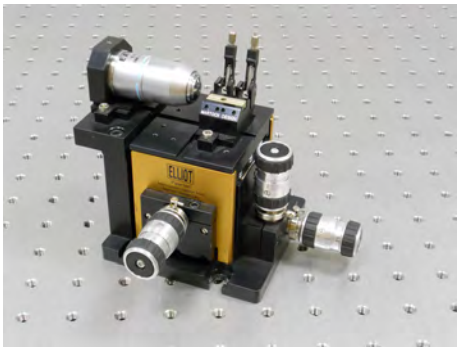
Fibre Launch Systems

ELLIOT | MARTOCK

2019

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. Adjustable spring-loaded clamp arm force
Fibre holder (Variants)	FC mount: Specify MDE510FC SMA mount: Specify MDE510SMA
Adjuster Type	Three high precision adjusters (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

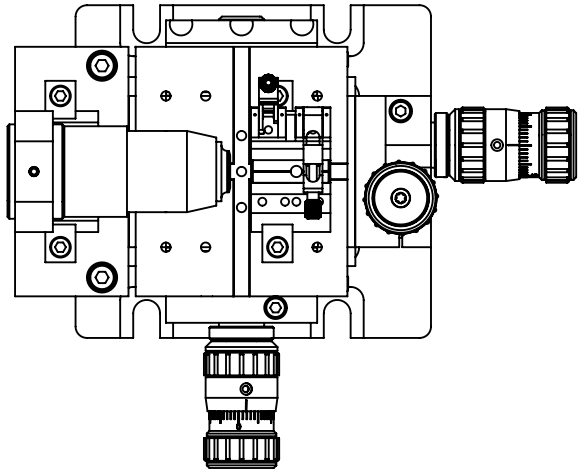
† Patent Nos. GB 2152616B & USA 4617833

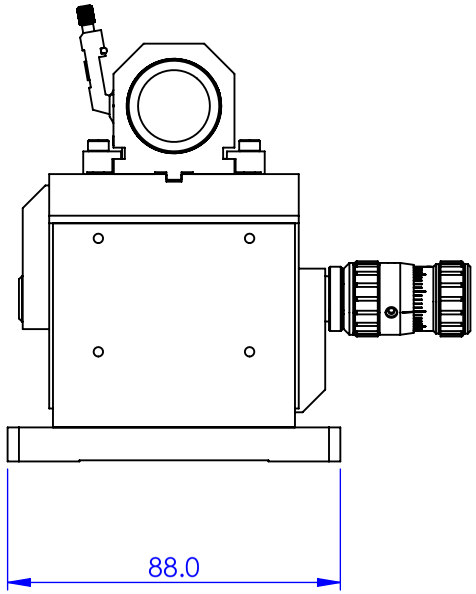
†† Patent Nos. GB 2129955B & USA 4635887

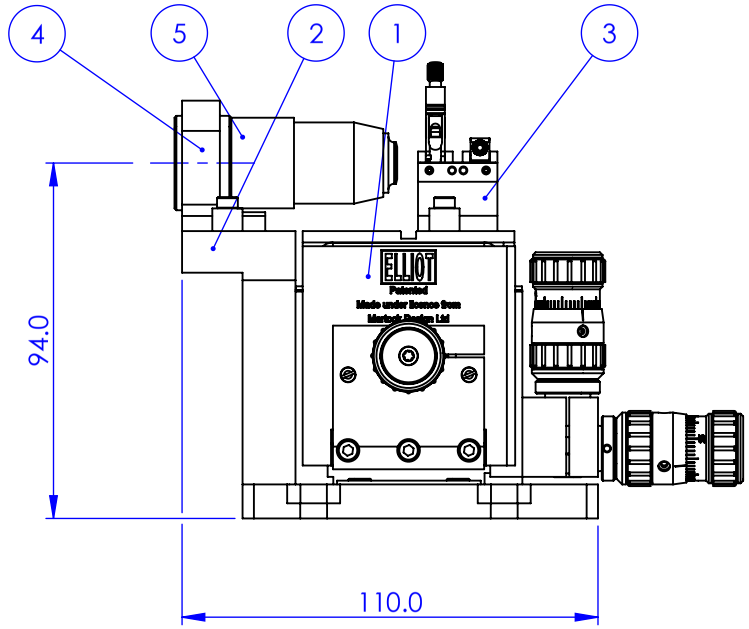
REVISIONS			
REV.	DESCRIPTION	DATE	APPROVED

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:
ALL BURRS, SHARP EDGES AND CORNERS TO BE REMOVED

	NAME	DATE
AUTHOR		09/08/2010
CHECKED	--	--

MATERIAL

FINISH
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DO NOT SCALE DRAWING

Elliot Scientific

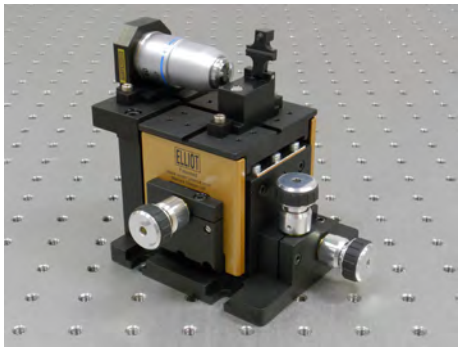
TITLE
FIBRE LAUNCH SYSTEM

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 (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

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. Adjustable spring-loaded clamp arm force
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 (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)

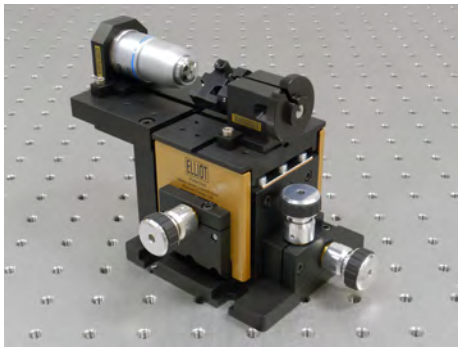
Custom sized V-grooves

† Patent Nos. GB 2152616B & USA 4617833

†† Patent Nos. GB 2129955B & USA 4635887

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. Adjustable spring-loaded clamp arm force up to 125 g
Fibre rotation	Full 360° rotation. Resolution approx 0.1 degrees
Adjuster Type	Three simple manual adjuster, 0.25 pitch (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

Elliot Gold™ Series: Automatic Alignment Systems

E2300 DAli 3 - Device Automatic Alignment System

- Dual-axis piezo controller for 150v actuators
- Software-driven
- Feature packed and flexible
- Ideal for development, test and production applications

The Elliot Scientific E2300 DAli 3 is a 2-axis piezo controller for photonic device alignment using an automated feedback routine. It is compatible with a wide range of external optical detectors and facilitates rapid and automated alignment of photonic components across a wide range of applications.

The E2300 DAli 3 is a sophisticated 3-axes piezo actuator controller, designed to complement the piezo-driven versions of the Elliot Gold™ Series range of flexure stages, but which is also suited to other piezo devices working on 0 - 150 V. It works by locating and optimizing an optical signal fed back from any suitable external detector.

DAli 3 incorporates the latest in electronics and uses complex software algorithms to quickly deliver precision automated alignment by locating and optimising an optical feedback signal derived from the components being aligned.

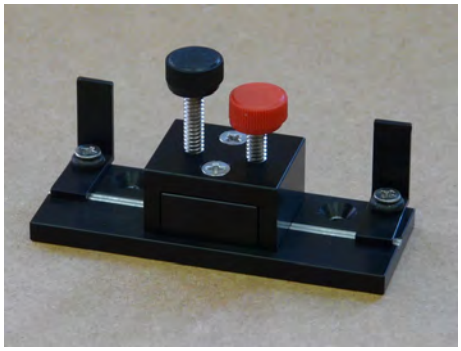
Options

E2323 - DAli 3 E2300 with MDE123 piezo driven XYZ positioner (25 µm piezo travel)

E2325 - DAli 3 E2300 with MDE125 piezo driven XYZ positioner (100 µm piezo travel)

Elliot Gold™ Series: Fibre Launch Solutions: Accessory

ETB100 Fibre to Fibre Alignment Block

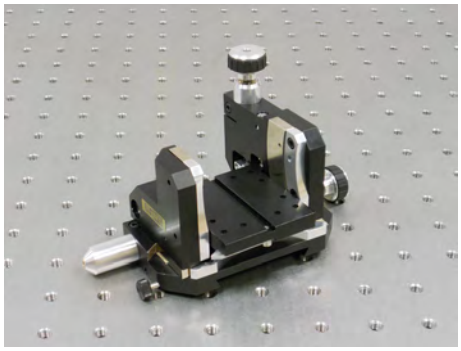


- Can be used with index matching gel to minimise coupling loss
- Quick and easy mechanical coupling of 2 bare fibres without splicing
- Simple and economical design

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

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

MDE183 Pitch and Yaw Stage with Simple Adjusters



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

ELLIOT MARTOCK

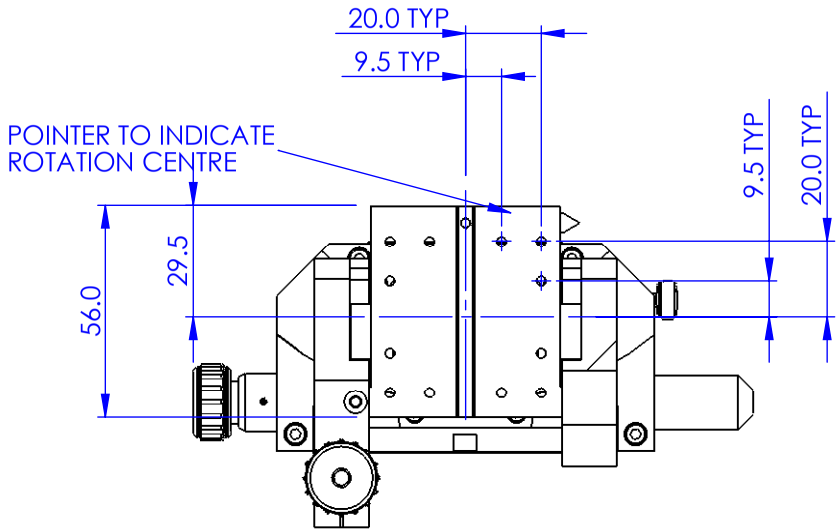
The MDE183 and MDE185 Rotation Stages add pitch and yaw adjustments to the Elliot Gold™ Series XYZ flexure stages. Applicable to a wide range of fibre and device alignment tasks requiring the ultimate in flexibility and precision control.

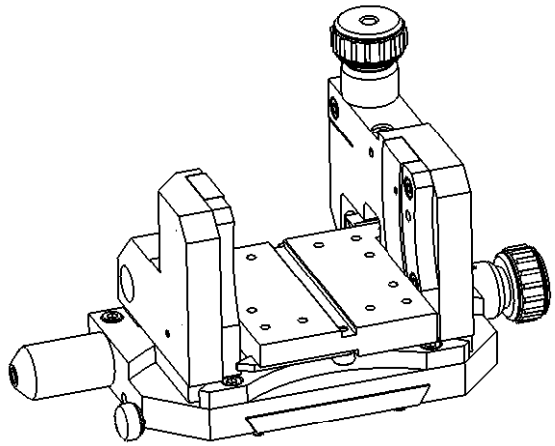
The MDE183 pitch and yaw module provides a ± 3° range in pitch and a ± 5° range in yaw, with a resolution of 2.0 arc secs. The module has a locating slot to accept Elliot/Martock standard top plate accessories such as fibre holders allowing bare fibre, ribbon cable and connectorised fibre to be used 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.

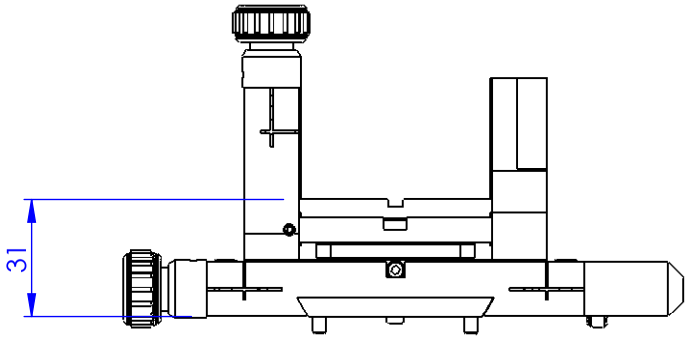
The MDE183 and MDE185 can be used with various top plate accessories from the Elliot/Martock range. These stages can also be mounted on riser blocks for 94 mm or 125 mm optical axis height. The MDE190 riser block is used to extend the axis height of an MDE147 or MDE148 bracket to 125 mm for 5 or 6 axis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

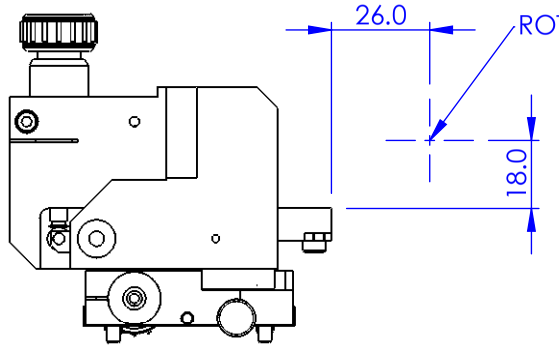
All accessories are compatible with the flexure stages. The optical axis height is 18 mm above the platform surface and on the centre line of the location slot. Where necessary a locating tongue forms part of the accessory. A standard clamp system is used and all accessories requiring attachment in this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

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
CHECKED	--	--

MATERIAL

FINISH
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DO NOT SCALE DRAWING

Elliot Scientific

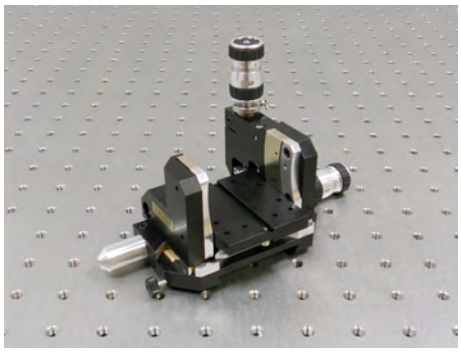
TITLE
2 AXIS PITCH YAW MODULE

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



- 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
- For Elliot Gold™ Series XYZ flexure stage, adds 5- & 6-axis operation
- Right or left-handed configuration available
- Optional fibre or array rotation holders for 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

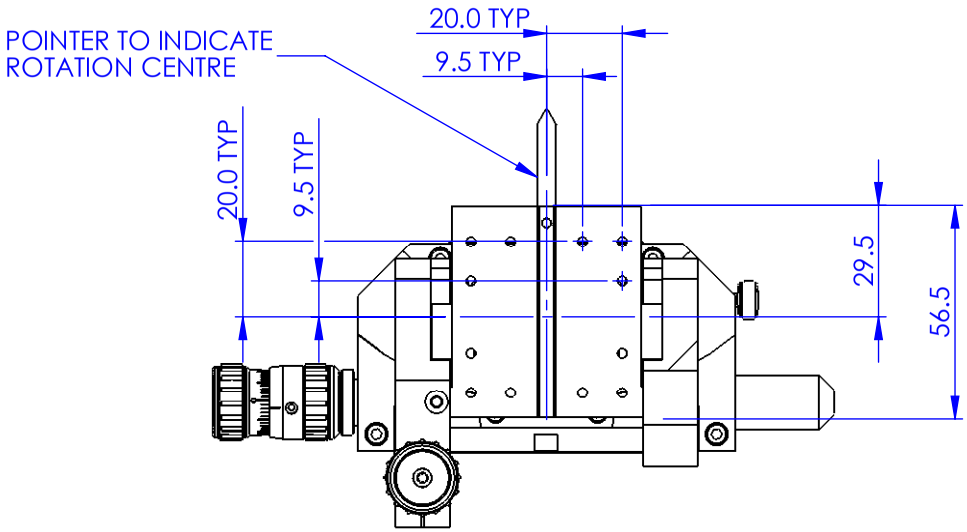
Configuration	Right handed version
Adjuster Type	2x High precision adjusters (MDE216)
Range	
θZ (yaw)	Coarse adjustment: ± 5°, Fine adjustment: ± 0.1°
θY (pitch)	Coarse adjustment: 3°, Fine adjustment ± 0.1°
Resolution	
θZ (yaw)	Coarse adjustment: 5.5 arc seconds, Fine adjustment: < 0.1 arc seconds
θY (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

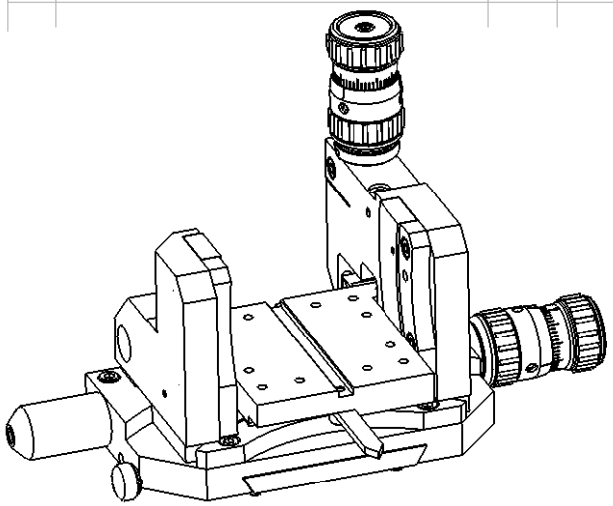
Options

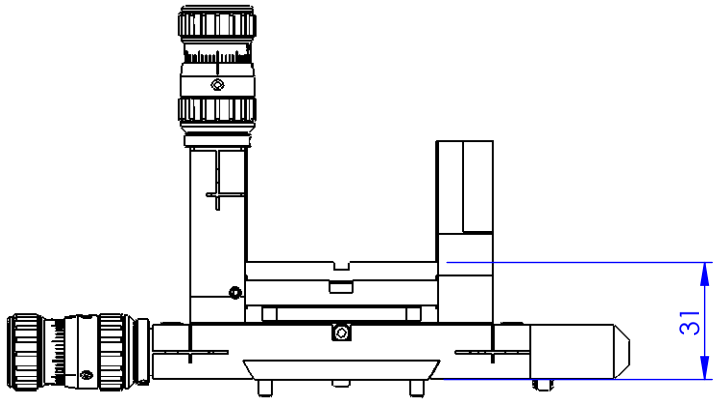
Alternative adjusters (simple, high precision, motorised)
Left-handed version (to special order)
Fibre holders
Fibre rotators
† Patent Nos. GB 2152616B & USA 4617833

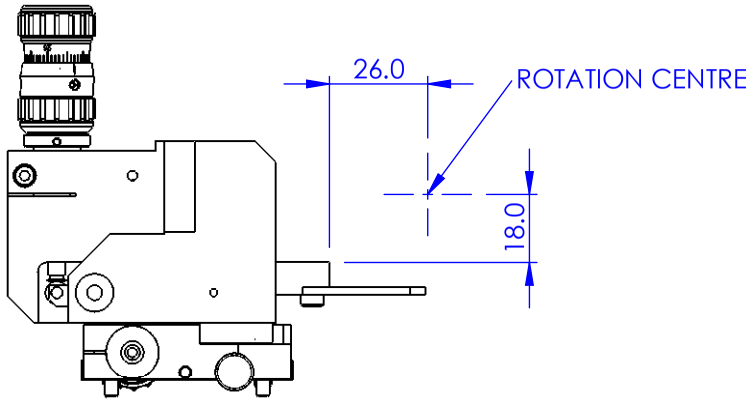
Fibre array rotator (MDE884LH)
Includes MDE154 clamp set

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
CHECKED	--	--

MATERIAL

FINISH
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DO NOT SCALE DRAWING

Elliot Scientific

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

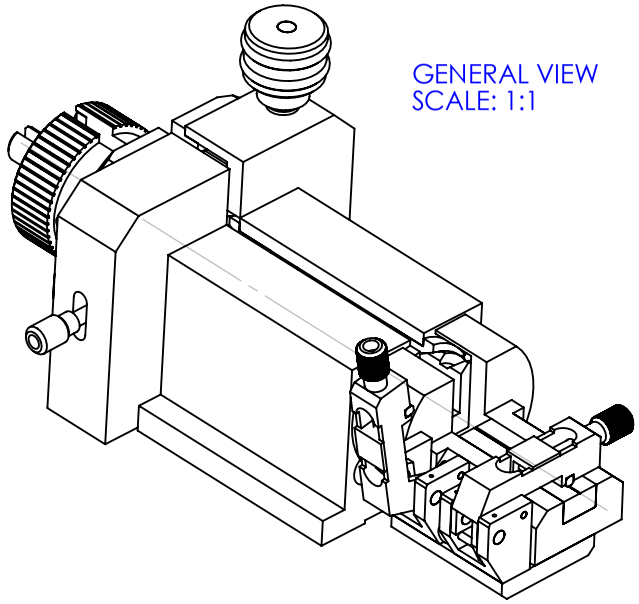
OEM upgrade kits for fusion splicers to facilitate splicing of PM fibre

Connectorised fibre version

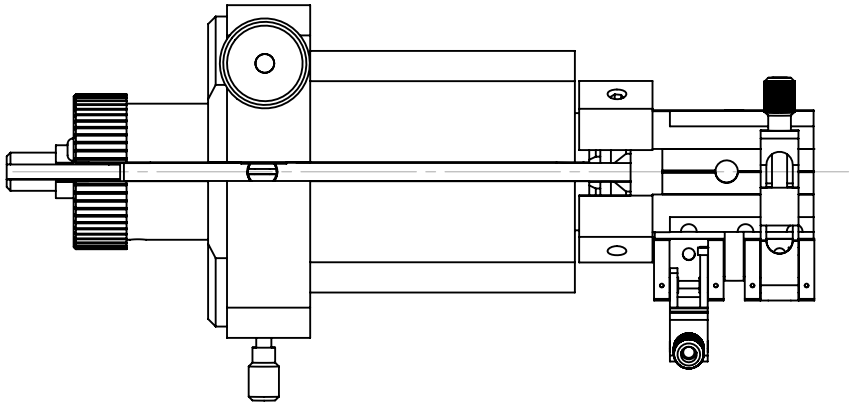
Custom configuration compatible with fibre chucks

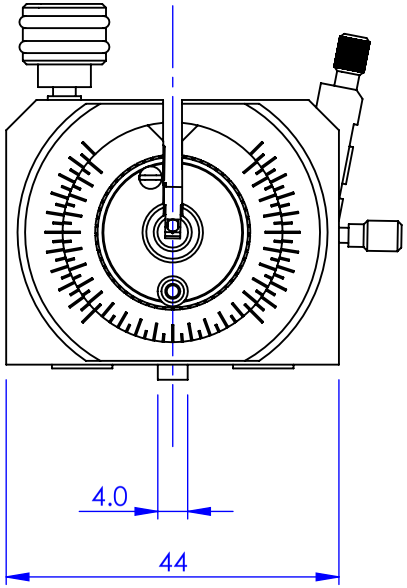
Clamp set (MDE154)

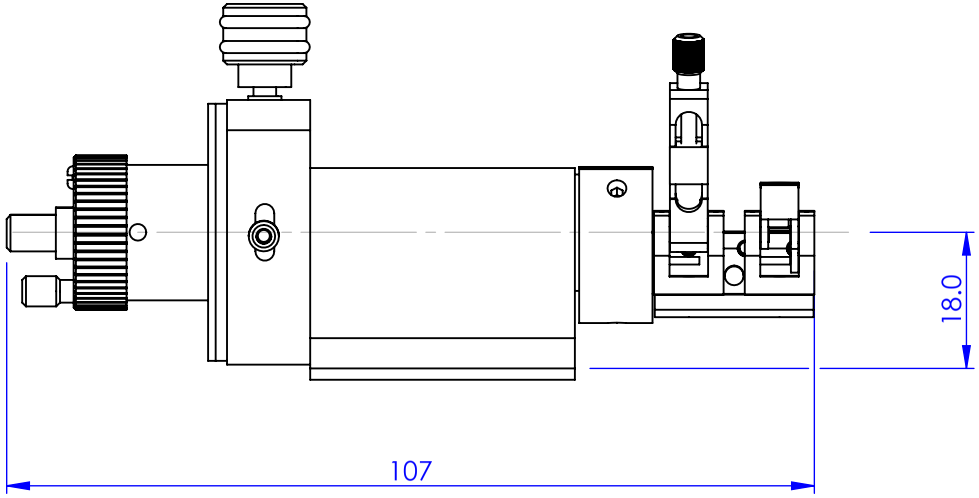
REVISIONS			
REV.	DESCRIPTION	DATE	APPROVED

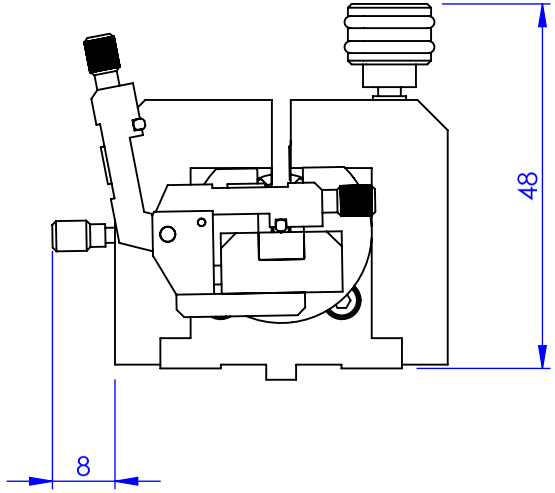


GENERAL VIEW
SCALE: 1:1









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

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

MATERIAL

FINISH
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DO NOT SCALE DRAWING

Elliot Scientific

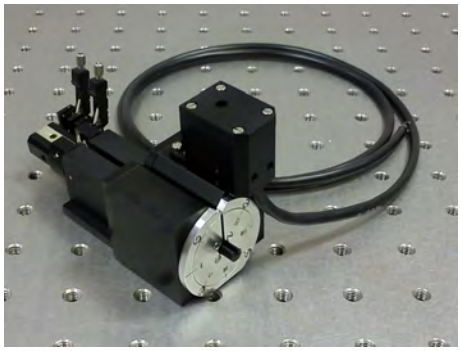
TITLE
HIGH PRECISION FIBRE ROTATOR

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

ELLIOT MARTOCK

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.

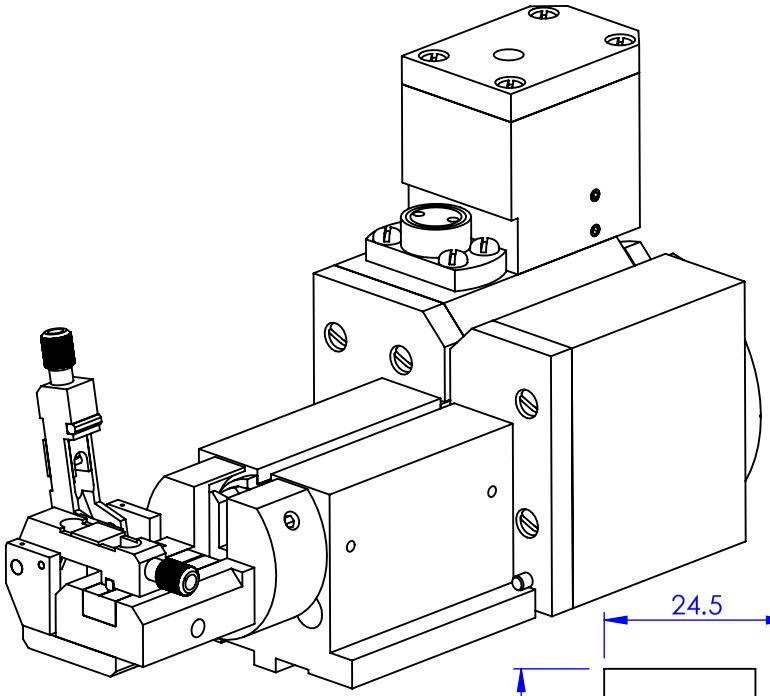
Specifications

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	

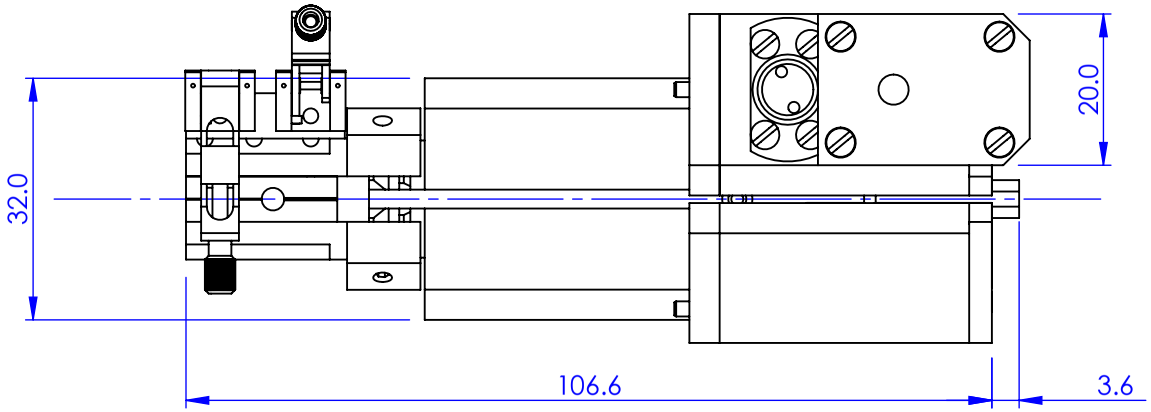
Options

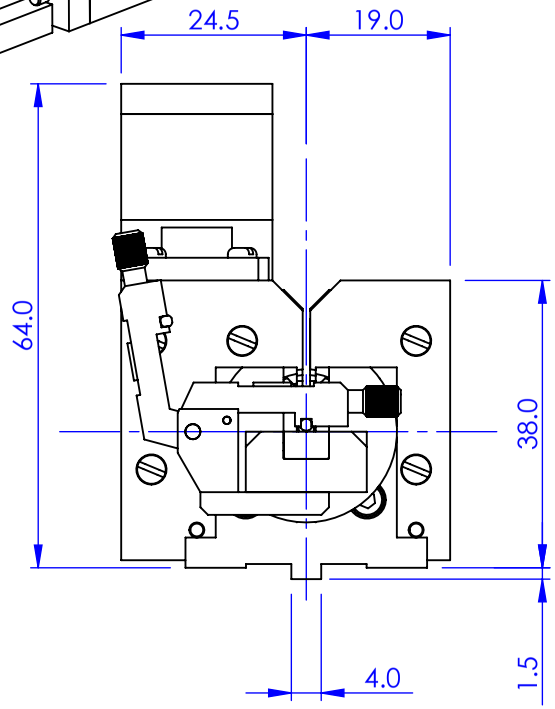
V-groove custom sizes available
OEM upgrade kits for fusion splicers to facilitate splicing of PM fibre
Custom versions compatible with fibre chucks

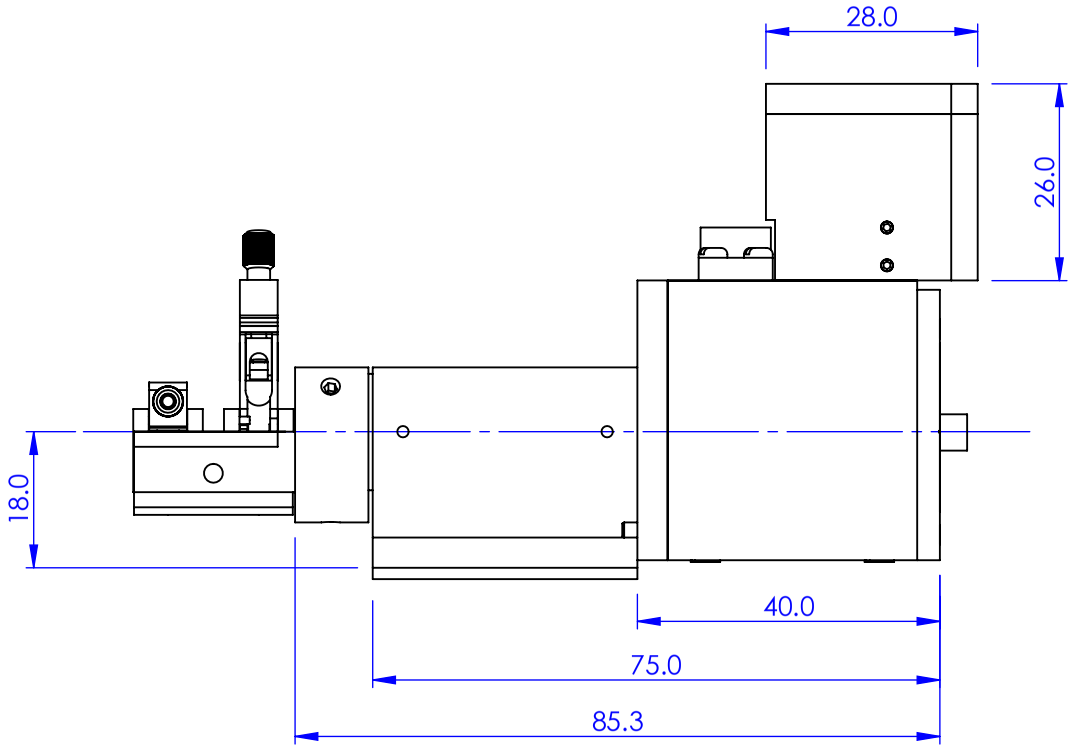
REVISIONS			
REV.	DESCRIPTION	DATE	APPROVED



GENERAL VIEW
SCALE: 1:1







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	09/08/2010
CHECKED	--	--

MATERIAL

FINISH
--

DO NOT SCALE DRAWING

Elliot Scientific

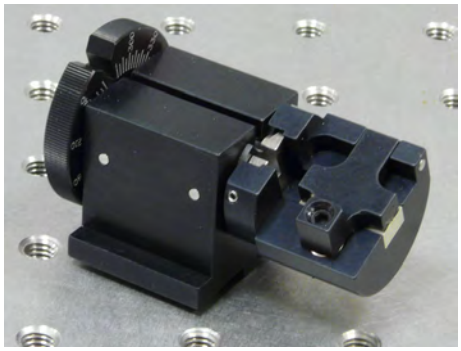
TITLE
MOTORISED FIBRE ROTATOR

SIZE A4 | DWG. NO. MDE235

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

Elliot Gold™ Series: Fibre Rotators

MDE718 Fibre Rotator



- Slotted design for easy insertion and removal of fibre
- Full 360° rotation
- Resolution approximately 0.1 degrees
- Fibre held in V-groove by single clamp arm
- V-block can be re-centred by user
- Integrates with Elliot Gold™ series flexure stages

An economical fibre rotator designed for less demanding rotation alignment of angular sensitive components. It can be used anywhere that stable, accurate fibre rotation is needed.

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°
Resolution	Approximately 0.1 degrees
Fibre fixturing	Fibre held in V-groove by single clamp arm

V-block can be re-centred by user

Standard V-groove for 125 µm fibre fitted

Options

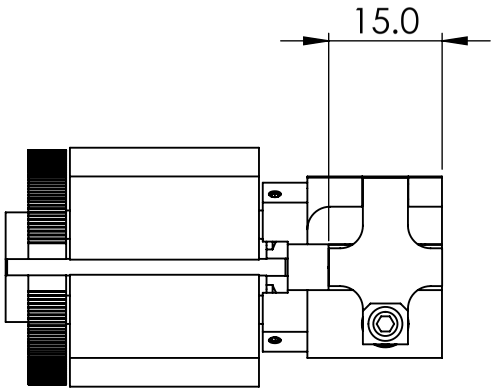
V-groove custom sizes available (MDE712/nnn)

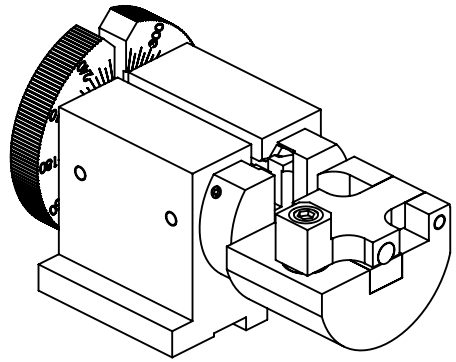
OEM upgrade kits for fusion splicers to facilitate splicing of PM fibre

Custom versions compatible with fibre chucks

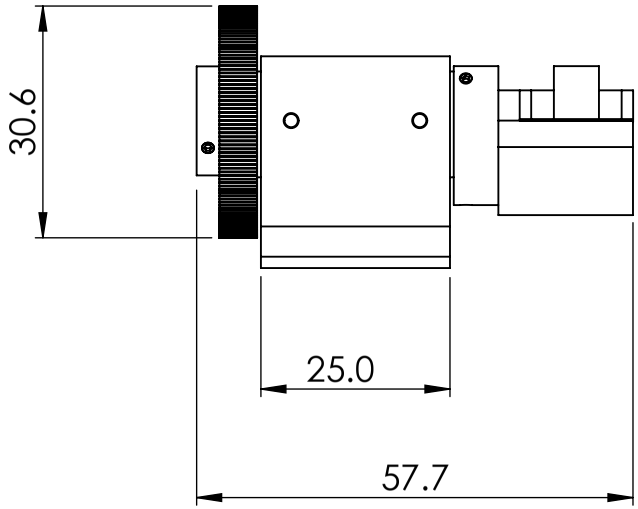
Clamp set (MDE154)

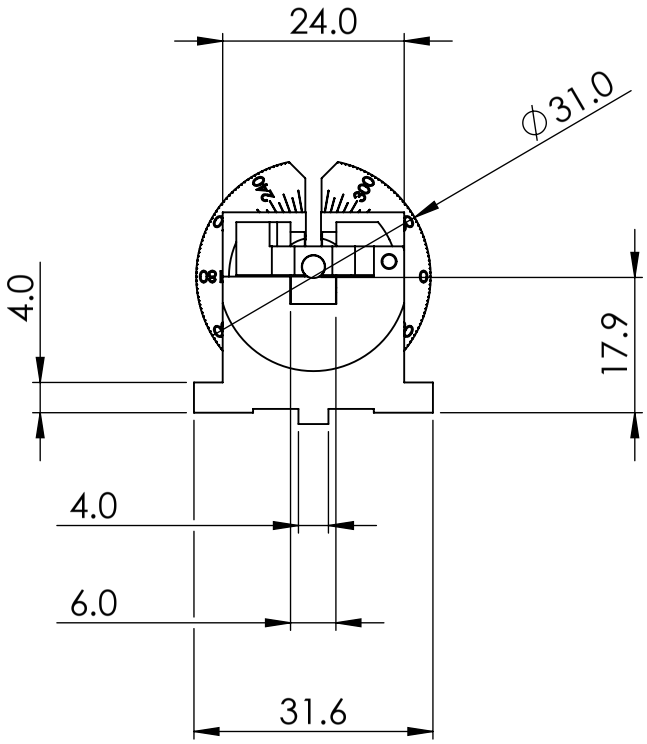
REVISIONS			
REV.	DESCRIPTION	DATE	APPROVED





GENERAL VIEW
SCALE 1:1





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	10/08/2010
CHECKED	--	--

MATERIAL
FINISH
--

DO NOT SCALE DRAWING

Elliot Scientific

TITLE
FIBRE ROTATOR

SIZE A4 | DWG. NO. MDE718

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

Elliot Gold™ Series: Fibre Array Rotators

MDE884LH Fibre Array / Crystal Rotator, Long Reach, Left Hand

ELLIOT MARTOCK

- θx fibre array / crystal manipulator
- Rotates exactly on x-axis
- Maintains 18 mm centre height
- Right handed version available

Unique roll mechanism ensures rotation is exactly about x-axis, and maintains 18 mm centre height. Right and left handed versions available. Can also be supplied with θy and θz adjustments. Front block is machined by Elliot Scientific or Customer to locate silicon V-groove block on the fibre ribbon.

The unique mechanical roll design features a decoupling of the linear adjuster travel from the roll motion, which minimises any radial offset during rotation. This ensures that angular movements are exactly about the x-axis and that no radial offset is introduced. The precision of motion results in a very high level of accuracy of the roll angle.

Specifications

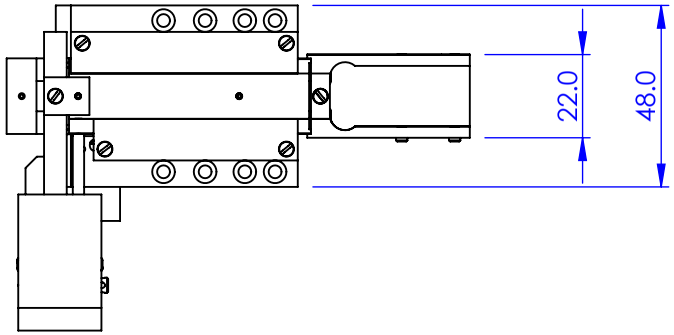
Configuration	Left hand
Centre Height	Maintained at 18 mm
θx Rotation	
Coarse range	± 4°
Fine range	± 10 arc minutes
θx Resolution (Coarse adjustment)	8 arc seconds
θx Resolution (Fine adjustment)	< 0.1 arc seconds

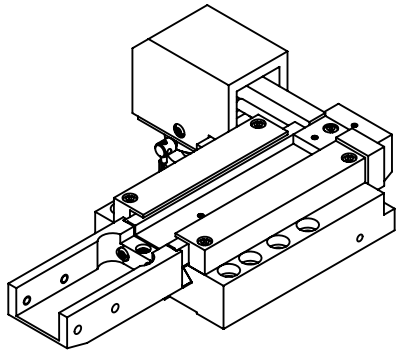
Options

θy and θz versions

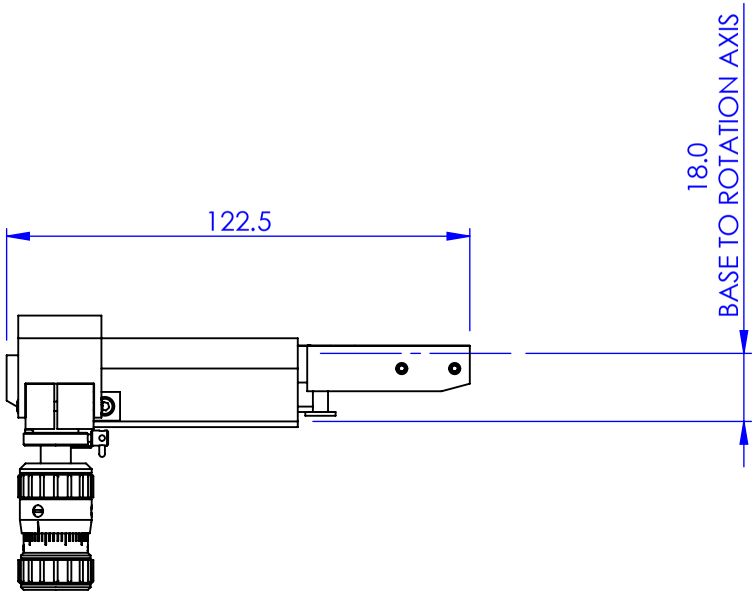
Inverted drive version if space is limited

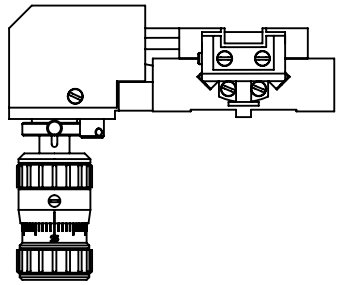
REVISIONS			
REV.	DESCRIPTION	DATE	APPROVED





GENERAL VIEW
SCALE: 1:2





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	03/06/2010
CHECKED	--	--

MATERIAL

FINISH
--

DO NOT SCALE DRAWING

Elliot Scientific

TITLE
RIBBON CABLE ROTATOR

SIZE A4 | DWG. NO. MDE884LH

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

Elliot Gold™ Series: Fibre Array Rotators

MDE884RH Fibre Array / Crystal Rotator, Long Reach, Right Hand

- θx fibre array / crystal manipulator
- Rotates exactly on x-axis
- Maintains 18 mm centre height
- Left handed version available

Unique roll mechanism ensures rotation is exactly about x-axis, and maintains 18 mm centre height. Right and left handed versions available. Can also be supplied with θy and θz adjustments. Front block is machined by Elliot Scientific or Customer to locate silicon V-groove block on the fibre ribbon.

The unique mechanical roll design features a decoupling of the linear adjuster travel from the roll motion, which minimises any radial offset during rotation. This ensures that angular movements are exactly about the x-axis and that no radial offset is introduced. The precision of motion results in a very high level of accuracy of the roll angle.

Specifications

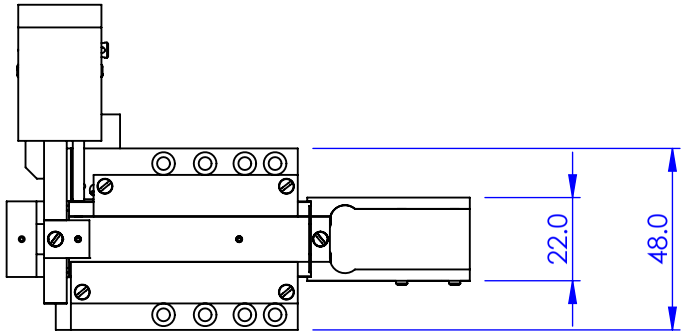
Configuration	Right hand
Centre Height	Maintained at 18 mm
θx Rotation	
Coarse range	± 4°
Fine range	± 10 arc minutes
θx Resolution (Coarse adjustment)	8 arc seconds
θx Resolution (Fine adjustment)	< 0.1 arc seconds

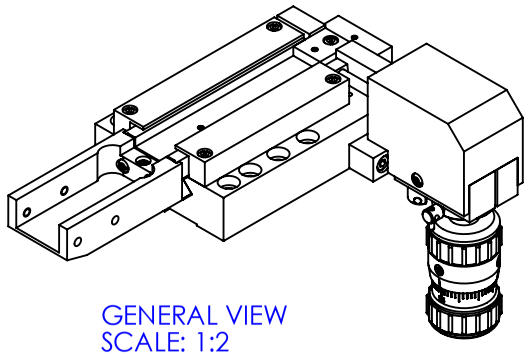
Options

θy and θz versions

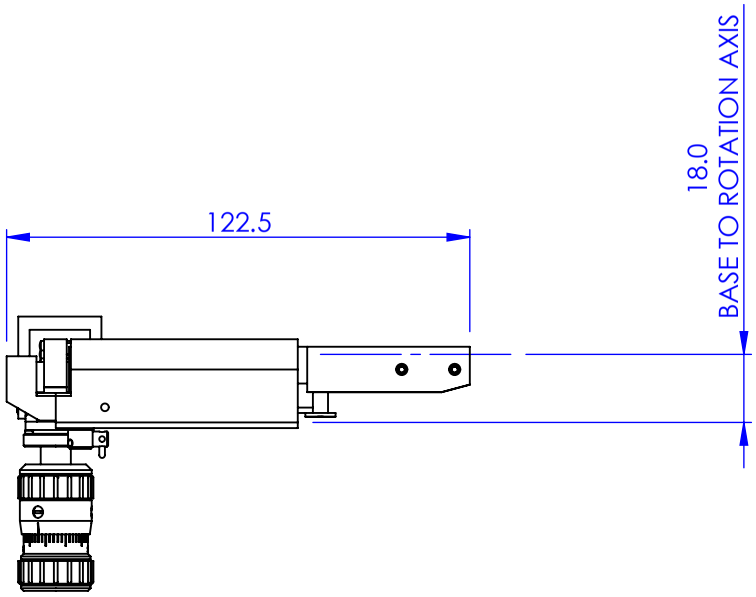
Inverted drive version if space is limited

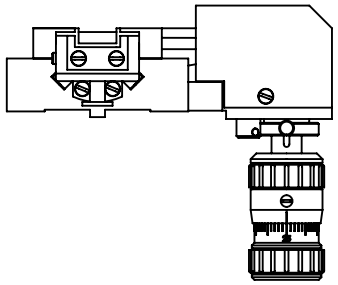
REVISIONS			
REV.	DESCRIPTION	DATE	APPROVED





GENERAL VIEW
SCALE: 1:2





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	03/06/2010
CHECKED	--	--

MATERIAL

FINISH
--

DO NOT SCALE DRAWING

Elliot Scientific

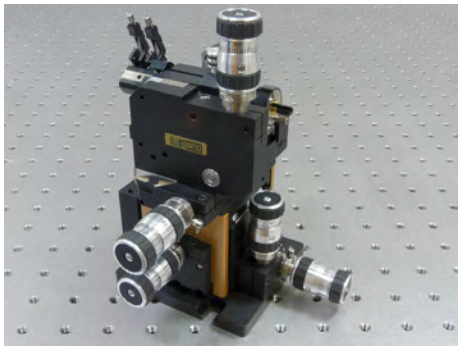
TITLE
RIBBON CABLE ROTATOR

SIZE A4 | DWG. NO. MDE884

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

Elliot Gold™ Series: Six-Axis Positioner

MDE187 Six-Axis Positioner fitted with High Precision Manual Adjusters



- 2 mm linear travel in XYZ axes with 20 nm resolution
- Roll adjustable through full 360° rotation
- Roll resolution 5 arc seconds
- Optical axis height 125 mm
- Slotted design for easy insertion and removal of fibre
- V-block preset on axis with < 1 µm concentricity error
- V-block can be re-centred by user
- Pitch and yaw resolution < 0.1 arc secs
- Pitch and yaw adjustments about a single point in space in a true arc with no cross-talk

ELLIOT MARTOCK

The MDE187, six-axis positioner is built up from the Elliot Gold™ Series of micro-positioning precision components.

It facilitates precise manual adjustment in XYZ linear axes, plus pitch (θY), yaw (θZ) and roll (θX) with excellent accuracy and long term stability.

The Six-Axis positioner comprises:

MDE185 Pitch and Yaw Stage with High Precision Adjusters

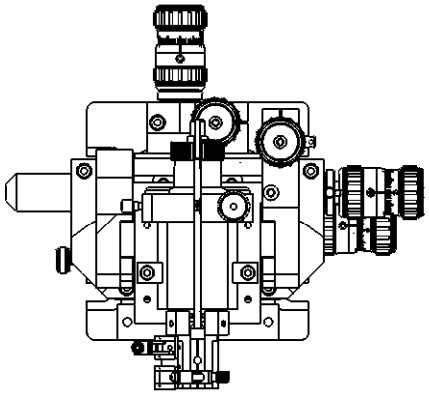
MDE717 High Precision Fibre Rotator

MDE154 Clamp Set

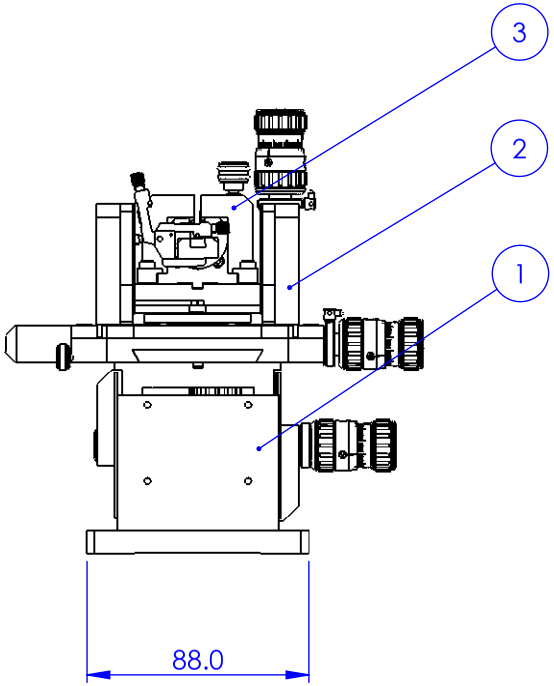
MDE122 Elliot Gold™ Series XYZ flexure stage fitted with high precision manual adjusters

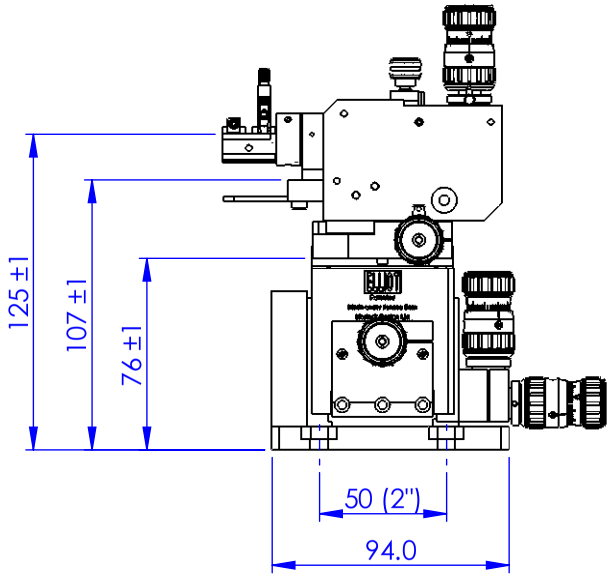
† Patent Nos. GB 2129955B & USA 4635887

	REVISIONS		
REV.	DESCRIPTION	DATE	APPROVED



PART NO.	ITEM NO.	QTY.	DESCRIPTION
MDE122	1	1	XYZ FLEXURE STAGE
MDE185	2	1	PITCH & YAW MODULE
MDE717	3	1	FIBRE ROTATOR





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	19/12/2006
CHECKED	--	--

MATERIAL

FINISH
--

DO NOT SCALE DRAWING

Elliot Scientific

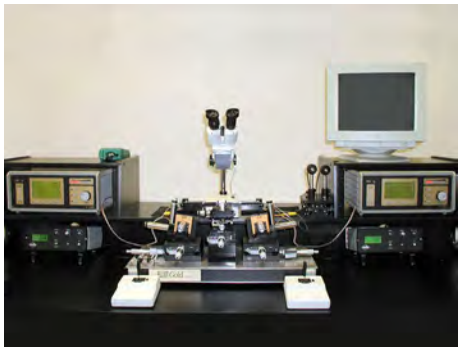
TITLE
6 AXIS POSITIONER

SIZE A4 | DWG. NO. MDE187

SCALE:1:3 | THIRD ANGLE PROJECTION | SHEET 1 OF 1

Elliot Gold™ Series: Alignment Systems: Multi-channel Optical Devices

E22884 E-Wedge™



- Automatic Alignment for Multi-channel Optical Devices

The E-Wedge™ system is designed to provide automatic alignment for multi-channel optical devices and fibre V-groove arrays. It includes automatic roll axis optimisation and compensation for angled device facets. The E-Wedge can be configured as a dual-ended automatic waveguide/device alignment workstation providing simultaneous alignment of input and output fibre arrays. The system can be customised to provide the number of axes needed for any particular devices. Holding fixtures are available for the full range of devices, fibres and v-groove arrays. Custom fixtures can also be provided.

Automatic alignment is provided by two E2300 DAli 3 controllers, designed to speed up and automate alignment in a wide range of applications such as laser diode to single-mode fibre, or input and output pigtailing to waveguide devices, couplers, splitters and WDMs. The E2300 includes a sophisticated 2-axis piezo actuator controller suitable for the piezo-actuated versions of our Elliot Gold™ Series flexure stages, and works by locating and optimising an optical signal fed back from any suitable detector.

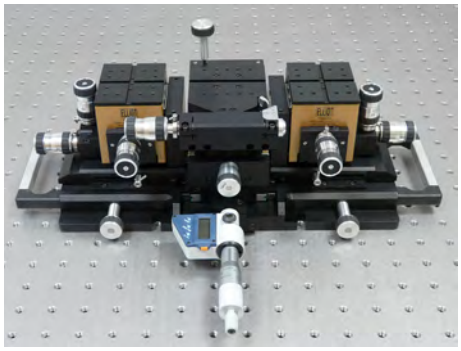
The user is presented with a convenient software-driven system with full control over the scan parameters, and USB interfaces with LabVIEW drivers are provided for full remote control of the instrument, allowing it to be incorporated into automated test and measurement rigs or production alignment systems.

E-Wedge™ Resolution

25 µm piezo drive	10 nm in X, Y & Z axes
100 µm piezo drive	50 nm in X, Y & Z axes
Rotation	< 0.1 arc seconds

Elliot Gold™ Series: Alignment Systems: Waveguides

MDE881 Professional Workstation



- 6-Axis precision manipulation
- All 6 axes are truly independent of each othe
- No cross-talk
- Direct readout of waveguide Y axis position
- Portable & stable - no need for an optical table
- Fast rack & pinion drive enables easy access to central workstation for simple loading

Optical workstation with six independent axes of manipulation. Designed for precise alignment of both input and output fibres to an optical waveguide device.

Alignment of single mode fibres to photonic devices is a demanding task and the Elliot/Martock range of precision positioners was originally developed to address this application. With dual interface optical waveguide devices however, things become more complicated as it is necessary to align fibres (or fibre arrays) to both the input and output facets of a device.

The MDE881 Workstation has been designed specifically to provide the multiple degrees of motion required for this type of critical alignment and is suitable for use with a wide range of devices and fibre types for both characterisation and pigtailing applications.

For enhanced operator convenience and productivity, each of these XYZ flexure stages can be moved away from the central stage by 40 mm travel on a rack and pinion drive. This allows rapid outward movement of the XYZ stages holding the fibres in order to access the central stage and hence facilitates loading of the workstation.

Specifications

Configuration	Dual Elliot Gold™ Series XYZ Flexure Stages (MDE122), each mounted on a Rack & Pinion Slide Central 5-axis stage Integral base plate with carrying handles
Optical Axis Height	125 mm from bottom of base plate, coincident with a point 18 mm above the middle of the top plate of the θz rotation unit
Flexure Stages	See MDE122 Specificiations
Central Workstation	See MDE883 Specifications
Rack & Pinion Slides	40 mm coarse travel in X axis. Lockable. Adjustable end-stop defines position to <1 µm accuracy.

Options

MDE881-60 Workstation with 60 mm travel

MDE747 Waveguide Mount with Pitch, Roll and Height Adjust

MDE890 Waveguide Mount with θy and X Adjust

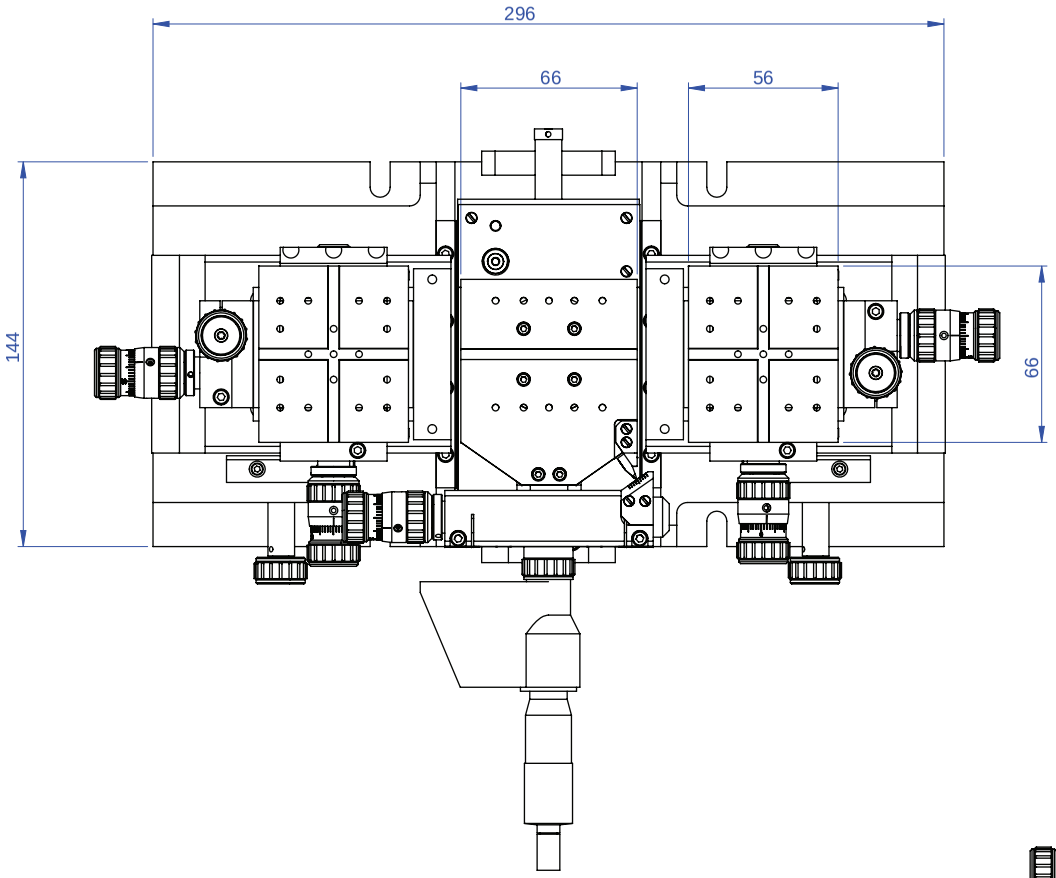
MDE891 Waveguide Mount with θy plus X and Z Adjust

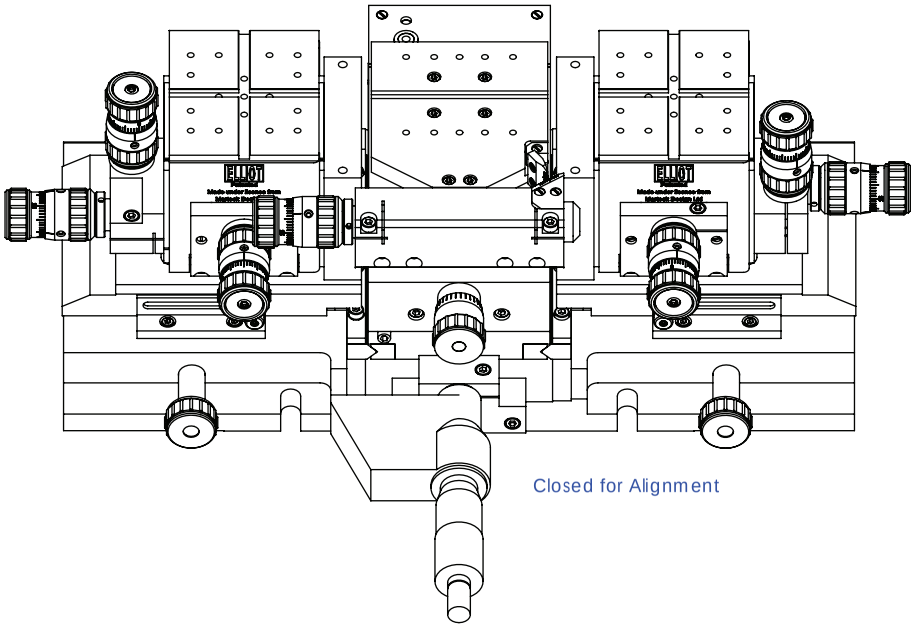
Waveguide/Device Holders & Other Accessories

MDE884RH & MDE884LH Fibre Array / Crystal Rotator, Long Reach

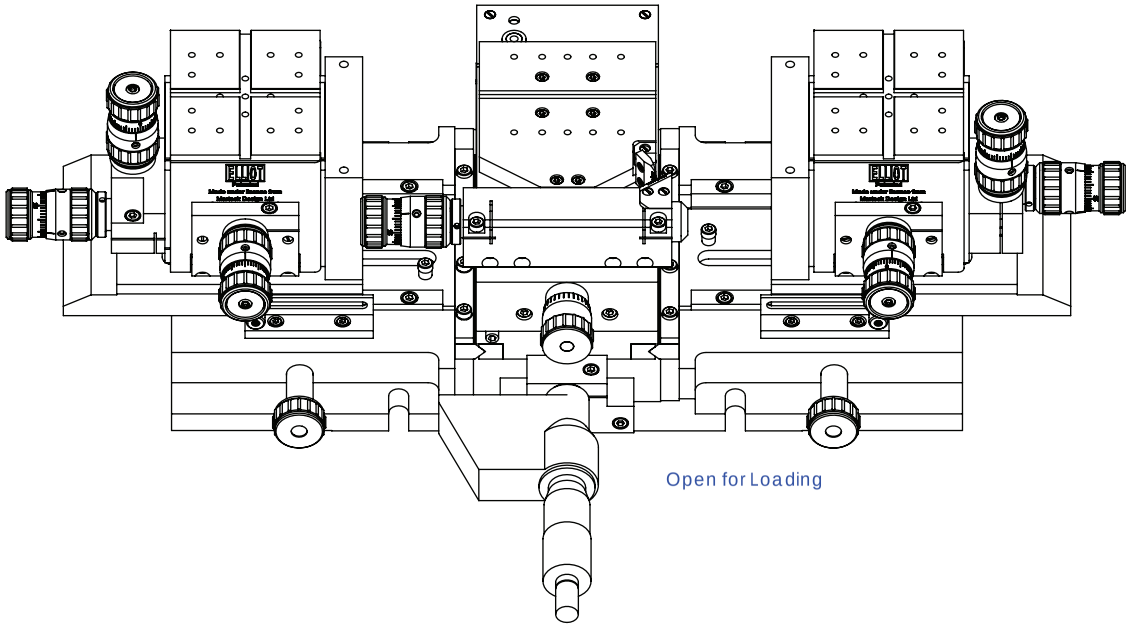
E2300 DAli 3 Device Automatic Alignment System

More detailed information about this product can be found on our website.

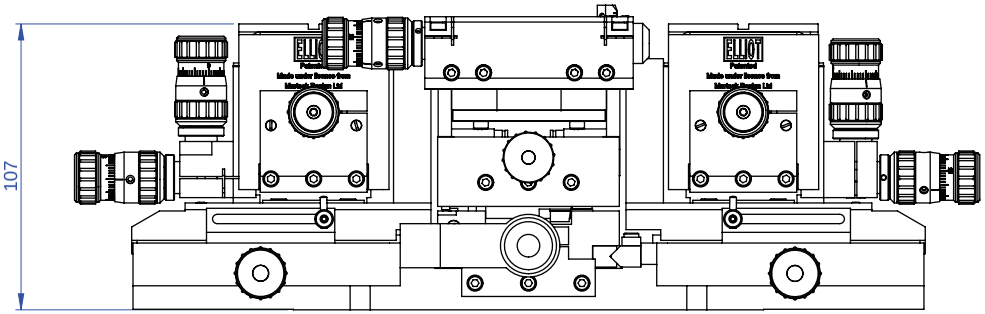




Closed for Alignment



Open for Loading



	NAME	DATE
AUTHOR	GW	19/11/2009
CHECKED	--	--

Elliot Scientific

MATERIAL

TITLE: DEVICE / WAVEGUIDE MANIPULATOR

FINISH: --

SIZE: A3

DWG NO.: MDE881

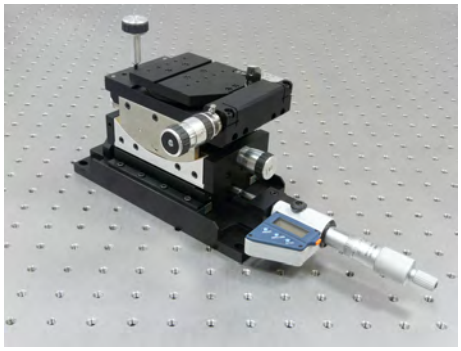
DO NOT SCALE DRAWING | SCALE: 1:2 | THIRD ANGLE PROJECTION | SHEET 1 OF 1

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

DEVICE / WAVEGUIDE MANIPULATOR

Elliot Gold™ Series: Alignment Systems: Central Workstation

MDE883 Central Workstation with Rotation, Tilt and Transverse Motion



ELLIOT MARTOCK

- ± 4° adjustment, 1 arc sec resolution for θx and ,θz
- ± 1° for θy
- 25 mm travel, 0.5 µm resolution for Y axis
- Direct readout of device Y linear travel position
- 6 mm travel, > 2 µm resolution for Z axis
- Mounts directly onto 25 mm or 1” pitch table

The Central Workstation provides roll (θx) and pitch (θy) at a height of 125 mm from the bottom of the base plate and these both coincide with the yaw (θz) axis at a height of 18 mm above the middle of the top plate of the θz rotation unit. Rotation axes are defined by curved bearings hence rotation is always in a true arc. Digital readout of the Y travel is provided to allow the operator to read waveguide positions. Thus stepping the fibre across the substrate to locate individual waveguides becomes a simple task.

The MDE883 Central Workstation was designed to be a key part of the MDE881 6-axes manipulator. However for applications where the geometry of the standard MDE881 is not suitable we offer the system in its key component parts, allowing custom set-ups to be configured on an optical table or breadboard. This approach means that the system can be purchased in parts as required.

Thus the MDE883 can be used in situations where the standard in-line configuration of the MDE881 is not suitable. For example when the waveguide inputs and outputs are angled at 90 degrees. Alternatively, building the system in kit form provides greater flexibility in adapting the modules to a wider range of applications.

Specifications

θx	± 4° rotation with 1 arc sec resolution
θz	± 4° rotation with 1 arc sec resolution
θy	± 1° rotation adjustable by hex key supplied with MDE881. Adjustment is useful for aligning to waveguides mounted on epoxy in packages where device is not necessarily sitting flat.
Y-travel	25 mm standard (MDE883) with 0.5 µm resolution and direct digital read-out of position to 1µm (with digital micrometer)
Z-travel	6 mm with 2 µm resolution by means of hex key adjuster
Axis Height	125 mm from bottom of base plate
Includes	MDE154 clamp set

Options

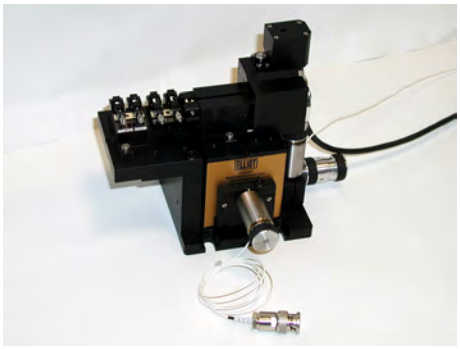
MDE883-60 with 60 mm of Y-travel

MDE890 and MDE891 can be used to extend the rotation range - useful for holding components such as Fabry-Perot filters

More detailed information about this product can be found on our website.

Elliot Gold™ Series: Alignment Systems: Polarising Maintaining Fibres

MDE2350 PM Fibre Alignment



- Slotted design for easy insertion and removal of fibre
- Full 360° rotation
- Integral stepper motor drive
- Resolution < 0.01° single step
- Maximum speed 18°/s (20 s for 360°)
- 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 for auto rotation alignment

ELLIOT MARTOCK

The MDE2350 comprises an MDE235 motorised fibre rotator mounted on an Elliot Gold™ Series 3-axis piezo-driven flexure stage. A DALi alignment system is used to maintain alignment while the fibre is rotated.

Designed for the alignment of angular-sensitive components, the MDE2350 is particularly effective for the alignment of polarisation-maintaining fibre and components.

Elliot Gold™ Series: Alignment Systems: Fibre Collimators

MDE9183 Fibre Collimator Aligner

- Slotted design for easy insertion and removal of fibre
- Full 360° rotation
- Integral stepper motor drive
- Resolution <0.01° single step
- Maximum speed 18°/s (20s for 360°)
- Fibre held in variable-force V-groove clamps
- Standard V-groove for 125/250µm fitted. (Custom sizes available.)
- V-block preset on axis with < 1µm concentricity error
- Stepper drive controllers available with LabVIEW drivers for auto rotation alignment

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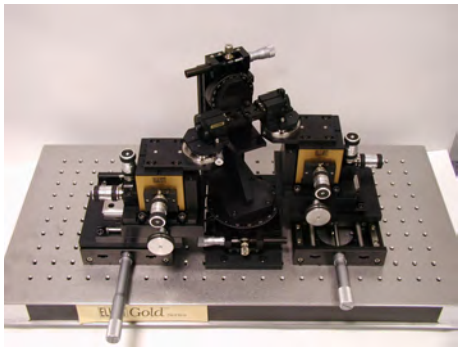
The MDE9183 is configured for the alignment of fibre collimators. It utilises the accurate MDE185 two axis pitch and yaw stage in combination with Elliot Gold™ Series flexure stages giving accurate 5-axis control.

Includes model MDE154 clamp set.

Elliot Gold™ Series: Alignment Systems: Semiconductor Optical Amplifiers

MDE22885 Semiconductor Optical Amplifier Aligner



- Slotted design for easy insertion and removal of fibre
- Full 360° rotation on all rotational axes
- Piezo drives available for linear axes
- Can be configured for variable facet angle
- Fibre held in V-groove clamps
- Standard V-groove for 125/250 µm fitted. (Custom sizes available.)

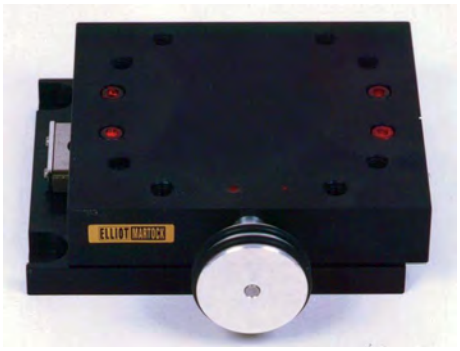
The MDE22885 is a specialised system for the alignment of SOAs (semiconductor optical amplifiers) and other similar dual-ended devices with angled facets.

The system comprises two 5-axis stages with Elliot Gold™ Series flexure stages, long-travel base platforms and a 2-axis fibre rotation mount. The central unit is a 2-axis rotation device mount configured for mounting of passive or active single- or multi-channel planar devices.

The linear axes of the flexure stages can be automated with a E2200 DALi alignment controller and piezo adjusters. Automated alignment is of particular benefit when working with lensed fibres.

Elliot Gold™ Series: Slide

MDE889 Rack & Pinion Slide – 60 mm



- 60 mm travel
- Adjustable end-stop defines position to < 1 µm accuracy
- Lockable
- Bolts directly to optical table
- Large thumbwheel for faster positioning

A precision translation unit designed for mounting directly to the optical table. The large mounting area can be quickly moved to and fro via the thumbwheel mechanism.

Specifications

Travel	60 mm Lockable
End stop accuracy	< 1 µm