

## **Linear Dovetail Slide Assemblies**

UniSlide<sup>®</sup> BiSlide<sup>®</sup> XSlide<sup>™</sup>

catalogue LGV-A



Motion solutions for the professional



### Design Manufacture Supply

**Our proven** engineering experience combined with continual development, results in the best possible motion products and systems for scientific, industrial. and defence organisations around the world.

Shipping Dept to be commended, travelled beautifully, packed very well...

### **GE Infra, Aviation US**

Thank you for a very quick and very productive response, very much appreciated...

### Thales

Thank you for your assistance and swift response and professional approach, It has been a refreshing pleasure...

**Global Bearings** 

### MOTION control

Components, systems & support.

Introduction	4
Engineering information	5
Accurate and reliable motion	8
Lubrication information	8
UniSlide assemblies	9
UniSlide selection guide	11
A1500 series - Motorised	12
A1500 series - Manual	13
A2500 series - Motorised	14
A2500 series - Manual	15
A4000 series - Motorised	16
A4000 series - Manual	17
A6000 series - Motorised	18
A6000 series - Manual	19
Multi-Axis combinations	20
Adaptors	21
Assembled UniSlide XY tables	22
<b>UniSlide modifications</b>	21
UniSlide options	23
<b>BiSlide assemblies</b>	24
XSlide assemblies	30
Elevating tables	
Manual	33
Motorised	34
Rotary tables	35
Motors, drives and controllers	36
Systems and customisation	38





3

### Meeting your needs for professional motion solutions

At LG Motion Limited we support your needs across Europe for the design, manufacture and supply of specialist motion products and services, whether you are an End-User, an Original Equipment Manufacturer or a Professional Systems Integrator.

Our product range includes:

- · Manually driven linear and rotary tables
- · Motorised linear and rotary positioning equipment

- · Machine building components and systems
- Drives and motion control systems

Our comprehensive solutions are designed to support you, whatever industry you operate in. We successfully serve a wide diversity of market areas including Research & Development, Aerospace, Electronics & Semiconductor, Nuclear, Defence, Print & Packaging and Film industries.

From our manufacturing facility in Hampshire, United Kingdom, we can supply you with the BiSlide<sup>®</sup>, UniSlide<sup>®</sup> and XSlide<sup>™</sup> assemblies and our own range of linear, rotary and elevator positioning tables, plus drives and motion controls for medium to high precision applications.

From improvements to an established process to a completely new application, our innovative designs and unique product range can offer size and technical advantages to give you the competitive edge. Whether you require a simple manual slide for a laboratory application or a customised multi-axis system, we can meet your precise requirements.



# **Engineering information**

### **Basic construction**

Dovetail assemblies are manufactured from precision extrusion of high grade aluminium alloy which provides lightweight, non-magnetic, corrosion resistant performance.



### **Magnetic properties**

The dovetail assemblies are made from non-magnetic aluminium alloy. Most leadscrews are 303 stainless and considered to be antimagnetic to a high degree. Brass leadscrews are only offered in standard grade accuracy. Some dovetail models may contain small magnetic parts for which no non-magnetic replacement is available. For further information please contact us.

### **Straightness**

There are three types of deviations from straightness that can occur; XYZ, referred to as **BOW** (flatness), **TWIST** (roll), **RUN-OUT** (straightness).

It is important to note that when installing linear slides, the degree of Bow can be seriously affected by the degree of flatness of the mounting surface and relative tension of the mounting screws.

If your application requires improved straightness tolerances, we can supply and certify enhanced units.



### **Engineering information**

### Leadscrews

The 1mm and 2mm leadscrews are formed by rolling through precision dies resulting in higher quality and accuracy than cut threads. All screws are made from high quality austenitic stainless steel with low magnetic properties.

Resonance or whip can develop at 1000rpm for lengths >900mm. For motorised units with travel >900mm a resonance damper can be incorporated or eliminated within the stepper drive technology.

### Wear resistance

The standard aluminium alloy dovetail base and low friction polymer pads of the slider provide excellent performance as a bearing material combination. Unlike ballscrew slide mechanisms, no lubrication is required. Under light to moderate loads, sideways play caused by wear during the first 30,000 cycles of operation will typically be <0.004mm. Wear after that is reduced to 0.001mm, approximately over the next 50,000 cycles. Sliders are equipped with adjustment screws to compensate for wear if required.

Electroless nickel plating is recommended for clean room environments Hard anodising is recommended for units with a serviceable life requirement in excess of 100,000 cycles or where abrasive conditions are met.

### Load configurations



### **Vacuum applications**

With modifications, UniSlide can be used in vacuum environments. To create a vacuum-capable UniSlide, we need to know the operating temperature of the environment and the vacuum, (in Torr) that the slide will be subjected to. Necessary substitutions of materials will be based on this information.

### **Positional feedback**

For accurate positional information a variety of linear and rotary feedback devices can be supplied and fitted. Please discuss your requirements with us.

### Slide maintenance

All dovetail assemblies are pre-greased during production, except vacuum prepared units. Additional lubrication should be applied to the dovetail slideway and leadscrew at regular intervals.

Always ensure that dovetail slideways and leadscrew are protected with a light film of lubrication. Do not use heavy oils, heavy grease or any spray lubricant containing solvents as this may lead to long-term damage.

### Service and maintenance

A service, repair and refurbishment facility is available at our factory for any work required outside of the standard warranty period.

### **Development**

Due to a policy of continual product development we reserve the right to change specifications without notice.

The design and manufacture of motion components and systems is our business. We pride ourselves in being able to offer a wide range of innovative solutions.

As manufacturers we cater for OEM applications with standard and customised units for volumes of 1 to 1000.

### **Engineering information**

### Guarantee

LG Motion Limited guarantees to replace all faulty parts free of charge for a period of 12 months from invoice date. Any labour will be carried out free of charge for the same period on goods returned to our factory. The Customer is liable for packing and delivery charges, to see Terms & Conditions visit www.lg-motion.co.uk/salesconditions.htm

### Warranty protects your investment for years

Dovetail products supplied by LG Motion are warranted to be free from defects for a period as shown<sup>\*</sup>, on all parts.

\* UniSlide<sup>®</sup> - 24 months

- \* BiSlide<sup>®</sup> 60 months
- \* XSlide<sup>™</sup> 60 months

LG Motion's obligation under this warranty does not apply to defects due, directly or indirectly, to misuse, abuse, negligence, accidents, or unauthorised repairs, alterations, or lack of maintenance; or to items that would normally be consumed or require replacement due to normal wear. Claims must be authorised, and a return authorisation number issued before a product can be returned.

The warranty does not cover items which are not manufactured or constructed by LG Motion. These components are warranted by their respective manufacturer.

Under the warranty, LG Motion will, at its option, either repair or replace a nonconforming or defective product.

The above warranty is the only warranty authorised by LG Motion. LG Motion shall in no event be responsible for any loss of business or profits, downtime or delay, labour, repair, or material costs, injury to person or property or any similar or dissimilar incidental or consequential loss or damage incurred by purchaser, even if LG Motion has been advised of the possibility of such losses or damages.

Inasmuch as LG Motion does not undertake to evaluate the suitability of any LG Motion product for any particular application, the purchaser is expected to understand the operational characteristics of the products, as suggested in documentation supplied by LG Motion, and to assess the suitability of the LG Motion products for each application.

### Glossary of terms

Common terminology, descriptions and definition used within the industry.

**Acceleration** The change in velocity as a function of time.

**Accuracy** An absolute measurement defining the difference between actual and commanded position.

Axial runout Positioning error of the rotary stage in the vertical direction when the tabletop is orientated in the horizontal plane.

**Axis of rotation** A centre line about which rotation occurs.

**Backlash** A component of bidirectional repeatability, it is the non-responsiveness of the system load to

reversal of input command. Bearing A support mechanism allowing relative motion between two surfaces loaded against each other. This can be a rotary ball bearing, linear slide bearing,

or air bearing (zero friction). Cantilevered load A load not symmetrically mounted on a stage. Critical speed A term used in the specification of a lead screw indicating the maximum rotation speed before resonance occurs. This speed limit is a function of the screw diameter, distance between support bearing, and bearing

rigidity. **Duty cycle** For a repetitive cycle, the ratio of 'on' time to total cycle time used to determine a motor's rms current and torque/force.

Datum sensor See Home.

Flatness (of travel) Measure of the vertical deviation of a stage as it travels in a horizontal plane.

**Friction** The resistance to motion between two surfaces in contact with each other.

Home Reference position for all absolute positioning movements. Usually defined by a home limit switch and/or encoder marker.

Home switch A sensor used to determine an accurate starting position for the home cycle.

Incremental move A move referenced from its starting point (relative move). Inertia The physical property of an object to resist changes in velocity when acted upon by an outside force. Inertia is dependent upon the mass and shape of an object.

Lead error The deviation of a lead screw or ball screw from its nominal pitch. Lead screw A device for translating rotary motion into linear motion. Unit consists of an externally threaded screw and an internally threaded carriage (nut). Limit switch A sensor used to determine the end of travel on a linear motion assembly.

Load carrying capability The maximum recommended payload that does not degrade the listed specifications for a mechanical stage.

Motion profile A method of describing a process in terms of velocity, time, and position.

NEMA National Electrical Manufacturer's Association. Sets standards for motors and other industrial electrical equipment. Orthogonality The condition of a surface or axis which is perpendicular (offset 90 degrees) to a second surface or axis. Orthogonality specification refers to the error from 90 degrees from which two surfaces of axes are aligned.

**Pitch (of travel)** Angular motion of a carriage around an axis perpendicular to the motion direction and perpendicular to the yaw axis.

**Pitch error** Positioning error resulting from a pitching motion.

Radial runout Positioning error of the rotary stage in the horizontal direction when the tabletop is orientated in the horizontal plane. Radial runout is defined as the total indicator reading on a spherical ball positioned 50mm above the tabletop and centred on the axis of rotation.

**Range** The maximum allowable travel of a positioning stage.

Repeatability The maximum deviation from the mean (each side) when repeatedly approaching a position. Unidirectional repeatability refers to the value established by moving toward a position in the same direction. Bidirectional repeatability refers to the value established by moving toward a position in the same or opposite direction.

Resolution The smallest change in distance that a device can measure. Resonance The tendency of a system to oscillate with high amplitude when excited by energy at a certain frequency. This frequency is known as the system's natural frequency of vibration, resonant frequency, or eigenfrequency.

**Roll (of travel)** Angular motion of a carriage around an axis parallel to the motion direction and perpendicular to the yaw axis.

**Roll error** Positioning error resulting from a roll motion.

**Runout** The deviation from the desired form of a surface during full rotation (360 degrees) about an axis. Runout is measured as Total indicated Reading (TIR). For a rotary stage, axis runout refers to the deviation of the axis of rotation from the theoretical axis of rotation.

Setting time Time required for a motion system to cease motion once the command for motion has ended. Shaft runout Deviation from straight line travel.

Stiction Friction encountered when accelerating an object from a stationary position. Static friction is always greater than moving friction, and limits the smallest possible increment of movement.

**Straightness of travel** Measure of the side-to side deviation of a stage as it travels in a horizontal plane.

Wobble An irregular, non-repeatable rocking or staggering motion of the table top of a rotary stage. Wobble is defined as an angular error between the actual axis of rotation and the theoretical axis of rotation.

Yaw (of travel) Rotation about the vertical axis, perpendicular to the axis of travel. Angular movement (error) that affects straightness and positioning accuracy.

**Yaw error** Positioning error resulting from a yaw motion.

# **Accurate and reliable motion**

With most positioning systems, the prime concern is usually repeatability.

Repeatability is defined as the ability to consistently return a work piece or tool unit to the same position time after time.

Accuracy is defined as the maximum allowable error between the target position and the actual position achieved.

In practice, repeatability and accuracy figures are often confused.



# **Lubrication information**

All our positioning units are pre-greased at the factory. To ensure long-life and maximum reliability, additional lubrication should be applied to the bearing and drive screws (*leadscrews, rolled ballscrew, precision ground ballscrew*) at planned intervals.

- The supplied lubricant for the UniSlide low friction polymer bearing pads is a lithium-based grease, light consistency NLG1 grade 1
- The recommended lubricant for the BiSlide and XSlide assemblies is BL-1 oil This does not however suit all environments
- The LG series has a range of lubricants to use, based on the unit requirements
- Leadscrews use a lithium-based grease, NLG1 grade
- All lubricants can be ordered from LG Motion at the time of supplying the positioning unit or as a spare at a later date
- Dovetail slides can operate without lubrication



Order code: 0010-101-05 Syringe -White Lithium Grease 5ml Order code: LG-LUBRIPLATE Lubriplate Aero -14oz Tin

### **Lubrication Intervals**

- Only a light film of grease is required, excess grease is just pushed off. As a general guide:
- Continuous use (24 hours per day) Grease daily
- Periodical use (several hours per day) Grease weekly
- Occasional use (several hours per month) Grease monthly
- Always ensure that leadscrews and bearing surfaces have the appearance of an oily film
- Do not use oils, heavy greases or any spray lubricant that may contain solvents. UniSlide, BiSlide and XSlide will operate without lubrication, with accelerated wear, as required in vacuum or clean room environment

Using any other lubricant than recommended may result in damage to bearing surface, drive nut or leadscrew support bearings.

### **Operating Temperature**

Typical working temperature of positioning units is +5°C to +50°C. Customised units for harsher environments are also available. Please **contact us** to discuss.

- Natural wiping action of dovetail slideway expels debris
- Corrosion resistant to anodised finished

# **UniSlide assemblies**

The ever popular UniSlide has been the preferred method to produce linear and rotational motion in scientific, research, machine, instrument and industrial applications since the late 1960's. With over 1 million supplied throughout the world, UniSlide's simple design, rugged, reliable operation has been successfully proven in thousands of applications across science and industry.

If you need precise, versatile movement in one, two or three dimensions, you can do it more efficiently and less expensively with UniSlide assemblies.

UniSlide can be customised and configured to precise requirements as each one is made to order, often within one week.

### **Design advantages**

UniSlide assemblies are the fast, versatile, economical way to put motion into your product or research project. They provide:

- A compact design that delivers maximum travel in the shortest amount of work space
- A simple, reliable design that's been time-tested in thousands of applications
- A modular design that allows easy construction of multi-axis systems
- A broad range of standard lengths, sizes and features to ensure compatibility with most requirements
- Customising to accommodate special circumstances or uses.



Manual XY UniSlide assembly.



### **Custom options**

- Thumb screw locks
- Variety of finishes
- Revolution counters
- Adaptors and brackets

### **Features**

- Simple, rugged design
- Lightweight, high-strength aluminium alloy
- Resistant to impact loads
- Corrosion resistant
- Non-magnetic
- Suitable for vacuum 10<sup>-6</sup> torr
- Manual or motorised

### Applications

#### Alignment

- Inspection QA & QC
- Optical focussing
- Antenna alignment
- Film and animation work
- Medical and biological analysis
- Moving probes, sensors, components and thousands of other uses.

Motor driven UniSlide with black anodised finish.

If your requirement is not listed, please contact us, as manufacturers we are confident we can produce it for you.

### **Permissible loading**

The size of the UniSlide selected for a given application will depend on user requirements. The table below provides maximum dynamic load capacities for each model for three different load positions.

Static loads are twice the dynamic load values shown below.

Model	Horizontal Central Ln	Cantilever Side Lcs	Cantilever Inline Lci	Load Thrust L <sub>T</sub>
A1500	7 kg	2 kg-cm	5 kg-cm	10 kg
A2500	15 kg	5 kg-cm	10 kg-cm	20 kg
A4000	50 kg	15 kg-cm	23 kg-cm	40 kg
A6000	110 kg	37 kg-cm	45 kg-cm	90 kg

### Loads



### **Cantilevered loads**

Working with Cantilever Loads in X & Y

The X-axis carries the weight of the Y axis, the Z-axis and the attached load. For good stability the X-axis should be one model larger than the Y-axis when the Y axis (L) is three time (3x) the width of X.

### Leadscrew nut

Over a period of time the leadscrew nut might exhibit backlash which can be reduced as follows:



# **UniSlide selection guide**

UniSlide assemblies have a large range of standard and customised units that can be specified by a part number.



To be used in conjunction with the Engineering information to ensure that the selected unit is suitable for the application. If in doubt please contact us.

### **Free sliding version**

Slides can be supplied as basic units without leadscrews. General dimensions and weights are shown below.

As standard the slide length = base width. Longer sliders available on request.

	Standard sizes
BASE	A1500 Series Width 1.5ins (38.1mm) Travel 38 - 266mm





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BASE





Model	Base L	.ength	Slider	Length	Base Width	Slider Width	Height	Weight
Woder	L	Lo	S	Stroke	W	Ws	н	Weight
A1503A	76mm (3")	83mm	38mm (1.5	") 38mm	38mm	15.5mm	14.6mm	0.08kg
A1506A	152mm (6")	160mm	38mm (1.5	") 114mm	38mm	15.5mm	14.6mm	0.14kg
A1509A	228mm (9")	236mm	38mm (1.5	") 190mm	38mm	15.5mm	14.6mm	0.20kg
A1512A	305mm (12")	312mm	38mm (1.5	") 266mm	38mm	15.5mm	14.6mm	0.27kg
A2504A	101mm (4")	110mm	63mm (2.5	") 38mm	63mm	32mm	21mm	0.26kg
A2506A	152mm (6")	161mm	63mm (2.5	") 90mm	63mm	32mm	21mm	0.36kg
A2509A	228mm (9")	237mm	63mm (2.5	") 165mm	63mm	32mm	21mm	0.51kg
A2512A	305mm (12")	313mm	63mm (2.5	") 241mm	63mm	32mm	21mm	0.66kg
A2515A	381mm (15")	390mm	63mm (2.5	") 317mm	63mm	32mm	21mm	0.81kg
A2518A	457mm (18")	466mm	63mm (2.5	") 393mm	63mm	32mm	21mm	0.95kg
A4006A	152mm (6")	163mm	101mm (4	") 51mm	101mm	60mm	26.5mm	0.82kg
A4009A	228mm (9")	239mm	101mm (4	") 127mm	101mm	60mm	26.5mm	1.2kg
A4012A	305mm (12")	315mm	101mm (4	") 203mm	101mm	60mm	26.5mm	1.5kg
A4015A	381mm (15")	391mm	101mm (4	") 279mm	101mm	60mm	26.5mm	1.8kg
A4018A	457mm (18")	468mm	101mm (4	") 355mm	101mm	60mm	26.5mm	2.1kg
A4021A	533mm (21")	544mm	101mm (4	") 432mm	101mm	60mm	26.5mm	2.4kg
A6009A	228mm (9")	240mm	152mm (6	") 76mm	153mm	93mm	44mm	2.9kg
A6012A	305mm (12")	316mm	152mm (6	") 152mm	153mm	93mm	44mm	3.7kg
A6018A	457mm (18")	468mm	152mm (6	") 305mm	153mm	93mm	44mm	5.3kg
A6024A	609mm (24")	621mm	152mm (6	") 457mm	153mm	93mm	44mm	6.8kg
A6030A	762mm (30")	773mm	152mm (6	") 609mm	153mm	93mm	44mm	8.4kg
A6036A	914mm (36")	926mm	152mm (6	") 762mm	153mm	93mm	44mm	10.0kg

## A1500 series

The A1500 series is a small, low profile positioner for light duty applications with light loads. Ideally the base requires support along its full length (except for very light loads).

Options include longer sliders to increase stability for large or cantilevered loads. For a full range of options and customisation, including locking devices please refer to **Options**, page 23.



Drawings can be downloaded from our website: www.lg-motion.co.uk/downloads

#### Notes:

- A. 2 x mounting holes M3 x 3.5mm deep.
   2 additional holes disposed symmetrically at 55.56 centres on 76.2mm long slider. \*Diff to manual ie. number of optional sliders listed.
- B. Holes in base to fit M4 Csk. screws. Withdraw bearing block assembly (leadscrew and slide) to access.
- C. Leadscrew nut 12.7mm dia. recessed with slider top surface. Not suitable as a mounting surface.
- D. 17-series stepper motor with handle on rear shaft extension.
- E. 15-way 'D' type connector.
- F. Fixed limit option. See table below for dimensions and weight. In this case replace P with F in table.
- G. 15 way high density 'D' type connector, limits.
- H. Adaptor plate limits.
- \*J. Optional sliders Slider 50.8, Hole centres 30.16 Slider 76.2, Hole centres 30.16 See A above.





	No Fixed Limits option	Fixed Limits option						
Model	suffix P	suffix F	Travel, mm	Weight, kg	Load Capacity	Lead	screw Ø7mm	
A1503	76.2 (3")	127 (5")	38	0.45	Horizontal I.n 7kg	Standard	<0.05mm/100mm	
A1506	152.4 (6")	203.2 (8")	114	0.53	Cantilevered side, Lcs = 2kg/cm	Grade	V = 0.5mm pitch K = 1.0mm pitch	
A1509	228.6 (9")	279.4 (11")	190	0.62	Cantilevered inline, Lci = 5kg/cm	Precision Grade	<0.02mm/100mm Q.5 = 0.5mm pitch	
A1512	304.8 (12")	355.6 (14")	266	0.7			Q1 = 1.0mm pitch	

## A1500 series

The A1500 series is the smallest model in the standard UniSlide range. Offering two standard styles, the **Standard** (V&K) and **Precision** (Q.5&Q1), it is ideally suited to a wide variety of light industrial duties, optical and laboratory applications.

Options include longer sliders to increase stability for large or cantilevered loads. For a full range of options and customisation, including locking devices please refer to **Options**, page 23.

Motorised units are shown page 12.

Drawings can be downloaded from our website: www.lg-motion.co.uk/downloads



Notes:

- A. 2 x mounting holes M3 x 3.5mm deep.
   2 additional holes disposed symmetrically at 55.66 centres on 76.2mm slider.
- Holes in base to fit M4 Csk. screws.
   Remove bearing block assembly (leadscrew and slide). Withdraw leadscrew and slider for access.
- C. Leadscrew nut 12.7mm dia. recessed with slider top surface. Not suitable as a mounting surface.
- \*D. Optional sliders Slider 50.8, Hole centres 30.16 Slider 76.2, Hole centres 30.16 See A above

Resolution Q.5 - 0.02mm

Q1 - 0.05mm

LEADSCREW REMOVED

Standard

Precision



Model	Base Length 'L'	Stroke mm	Weight kg (typical)	Load Capacity	Leadscrew Ø7mm
A1503	76.2mm (3")	38	0.15		Standard <0.05mm/100mm
A1506	152.4mm (6")	114	0.20	Horizontal, $Ln = 7kg$ Cantilevered side,	Grade V = 0.5mm pitch K = 1.0mm pitch
A1509	228.6mm (9")	190	0.30	Cantilevered inline,	Precision <0.02mm/100mm Grade 0.5 = 0.5mm pitch
A1512	304.8mm (12")	266	0.40	Lor – Sky/offi	Q1 = 1.0mm pitch

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ALL DIMENSIONS ARE TYPICAL UNLESS OTHERWISE STATED

## A2500 series

The A2500 series is a very popular size and ideally suited to a wide variety of industrial, optical and laboratory applications.

Options include longer sliders to increase stability for large or cantilevered loads. For a full range of options and customisation, including locking devices please refer to **Options**, page 23.



Drawings can be downloaded from our website: www.lg-motion.co.uk/downloads

#### Notes:

- A. 2 x mounting holes M4 x 5.5mm deep. Additional holes disposed symmetrically at 82.55 centres on 101.6 and 152.4 sliders.
- B. Holes in base to fit M5 Cap head screws.
- C. Leadscrew nut 30mm dia. recessed with slider top surface. Not suitable as a mounting surface.
- D. 23-series stepper motor.
- E. 15-way A1500 'D' type connector.
- F. Fixed limit option.
- G. 15 way high density 'D' type connector, limits.
- H. Adaptor plate limits.
- \*J. Optional sliders Slider 76.2, Hole centres 52.4 Slider 101.6, Hole centres 52.4 Slider 152.4, Hole centres 52.4 See A above.



	No Fixed Limits option			Fixed Limits option					
Model	suffix P Base Length 'L'	ʻM', mm	Travel, mm	suffix F Base Length 'L'	ʻM', mm	Travel, mm	Weight, kg (typical)	Load Capacity	Leadscrew Ø7mm
A2504	101.6mm (4")	50	38	-	-	38	1.1		
A2506	152mm (6")	88	89	228mm (9")	127	89	1.25	Horizontal. Ln = 15kg	Standard Grade <0.05mm/100mm
A2509	228mm (9")	126	165	305mm (12")	165	165	1.5	Cantilevered side, Lcs = 5kg/cm Cantilevered inline, Lci = 10kg/cm	K = 1.0mm pitch
A2512	304mm (12")	164	241	381mm (15")	203	241	1.6		Precision Grade <0.02mm/100mm
A2515	381mm (15")	202	317	381mm (18")	241	317	1.8		Q.5 = 0.5mm pitch Q1 = 1.0mm pitch
A2518	457mm (18")	240	393	535mm (21")	279	393	2.0		

# A250



The A2500 series is a very popular size and is ideally suited to a wide variety of industrial, optical and laboratory applications. Offering two standard styles, the **Standard** (V&K) and **Precision** (Q.5&Q1).

Options include longer sliders to increase stability for large or cantilevered loads. For a full range of options and customisation, including locking devices please refer to **Options**, page 23.

Motorised units are shown page 14.

Drawings can be downloaded from our website: www.lg-motion.co.uk/downloads

#### Notes:

- A. 2 x mounting holes M4 x 5.5mm.
   2 additional holes disposed symmetrically at 82.55 centres on 101.6 and 152.4 sliders.
- B. Holes in base to fit M5 Cap screws.
- C. Leadscrew nut 30mm dia. recessed with slider top surface. Not suitable as a mounting surface.
- \*D. Optional sliders Slider 76.2, Hole centres 52.4 Slider 101.6, Hole centres 52.4 Slider 152.4 Hole centres 52.4 See A above.

#### Resolution

Q.5 - 0.005mm Q1 - 0.01mm





Standard



ALL DIMENSIONS ARE TYPICAL UNLESS OTHERWISE STATED

Model	Base Length 'L'	Stroke mm	Weight kg (typical)	Load Capacity	Leadscrew Ø7mm
A2504	101.6mm (4")	38	0.45		
A2506	152.4mm (6")	89	0.6	Horizontal, Ln = 15kg	Standard <0.05mm/100mm Grade V = 0.5mm pitch
A2509	228.6mm (9")	164	0.8	Cantilevered side, Lcs = 5kg/cm	K = 1.0mm pitch
A2512	304.8mm (12")	240	0.9	Cantilevered inline, Lci = 10kg/cm	Precision<0.02mm/100mmGradeQ.5 = 0.5mm pitchQ11.0mm pitch
A2515	381mm (15")	317	1.04		Q1 = 1.0mm pitch
A2518	457.2mm (18")	393	1.25		

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## A4000 series

The A4000 series is ideally suited to a wide variety of industrial, optical and laboratory applications.

Options include longer sliders to increase stability for large or cantilevered loads. For a full range of options and customisation, including locking devices please refer to **Options**, page 23.



Drawings can be downloaded from our website: www.lg-motion.co.uk/downloads

#### Notes:

- A. 4 x mounting holes M5 x 10mm deep.
- B. Holes in base to fit M6 Cap head screws.
- C. Leadscrew nut 38mm dia. recessed with slider top surface. Not suitable as a mounting surface.
- D. 23-series stepper motor.
- E. 15-way A1500 'D' type connector.
- F. Fixed limit option.
- G. 15 way high density 'D' type connector, limits.
- H. Adaptor plate limits.
- \*J. Optional sliders Slider 52.4, Hole centres as drawing Slider 203.2, Hole centres as drawing





	No Fixed Lim	No Fixed Limits option			Fixed Limits option				
Model	suffix P Base Length 'L'	ʻM', mm	Travel, mm	suffix F Base Length 'L'	ʻM', mm	Travel, mm	Weight, kg (typical)	Load Capacity	Leadscrew Ø10mm
A4009	228.6mm (9")	126	127	305mm (12")	165	127	2.7		
A4012	304.8mm (12")	164	203	381mm (15")	203	203	3.1	Horizontal, Ln = 50kg	Standard Grade <0.05mm/100mm V = 0.5mm pitch K = 1.0mm pitch Precision Grade <0.02mm/100mm 0.5 = 0.5mm pitch
A4015	381mm (15")	202	279	457mm (18")	241	279	3.4		
A4018	457.2mm (18")	240	356	533mm (21")	279	356	3.8	Cantilevered side, Lcs = 15kg/cm	
A4021	533.4mm (21")	279	432	610mm (24")	317	432	4.2	Cantilevered inline, Lci = 23kg/cm	
A4024	609.6mm (24")	317	508	686mm (27")	355	508	4.5		Q1 = 1.0mm pitch
A4027	685.8mm (27")	355	584	762mm (30")	394	584	4.9		
A4030	762mm (30")	393	660	838mm (33")	432	660	5.3		

16

## A4000 series

The A4000 series is ideally suited to a wide variety of industrial, optical and laboratory applications. Offering two standard styles, the **Standard** (V&K) and **Precision** (Q.5&Q1).

Options include longer sliders to increase stability for large or cantilevered loads. For a full range of options and customisation, including locking devices please refer to **Options**, page 23.

Motorised units are shown page 16.

Drawings can be downloaded from our website: www.lg-motion.co.uk/downloads



- A. Mounting holes M5 x10mm.
- B. Holes in base to fit M6 Cap screws.
- C. Leadscrew nut 38mm dia. recessed with slider top surface. Not suitable as a mounting surface.
- \*D. Optional sliders Slider 152.4, Hole centres as drawing Slider 203.2, Hole centres as drawing
- Resolution

Q.5 - 0.005mm

Q1 - 0.01mm





Precision



Model	Base Length 'L'	Stroke mm	Weight kg (typical)	Load Capacity	Leadscrew Ø10mm
A4006	152.4mm (6")	51	1.0		
A4009	228.6mm (9")	127	1.4		
A4012	304.8mm (12")	203	1.9		<b>e</b> 1 1 0.05 //00
A4015	381mm (15")	280	2.3	Horizontal, Ln = 50kg Cantilevered side.	Grade V = 0.5mm pitch K = 1.0mm pitch
A4018	457.2mm (18")	356	2.7	Lcs = 15kg/cm Cantilevered inline,	Precision <0.02mm/100mm
A4021	533.4mm (21")	432	3.1	Lci = 23kg/cm	Grade Q.5 = 0.5mm pitch Q1 = 1.0mm pitch
A4024	609.6mm (24")	508	3.5		
A4027	685.8mm (27")	584	3.9		
A4030	762mm (30")	661	4.3		

**UniSlide**®

## A6000 series

The A6000 series is ideally suited to a wide variety of industrial, optical and laboratory applications.

Options include longer sliders to increase stability for large or cantilevered loads. For a full range of options and customisation, including locking devices please refer to **Options**, page 23.



Drawings can be downloaded from our website: www.lg-motion.co.uk/downloads

#### Notes:

- A. 4 x mounting holes M6 x 12mm in slider top.
- B. Holes in base to fit M8 Cap head screws.
- C. Leadscrew nut 45mm dia. recessed with slider top surface. Not suitable as a mounting surface.
- D. 34-series stepper motor.
- E. 15-way A1500 'D' type connector
- F. Fixed limit option.
- G. 15 way high density 'D' type connector, limits.
- \*H. Optional sliders Slider 228.6, Hole centres as drawing Slider 304.8, Hole centres as drawing





	No Fixed Lin	nits opti	on	Fixed Limits option					
Model	suffix P Base Length 'L'	'Μ', mm	<b>Travel,</b> mm	suffix F Base Length 'L'	ʻM', mm	Travel, mm	Weight, kg (typical)	Load Capacity	Leadscrew Ø14mm
A6009	228.6mm (9")	130	44	305mm (12")	165	44	6.5		
A6012	304.8mm (12")	168	120	381mm (15")	203	120	7.3	Horizontal. Ln = 110ka	Standard Grade K = 1.0mm pitch
A6018	457.2mm (18")	244	273	533mm (21")	279	273	9.0	Cantilevered side, Lcs = 37kg/cm	K2 = 2.0mm pitch Precision Grade
A6024	609.6mm (24")	321	425	686mm (27")	355	425	10.7	Cantilevered inline, Lci = 45kg/cm	<0.02mm/100mm Q1 = 1.0mm pitch
A6030	762mm (30")	397	577	838mm (33")	432	577	12.5		Q2 = 2.0mm pitch
A6036	914.4mm (36")	473	730	990mm (39")	508	730	14.2		

## A6000 series

The A6000 series is ideally suited to a wide variety of industrial, optical and laboratory applications. Offering two standard styles, **Standard** (V&K) and **Precision** (Q.5&Q1).

Options include longer sliders to increase stability for large or cantilevered loads. For a full range of options and customisation, including locking devices please refer to **Options**, page 23.

Motorised units are shown page 18.

Drawings can be downloaded from our website: www.lg-motion.co.uk/downloads

Standard

Precision



- A. 4 x mounting holes M6 x 12mm.
- B. Holes in base to fit M8 Cap screws.
- C. Leadscrew nut 45mm dia. recessed with slider top surface. Not suitable as a mounting surface.
- \*D. Optional sliders Slider 228.6, Hole centres see drawing Slider 304.8, Hole centres see drawing
- Resolution

Q.1 - 0.01mm

Q2 - 0.02mm





ALL DIMENSIONS ARE TYPICAL UNLESS OTHERWISE STATED

44

Model	Base Length 'L'	Stroke mm	Weight kg (typical)	Load Capacity	Leadscrew Ø14mm
A6009	228.6mm (9")	76	4.3		Stendard Crade
A6012	304.8mm (12")	152	5.1	Horizontal, Ln = 110kg Cantilevered side, Lcs = 37kg/cm Cantilevered inline, Lci = 45kg/cm	K = 1.0mm pitch K2 = 2.0mm pitch
A6018	457.2mm (18")	305	6.8		Precision Grade
A6024	609.6mm (24")	457	8.6		Q1 = 1.0mm pitch Q2 = 2.0mm pitch
A6030	762mm (30")	610	10.6		

### UniSlide®

# **Multi-axis combinations**

All UniSlide assemblies can be assembled in any multi-axis combination, with XY & XYZ being the most popular. It is easy to combine with any of the UniSlide and LG Series of motion products.

Combining UniSlide in this way provides cost effective solutions for many manual and motorised motion control applications.



A four axis XYZQ system to measure travel distance for medium-sized payloads.

XYZ Black anodised unit used with right angle adaptor plate.

# **Adaptors**

**Standard Adaptor Plates** 

Standard XY & XYZ axis adaptor plates are suitable for building up multi-axis UniSlide assemblies.

These aluminium adaptor plates allow you to configure the UniSlide to XY & XYZ configurations. Each plate has a hole pattern that mates the slider of the lower X-axis at right angles to the top Y-axis

The adaptors can also be used as auxiliary payload mounting plates or as intermediate plates between load and slider. This provides more mounting surface area and is also a quick way to change loads while maintaining alignment to the UniSlide.

#### 'D' 'W' 'H' Type Code Part No. Fig. 1500XY 38 6 1590-045-01 90 2 38 6 1590-045-02 2 1500XZ 40 2500XY 63 6 2590-045-01 2 100 2500XZ 63 63 6 2590-045-02 2 2501XZ 79 156 2590-145-60 63 1 4000XY 100 12 4090-045-01 2 114 4090-045-01 4000XZ 114 100 12 2 4001XZ 100 162 4090-145-60 1 114 152 12 6090-045-01 2 6000XY 100 6001XZ 100 252 6090-145-10 152 1



# **Assembled UniSlide XY Tables**

### **AXY series**

To meet common applications we supply UniSlide XY tables with large top work surface combined with a stable base to provide loadings of 10-50kg. Tables are designed with crossed and inverted UniSlide with XY plates.



Model	<b>Height, mm</b> (typical)	<b>Scan, mm</b> (typical)	Plate Dimensions mm	Load Capacity, kg	Leadscrew
AXY2504	70	40x40	100x100	10	
AXY4006	90	50x50	200×200	30	Standard Grade <0.05mm/100mm
AXY4009	90	125x125	2007200	50	V = 0.5mm pitch K = 1.0mm pitch
AXY6009	140	75x75			Precision Grade <0.02mm/100mm Q1 = 1.0mm pitch Q2 = 2.0mm pitch
AXY6012	140	150x150	250x250	70	
AXY6015	140	225x225			

### LXY series Low Profile UniSlide XY

These low profile tables feature minimal height with exception rigidity and a large work surface area. They are designed around four UniSlide assemblies with standard leadscrew options available.





Model	Height, mm (typical)	<b>Scan, mm</b> (typical)	Working Envelope, mm (typical)	Load Capacity, kg	Leadscrew
LXY2506	65	50x50	325x325	25	
LXY4006	90	50x50	325x325	70	Standard Grade <0.05mm/100mm
LXY4009	90	125x125	475x475	10	V = 0.5mm pitch K = 1.0mm pitch
LXY6009	140	75x75	430x439		Precision Grade <0.02mm/100mm
LXY6012	140	150x150	580x580	100	Q2 = 2.0mm pitch
LXY6015	140	225x225	750x750		

# **UniSlide modifications**

Nearly 1000 standard UniSlide models are available. But sometimes, the standard versions just won't suit your application.

We understand. That's why we offer a wide range of custom modification capabilities including:

- Additional holes in base, slider or plates
- Additional sliders or multiple sliders
- Different knobs and handles
- Special length dovetail bases
- Lead screw shaft extensions
- Vacuum preparation
- Milled slots
- Optional finishes
- Choice of lead screw materials, including brass

Example 1

Bearing Block at both ends of base.



### **Example 4**

Multi-axis combination with off-set motor drive.



Example 2 Extra holes in sl

Extra holes in slider and end of base. Customised motor plate and holes in slider to meet customer mounting requirements.



**Example 5** Dual slider with thumblock and revolution counter.



 Choice of drive nut materials, including brass, oil-impregnated bronze and Vespel

- Gearbox
- Right and left-hand threads on the same lead screw, allowing a pair of sliders to move together or apart

Still don't see what you want? Give us a call. If it can be done, we can do it

### Example 3

Linear scale and pointer, slider lock and customised base to meet location requirements.



**Example 6** Linear table with rotary table and chuck used for ring engraving.



"If you need precise, versatile movement in one, two or three dimensions, do it more efficiently and less expensively with UniSlide, BiSlide or XSlide."

# Options

LG Motion offers versatility to the range with an extensive array of options and accessories that can be added to your UniSlide allowing you to customise it to your exact application requirements.













### Manual UniSlide

### **Rapid advance units**

If you will be moving the slider frequently or your base length is long you may wish to consider a rapid advance model. These save time by allowing you to quickly reposition the slider by uncoupling the drive system.

#### Left / Right hand thread leadscrews

Unique design incorporating two sliders driven by a single right and left handed threaded leadscrew. When the knob is turned the sliders simultaneously move toward or away from each other. Ideal for applications where two objects must share a common axis of movement such as centring or mating operations in manufacturing, testing and research environments.

### **Locking Device**

### Thumb lock (-TL)

This is the most common lock for fixing the position of the slider. It uses a simple thumb screw to secure the leadscrew near the end bearing block. NB. The overall length of the UniSlide is increased to cater for the lock.

### Traveling slider lock (-SL)

This lock attaches to the slider; the thumbscrew pressing against the outside edge of the base. It can be mounted for left or right hand use. Slider height is increased to cater for the locking plates.

#### Slider lock (-SLR or SLL)

Only suitable for travels less than the length of the slider. Cam lock secures against the slider. Can be fitted on left or right side

### **Revolution counter (-RC)**

A mechanical revolution counter provides a convenient digital readout to 0.1mm. Counters can replace the linear scale and graduated hand wheel when the linear scale is likely to be obscured by payload or way covers.

### Way covers

An easy method to protect the slider and dovetail from dust, dirt and grit that may be in the working environment. Adding way covers will increase the slider height and reduce the usable travel of a standard UniSlide to cater for the way cover compression.



#### Finishes

As standard UniSlide are supplied with a machined aluminium finish. To meet your requirements, UniSlide assemblies can be cosmetically anodised in a variety of colours, clear and black being the most popular.

Hard anodising increases surface hardness and abrasive resistance. Nickel coatings provide a slick, even and corrosion resistant surface. Hard anodising is often recommended for motorised units as it reduces wear and increases life.

Anolube III-15K provides a ceramic-hard, lubricous, protective coating for very harsh environments such as food processing, medical and offshore oil platforms.

### Sliders

Longer length sliders (carriage) increase the stability of your system, particularly with large or overhung loads. In addition, a base can have multiple sliders driven or free sliding for more support.

#### **Vacuum preparation**

UniSlide assemblies patented dovetail bearings give it certain advantages over other designs. They have been used in a number of environments from outer space to vacuum chambers. The necessity for modification depends upon the so-called hardness of the vacuum and other specific requirements. We can supply assemblies that are free of grease and oils; however for critical applications the assemblies should be cycled in an out gassing chamber to remove residual contamination. Material substitutions are made to suit the specific application.

### **Motorised UniSlide**

#### **Limit switches**

Limit switches are usually used to prevent over-travel of the slider or send an event signal. There are variations, fixed end limits or outboard adjustable.

### Home datum sensor

As standard an inductive type, PNP sensor is fitted at the motor end. The unit used provides a repeatable datum position to <0.004mm. Alternatives can be provided on request.



# **BiSlide assemblies**

### **BiSlides Assemblies are Modular, Compact, and Durable**

- Rugged, 45 degree opposing way guides carry high loads in all directions
- Long life anodised ways as standard
- Improved lead screw drive for higher thrust capacity
- Simple modular designs eliminates adaptor plates and brackets

### Description

The BiSlide is a modular system of positioning stages that allows you to quickly and easily create a complete single or multi-axis system by simply bolting together modular components. Because BiSlide components are all standard and interchangeable, if the task changes or ends, you can readily disassemble the components and put them to work elsewhere.

If you're a manufacturer, you'll find the BiSlide system is easy to upgrade and service to keep up with your rapidly changing marketplace. If you're a researcher, you'll like BiSlide's ease of configuration and expansion for different projects. Everyone appreciates BiSlide's durable construction and low cost.

### Features and Benefits of BiSlide

- Lighter weight
- Fewer parts
- Lower cost
- Higher strength to weight ratio uses hard aluminium alloys and a rigid I-beam cross section
- More compact than most ball screw driven stages
- Self-holding unlike ball screws, the 1 or 2mm lead screw will not creep or backdrive
- Resistant to impact loads
- Natural wiping action expels debris
- Gradual wear not sudden failure of rolling element type screws and guide-ways
- Corrosion resistant to anodised finished
- Operate without lubrication
- Spare set of guide-ways built-in on the flip side just in case the primary ones get damaged

### **Specification**

Coefficient of friction: 0.09 typical.

**Coefficient range:** 0.04 (Heavy Load Dynamic) to 0.15-0.3 (Lubricated Heavy Load Static>1 hour).

Minimum motor torque required: 0.4 Nm.

**Repeatability:** <0.05mm over short term, long term dependent on wear.

**Straight line accuracy:** <0.075mm over entire travel distance.

Screw lead accuracy: 0.075mm/25cm.

**Operating temperature:** -18° to 82°C.

**Materials** 

Lead screw: Hard nickel plated.

Carriage: Machined aluminium.

Other surfaces: Black anodised aluminium.



### **Selection guide**

BiSlide assemblies have a large range of standard and customised units that can be specified by a part number.



BiSlide Code



### Maximum load carrying capacity

Load	Dynamic	Static	Momentary	
Normal Centred	300lb	300lb	1000lb	
Thrust	100lb	200lb	300lb	
Cantilevered	500 inch-lb	(see formula below)	(see formula below)	

\*Maximum 40 lbs thrust towards motor.

### For cantilevered Loads:

equivalent centre load =  $(d \times L/2) + L$  where d =distance load is from centre in inches, L = Load (lbs)







BiSlide assemblies conform to the European Machinery Directive (89/392/EEC) Annex 1.

### **BiSlide assemblies**

### **BiSlide<sup>®</sup> stock and custom positioning equipment**

All BiSlides are designed to accommodate NEMA size 23 and 34 motors without modifications. Many other types of motors can be used, most of them requiring no modifications to the BiSlide.

All BiSlides can be purchased with or without motors. Related motor drives, controls, and software are also available.

Motor-driven BiSlides are available in standard lengths from 12.7cm (5") to 203.2cm (80")

For help contact our engineering staff.

Example 2: This right angle drive option has a standard BiSlide, cleated to the I-beam base profile. The bottom surface is the T-slot plate profile.



Example 4: XYZ water tank scanner.





Example 3: Parallel coupled units to move large loads or scan over a greater area.



### **BiSlide construction delivers** high precision and long life

1 Large, versatile carriage - provides a 127 x 79mm mounting surface suitable for carrying anything from an assembly fixture to a measuring probe – eight threaded attachment holes let you securely fasten any any kind of payload. Also, there's four accessory holes for limit switch cam or other sensors. Carriage has fit and wear compensation adjustments

#### 2 Precision lead screw -

we make our lead screws to make sure they're the best quality. Precision rolled Acme thread, hard nickel plated for smooth, troublefree operation and long life Support bearing - delivers just the right combination of constraint and anti-vibration qualities for the lead screw

6 StabilNut<sup>™</sup> - 'solid' low friction connection between the lead screw and carriage. it has an anti-backlash design with fine mesh adjustment for responsive rotary to linear translation 9 End plate - provides a convenient way to directly mount a BiSlide assembly on end. Four hole pattern mates with other BiSlide carriages and T-Slots

3 Motor plate - the four bolt design securely attaches the motor

3

Coupling - precision-honed to provide a rigid motor to lead screw mating Base - made from hard alloy aluminium I-beam that's hard anodised for good looks and long life. BiSlide is the strongest, lightest, and most durable slide actuator available

7

8 Roller Bearings - preloaded to provide axial constraint for the lead screw. Designed for high capacity, for impact resistance and long life T-Slots - the universal connections to the base for cleat or side mounting, limit switches, framing and tandeming. Accommodates T-nuts, bolts and cleats for maximum flexibility

10

Bearing Pads - super slick PTFE compound for lowest friction, smooth linear motion, and long life

### **BiSlide** assemblies

### Simple and versatile mounting makes multi-axis systems easy

The BiSlide system is designed around a hard alloy aluminium I-beam base. Mounting features include a pair of T-Slots on each side, drilled end plates and a series of threaded holes on the carriage. Using standard cleats, T-Nuts, bolts and T-Slot plate you can quickly and easily configure a BiSlide system for multiple coordinates. Combine that attachment flexibility with the availability of BiSlides up to 230cm and choice of manual or motor-driven models, and you have a positioning system that will do precisely what you want, at a low cost.

### **Mounting examples**





### Right: Easy XZ configuration

Just use the four pre-drilled holes in the end plate. Any 90 degree orientation is possible. *Items needed:* Four MB-1 bolts.

### Left: Rigid XY attachment using BiSlide cleat

The Y axis can be positioned anywhere on X axis without an adaptor plate or special holes. *Items needed:* Two MC-2 cleats and four MB-1 bolts.

### **BiSlide cleats**

Cleats are available in standard two-hole versions, a two-hole design with 2 inch spacing for optical table mounting, and single hole cleats for attachment to other T-Slot framing systems.



### BiSlide Angle Brackets

The Angle Brackets allow longer BiSlide assemblies to be end mounted with higher stability. These brackets feature either direct mounting to another BiSlide assembly, or attachment with the BiSlide cleats.



#### Tandem option carries heavy load economically

For higher loads and increased stiffness, the tandem option is an attractive solution for many applications. This configuration uses a standard motor-driven model, mechanically attached to a free sliding model. The two bases are securely fastened together and the carriages are precision machined in place to ensure flatness and parallelism.



Motor driven BiSlide with tandem option.



Parallel coupled BiSlide XYZ assembly.

### Parallel Coupled BiSlide assembly





Double Parallel Coupled BiSlide Assembly with optional double carriages.

motor on one slide and a bearing assembly on the other slide. A timing belt drive connects the two slides for synchronous operation. Manual versions have a bearing assembly on both slides; a hand wheel) drives the timing belt. Use our inexpensive cleats to mount your Parallel Coupled BiSlide Assembly to nearly any flat surface. For a free-standing assembly, BiSlides can be cleated to the T-Slot plate or base structural profiles.

Parallel systems are usually shipped unassembled to reduce

assembly instructions, all fasteners, hardware, and come

complete with a timing belt tensioner. They can be shipped

build and carriage costs. These kits include detailed

fully assembled if required.

# ဖ ရွိ မြELT COVER BELOW BOTTOM OF BASE

### Choose the Parallel Coupled Assembly for large and long traverses

If your application calls for large loads or the ability to traverse long distances in two or three axes, the Parallel Coupled Assembly is what you need. It uses two identical BiSlide units. Motor driven models use a double shaft



### **BiSlide assembly and T-Slot profile cross section**

# **XSlide assemblies**

### Description

The XSlide<sup>™</sup> assembly is a compact positioning slide with high capacity and increased standard features.

The design is based on the BiSlide assembly for smaller loads. Borrowed from the BiSlide design are the dovetail ways, cleat mounting, and the aluminium/steel/poylmer bearing construction.

The 45 degree opposing dovetail ways on both the BiSlide and XSlide assemblies provide the highest rigidity for their size compared to other dovetail designs.

The XSlide has two unique adjustment features not previously available. Both the carriage fit and the leadscrew/nut mesh adjustments are accessible from the sides. All fine tuning/wear compensation can be easily accomplished without removing a payload from the carriage.



### **Features**

- 48mm x 31mm cross section
- Low cost
- High precision
- Smooth PTFE bearings
- Directly combinable for multi-axis assemblies
- Impact tolerant
- Corrosion resistant
- Long life anodised ways
- Integrated limit switches
- 7 lead screw pitches
- NEMA 17 or 23 motor mounting

### **Specification**

Coefficient of sliding friction: 0.09.

Cantilevered loads: Equivalent centre load = (dxF) + F d = distance from centre (inches) F = load (lbs). Minimum motor torque required: 0.18Nm Repeatability (short term): 0.0025mm (0.0001"). Straight line accuracy: 0.025mm/25cm (0.001"/10"). Screw lead accuracy: 0.076mm/25cm (0.003"/10"). Operating temperature: 0 to 180° F (-18 to 82° C). (Optional materials for wider temperature ranges available).

### **Materials**

Base, carriage, cleats, ends: hard aluminium.
Lead screw: Nickel plated steel or 303 SS.
Lead screw nut: Delrin AF.
Lead screw coupling: Steel.





### **Selection guide**

XSlide assemblies have a large range of standard and customised units that can be specified by a part number.



### Maximum load carrying capacity

Load	Dynamic	Static	Momentary
FW	35lb / 15.9kg	35lb / 15.9kg	140lb / 63.6kg
Ft1	10b / 4.5kg	20b / 9.1kg	120lb / 54.5kg
Ft2	10lb / 4.5kg	20b / 9.1kg	40lb / 18.2kg
Fms	32lb / 3.6N-m	7.3N-m /125lb	125lb / 14.0kg
Fmi	22lb / 2.5N-m	5.0N-m /88lb	88lb / 9.9kg



Ft2

### Configurations



### **XSlide assemblies**



Shown with optional Motors and Cleats

### **Cleat attachment**

Travel (ins)	No. of Cleats*
2	4
4	4
6	4
8	6
12	6
18	6
24	8
30	10

\*For typical applications. 2 Cleats minimum Use more for higher rigidity



Cleats make mounting multiple units simple and easy.

### Accessories

### Cleats

Cleats are used to mount the XSlide assembly to a surface and to configure two XSlides in XY. One pair of cleats has 190lbs of holding capacity. Use in pairs only.

### **Bolts**

6-32 x 3/8" long socket head cap are used for Cleats. 6-32 x 1/2" long socket head cap are for end mounting.

### Gusset

The Gusset provides higher rigidity when end mounting. Cleats with fasteners are included.





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# **Elevating tables**

The design of these tables supplement the UniSlide series by giving unobstructed access above and around the table top. Our design provides a stable platform in a compact unit that has proved particularly popular in the optics industry.

Motorised version shown on page 34.



Drawings can be downloaded from our website: www.lg-motion.co.uk/downloads

#### Notes:

- A. 4 x M4 x 7.5mm deep.
- B. 4 x M5 x 7.5mm deep.
- C. 2 x M6 x 7.5mm deep.
- D. 4 x Ø5.5 c/bored Ø9 x 5.5mm deep (A25\*\*EL).
- D. 4 x Ø6.6 c/bored Ø10.6 x 6.5mm deep (A40\*\*EL).

See drawing on page 34 for A40\*\*EL top plate hole configuration.







	F	G	н	J	К	L	Μ
A25**EL	125	50	140	63	63	104	9
A40**EL	223	82.55	254	100	100	155.6	18

Model	Load	Stroke mm	Weight kg (typical)	Leadscrew	
A2501EL	15kg	25	0.8		
A2502EL	15kg	50	1.0	Standard Grade <0.05mm/100mm	
A4002EL	25kg	50	3.7	K = 1.0mm pitch Precision Grade	
A4004EL	25kg	25	4.5	<0.02mm/100mm Q1 = 1.0mm pitch	man
A4006EL	25kg	25	6.0		ual

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# **Elevating tables**

The design of these tables supplement the UniSlide series by giving unobstructed access above and around the table top. Our design provides a stable platform in a compact unit that has proved particularly popular in the optics industry.

Drawings can be downloaded from our website: www.lg-motion.co.uk/downloads

#### Notes:

A25\*\*ELP

- A. 4 x M4 x 7.5mm deep.
- B. 4 x M5 x 7.5mm deep.
- C. 2 x M6 x 7.5mm deep.
- D. 4 x Ø5.5 c/bored Ø9 x 5.5mm deep
- R 15 way 'D' Type connector.
- S Motor 23 series.

A4\*\*\*ELP

- AA. 8 x M8 x 12.5mm deep.
- BB. 8 x M6 x 12.5mm deep.

CC. 4 x M5 x 12.5mm deep.

D. 4 x Ø6.5 c/bored Ø10.6 x 6.5mm deep

- R 15 way 'D' Type connector.
- S Motor 34 series.







	Е	F	G	Н	J	К	L	М	Ν	Р
A25**ELP	5.5	136	60	209	72.5	63	104	63.5	21.5	84
A40**ELP	13	310	82.55	336	100	100	155.6	127	41/31 Under Motor	134

	Model	Load	Stroke mm	Weight kg (typical)	Leadscrew
	A2501ELP	15kg	25	0.8	
	A2502ELP	15kg	50	1.0	Standard Grade <0.05mm/100mm
5	A4002ELP	25kg	50	3.7	K = 1.0mm pitch Precision Grade
	A4004ELP	25kg	100	4.5	<0.02mm/100mm Q1 = 1.0mm pitch
2	A4006ELP	25kg	150	6.0	

# **Rotary tables**

### Description

Two ranges of rotary table designed to meet particular requirements. The instrument type models are designed for laboratory and optical bench applications. The larger models are available as manual or motorised units with the largest capable of handling loads up to 500kg.

The precise movement and accuracy are achieved by using a high specification main bearing and thrust race combined with a smooth ratio worm and wheel assembly. The finish on all models is black anodised.

### **Features**

- Central aperture for optical and cable services
- Manual and motorised options
- Well suited for unbalanced loads
- Good in position stability

Model	ømm Aperture	Load, kg
LGR0100	25	3
LGR0200	40	5
LGR1090	12	10
LGR2090	45	50
LGR3090	110	500



Left to right: LGR3090, LGR2090, LGR1090 Motorised options.



LGR0200 and LGR0100 Instrument stages.

### Selection guide



# Motors, drives and controllers

LG Motion supplies motors, drives and controllers for many types of applications across the scientific and industrial spectrum. With new developments on a regular basis, the expanding range is designed to fulfill popular and highly specialised applications.

The requirements can vary greatly and we can assist by matching key features to ensure the optimum performance and successful solution.

From single axis to multi-axis with full interpolation running via FireWire, we lead the way with cost effective solutions that address your application needs.

### Motors

In general terms the stepper system offers the lowest-cost solution while the brushless servo provides the highest overall performance. When selecting the correct technology there are often other considerations which influence the choice, such as compatibility with existing equipment or customer preference. Some applications could be equally well served by more than one technology.

The performance of a motor is strongly influenced by the type of drive and controller used and we can assist with the application to match key components to ensure the optimum performance and solution.

Stepper motor technology is typically used with the dovetail slide range.

### Stepper motor benefits

### Lowest-cost solution

A stepper motor will always offer the lowest cost solution. If a stepper will do the job, use it.

### Rugged and reliable

Steppers are mechanically very simple and apart from the bearings (in common with servos) there is nothing to deteriorate or fail.

### No maintenance

There are no brushes requiring periodic checking or replacement.

### Industry-standard ranges (NEMA or metric)

Steppers are produced to standard flange and shaft sizes so finding a second source is not a problem.

### Few environmental constraints

A stepper may be used in just about any environment, including in a vacuum.

### Inherently failsafe

Any conceivable fault within the drive prevents motion, since the current must be continually switched for continuous rotation. A brush motor is internally-commutated and can run away if continuous current is applied.

### Not easily de-magnetised by excessive current

Owing to the perpendicular planes of permanent-magnet and alternating flux paths.

### Inherently stable at standstill

With DC flowing in the windings the rotor will remain completely stationary. There is no tendency to jitter around an encoder or resolver position. This is useful in applications like microscope stages.

### Can be stalled indefinitely without damage

There is no increase in motor current as a result of a stall or jam, therefore no risk to the motor or drive and minimum chance of mechanical damage.

### High continuous torque in relation to size

Compared with a servo of the same size, a stepper can produce greater continuous torque at low speeds.

### Only 4 leads required

This minimises the installed cost, particularly important in applications where connections are expensive (e.g. vacuum chambers).

If you are looking for a motor to survive in the harshest of environments, then consider our range of Environmental Motors from Empire Magnetics. Just look at the list of the products and the demanding environments that they are designed to handle.

Product Types	Environments
Step Motors	Vacuum
Radiation Hardened Motors	Gamma Radiation
Brushless DC Motors	Waterproof
AC Motors	Dustproof
Hazardous Area Motors	Abrasive Dustproof
Stand Alone Resolvers	Hazardous Area
Brakes	Extended Temperature Range
Rotor Nut Motors (actuators)	Cryogenic
Gearheads	Standard Industrial
Axial Gap Motors	High Altitude & Humidity
Turn-key Projects	Combination of Environments







#### **Drives**

The drive is an electronic power amplifier that delivers the power to operate the motor in response to low-level control signals. In general, the drive will be specifically designed to operate with a particular motor type.





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### Controllers

The actual movement of the motor is determined by the indexer/controller; it sets parameters like velocity, distance, direction and acceleration rate. The control function may be distributed between a host controller, such as an industrial computer, and a slave unit that accepts high-level commands. One controller may operate in conjunction with several drives and motors in a multi-axis system.

### **Panel Building**

A full panel building service is available to ensure compatibility and reliability of operation. We specialise in small to medium control panel design and build. Our service is competitive and you can benefit from our many years experience in motion control and automation industries.

The installation requirements for EMC compatibility will vary with the particular product. Equipment which is CE-marked and certified as having inherent EMC compliance may be installed in any location provided that the installation instructions are followed. Other equipment intended only for use by qualified system builders requires additional measures to ensure EMC compliance.

Wired and tested to best practice with full documentation supplied and quality components used in all builds.

## **Systems and customisation**



LG Motion have Of designed and interbeimplemented te with tailored solutions a across a wide As er range of re technologies pe and market In applications. Ci

Offering a complete service, from design and build, to test, programming, installation and commissioning, we believe that we are at the forefront of technological change. At LG Motion we will continue to offer you the most practical and up-to-date solution with a professional approach.

As large OEM's downsize and engineering resources have been reduced, people have looked for a cost-effective sub-contract facility. The skills and experience of our people added to the product technology available from our leading Industry Partners, has seen an increasing number of both major Blue Chip companies and emerging companies enter into successful, long term relationships with LG Motion.

Since inception, LG Motion has been internationally recognised as a Specialist in Positioning Systems, both at component and System Build level. Constantly catering for the ever-changing role of the Original Equipment Manufacturer (OEM) and the demands of the End-User, LG Motion continually delivers quality solutions. The ability to meet the demands of modern manufacture can only come from increased flexibility in the process control environment. LG Motions' expertise in key aspects of motion control technology allows the original manufacturer to concentrate on the production of their own product, saving valuable time and resource.

### **Capabilities**

- Mechanical design from a simple manual mechanical slide to a full multi axis custom solution.
- Technicians to wire, program, test and integrate with your system.
- With the full support of several major international corporations almost all projects can be considered.



### Design

Design services for all our product range - with full support from our extensive range of business partners, onsite 3D CAD facilities and a team of experienced engineers with hundreds of applications involving all aspects of motion control, materials and components. Utilising our 3D design and Solid modelling to help you see what you will get before we build it.







Our continued success in motion for a wide range of industries, which include Aerospace, Pharmaceutical & Medical, Automotive, Nuclear, Printing, Packaging, Machine Tools, and Food Processing, is a result of an ability to listen carefully to customer needs and applying the experience to deliver projects on time and within budget.



### LG Motion Vision and Values

• To provide an exciting workplace where individuals can experience the emotion of achievement by applying knowledge and technology to help companies and institutes deliver their vision.

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- The respect of individual ability and their value within the business.
- To encourage responsibility for personal and Company success.
- Successful Teamwork will deliver better results for everyone.
- Commitment to excellence in all aspects of the Company.
- Hard work, continuous improvement and enjoyment.



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Delivery received swiftly, very pleased with the quick response...

**Imperial College** 

Job well done, great success, a very happy customer...

**Precision Acoustic** 

Thank you for good product/delivery...

Alcatel-Lucent

Goods received, amazed at quick turn around, thank you...

**Rutherford Labs** 

You are a great company, thank you...

**Eltromat** 



### **LG Motion Limited**

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Motion solutions for the professional

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