

S11 APPLICATION GUIDELINE 8.2

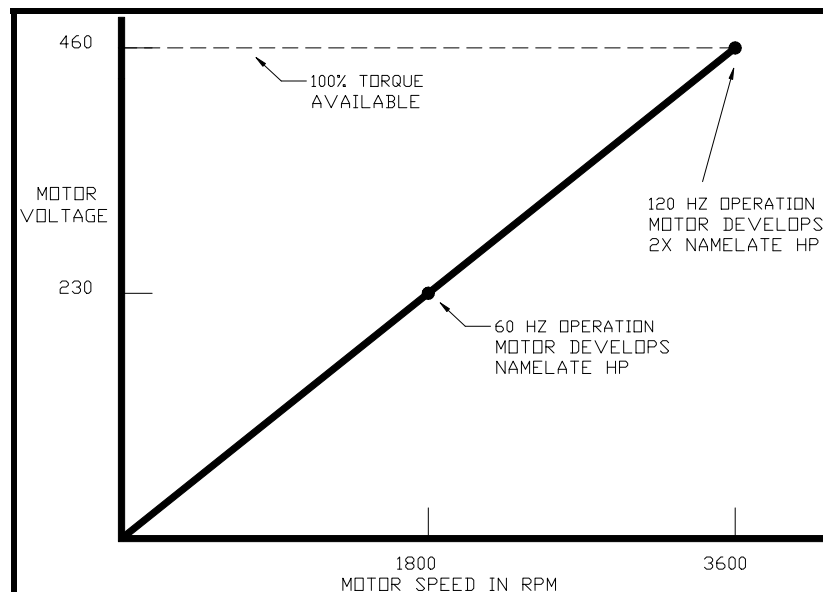
120 Hz Constant Torque Operation of a 60 Hz Motor

Introduction

The S11's adjustable volts/hertz relationship and high frequency capability can be utilized in applications that require a 1:2 constant torque speed range or that have limited space available for the motor.

The motor will run on 460V power but is wired for 230V. This can be done because the insulation systems of low voltage motors are good for 600 volts. The drive will put 230V to the motor at 60Hz which the motor winding will need for proper operation. At this time, the motor can deliver nameplate horsepower and torque. As the inverter continues to increase frequency AND voltage, motor horsepower increases linearly to double rating at 120 Hz. A graph below shows a voltage vs. speed curve with torque represented on the same graph by a dotted line.

Graph



Check with motor manufacturer for top speed capability of your motor. The balance of the motor's rotor and bearing life are of concern during over speed operation. Make sure the machine pulleys or gearbox are sized for 3600 RPM.

Both of the following motors have the same torque rating of approximately 14 ft-lbs at 60 Hz:
5 HP, 230V, 184T frame, 1800 RPM, 12.6 amps (will be run up to 480V 120 Hz 3600 RPM)
10HP, 460V, 215TC frame, 3600 RPM, 11.5 amps (will be run up to 480V 60 Hz 3600 RPM)
A 10 HP S11 could be used with either motor. Notice that the 5 HP motor is in a smaller frame.

For additional assistance, please contact Toshiba Adjustable Speed Drive Marketing Dept. at (800) 872-2192

Programming

Parameter	Description	Default Value	New Value
<i>UL</i>	Base Frequency 1	50.0 (WP) 60.0 (WN,AN)	120 Hz

Revision History

Rev.	Date	Written/Revised By	Approved By	Description
8.2	6/23/2011	Joshua Austin	Eric Houg	Modified parameter table, and simple rewording. Revised to incorporate document control requirements.

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