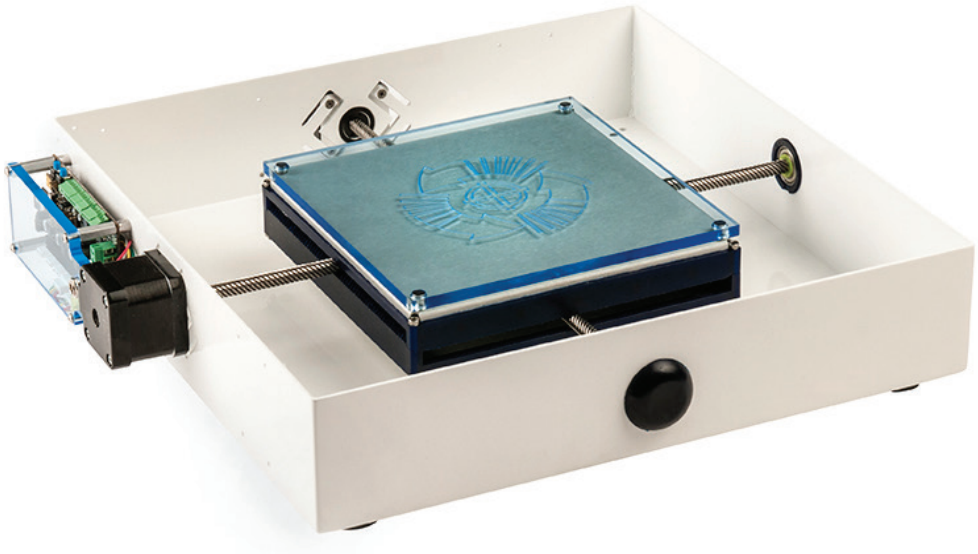
Bell Everman

Embedded Motion Systems

DATA SHEET



ServoSpline

Backlash-free helical rack drive

If you find that direct drive or ballscrew-driven positioning stages are overkill for your application, you now have a simpler option. Our new ServoSpline™ positioning stages feature a unique drive mechanism that provides backlash-free motion and simplified control.

Modern Rack-and-pinion. ServoSpline represents a rethinking and extension of a classic rack-and-pinion design. In this case, there are two sets of elastomeric racks located on the four underside edges of the stage's moving platform. The pinion consists of perpendicular, direct-driven helical splines the extend under the full length of the platform. Attached directly to ServoSpline's motors, these steel splines are vertically offset so that one meshes with the rack in the x-axis and the other in the y-axis. Simple motion commands can position the stage in x- and y-axis by independently driving the two splines.

Technical Advantages. ServoSpline is not intended to replace high-fidelity stages in applications with the most stringent requirements for accuracy, repeatability. Nor is it meant for heavily loaded applications. Instead it comes into play when you need a reliable stage that easy to deploy. ServoSpline's technical features include:

- **No backlash.** ServoSpline's urethane elastomer rack offers a bit of compliance and very closely conforms to the shape of the helical spline. This tight fit and small amount of "give" eliminate backlash altogether.
- **Long wearing.** The urethane elastomer used in the rack has been formulated for its wear properties. What's more, only a small portion of the rack comes in contact with the steel splines at any given stage position, which further minimizes wear potential.
- **Easy to implement.** The motor driven crossed splines can deliver the stage to any x-y coordinate with very simple motion commands. ServoSpline also follows our embedded motion system philosophy, so you can basically just bolt it onto your machine and expect it to run.

Applications. We've already applied ServoSpline to 3D printing and automated assembly applications as well as dispensing, engraving, additive manufacturing, biomedical titer plate indexing and pipetting for diagnostic equipment, but it can serve in a wide variety of machines that need motion stages that are easy to implement.

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Technical Specifications		ServoSpline helical rack XY drive
System Dimensions, mm		396 x 396 x 80
Maximum Travel Length, mm		160 x 160
Processor Type		32BIT NPC LPC1769 120MHZ ARM
Kinematic Flatness of Motion		±100 µm (±0.004 in.)
Standard Accuracy		±100 µm (±0.004 in.)
Power Supply		12-24 V, 3A wall unit
Pitch, Roll & Yaw (arc-sec)		50
Max Dynamic Payload, kg		2.5
Speed, mm/sec		250
Max. Acceleration, g		1
Inputs	Digital	4
	Analog utility	2
		ESD/Surge protected
Outputs		3 High Current Mosfet
Stepper Driver		4 Built-in DRV8825 1/32 micro-step
		Digital pot current control
Features		Heatsink strip for better heat dissipation at higher currents
		RoHS compliant
		Built in Micro SD card slot
		USB port

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