

### Force Repeatability in Linear Applications

Many linear applications in linear motion have a requirement for specific levels of force repeatability from cycle to cycle. This requirement may be to insure the repeatability of the strength of a weld, the holding force of a clenched fastener, or the proper installation force of a bearing.

Exlar's GSX actuators offer best-in-industry force repeatability. The design of the GSX offers a true direct drive actuator in which the magnets of the motor's rotor are bonded directly to its planetary roller screw. This eliminates the inefficiency and inaccuracy of belts, gears or couplings!

The GSX actuators also offer the most advanced and thermally efficient rotary brushless motor technology available today. Their T-LAM segmented lamination stators offer unmatched torque density, thermal efficiency, and torque repeatability, which translates to superior force repeatability.

For more information on T-LAM stators see additional articles at these url's:

"Why the Exlar T-LAM Servo Motors Have Become the New Standard of Comparison for Maximum Torque Density and Power Efficiency"  
[http://www.exlar.com/Engineering%20Stuff/TLAM\\_Standard.pdf](http://www.exlar.com/Engineering%20Stuff/TLAM_Standard.pdf)

"Compare T-LAM Stator Technology to Traditional Brushless Motors"  
[http://www.exlar.com/Engineering%20Stuff/TLAM\\_Trad\\_Comp.pdf](http://www.exlar.com/Engineering%20Stuff/TLAM_Trad_Comp.pdf)

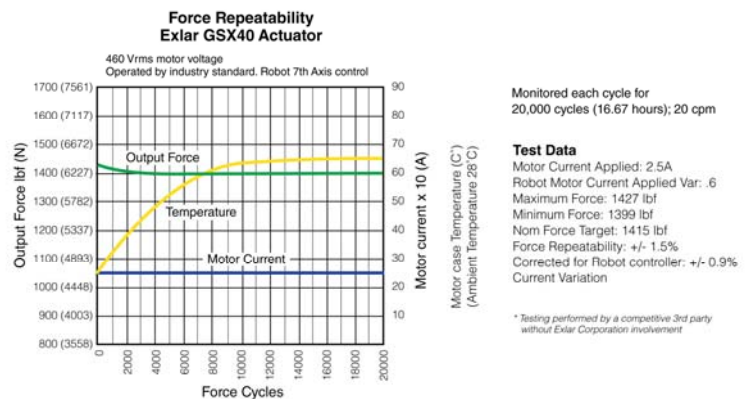
"Why All Exlar SLM Servomotors Have a 50 Degree C "Hot Spot" Temperature Safety Margin"  
[http://www.exlar.com/Engineering%20Stuff/Hot\\_Spot\\_Safety\\_Margin.pdf](http://www.exlar.com/Engineering%20Stuff/Hot_Spot_Safety_Margin.pdf)

The integrated design of the GSX actuators offers the most compact linear actuators on the market, with true direct drive for optimum performance and force repeatability.



Exlar's T-LAM™ brushless motor stator technology (shown left) is the industry's most compact, powerful and thermally efficient design.

The data below shows the results of direct testing of Exlar's GSX40 actuator for force repeatability in an open loop system. The actuator was operated by the 7<sup>th</sup> axis controller and servo amplifier of an industry standard robot. 20,000 cycles were performed at a cycle rate of 20 per minute. The results were that the GSX actuator offered force repeatability of +/- 1.5%. This value was superior to the competitive actuator manufactured by the independent company doing the testing, Brand A, and a third actuator that they also tested, Brand T.



This data demonstrates the excellent force repeatability available to you in an open loop system. If your application requires even more accurate force control Exlar offers integrated force sensing devices for monitoring force in your application. See Exlar's force measuring brochure at [http://www.exlar.com/prod\\_force\\_meas\\_oview.html](http://www.exlar.com/prod_force_meas_oview.html)