions

MDE520 High-Precision Polarisation Maintaining Fibre Launch System

- 5 arc seconds rotational resolution
- Orthogonal alignment grooves
- 2 mm travel per axis
- Suitable for PM fibre (125/250 µm cladding/jacket)
- Ultra-stable patented† design XYZ flexure stage
- 20 nm linear resolution with patented†† high resolution
- adjusters

Elliot Gold™ series polarisation maintaining (PM) fibre launch system comprising: 3-axis high precision flexure stage with high precision fibre rotator, objective lens mount with RMS thread, and large fixed bracket. Suitable for launching free space light beams into PM fibre.

PM fibre requires that the roll axis be adjusted to ensure correct alignment of the laser polarisation and fibre polarisation axes.

All accessories are compatible with the Elliot Gold™ series flexure stages. The optical axis height is 18 mm above the platform surface and on the centre line of the location slot. Where necessary a locating tongue forms part of the accessory.

A standard clamp system is used and is supplied with the flexure stages and accessory platforms. The clamp set (MDE154) is available separately if required.

System Constituents:

MDE717 High precision fibre rotator

MDE330 Elliot Gold™ series XYZ High Precision Flexure Stage

MDE216 High precision manual adjusters (x3)

MDE154 Clamp Set x 2

MDE150 Objective mount (RMS thread)

MDE147 Large fixed bracket

Specifications

Configuration	Right handed version
Fibre holder	Double V-groove & clamp arms for 125/250 µm cladding/jacket fibre. Spring-loaded clamp arm force adjusts from 25 to 125g
Fibre rotation	Full 360° rotation Engraved scale ± 90° Vernier reads to 30 arc minutes Fine adjustment screw with 5 arc seconds resolution Range ± 5° V-block preset on axis with < 1 µm concentricity error V-block can be re-centred by user
Adjuster Type	Three high precision adjusters (Model MDE216) utilising a patented†† lever system with rotary fine and coarse control
Resolution	20 nm
Load capacity	4.5 kg
Arcuate Displacement	X axis 20 µm, Y and Z axes 14 µm (at maximum range of travel)
Optical axis	94 mm above the bottom of the stage
Objective mount	Removable stainless steel sleeve with RMS thread (0.800"-36). Allows on-axis adjustment and exchange of objectives or suitably mounted aspheric or ball lenses

Options

Left-handed version (to special order)

Custom sized V-grooves

Elliot Gold™ Series: Fibre Launch Solutions

MDE521 Standard Polarisation Maintaining Fibre Launch System

- ~ 0.1 degrees rotational resolution
- Suitable for PM fibre (125 µm)
- Orthogonal alignment grooves
- 200 nm resolution
- 2 mm travel per axis
- 4.5 kg load capacity
- Ultra-stable patented† design XYZ flexure stage

Elliot Gold™ series polarisation maintaining (PM) fibre launch system comprising: 3-axis simple manual flexure stage with standard fibre rotator, objective lens mount with RMS thread, and small fixed bracket.

PM fibre requires that the roll axis be adjusted to ensure correct alignment of the laser polarisation and fibre polarisation axes.

All accessories are compatible with the Elliot Gold™ series flexure stages. The optical axis height is 18 mm above the platform surface and on the centre line of the location slot. Where necessary a locating tongue forms part of the accessory.

A standard clamp system is used and is supplied with the flexure stages and accessory platforms. The clamp set (MDE154) is available separately if required.

System Constituents:

MDE718 Fibre rotator

MDE330 Elliot Gold™ series XYZ High Precision Flexure Stage

MDE217 Manual adjusters 0.25 pitch (x3)

MDE154 Clamp Set

MDE150 Objective mount (RMS thread)

MDE148 Small fixed bracket

Specifications

Configuration	Right handed version
Fibre holder	V-groove & single clamp arm for 125 µm fibre. Spring-loaded clamp arm force adjusts from 25 to 125 g
Fibre rotation	Full 360° rotation. Resolution approx 0.1 degrees
Adjuster Type	Three simple manual adjuster, 0.25 pitch (Model MDE217)
Stage travel	2 mm in X, Y and Z axes
Resolution	200 nm
Load capacity	4.5 kg
Arcuate Displacement	X axis 20 µm, Y and Z axes 14 µm (at maximum range of travel)
Optical axis	94 mm above the bottom of the stage
Objective mount	Removable stainless steel sleeve with RMS thread (0.800"-36). Allows on-axis adjustment and exchange of objectives or suitably mounted aspheric or ball lenses

Options

Left-handed version (to special order)

Custom sized V-grooves

† Patent Nos. GB 2129955B & USA 4635887

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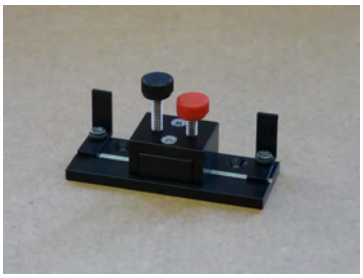
Elliot Gold™ Series: Fibre Launch Solutions: Accessory

ETB100 Fibre to Fibre Alignment Block



- Can be used with index matching gel to minimise coupling loss
- Quick and easy mechanical coupling of two bare fibres without splicing
- Simple and economical design

Designed to allow two bare fibres to be coupled quickly and easily without the need for splicing in applications such as OTDR testing.

For the latest price, contact us today.

Elliot Gold™ Series: 2 & 3-axis Rotation Modules

MDE183 Pitch and Yaw Stage with Simple Adjusters

ELLIOT MARTOCK

- Pitch and yaw adjustment about a single point in space
- ± 3° range in pitch (θY), ± 5° range in yaw (θZ): Resolution 2.0 arc secs
- Rotation in a true arc - no cross-talk
- Excellent long-term stability
- Swing-out pointer identifies the centre of rotation
- Fits Elliot Gold™ Series XYZ flexure stage to provide 5 & 6 axis operation
- Right or left-handed configuration available
- Add optional fibre or fibre array rotation holders to provide roll axis adjustment
- Standard fibre holders fit top plate

The MDE183 and MDE185 Rotation Stages add pitch and yaw adjustments to the Elliot Gold™ Series XYZ flexure stages. Applicable to a wide range of fibre and device alignment tasks requiring the ultimate in flexibility and precision control.

The MDE183 pitch and yaw module provides a ± 3° range in pitch and a ± 5° range in yaw, with a resolution of 2.0 arc secs. The module has a locating slot to accept Elliot/Martock standard top plate accessories such as fibre holders allowing bare fibre, ribbon cable and connectorised fibre to be used with the rotation module. A locating tongue on the base interfaces with the top plate of the flexure stages. When fitted with a fibre rotator and attached to a stage, the module allows 6-axis manipulation of a fibre about a single point in space. A swing-out pointer identifies the rotation centre for ease of use.

The MDE183 and MDE185 can be used with various top plate accessories from the Elliot/Martock range. These stages can also be mounted on riser blocks for 94 mm or 125 mm optical axis height. The MDE190 riser block is used to extend the axis height of an MDE147 or MDE148 bracket to 125 mm for 5 or 6 axis fibre launch applications.

All accessories are compatible with the flexure stages. The optical axis height is 18 mm above the platform surface and on the centre line of the location slot. Where necessary a locating tongue forms part of the accessory. A standard clamp system is used and all accessories requiring attachment in this format are supplied with a clamp set.

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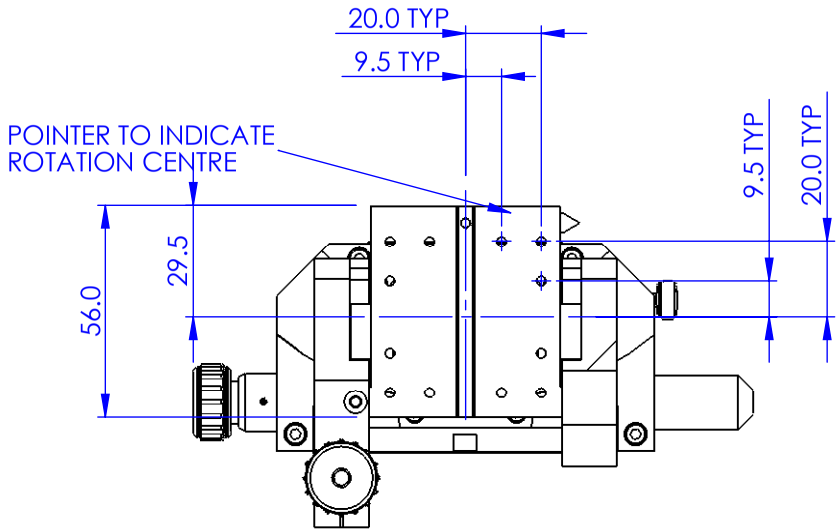
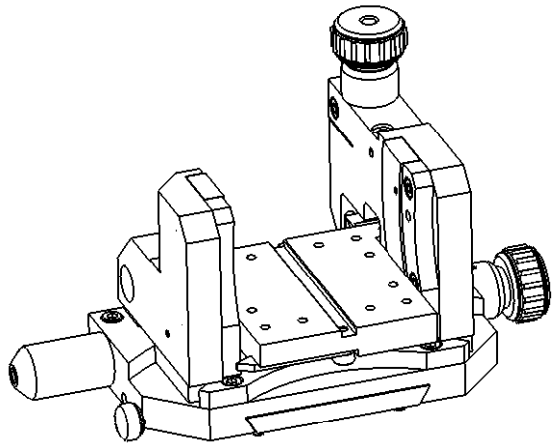
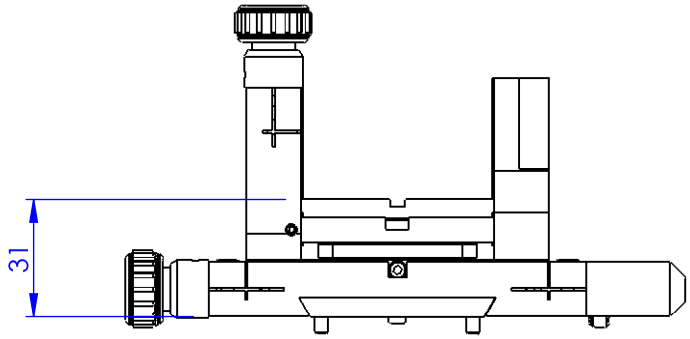
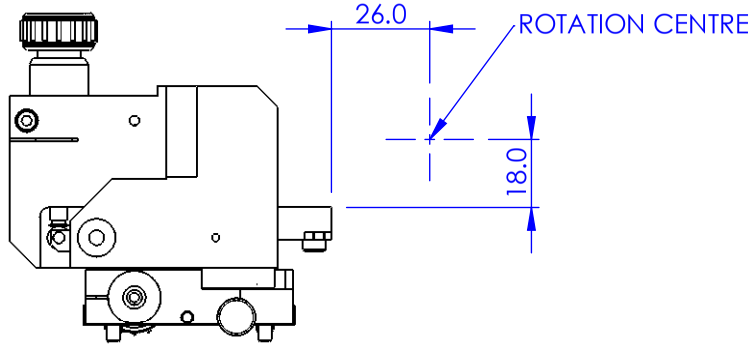
REVISIONS			
REV.	DESCRIPTION	DATE	APPROVED









DIMENSIONS ARE IN mm
GENERAL TOLERANCES: ± 0.1
ANGULAR TOLERANCES: ±
SURFACE FINISH:
ALL BURRS, SHARP EDGES AND CORNERS TO BE REMOVED

	NAME	DATE
AUTHOR	GW	26/02/2008
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MATERIAL

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Elliot Scientific

TITLE
2 AXIS PITCH YAW MODULE

SIZE **A4** | DWG. NO. MDE183

SCALE:1:2 | THIRD ANGLE PROJECTION | SHEET 1 OF 2

Elliot Gold™ Series: 2 & 3-axis Rotation Modules

MDE185 Pitch and Yaw Stage with High Precision Adjusters

ELLIOT MARTOCK

- Pitch and yaw adjustment about a single point in space
- ± 3° range in pitch (θY)
- ± 5° range in yaw (θZ)
- Resolution < 0.1 arc secs
- Rotation in a true arc - no cross-talk
- Excellent long-term stability
- Swing-out pointer identifies the centre of rotation
- Fits Elliot Gold™ Series XYZ flexure stage to provide 5 & 6 axis operation
- Right or left-handed configuration available
- Add optional fibre or fibre array rotation holders to provide roll axis adjustment

The MDE183 and MDE185 Rotation Stages add pitch and yaw adjustments to the Elliot Gold™ Series XYZ flexure stages. Applicable to a wide range of fibre and device alignment tasks requiring the ultimate in flexibility and precision control.

The MDE185 pitch and yaw module provides a ± 3° range in pitch and a ± 5° range in yaw, with a resolution of < 0.1 arc secs. The module has a locating slot to accept Elliot/Martock standard top plate accessories such as fibre holders allowing bare fibre, ribbon cable and connectorised fibre to be used with the rotation module. A locating tongue on the base interfaces with the top plate of the flexure stages. When fitted with a fibre rotator and attached to a stage, the module allows 6-axis manipulation of a fibre about a single point in space. A swing-out pointer identifies the rotation centre for ease of use.

The MDE183 and MDE185 can be used with various top plate accessories from the Elliot/Martock range. These stages can also be mounted on riser blocks for 94 mm or 125 mm optical axis height. The MDE190 riser block is used to extend the axis height of an MDE147 or MDE148 bracket to 125 mm for 5 or 6 axis fibre launch applications.

Specifications

Configuration	Right handed version
Adjuster Type	2x High precision adjusters (Model MDE216)
Range	
θZ (yaw)	Coarse adjustment: ± 5°, Fine adjustment: ± 0.1°
θY (pitch)	Coarse adjustment: 3°, Fine adjustment ± 0.1°
Resolution	
θZ (yaw)	Coarse adjustment: 5.5 arc seconds, Fine adjustment: < 0.1 arc seconds
θY (pitch)	Coarse adjustment: 5.5 arc seconds, Fine adjustment < 0.1 arc seconds
Optical axis	125 mm above the bottom of an Elliot Gold™ Series XYZ flexure stage
Cross-talk	No cross-talk - Rotation in a true arc

Options

Alternative adjusters (simple, high precision, motorised)
Left-handed version (to special order)
Fibre holders
Fibre rotators
Fibre array rotator (MDE884LH)
Includes Model MDE154 clamp set

† Patent Nos. GB 2152616B & USA 4617833

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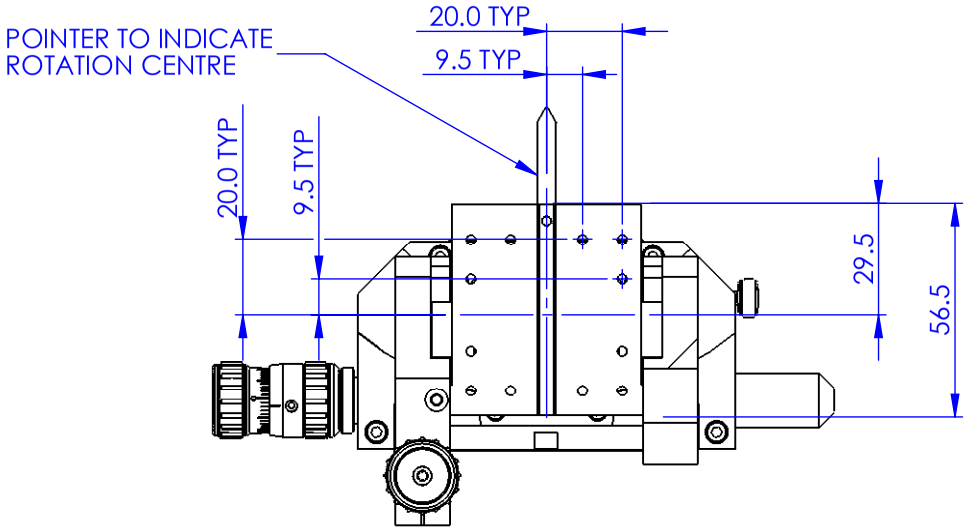

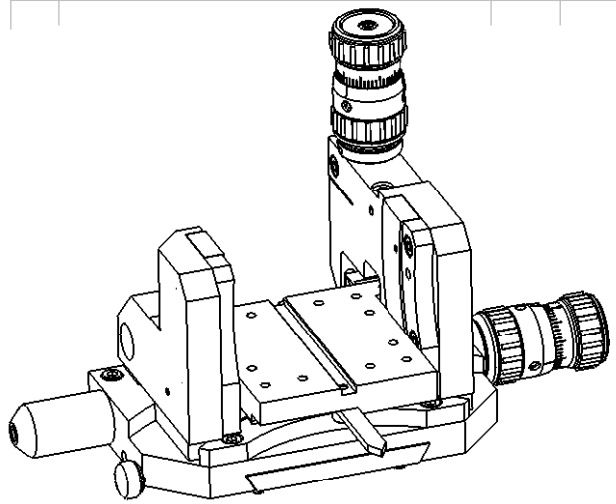

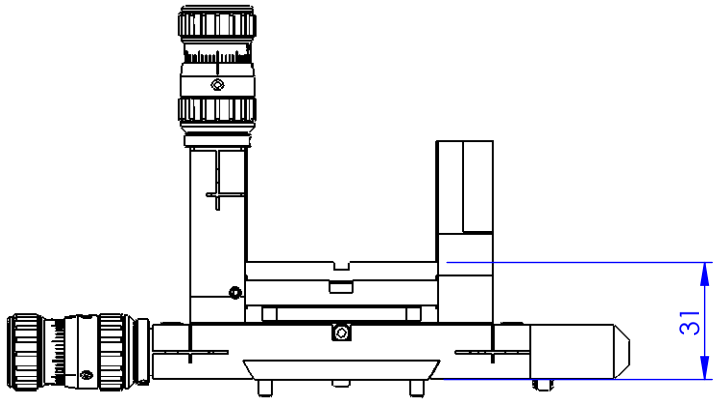

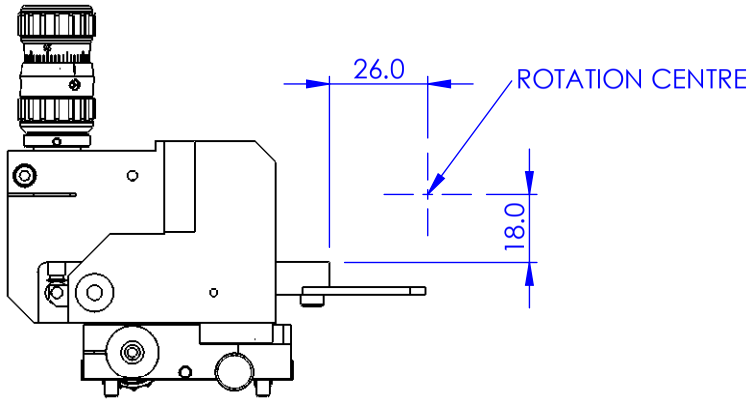

DIMENSIONS ARE IN mm
GENERAL TOLERANCES: ± 0.1
ANGULAR TOLERANCES: ±
SURFACE FINISH:
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	NAME	DATE
AUTHOR	GW	26/02/2008
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MATERIAL

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TITLE
2 AXIS PITCH YAW MODULE

SIZE **A4** | DWG. NO. MDE185

SCALE:1:2 | THIRD ANGLE PROJECTION | SHEET 1 OF 1

Elliot Gold™ Series: Fibre Rotators

MDE717 High Precision Fibre Rotator

- Slotted design for easy insertion and removal of fibre
- Full 360° rotation
- Fine adjustment screw with 5 arc seconds resolution
- V-block preset on axis with < 1 µm concentricity error
- V-block can be re-centred by user
- Integrates with Elliot Gold™ series flexure stages

Designed for the most demanding rotation and alignment of angular sensitive components. It can be used anywhere that stable, accurate fibre rotation is needed.

The popular MDE717 fibre rotator is an updated version of the original and now offers the same highly accurate rotation in a more stable package.

All accessories are compatible with the Elliot Gold™ series flexure stages. The optical axis height is 18 mm above the platform surface and on the centre line of the location slot. Where necessary a locating tongue forms part of the accessory. A standard clamp system is used and is supplied with the flexure stages and accessory platforms. The clamp set (MDE154) is available separately if required.

Specifications

Rotation adjustment	360°
Coarse adjustment	Engraved scale ± 90°, vernier reads to 30 arc minutes
Fine adjustment	Screw with 5 arc seconds resolution
Range	± 5°
Fibre fixturing	Fibre held in double V-groove by two clamp arms
Clamp load	Adjustable 25 g to 125 g

V-block preset on axis with < 1 µm concentricity error
V-block can be re-centred by user
Standard V-groove for 125/250 µm fitted
Split spring sleeve retains fibre in slot at the control end and prevents fouling during rotation

Options

V-groove custom sizes available
OEM upgrade kits for fusion splicers to facilitate splicing of PM fibre
Connectorised fibre version
Custom configuration compatible with fibre chucks
Clamp set (Model MDE154)

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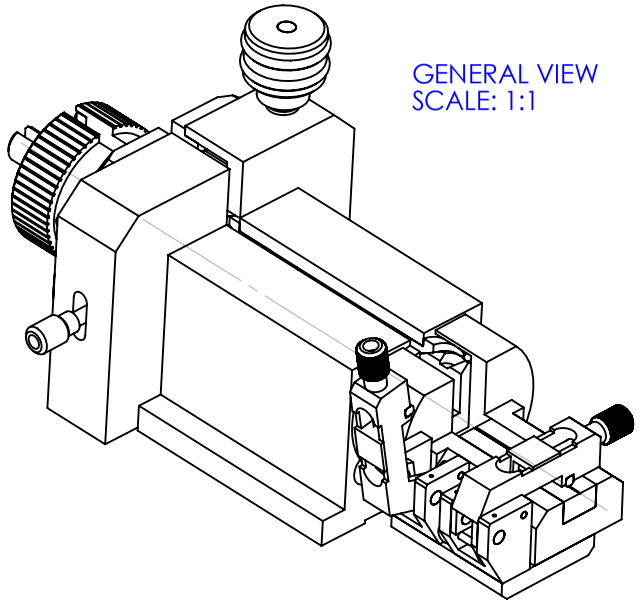
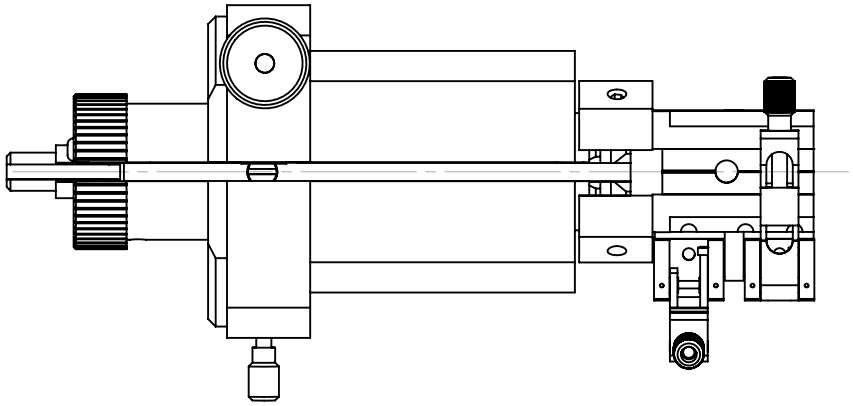
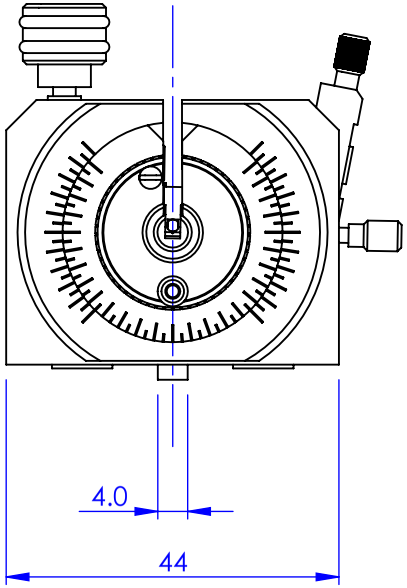
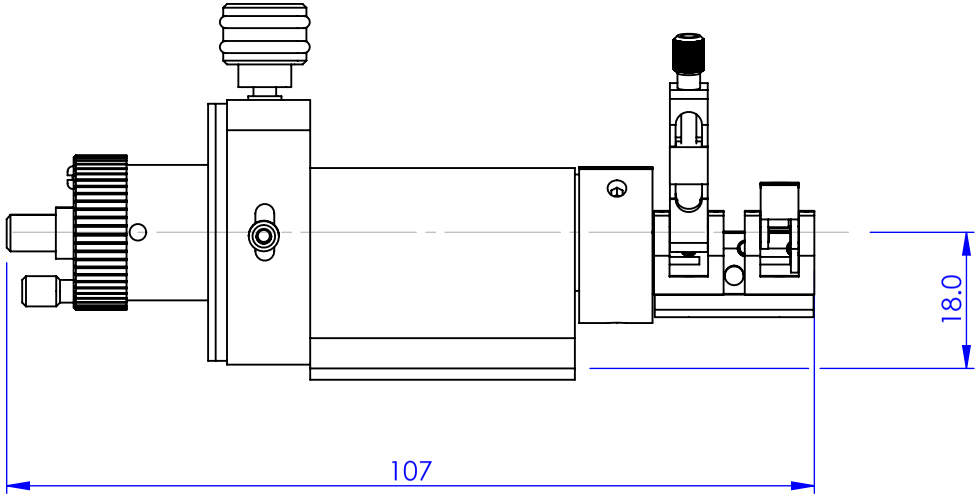
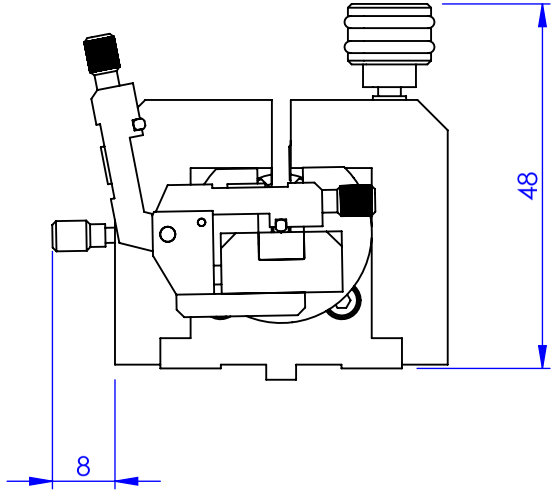


GENERAL VIEW
SCALE: 1:1









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AUTHOR	GW	10/08/2010
CHECKED	--	--

MATERIAL

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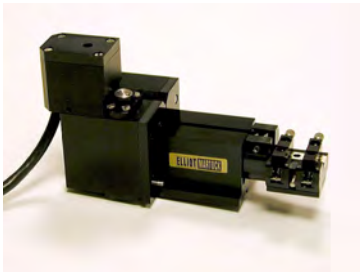
TITLE
HIGH PRECISION FIBRE ROTATOR

SIZE **A4** | DWG. NO. MDE717

SCALE:1:1 | THIRD ANGLE PROJECTION | SHEET 1 OF 2

Elliot Gold™ Series: Fibre Rotators

MDE235 Motorised Fibre Rotator



- Slotted design for easy insertion and removal of fibre
- Full 360° rotation
- Integral stepper motor drive
- Resolution <0.01 degrees
- Fibre held in variable-force V-groove clamps
- Standard V-groove for 125/250 µm fitted
- (Custom sizes available)
- V-block preset on axis with < 1 µm concentricity error
- Stepper drive controllers available with LabVIEW™ drivers
- Integrates with Elliot Gold™ series flexure stages

The MDE235 is a motorised version of the MDE717 fibre rotator. It includes all the features of the original with the addition of a smooth and accurate stepper motor drive. Designed for the demanding rotation and alignment of angular sensitive components. It can be used anywhere that stable, accurate fibre rotation is needed.

Specifications

Actuator	Stepper motor
Rotation adjustment	Continuous 360°
Resolution	< 0.01° with full step controller
Fibre fixturing	Fibre held in V-groove by two variable force clamp arms
Clamp load	Adjustable 25 g to 125 g
V-block preset on axis with < 1 µm concentricity error	Standard V-groove for 125/250 µm fitted
Split spring sleeve retains fibre in slot at the control end	

Options

V-groove custom sizes available
OEM upgrade kits for fusion splicers to facilitate splicing of PM fibre
Custom versions compatible with fibre chucks

For the latest price, contact us today.

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