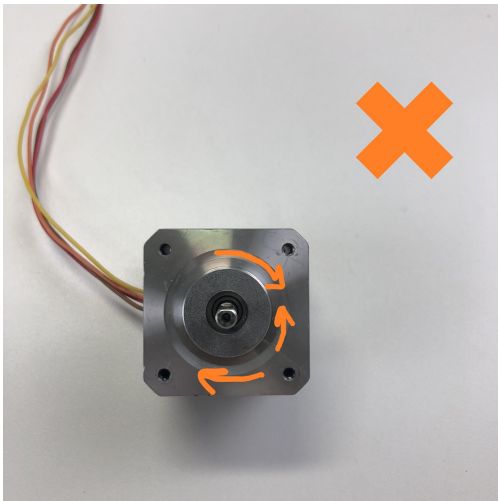# Testing a Stepper motor

If your stepper motor is not working as intended, you may need to test for a short in the wiring. While physically inspecting your mainboard and wiring may be required, there are a few quick tests that can be done to eliminate other variables.

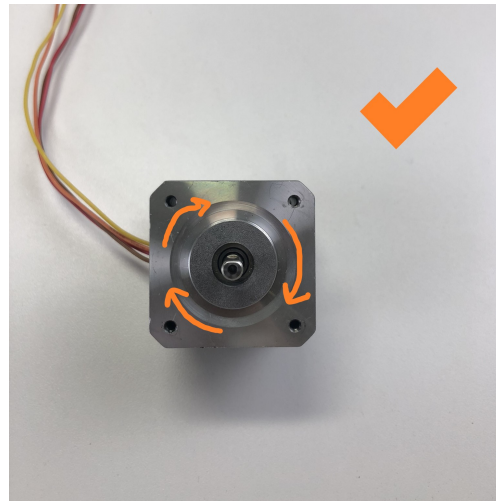## How do I know if my stepper motor is not functioning correctly?

Under normal operation, a stepper motor should turn in a constant direction, only stopping when the software tells it to, or it is stalled out. A stepper motor that has a short, or is damaged, will commonly;

1. Not move at certain jog speeds, but will make a noise indicating it is receiving power

2. Switch directions when any pressure is applied to the motor's shaft.

STEPPER MOTOR WITH A SHORT
When the stepper motor is attached to a coupler, or leadscrew, it may only move slightly back and forth in opposite directions, as anything putting resistance on the stepper motor shaft will cause it to reverse direction without input from the software. We can use this to our advantage when testing a bad motor.
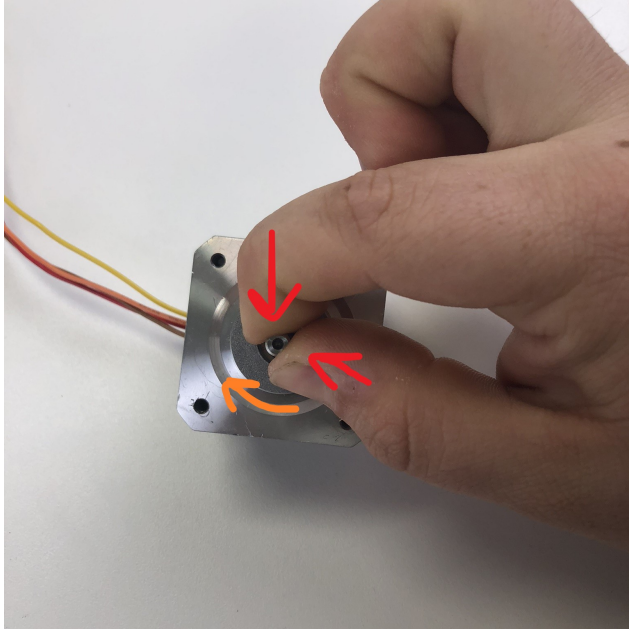
PROPERLY FUNCTIONING STEPPER MOTOR
Rotates till stalled out by force, will not reverse without input from software.

Testing for a short

When testing for a short in a stepper motor's wiring, simply detach the motor from its leadscrew and coupler, grip the motor shaft with one hand, and jog the motor in one direction at multiple jog speeds. If there is a short in the wiring, or an issue with your stepper motor, it will reverse direction when the motor shaft is gripped as shown below. If the motor is functioning correctly, it will stall out completely at higher jog feeds, and simply continue to turn at lower ones. Note that the point is NOT to stall out the motor at any jog speed, as using anything other than your fingers to grip the motor shaft can damage it. The idea is to simply put resistance on the shaft to identify a short or motor issue.

Please contact Stepcraft support if you have any further questions.
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