

XSlide™ Positioning System

Long life, precise movement, greater value

Manual and Motorized

XSLIDE™

Compact Positioning Stage

Ideal for limited space applications

VELMEX, INC.
Positioning Systems for Science and Industry

Velmex positioning products provide a variety of precise, yet simple, modular configurations to satisfy a broad range of applications where high precision and value are essential. Velmex applications are limited only by your imagination. For example:

- Measurement
- Antenna Alignment
- Automation
- Camera Positioning
- Film and Animation Work
- Inspection and QA/QC
- Medical And Biological Analysis
- Moving Probes, Sensors, Components
- Optical Focusing
- Photonics
- Pick and Place
- Prototyping
- Research and Testing
- Workhold Fixturing and Light Industrial
- And thousands of other uses.

You are not limited to off-the-shelf items. Every Velmex product is built to order. We can customize your device to meet your exact requirements with:

- Rapid, standard or fine motion
- Locks
- Counters and Scales
- Position Encoders
- Special Finishes
- Prep for Special Environments
- Framing
- Plates and Brackets

Velmex's very broad range of positioning equipment for science and industry delivers quality, precision, selection and value.

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Positioning Systems for Science and Industry



Linear manual and motorized XSlides of varying length.



XSlides can easily be configured into multi-axis stages like this three-axis motorized XSlide Assembly.

The Velmex XSlide is a compact positioning stage highly suitable for either high performance incrementing or scanning of smaller loads. Their compact design makes them ideal for limited space applications. Constructed with hard-coat anodized, aluminum dovetail ways and smooth motion PTFE bearings; XSlides deliver higher rigidity for longer life and more precise movement when compared to other dovetail designs. XSlides have a load capacity of 35 lbs. (15.9 kg.) horizontally and 10 lbs. (4.5 kg.) vertically.

Straight-line accuracy is 0.001"/10" (0.025 mm/25 cm). Repeatability is 0.0001 inch (0.0025 mm).

The carriage rides on the outside of the ways allowing for a more compact design and easier access for adjustments. With a cross-sectional profile of 1.88" (48 mm) by 1.22" (31 mm), the XSlide comes in eight standard travel lengths from 2" (50 mm) to 30" (76.2 cm). XSlides can be manually-operated or motor-driven.

Nut Mesh Adjustment – A fine mesh adjustment to minimize backlash. Located on the side of the carriage is easy to adjust without needing to remove the payload.

Carriage Fit – Two external side adjustments for fit and wear compensation; keeps carriage in parallel, reduces binding and wear. Easy to adjust without removing the payload.

Integrated Limit Switches – End-of-travel limit switches are integral to the motor block and the end plate. Protected providing longer life.

Motor Block – Protects the bearing and limits. Maintains position of lead screw in relation to motor.

Carriage (Slider) – Hard aluminum alloy construction, large and versatile mounting surface suitable for carrying a wide variety of payloads. Threaded attachment holes for securely fastening the load.

Carriage Nut – Reduces friction and makes a solid connection between the lead screw and carriage.

Roller Bearings – preloaded, thrust bearings constrain the lead screw axially and radially.

Motor Plate – Easily mount a motor to the XSlide. Accepts NEMA 17 or NEMA 23 motors.

End Plate – A convenient way to mount a XSlide on end. The 4-hole pattern easily mates with other XSlide carriages to create XY and XYZ axis configurations. Or use adapter plates to marry the XSlide with other Velmex stages.

Lead Screw – Precision lead screw constructed with rolled acme thread and hard nickel-plated for smooth, trouble-free operation and long life. Manufactured by Velmex.

Hard Stop – Hard Stops at both ends of the XSlide protect the limit switches.

PTFE Slider Bearing Pads – slick PTFE compound lowers friction for smooth movements.

Dovetail Base – Hard alloy aluminum I-beam with dovetail ways for maximum stiffness and strength. Hard anodized to be corrosion resistant and impact tolerant for longer life. Light-weight, yet rugged at a low cost.



Positioning Systems for Science and Industry

XSlide™ Configurations - Manual and Motorized Slides



Manual Free Sliding XSlide (XF Series)



Manual Screw Drive XSlide (XN Series)



Motorized XSlide (XN Series)



Motorized XSlide Assembly used to move a Camera.

XSlide Applications

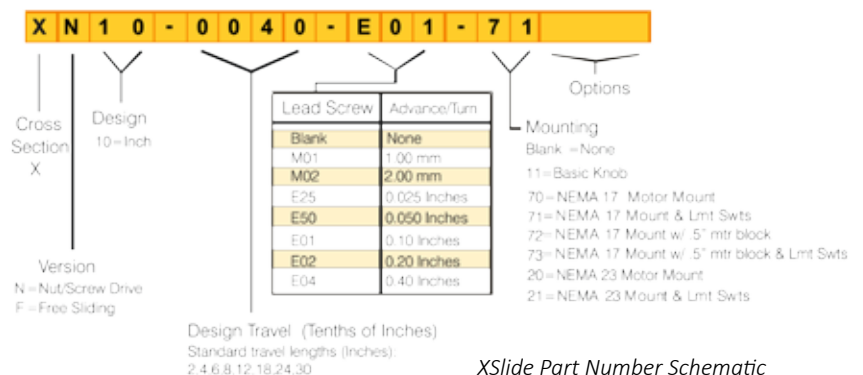
Because of their compact design, XSlides are ideal for limited space applications. They can be used in most applications that also use the larger UniSlides® and BiSlides® including scientific, medical, industrial, optical, inspection and scanning applications. The systems can be used to position, align, measure, test, fixture and machine, to name a few of the functional uses.

XSlide Specifications

XSlide Series†		XN10 - Lead Screw (Manual)	XF10 - Free Slide	XN10 - Lead Screw (Motorized)
Travel Distance*	Inches	2" – 30"	2.5" – 30.5"	2" – 30"
	cm	5.1 – 76.2	6.4 – 77.5	5.1 – 76.2
Overall Base Length*	Inches	6.05" – 34.05"	4.36" – 32.86"	6.36" – 34.86"
	cm	15.4 – 86.5	7.62 – 83.46	16.15 – 88.54
Slider Length	Inches	2"	2"	2"
	cm	5.1	5.1	5.1
Movement		1 axis - horizontal or 1 axis - vertical (Adapter plate can be added to end to support the slide.)		
Maximum Horizontal Load	lbs.	35	35	35
	kg.	15.9	15.9	15.9
Weight	lbs.	.99 – 3.22	.26 – 1.72	.99 – 3.22
	kg.	.45 – 1.46	0.12 – 0.78	.45 – 1.46
Height	Inches	1.39"	1.22"	1.72"
	cm	3.5	3.1	4.37
Width	Inches	1.9"	1.9"	1.9"
	cm	4.8	4.8	4.8

*Additional travel lengths available - Screw Drives to 60" and Free Sliding to 120"

† Motors Sold Separately



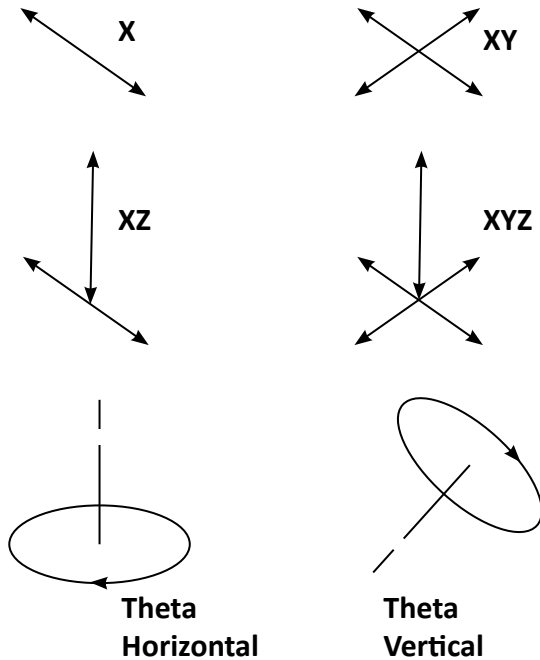
XSlide Part Number Schematic



Positioning Systems for Science and Industry

XSlide™ Specifications (continued)

Axis Configurations



Coefficient of friction:

0.09 typical

Minimum motor torque required;

25 oz-in (0.18 N-M)

Repeatability:

0.0001" over short term, long term dependent on wear

Straight line accuracy:

0.001"/10" (0.025mm/25cm)

Screw lead accuracy:

0.003"/10" (0.076 mm/25 cm) 0.0015"/10" available. Consult factory.

Operating temperature:

0 to 180° F (-18 to 82° C)

Lead screw

Stainless steel or hard nickel plated

Carriage

Machined aluminum

Other surfaces

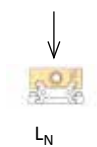
Hard alloy, black anodized aluminum

Loads

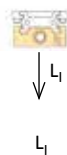
Combining XSlides in XY or XYZ configurations can create a cantilever load. In these configurations the X axis carries the weight of the Y axis and/or Z axis and the attached payload.

Refer to the chart on the right for the maximum loads allowed.

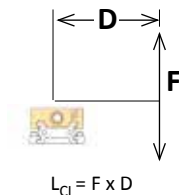
Normal (L_N)



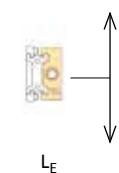
Inverted (L_I)



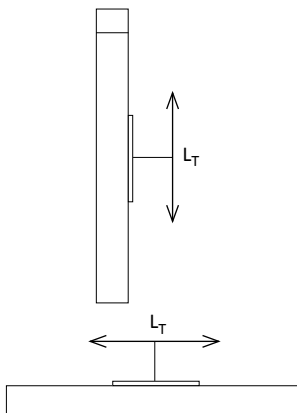
Cantilever Inline (L_{CI})



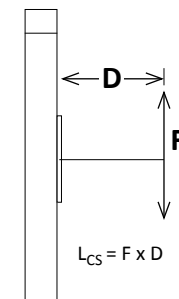
Edge (L_E)



Thrust

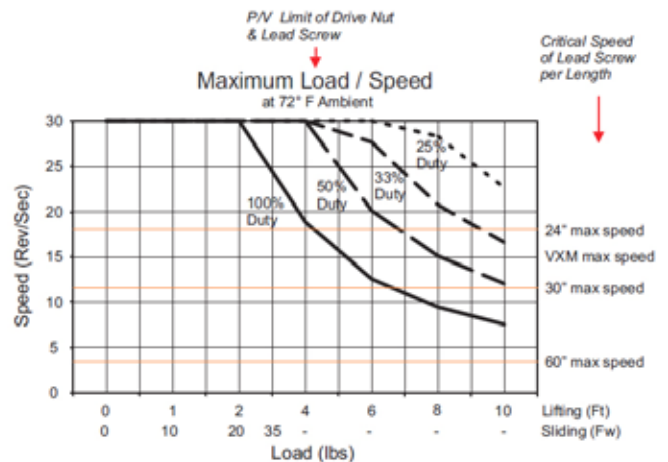
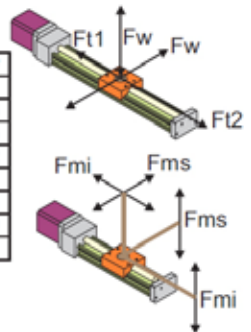


Cantilever Side (L_{CS})

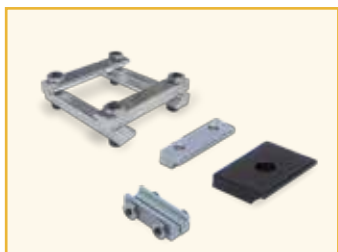


MAXIMUM RATINGS

Load	Dynamic		Static		Momentary	
	lb	kg	lb	kg	lb	kg
Fw	35	15.9	35	15.9	140	63.6
Ft1	10	4.5	20	9.1	120	54.5
Ft2	10	4.5	20	9.1	40	18.2
	in-lbs	N-m	in-lbs	N-m	in-lbs	N-m
Fms	32	3.6	65	7.3	125	14.0
Fmi	22	2.5	45	5.0	88	9.9



XSlide® Options and Accessories



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



Gussets – Use as end mounting for vertical XSlide assemblies perpendicular to the X or Y plane. The gusset provides higher rigidity. They are available in various sizes for vertical and gantry mounting.



Mounting bolts and other hardware – for use with the cleats to create strong, secure attachments.



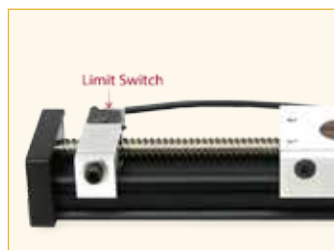
Adapter Plates and Spacers – A variety of adapter plates to mount XSlides to other Velmex products like BiSlides and Rotary Tables. There are also adapter plates with spacers to carry larger payloads.



Additional Carriages – Additional carriages (sliders) can be added to all models of BiSlides to increase the carrying capacity of the slide. Carriages can be driven or floating.



Home Switch – A magnetic reed home switch sets and returns the carriage to home (starting) position. This is moveable. (Available on motorized only.)



Adjustable Limit Switches – Fixed, end-of travel limit switches built in to the end plate are standard on motorized XSlides. Moveable limit switches can be added as an option to motorized XSlide Assemblies. This is moveable. (Available on motorized only.)



Encoders and VRO™ Encoder Readout – For a high resolution position readout a rotary encoder and Velmex's VRO encoder readout can be mounted to most linear XSlide assemblies. This is moveable. (Available on motorized only.)



XSlide Assembly combined with a Velmex Rotary Table – XSlides can easily be combined with other Velmex products to make custom systems for specialized motion and positioning projects. (The system above also included Velmex framing components.)



VXM™ Controller – Step motors coupled with a motor controller like the Velmex VXM™ are a cost effective solution for accurate speed and precise incremental positioning. The XSlide has been designed with plug-run capability for the VXM.



Motors – XSlides are compatible with NEMA DC step motors – 17 or 23.

More Positioning Solutions from Velmex

Velmex manufactures standard and custom linear and rotary motion-control positioning equipment for scientific, research, machining and industrial applications. Velmex produces UniSlide®, BiSlide® and XSlide™ manual and motor-driven assemblies; manual and motor-driven XY tables, rotary tables, elevating tables and turntables; VXM™ motor controls and VRO™ digital readouts. Products include slides, stages and actuators in a variety of configurations and a broad range of sizes and payload capacities.

Velmex UniSlide® Assemblies are available in a variety of configurations, models and sizes including Linear Slide Assemblies, Elevating Tables and XY Tables.



Velmex BiSlide® Assemblies offer durable, easy-to-configure, low cost and modular design for a highly effective and very versatile positioning device.



Velmex Rotary Tables deliver 360° of continuous motion for precise, continuous and incremental rotating for scanning, assembly, testing and production.



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Visit the Velmex web site at www.velmex.com for more details and specifications on all the Velmex stages; along with motors, controllers, encoders and readouts. The site includes CAD files, numerous examples, news and updates.

Velmex is leader in delivering rugged, reliable, precision positioning systems at a reasonable cost. We have helped thousands of companies and organizations with solutions to the application challenges. If you need help in designing a positioning system, please contact us and to talk with one of our Application Engineers.