57STH56 NEMA-23 Bipolar Stepper with 77:1 Gearbox



This NEMA-23 motor has an integrated Planetary gearbox with a

 $76^{49}/_{64}:1$ ratio. It comes with the rear shaft exposed, so you can mount an encoder or shaft coupler. See the ""Compatible Products"" tab for a complete list of attachments.

When connected to a 1067 — PhidgetStepper Bipolar HC, the 3334 has a maximum speed of 25 RPM. At the output of the gearbox, the step angle approximately 0.023B°. When using the step angle in calculations, you should derive the exact step angle by dividing 1.8B° by the gearbox reduction ratio. See the ""Compatible Products" tab for wiring details.

At 2.8 Amps, this stepper motor can produce a maximum torque of 960 kg-cm. However, the gearbox is only rated for 240 kg-cm of continuous torque. Loading this gearbox stepper beyond the torque rating of the gearbox will shorten its useful life.

Connection

This motor must be controlled by a constant current or chopper drive controller. You can find a list of suitable controllers on the **Compatible Products**tab. There you will also find compatible attachments such as encoders, mounting hardware, and transmission hardware.

Warning

Connecting the motor directly to a power supply will destroy the motor and void the warranty. If you want to check your motor make sure it is connected to a constant current / chopper drive controller.

Product Specifications

Motor Properties

Bipolar Stepper Motor Type

Manufacturer Part Number 57STH56-2804B / 56JXS300K77

0.023B° Step Angle B± 5 % Step Accuracy Holding Torque 240 kgB·cm Rated Torque 240 kgB·cm

Maximum Speed (w/1067 Motor Controller) 25 RPM

Acceleration at Max Speed

1E+06 1/16 steps/secBI (w/1067 Motor Controller)

300 mm

Electrical Properties

Recommended Voltage 12 V DC Rated Current 2.8 A Coil Resistance 900 m0© Phase Inductance 2.5 mH

Physical Properties

Shaft Diameter 12 mm Rear Shaft Diameter 3.9 mm Mounting Plate Size NEMA - 23Weight 1.5 kg Number of Leads 4

Gearbox Properties

Gearbox Type Planetary 76 ⁴⁹ ₆₄ : 1 Gear Ratio 1 ¹∏₂B° Backlash Error Maximum Strength of Gears 240 kgB·cm

Shaft Maximum Axial Load 100 N Shaft Maximum Radial Load 250 N

Documents

Wire Length

- Stepper Motor and Controller Primer
- Mechanical Drawings

Projects

- Motor Music: Play MIDI Files using Phidget Stepper Motors (June 1, 2015)
- How To Avoid Resonance Issues in Stepper Motors (July 28, 2014)
- Steppers with Encoders: When Open-loop Control Is Not Enough (May 13, 2014)

Motor Controllers

This motor must be controlled by a stepper motor controller. This diagram shows how to connect the motor wires to the controller to produce a clockwise rotation in the stepper motor when increasing position. To wire for counterclockwise rotation when increasing position, reverse the red and blue wires.

Note: Make sure to unplug the power cord from the motor controller before switching wires around.

The following stepper controllers can be used to drive this motor:

Controller Properties				
Part Number	Motor Position Resolution	Stepper Velocity Resolution	Stepper Velocity Max	Available Current per Coil Max
1067_0B	¹□ ₁₆ Step (40-Bit Signed)	1 1/16 steps/sec	250000 1/16 steps/sec	4 A
STC1000_0	¹□ ₁₆ Step (40-Bit Signed)	1 1/16 steps/sec	115000 1/16 steps/sec	4 A