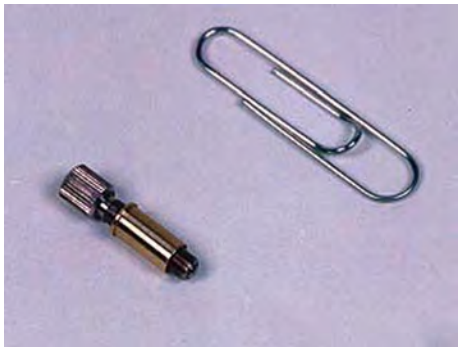
Adjusters

ELLIOT | MARTOCK

2019

Micrometers, Adjusters, Piezos & Inertial Drives: Miniature Adjusters

MDE208 Simple Adjuster with 5 mm travel



ELLIOT MARTOCK

- 5 mm travel
- Extremely compact
- Very smooth operation
- Very fine thread - 0.25 mm pitch
- Designed specifically for micropositioning applications
- Positioning to 0.5 µm using a hex key via integral hole
- Long life stainless steel spindle with hard steel ball tip & nickel silver nut

This miniature adjuster is used in the MDE260 series micropositioners. It incorporates a 4 mm diameter mounting spigot. A knurled knob facilitates simple adjustment or an optional hex driver can be used when greater sensitivity is required.

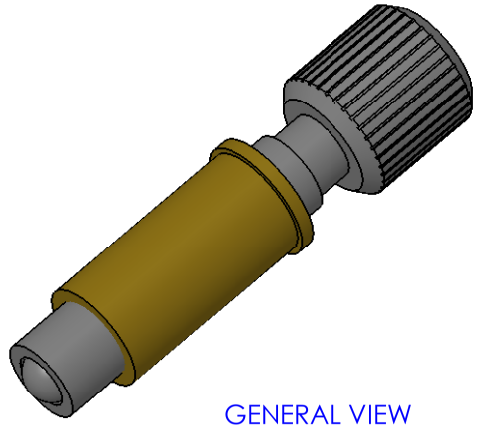
Specifications

Travel	0 ~ 5 mm
Thread	0.25 mm pitch
Sensitivity	0.5 µm

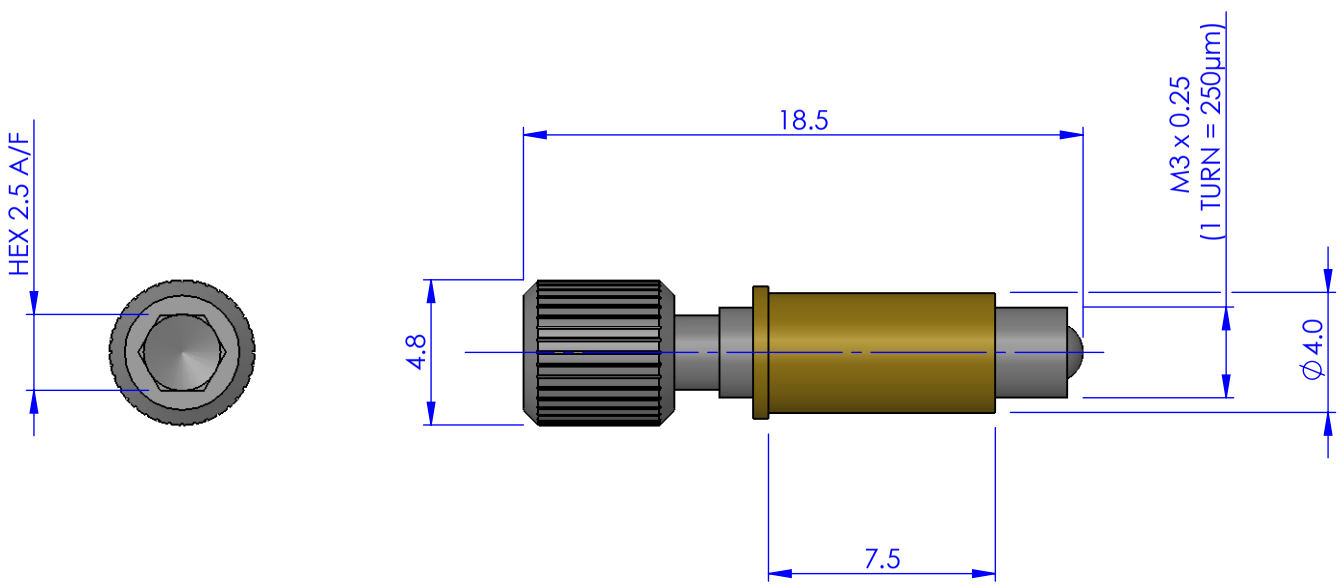
Options

Long travel version - 10 mm

	REVISIONS		
REV.	DESCRIPTION	DATE	APPROVED



GENERAL VIEW
SCALE: 4:1



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	02/06/2010
CHECKED	--	--

MATERIAL
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FINISH
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DO NOT SCALE DRAWING

Elliot Scientific

TITLE
MDE208 ADJUSTER

SIZE A4 | DWG. NO. MDE208

SCALE:4:1 | THIRD ANGLE PROJECTION | SHEET 1 OF 1

Micrometers, Adjusters, Piezos & Inertial Drives: Miniature Adjusters

MDE213 Simple Adjuster with 3 mm travel

- 3 mm travel
- Ultra-miniature
- Very smooth operation
- Very fine thread - 0.25 mm pitch
- Designed specifically for micropositioning applications
- Positioning to 0.5 µm using the supplied 1.27 AF Ball Drive key
- Long life stainless steel spindle with hard steel ball tip & nickel silver nut

ELLIOT MARTOCK

This miniature adjuster is used in the MDE265 series micropositioners. It incorporates a 3 mm diameter mounting spigot. A ball drive key is supplied to effect adjustments.

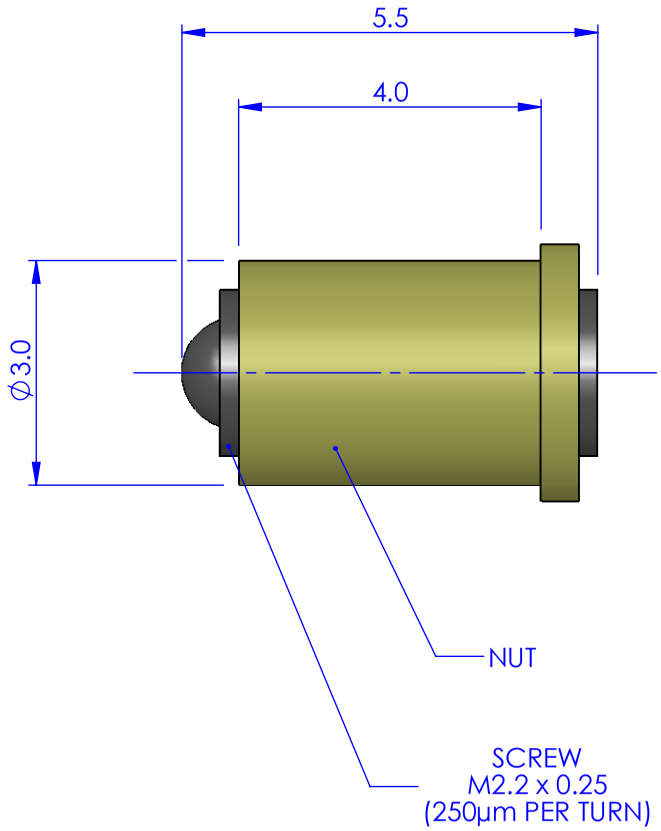
Specifications

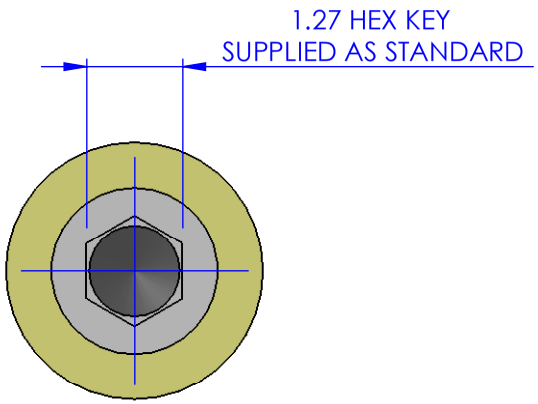
Travel	0 ~ 5 mm
Thread	0.25 mm pitch
Sensitivity	0.5 µm

Options

Long travel version

	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	23/04/2008
CHECKED	--	--

MATERIAL
--

FINISH
--

DO NOT SCALE DRAWING

Elliot Scientific

TITLE
M2.2 ADJUSTER

SIZE A4 | DWG. NO. MDE213

SCALE:10:1 | THIRD ANGLE PROJECTION | SHEET 1 OF 1

Micrometers, Adjusters, Piezos & Inertial Drives: Miniature Adjusters

MDE214 Simple Adjuster with 10 mm travel

- 10 mm travel
- Compact design
- Very smooth operation
- Positioning to 0.5 µm
- Very fine thread - 0.25 mm pitch
- Designed specifically for micropositioning applications
- Long life stainless steel spindle with hard steel ball tip & nickel silver nut

ELLIOT MARTOCK

This miniature adjuster is used in the MDE255 and MDE260 series micropositioners. It incorporates a side mounting bar and a knurled knob facilitates simple adjustment.

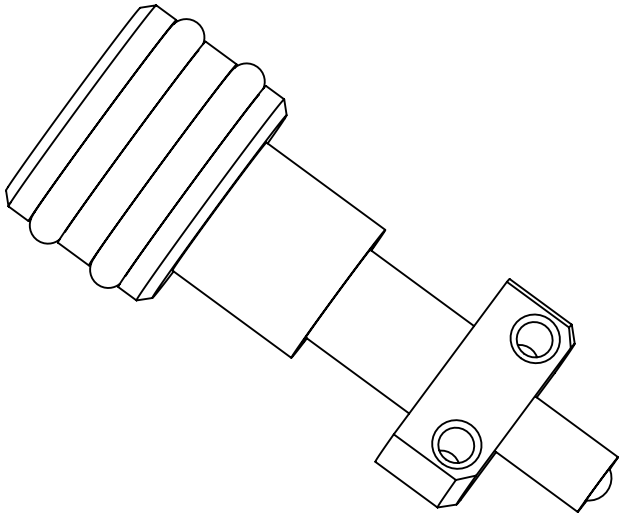
Specifications

Travel	0 ~ 10 mm
Thread	0.25 mm pitch
Sensitivity	0.5 µm

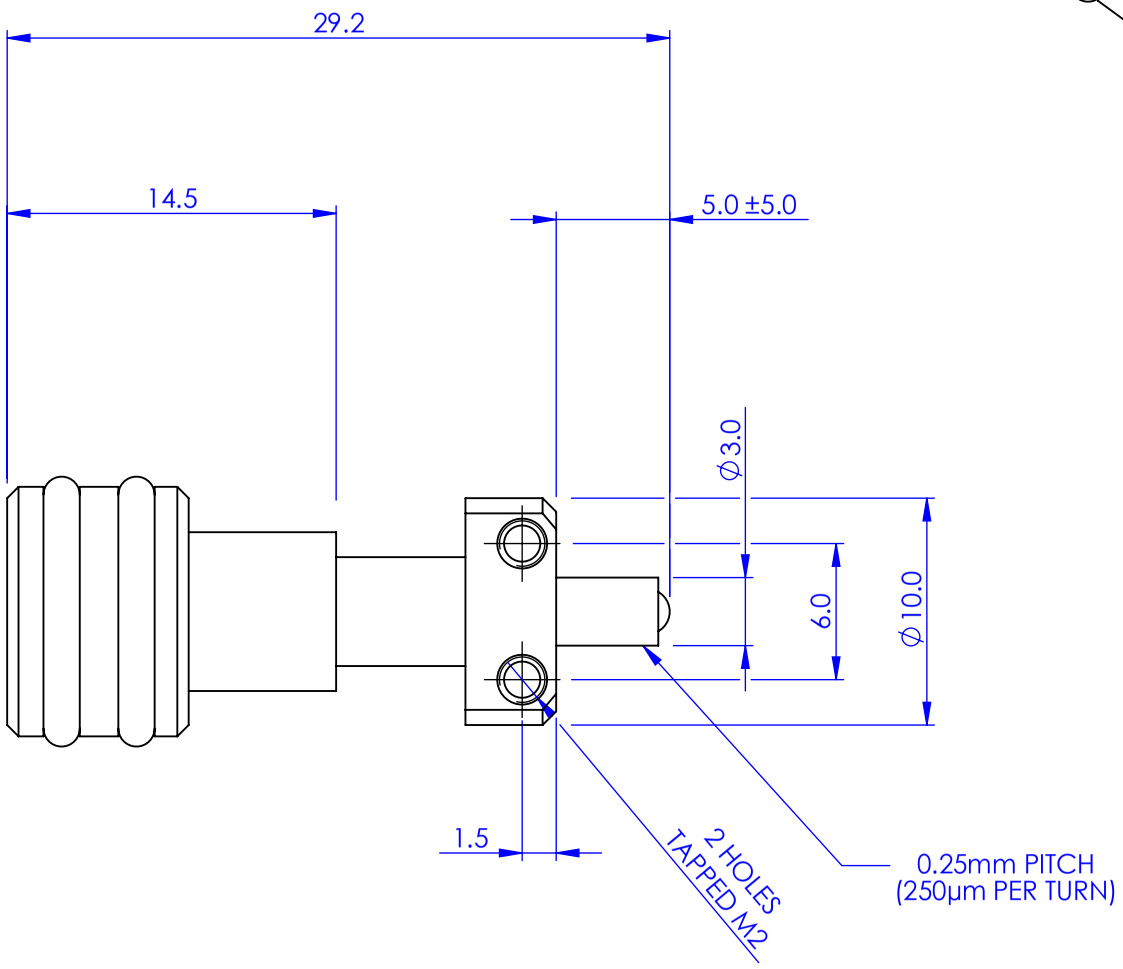
Options

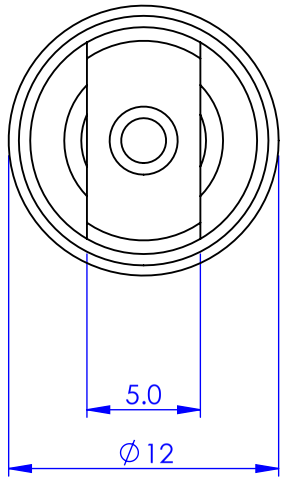
Short travel version

REVISIONS			
REV.	DESCRIPTION	DATE	APPROVED



GENERAL VIEW
SCALE: 3:1





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	07/04/2010
CHECKED	--	--

MATERIAL
ALUM. ALLOY, NICKEL SILVER, STAINLESS STEEL

FINISH
--

DO NOT SCALE DRAWING

Elliot Scientific

TITLE
ADJUSTER

SIZE **A4** | DWG. NO. MDE214

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

Micrometers, Adjusters, Piezos & Inertial Drives: Miniature Adjusters

E200 Simple Adjuster with 12 mm travel

- 12 mm travel
- Compact design
- Very smooth operation
- Positioning to 0.4 µm
- Highest quality hand-lapped adjusters
- Hex drive adjusters with removable knurled knobs
- Designed specifically for micropositioning applications
- Very fine thread - 0.20 mm pitch (~127 turns/inch thread)
- Long life stainless steel spindle with hard steel ball tip & nickel silver nut

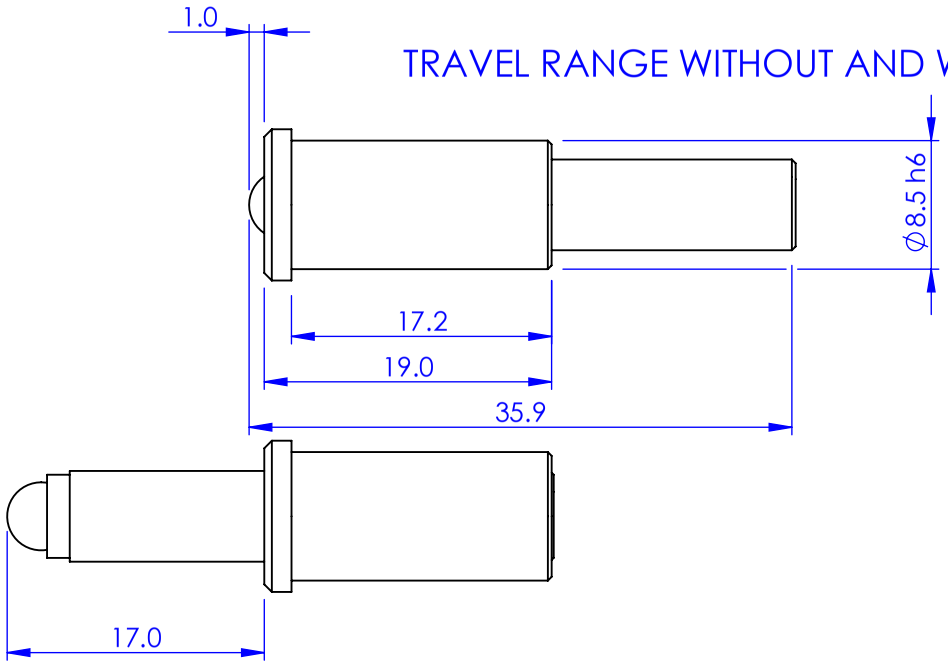
This miniature adjuster is used in the E901, E902 and E910 series micropositioners. Adjustment is either via a removable knurled knob or a 3 mm hex socket.

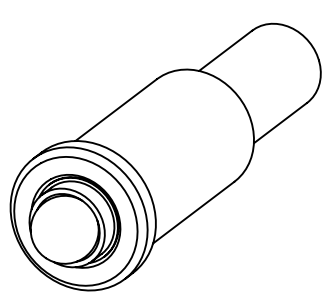
Specifications

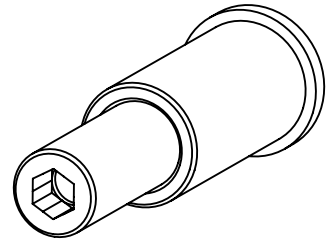
Travel	0-12 mm
Thread	0.20 mm pitch
Sensitivity	0.4 µm

REVISIONS			
REV.	DESCRIPTION	DATE	APPROVED

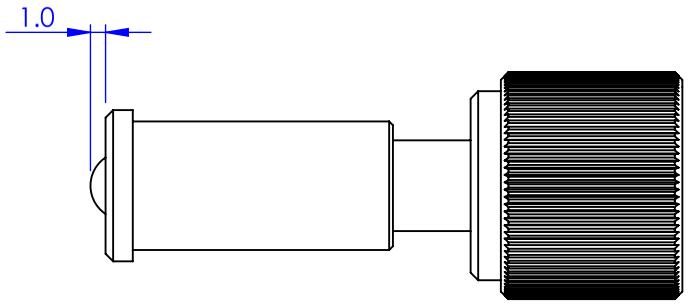
TRAVEL RANGE WITHOUT AND WITH REMOVEABLE KNOB

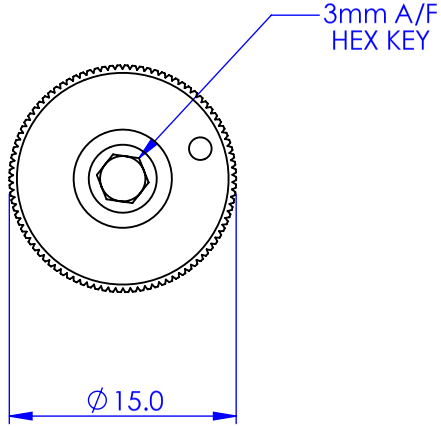


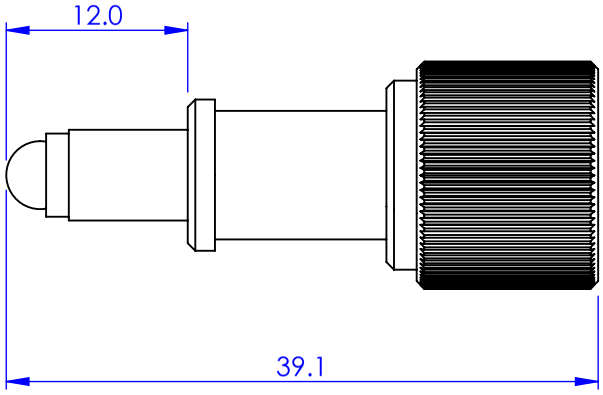




GENERAL VIEWS
SCALE: 2:1







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	15/09/2006
CHECKED	--	--

MATERIAL
--

FINISH
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DO NOT SCALE DRAWING

Elliot Scientific

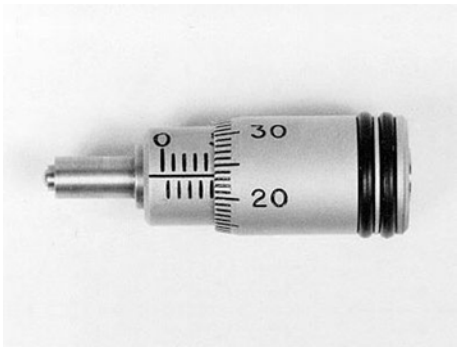
TITLE
E-200 ADJUSTER

SIZE A4 | DWG. NO. E-200 Adjuster

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

Micrometers, Adjusters, Piezos & Inertial Drives: Micrometers

MDE206 Micrometer Adjuster with 5 mm travel



ELLIOT MARTOCK

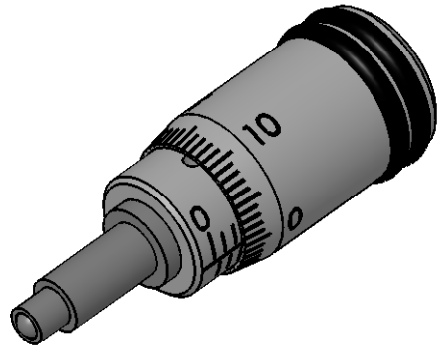
- Very compact
- 0.01 mm graduations, 0.5 mm per revolution
- Very smooth motion allows positioning to 1 µm
- Rubber rings provide a sensitive but precise grip
- Designed specifically for micropositioning applications
- Stainless steel screw with hard steel ball on spindle tip

This micrometer features rubber finger grips and very smooth motion that give a linear sensitivity of 1 µm. Graduations indicate 10 µm of linear travel.

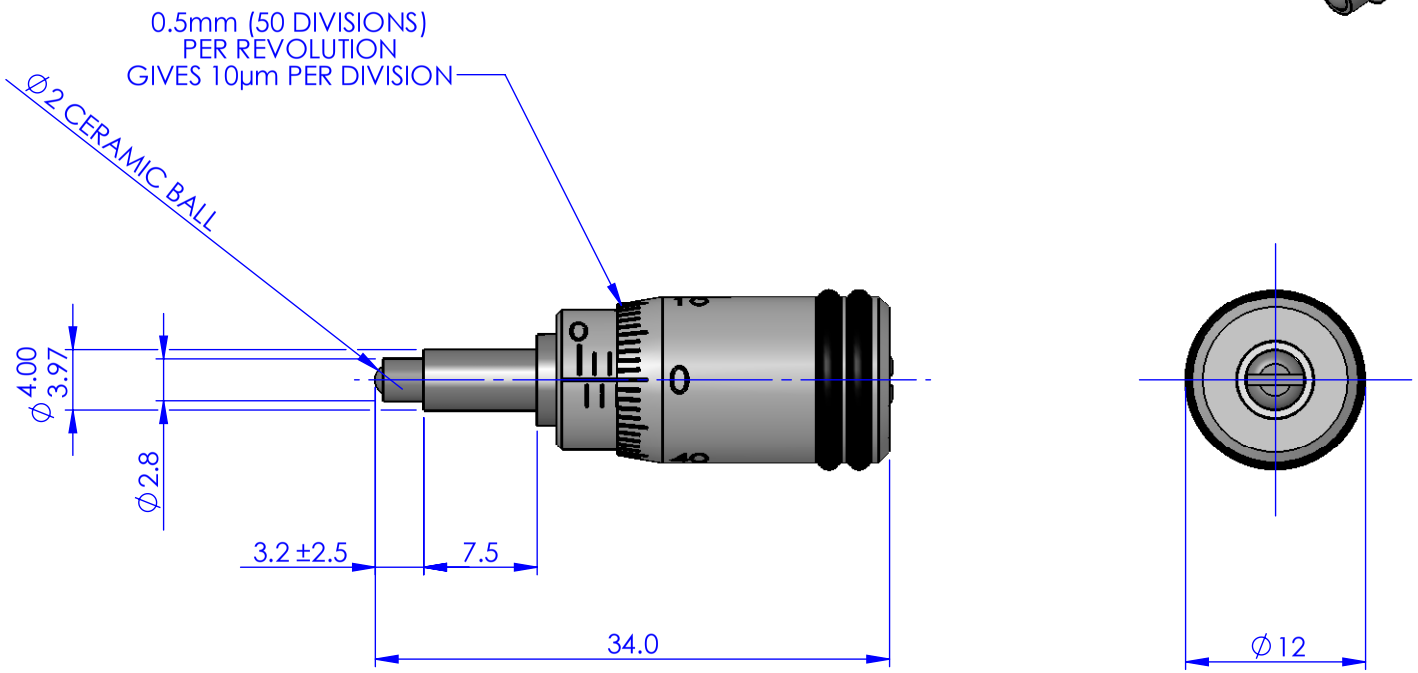
Specifications

Travel	0 ~ 5 mm
Displacement	0.5 mm per revolution
Graduations	10 µm
Sensitivity	1 µm
Spigot diameter	4 mm

REVISIONS			
REV.	DESCRIPTION	DATE	APPROVED



GENERAL VIEW



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	22/04/2008
CHECKED	--	--

MATERIAL
ALUM. ALLOY, NICKEL SILVER, STAINLESS STEEL

FINISH
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DO NOT SCALE DRAWING

Elliot Scientific

TITLE
5mm TRAVEL MICROMETER

SIZE A4 | DWG. NO. MDE206

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

Micrometers, Adjusters, Piezos & Inertial Drives: Micrometers

MDE219 Micrometer Adjuster with 10 mm travel

ELLIOT MARTOCK

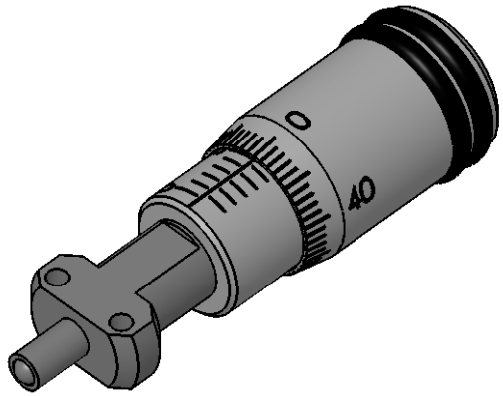
- Very compact
- 0.01 mm graduations, 0.5 mm per revolution
- Very smooth motion allows positioning to 1 µm
- Rubber rings provide a sensitive but precise grip
- Designed specifically for micropositioning applications
- Stainless steel screw with hard steel ball on spindle tip

This micrometer features rubber finger grips and very smooth motion that give a linear sensitivity of 1 µm. Graduations indicate 10 µm of linear travel.

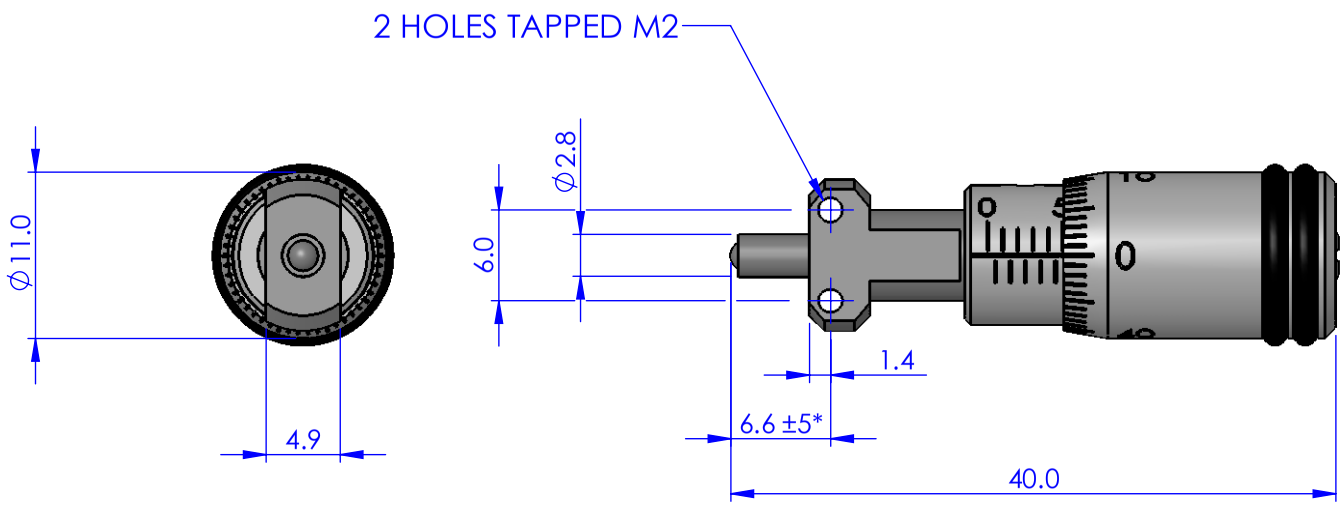
Specifications

Travel	0 ~ 10 mm
Displacement	0.5 mm per revolution
Graduations	10 µm
Sensitivity	1 µm
Mounting	M2 tapped holes x2

	REVISIONS		
REV.	DESCRIPTION	DATE	APPROVED



GENERAL VIEW



*MDE219 HAS ±5mm OF TRAVEL FROM POSITION SHOWN.
SCREW PITCH IS 0.5 SO ONE COMPLETE TURN GIVES
0.5mm OF TRAVEL AT 10µm PER DIVISION

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	22/04/2008
CHECKED	--	--

MATERIAL
ALUM. ALLOY, NICKEL SILVER, STAINLESS STEEL

FINISH
--

DO NOT SCALE DRAWING

Elliot Scientific

TITLE
±5mm TRAVEL MICROMETER

SIZE A4 | DWG. NO. MDE219

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

Micrometers, Adjusters, Piezos & Inertial Drives: Micrometers

MD-Mitutoyo Digital Micrometer Adjuster with 25 mm travel

- Data hold
- Data output
- Zero setting
- Large LCD display
- Inch/metric conversion
- Tungsten carbide tip
- Reads to 1 µm or 0.00005"

Digital micrometer with direct read-out of position to 1 µm on LCD display. Very smooth motion that gives a linear sensitivity of 0.5 µm.

Specifications

Travel	0 ~ 25 mm
Displacement	0.635 mm (0.025") per revolution
Graduations	0.001"
Sensitivity	0.5 µm
Mounting shaft	9.5 mm Ø

Micrometers, Adjusters, Piezos & Inertial Drives: Precision Adjusters

MDE215 Ultra Fine Mirror Mount Adjuster

- 20 nm resolution
- Lockable coarse drive
- Provides ultra-fine adjustment
- Retrofits existing mirror mounts
- Fits the ¼-80 tapped hole
- Improves resolution

The MDE215 incorporates a patented† mechanical lever that can achieve a linear sensitivity of 20 nm. Suitable for retrofitting to existing optical mounts, as it fits the 1/4-80 tapped hole typically found on kinematic mirror mounts, enhancing their adjustment precision.

Specifications

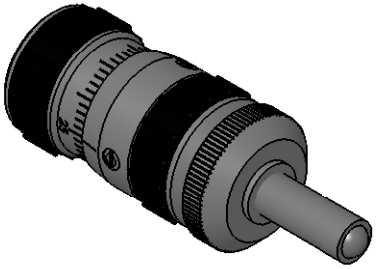
Resolution	20 nm
Mounting size	¼-80 tapped thread

Options

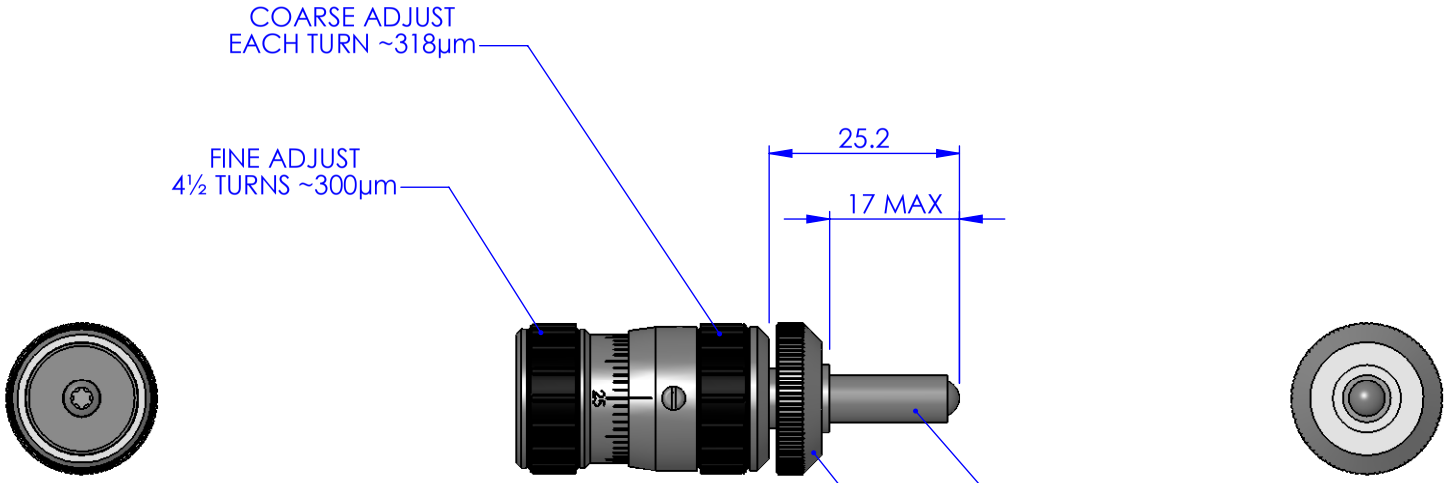
Elliot Scientific can supply a mirror mount for 1" optics fitted with two MDE215 adjusters. Resolution is increased from around 2 arc seconds to 0.1 arc seconds.

† Patent Nos. GB 2152616B & USA 4617833

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	12/07/2010
CHECKED	--	--

MATERIAL

FINISH
--

DO NOT SCALE DRAWING

Elliot Scientific

TITLE
HIGH PRECISION ADJUSTER

SIZE A4 | DWG. NO. MDE215

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

Micrometers, Adjusters, Piezos & Inertial Drives: Precision Adjusters

MDE216 High Precision Manual Adjuster

- Negligible backlash
- Graduated knob
- Output via non-rotating hard steel ball
- Positive travel limit stops on control knob
- Coarse adjustment: 8.0 mm travel at 1 µm resolution
- Fine adjustment: 0.3 mm travel at 20 nm resolution
- Very smooth feel, largely independent of applied load
- Santoprene control ring allows a delicate touch and reduces heat transfer into the drive

The MDE216 high precision adjuster is based on a patented† mechanical lever system and is the highest resolution mechanical (non-piezo) adjuster in the Elliot Scientific range.

It is ideal for use with the Elliot Gold™ series flexure stages as it incorporates a 12 mm diameter matching sleeve. Travel is 8 mm (limited to 2 mm in flexure stages), with 20 nm resolution on the fine control.

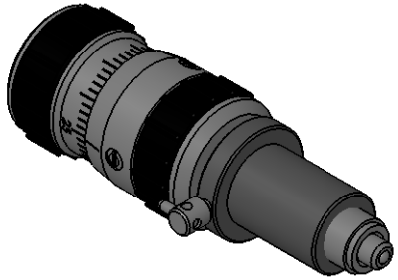
Not all applications require that three adjusters be fitted in a flexure stage. Substitution with an MDE229 fixed axis spacer sets an axis in mid travel position and provides a cost saving. At a later date it can be replaced by an adjuster if user requirements change.

Specifications

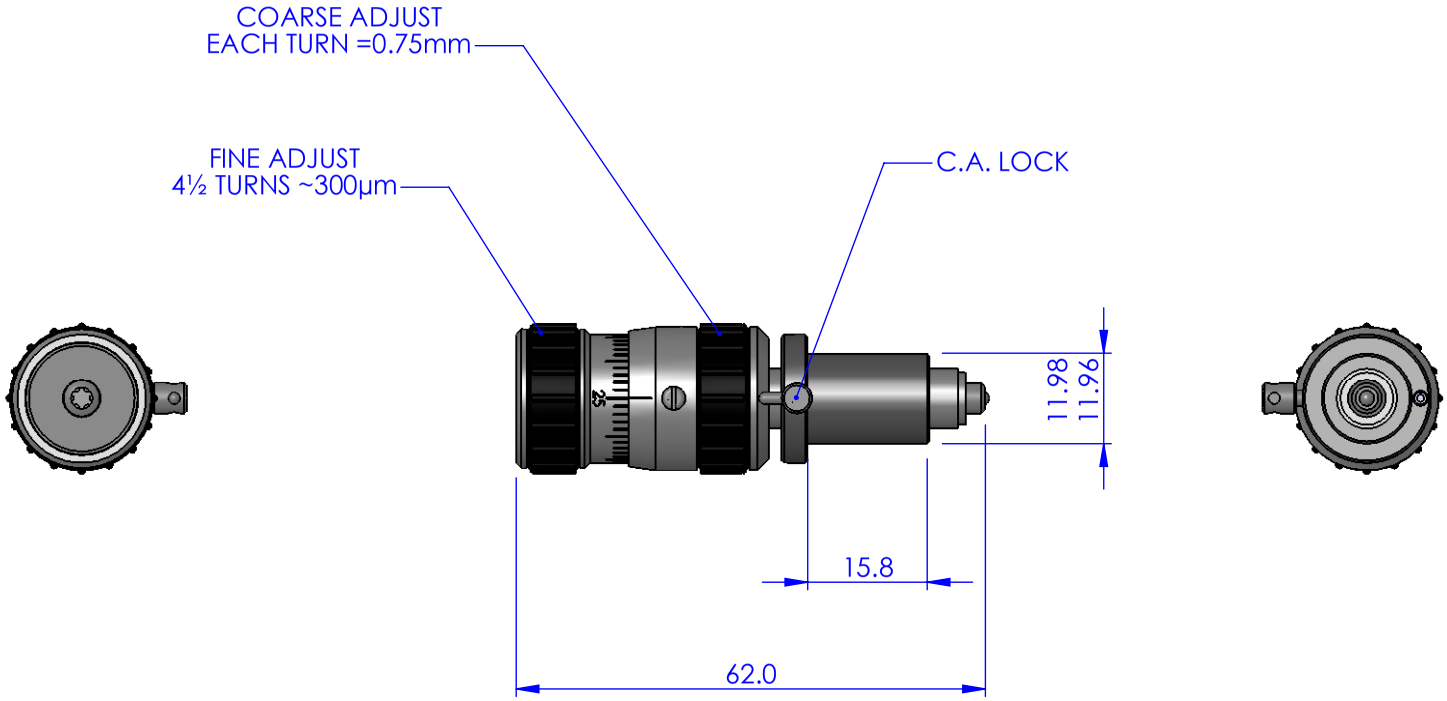
Coarse adjustment	8 mm travel, 1 µm resolution
Fine adjustment	0.3 mm travel, 20 nm resolution
Readout	Graduated knob with 50 arbitrary divisions

† Patent Nos. GB 2152616B & USA 4617833

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	12/07/2010
CHECKED	--	--

MATERIAL

FINISH
--

DO NOT SCALE DRAWING

Elliot Scientific

TITLE
HIGH PRECISION ADJUSTER

SIZE A4 | DWG. NO. MDE216

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

Micrometers, Adjusters, Piezos & Inertial Drives: Precision Adjusters

MDE217 Simple Manual Adjuster

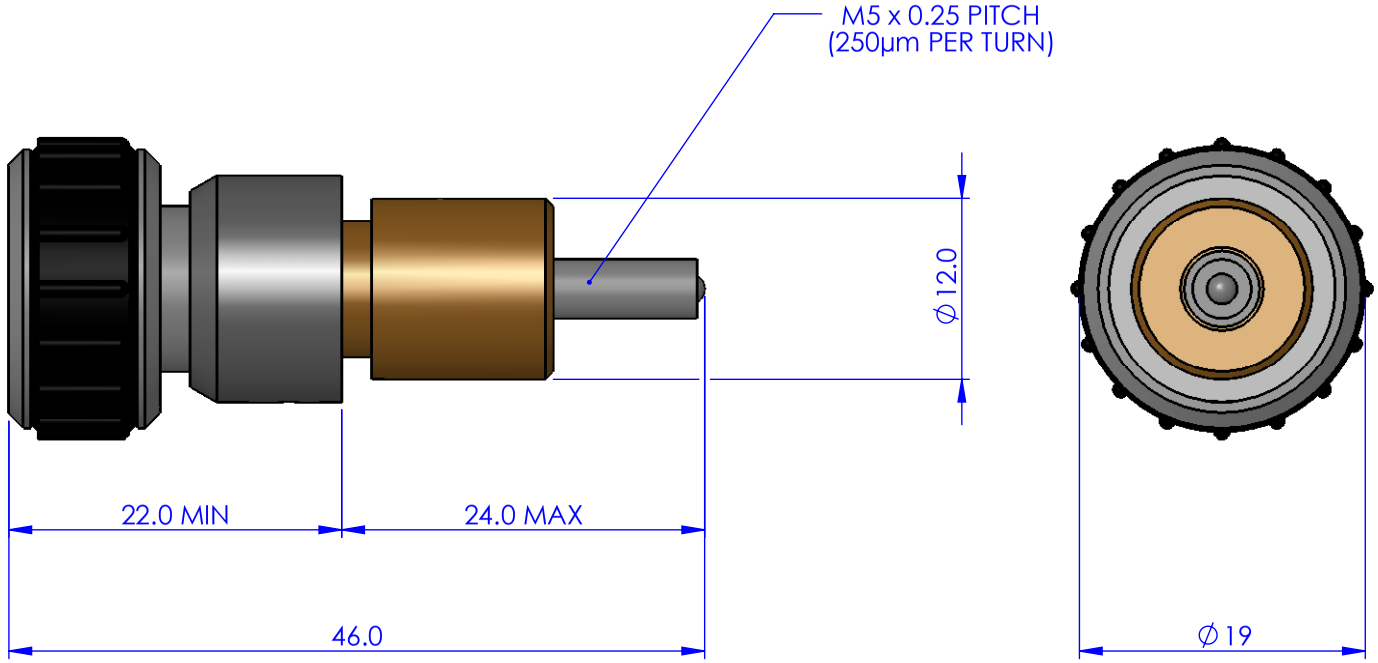
- 8.0 mm travel
- 1 µm resolution
- Cost effective

The MDE217 is a manual adjuster incorporating a 12 mm diameter sleeve matched to the Elliot Gold™ series flexure stages. It has 1 µm resolution and provides a cost effective solution where simple adjustment is required.

Specifications

Travel	8 mm
Resolution	1 µm
Thread type	0.25 pitch

	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	29/04/2008
CHECKED	--	--

MATERIAL

FINISH
--

DO NOT SCALE DRAWING

Elliot Scientific

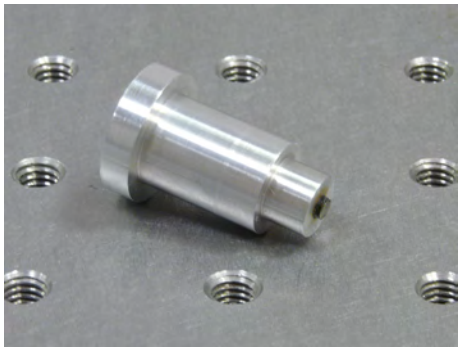
TITLE
SIMPLE ADJUSTER

SIZE A4 | DWG. NO. MDE217

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

Micrometers, Adjusters, Piezos & Inertial Drives: Precision Adjusters

MDE229 Fixed Axis Spacer



- Eliminates expense of high precision adjuster
- Preset to fit Elliot Gold™ series flexure stage

A Fixed Axis Spacer is used when a third axis is not required on a flexure stage. For example, when used as an YZ waveguide mount between two XYZ stages.

Not all applications require that three adjusters be fitted in a flexure stage. Substitution with an MDE229 fixed axis spacer sets an axis in mid travel position and provides a cost saving. At a later date it can be replaced by an adjuster if required.

Micrometers, Adjusters, Piezos & Inertial Drives: Motorised Actuators

MDE231 Stepper Motor Actuator: 8 mm travel

ELLIOT MARTOCK

- Non-rotating spindle
- Resolution 0.254 µm single step
- Integral stepper motor drive and gearbox
- Integrates with Elliot Gold™ series flexure stages and rotation units

The MDE231 is a stepper motor-driven 8 mm travel actuator. The non-rotating spindle offers low noise translation or rotation when integrated with the Elliot Gold™ series flexure stages, pitch & yaw stages and rotation units. Developed for the demanding rotation and alignment of fibre optic components, it can be used anywhere that stable, accurate motion is needed.

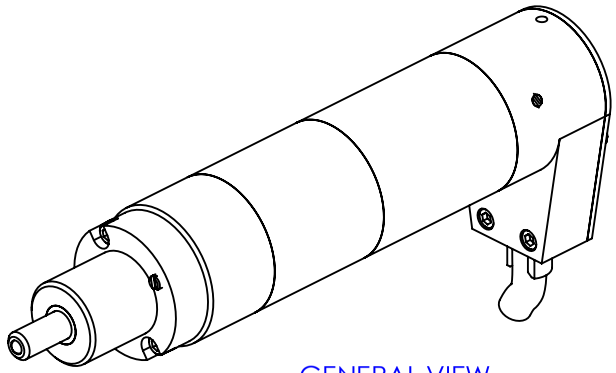
Specifications

Travel	8 mm
Thread	0.254 µm pitch
Max. speed	0.5 mm/s
Non-rotating spindle	
Manual adjustment via hex key	

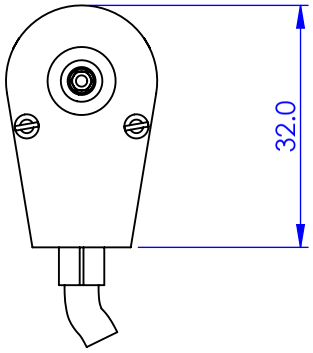
Options

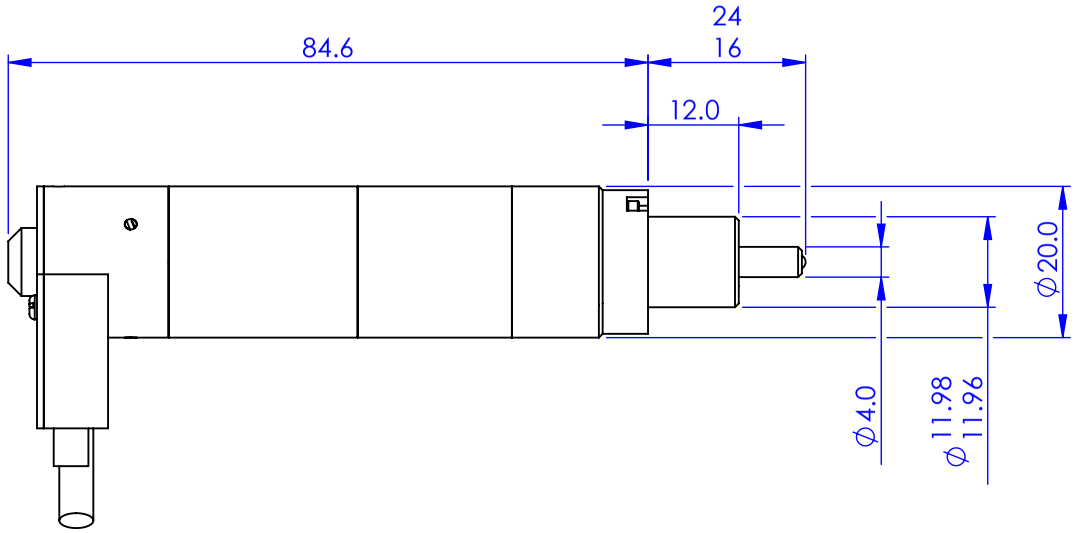
Stepper drive controllers available

	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
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DO NOT SCALE DRAWING

Elliot Scientific

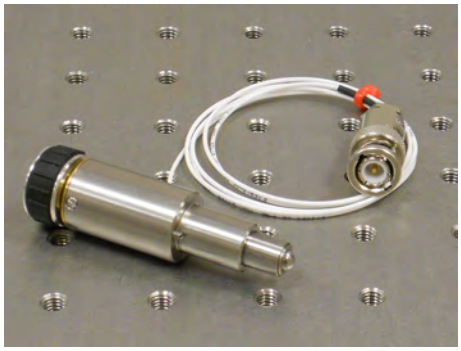
TITLE
8mm STEPPER MOTOR ACTUATOR

SIZE **A4** | DWG. NO. MDE231

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

Micrometers, Adjusters, Piezos & Inertial Drives: Piezo Adjusters

MDE218 Standard Piezo Adjuster with 25 µm travel



- 25 µm direct-drive piezo
- 8 mm coarse travel on 0.25 pitch thread
- Adjustable hard stop prevents damage to the piezo when axis is at full mechanical extension

Standard piezo adjuster for applications requiring greater resolution than that achievable with manual adjusters or where "hands free" operation of the positioner is required.

The MDE218 piezo adjuster offers 25 µm of direct-drive piezo travel with 10 nm resolution and incorporates a 12 mm sleeve matched to the Elliot Gold™ series flexure stage.

Specifications

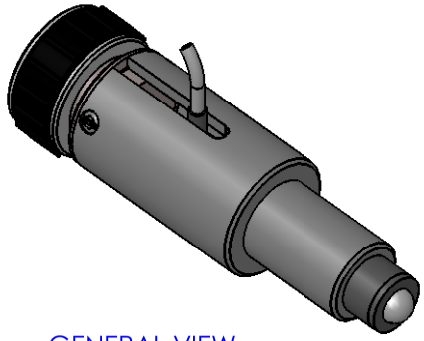
Travel	25 µm direct-drive piezo
Resolution	10 nm
Coarse travel	8 mm coarse travel on 0.25 pitch thread (limited to 2 mm when fitted to an Elliot Gold™ Series flexure stage)
Operating voltage	0 ~ 150 V
Hysteresis	12 ~ 15%

Adjustable hard stop prevents damage to the piezo when axis is at full mechanical extension

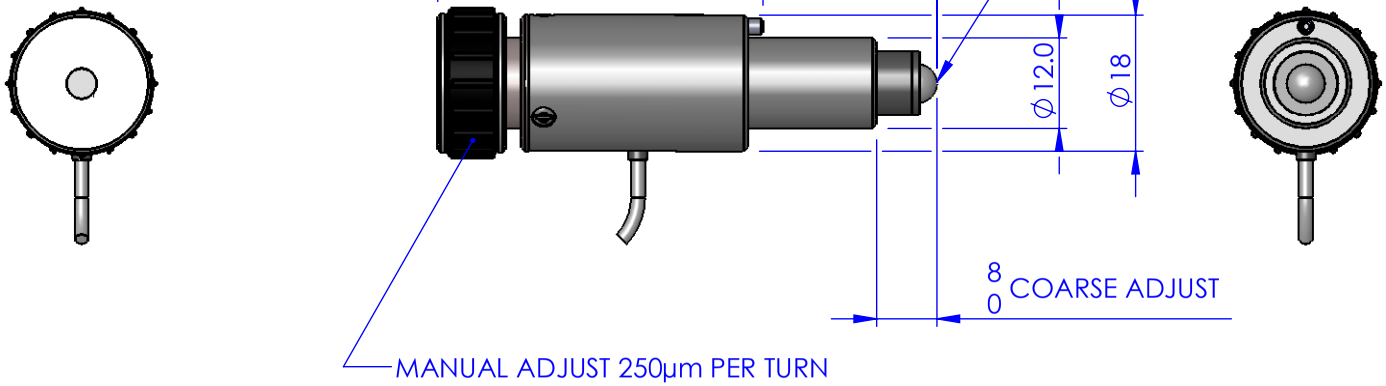
Options

Long travel 100 µm piezo adjuster (MDE227)
Very long travel 200 µm piezo adjuster (MDE230)
DAli 3 piezo controller (E2300)

	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	30/04/2008
CHECKED	--	--

MATERIAL

FINISH
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DO NOT SCALE DRAWING

Elliot Scientific

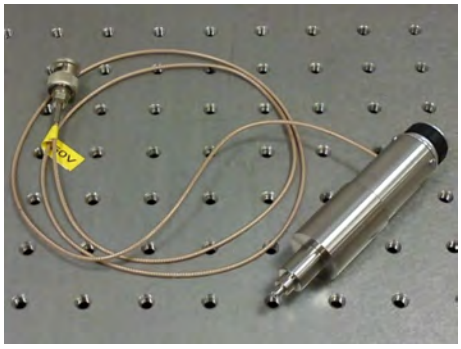
TITLE
PIEZO ADJUSTER

SIZE **A4** | DWG. NO. MDE218

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

Micrometers, Adjusters, Piezos & Inertial Drives: Piezo Adjusters

MDE227 Long Travel Piezo Adjuster with 100 µm travel



- 100 µm travel
- 50 nm resolution

This Long Travel Piezo Adjuster is for applications requiring an increased range of high precision adjustment. The MDE227 gives 100 µm of piezo travel with 50 nm resolution by means of a lever mechanism to amplify the extension of a 40 µm piezo stack. It also incorporates a 12 mm sleeve matched to the Elliot Gold™ series flexure stage.

On drives such as the MDE227, an integral hex adjuster is built into the coarse drive. This adjuster protrudes significantly from the flexure stage body, so finger pressure effects during manual adjustment can cause cross-talk between axes. Adjustment using a ball-headed hex key avoids these effects and the adjuster is driven in the intended axis only.

Specifications

Travel	100 µm piezo travel
Resolution	50 nm
Coarse travel	± 1 mm travel on coarse drive with 1 µm resolution
Operating voltage	0 ~ 150 V
Hysteresis	12 ~ 15%

Options

Standard travel 25 µm piezo adjuster (MDE218)
Very long travel 200 µm piezo adjuster (MDE230)
DAli 3 piezo controller (E2300)

Micrometers, Adjusters, Piezos & Inertial Drives: Piezo Adjusters

MDE230 Very Long Travel Piezo Adjuster with 200 µm travel

- 200 µm travel
- 130 nm resolution

This Very Long Travel Piezo Adjuster is for applications requiring an increased range of high precision adjustment.

The MDE230 gives 200 µm of piezo travel with 130 nm resolution by means of a lever mechanism to amplify the extension of a piezo stack. It also incorporates a 12 mm sleeve matched to the Elliot Gold™ series flexure stage.

The MDE230 features an integral hex adjuster built into the coarse drive. The adjuster protrudes significantly from the flexure stage body, so finger pressure effects during manual adjustment can cause cross-talk between axes. Adjustment using a ball-headed hex key aviods these effects and the adjuster is driven in the intended axis only.

Specifications

Travel	200 µm piezo travel
Resolution	130 nm
Coarse travel	± 1 mm travel on coarse drive with 1 µm resolution
Operating voltage	0 ~ 150 V
Hysteresis	12 ~ 15%

Options

Standard travel 25 µm piezo adjuster (MDE218)

Long travel 100 µm piezo adjuster (MDE227)

DAli 3 piezo controller (E2300)