msd 101

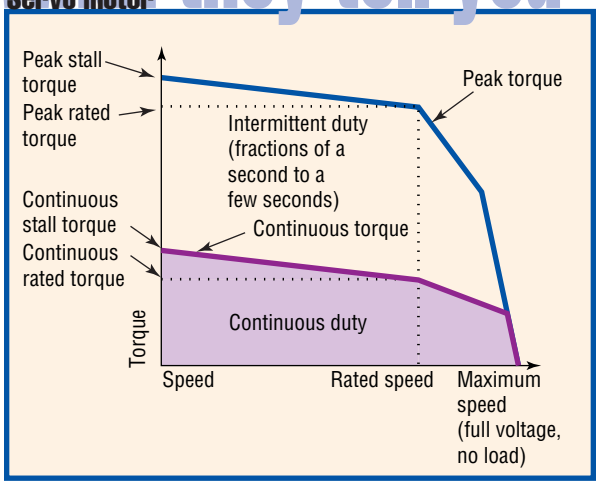
Motors and Actuators

Speed-torque curves

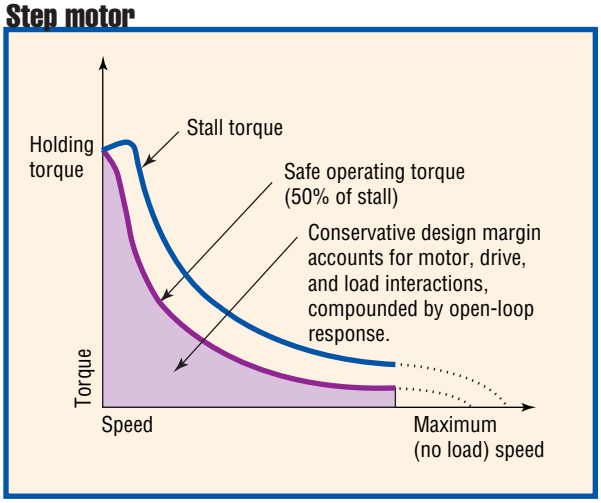
Almost everything you need to know about a motor is contained in the speed-torque curve. If you know where to look, you can find or get a feel for such critical information as peak operating levels, stall conditions, starting torque, and dynamic response. Speed-torque curves can also help you select the best motor technology, whether it's ac or dc, stepper or servo, moving coil or switched reluctance.

What they tell you

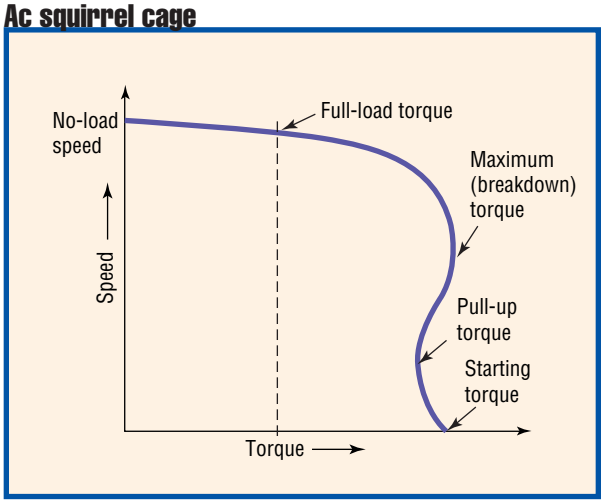
Servo motor



Step motor



Ac squirrel cage



questions &answers

Q **Why would a "properly sized" motor stall in actual use?**

A It's probably overheating. Use a derating curve to select a different motor, and see if it doesn't perform better.

Q **Is it better to use a servo or stepper?**

A The best motor is the one that does the job. However, if the application falls within a step motor's safe operating range, you're likely to save money with the stepper.

Q **What would cause a motor to fall short of the acceleration predicted by its speed-torque curve?**

A Friction, mainly. To overcome it, make sure you design in some torque margin when selecting a motor.