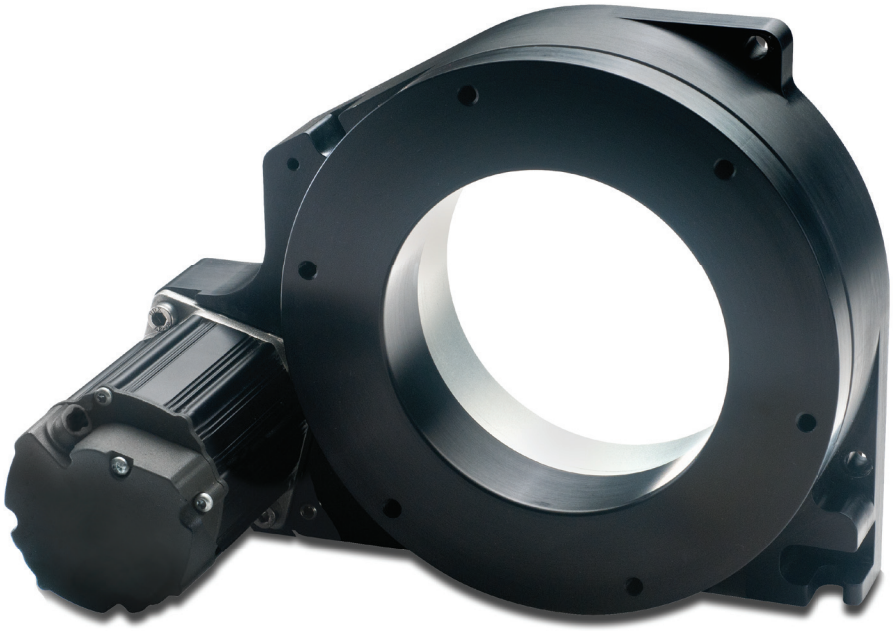
Bell Everman

Embedded Motion Systems

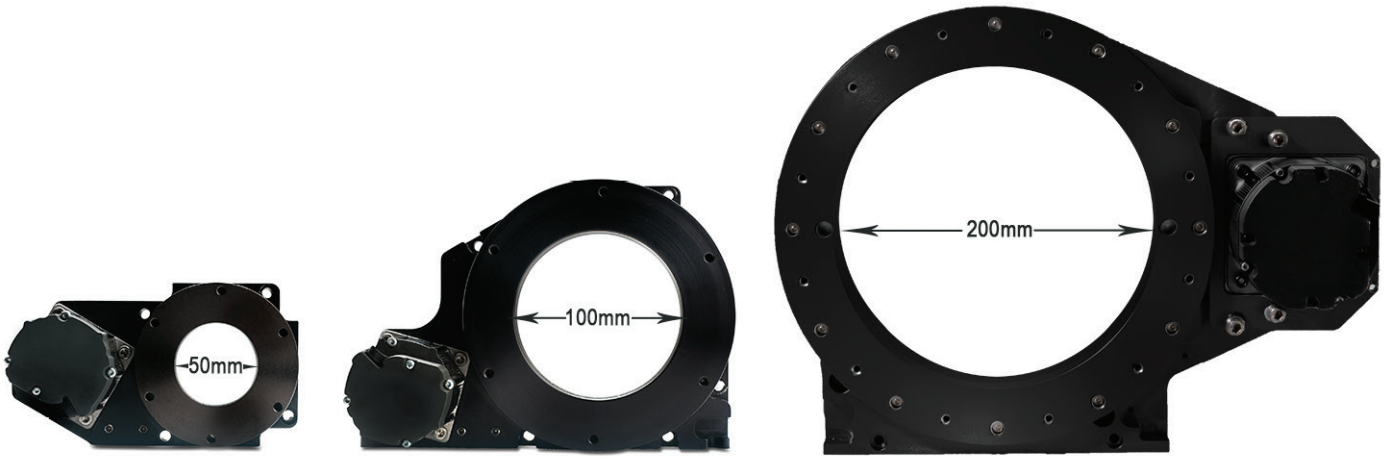
DATA SHEET



ServoBelt Rotary Stage

Precision rotary motion in an easy-to-integrate package.

- **Big Through-hole, Small Package.** Available in 50, 100 and 200 mm through holes and profiles under 67-mm, these belt-drive stages are easy to integrate into tight machine envelopes.
- **Direct Drive Performance.** Designed for NEMA 23 and 34 motors, the belt-drive stages offer speeds up to 1,000 rpm, continuous torque to 6.6 N-m and accuracies down to 0.27 arc-sec with Renishaw ring encoders or tape scales for partial rotation.
- **Application Flexibility.** ServoBelt Rotary supports both continuous rotation and variable indexing applications.
- **Robust Bearings.** ServoBelt Rotary incorporates large bearings for its size, imparting moment and load capacities far in excess of its usual application requirements. This excess load capacity translates into virtually limitless bearing life. Lubed-for-life, full duplex, preloaded angular contact bearings.
- **Cost Effective.** ServoBelt Rotary offers an economical solution for a variety of medium-duty rotary motion jobs such as driving carousel tables on packaging and assembly machines and providing fourth-axis rotary motion for laser cutting and mini CNC machines.



82 Aero Camino, Goleta, CA (805) 685-1029 www.bell-everman.com

TECHNICAL SPECIFICATIONS	ServoBelt Rotary Size/Feedback		
	SBR-50	SBR-100	SBR-200
Type	NEMA 23 3:1 Belt Drive Rotary	NEMA 23 5:1 Belt Drive Rotary	NEMA 23 or 34 11:1 Belt Drive Rotary
Bearing Type	Preloaded duplex angular contact		
Motor and Encoder Type	3-phase brushless motor, with 16KCPR motor encoder or ring encoder		
Through Hole	50.8mm (2.00 in.)	101.6mm (4.00 in.)	203.2mm (8.00 in.)
Accuracy (±arc-sec) Deviation from commanded angle.	16KCPR: 90 Ring: 16	16KCPR: 75 Ring: 16	16KCPR: 60 Ring: 16
Kinematic Wobble (±arc-sec) Tilt of rotary axis irrespective of table flatness or physical runout of table top.	16	8	8
Kinematic Radial Runout (µm TIR) In-plane wander of rotational centerline irrespective of table roundness or physical runout of table top OD.	8	8	10
Table Top Parallelism To Base (µm TIR) Total indicated worst case parallelism top to bottom.	25	25	35
Table Top Physical Radial Runout (µm TIR) Total indicated runout of the outer diameter of the rotating table under stationary indicator at the table's outer edge.	10	10	15
Bi-Directional Repeatability With motor encoder versions only, assumes 0.2 degrees lost motion at pinion, divided by ratio.	16KCPR: ±120 arc-sec Ring: Control Dependent, ±1 count possible	16KCPR: ±40 arc-sec Ring: Control Dependent, ±1 count possible	16KCPR: ±100 arc-sec Ring: Control Dependent, ±1 count possible
Uni-Directional Repeatability Angular conversion of 10µm at bull gear radius.	16KCPR: ±30 arc-sec Ring: Control Dependent, ±1 count possible	16KCPR: ±12 arc-sec Ring: Control Dependent, ±1 count possible	16KCPR: ±15 arc-sec Ring: Control Dependent, ±1 count possible
Resolution Choices	16KCPR: 16k @ motor Ring: 1µm, 0.5µm, 0.2µm, 0.1µm (100mm ring)	16KCPR: 16k @ motor Ring: 1µm, 0.5µm, 0.2µm, 0.1µm (150mm ring)	16KCPR: 16k @ motor Ring: 1µm, 0.5µm, 0.2µm, 0.1µm (255mm ring)
Table Resolution (KCPR) Measured in thousands of pulses per revolution of the table (KCPR).	16KCPR: 48 Ring: 314.9, 629.8, 1574, 3149	16KCPR: 80 Ring: 472, 944, 236, 4720	16KCPR: 176 Ring: 800, 1600, 4000, 8000
Speed Limit (RPM) Note that maximum speed for ring encoder units decreases as resolution increases.	16KCPR: 1300 Ring: 1300-134	16KCPR: 800 Ring: 764-66	16KCPR: 360 Ring: 374-52
Continuous Torque, N-m (motor) RMS torque allowed at table. Assume peak torque to be 3 times RMS torque for no longer than 3 seconds.	2.4(-2), 3(-3), 4.0(-4)	4.1(-2), 5.1(-3), 6.6(-4)	NEMA 23: 9.0(-2), 11.2(-3), 14.5(-4) NEMA 34: 20(-2), 30(-3), 38(-4)
Load Capacity Axial/Radial (kN) Load capacity are for L10 rating life of 1 million table revolutions. Load capacity is not equivalent to payload. The ability to servo control a given payload is dependent on inertia, motion profile, duty cycle and control architecture.	8.6 / 7.7	14.0 / 11.7	25/21
Max. Moment (N-m) Moment loads are for L10 rating life of 1 million table revolutions.	120	370	1050
Rotational Inertia (kg-m^2) Rotational inertia of table.	16KCPR: 0.00018 Ring: 0.00047	16KCPR: 0.005 Ring: 0.006	16KCPR: 0.037 Ring: 0.046
Stage Weight (kg, less motor)	1.32	3.3	7.5
Recommended Payload Maximum, kg Bearing capacity is far in excess of these numbers for enhanced bearing life. Ability to control recommended payloads entirely dependent on move profile and moment of inertia.	10	25	100

Configure and request a quote online at **www.bell-everman.com/servobelt-rotary**.

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