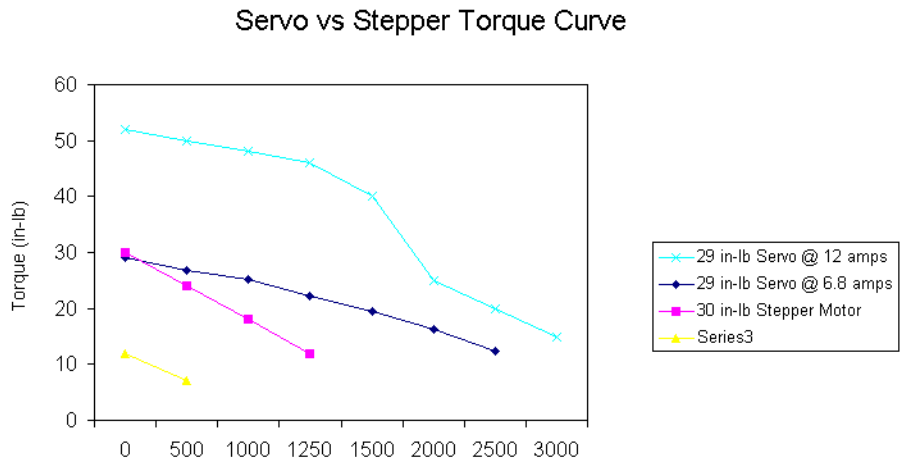
TB156 (Rev1) - Servo vs. Stepper Performance

Overview

This document compares the performance of equally rated servo and stepper motors and explains why servomotors out perform stepper motors.



Speed (RPM/Steps per Second)

Advantages of servo over stepper motors

*Servos have a larger usable RPM band (3000rpm vs. 1000rpm) as shown in the graph above.
*Servos produce more torque at any speed than comparable stepper motors. This can be up to 400% more torque for equally rated motors.
*Servos are under closed-loop control via their encoders allowing additional power to be sent to the motor when resistance is encountered. Steppers on the other hand will simply stall and lose their position relative to the control resulting in improperly machined parts.
*Servos offer superior resolution compared to steppers (typically 8000counts/rev vs. 2000microsteps/rev).
*Servos offer 100% guaranteed accuracy. Stepper motors cannot at any time guarantee their position.
*Servos only consume the amount of power they need to reach their commanded position, and no power at all when on target. Stepper motors use the same amount of power all the time, even when at rest.

Document History

Rev1 Created on ***2003-05-05*** by ***#001***