

42STH38 NEMA-17 Bipolar Stepper with 5.18:1 Gearbox



This NEMA-17 motor has an integrated Planetary gearbox with a $5\frac{2}{11}:1$ 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 3325 has a maximum speed of approximately 900 RPM. At the output of the gearbox, the step angle is a little under 0.35° . When using the step angle in calculations, you should derive the exact step angle by dividing 1.8° by the gearbox reduction ratio. See the “Compatible Products” tab for wiring details.

At 1.7 Amps, this stepper motor can produce a maximum torque of 18.6 kg-cm. However, the gearbox is only rated for 18 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 Product** 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

Motor Type	Bipolar Stepper
Manufacturer Part Number	42STH38-1684B / 36JXS60K5.18
Step Angle	0.35°
Step Accuracy	± 5 %
Holding Torque	18 kg·cm
Rated Torque	18 kg·cm
Maximum Speed (w/1067 Motor Controller)	904 RPM
Acceleration at Max Speed (w/1067 Motor Controller)	410000 1/16 steps/sec ²

Electrical Properties

Recommended Voltage	12 V DC
Rated Current	1.7 A
Coil Resistance	1.7 Ω
Phase Inductance	3.2 mH

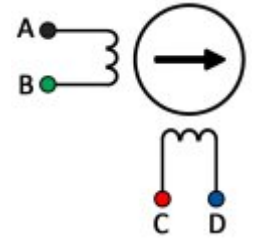
Physical Properties

Shaft Diameter	8 mm
Rear Shaft Diameter	3.9 mm
Mounting Plate Size	NEMA – 17
Weight	457 g
Number of Leads	4
Wire Length	300 mm

Gearbox Properties

Gearbox Type	Planetary
Gear Ratio	5 ² ₁₁ : 1
Backlash Error	1 ¹ ₂ °
Maximum Strength of Gears	18 kg·cm
Shaft Maximum Axial Load	49.1 N
Shaft Maximum Radial Load	98.1 N

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 counter-clockwise 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:

Encoders

The rear shaft of this motor can be equipped with an encoder for applications where you need to keep track of the exact position, velocity, or acceleration of the motor. The mounting holes on the back of this motor are compatible with the following encoders:

Shaft Couplers

If you need to connect the main shaft of this motor to the shaft of another device, you can use a shaft coupler:

