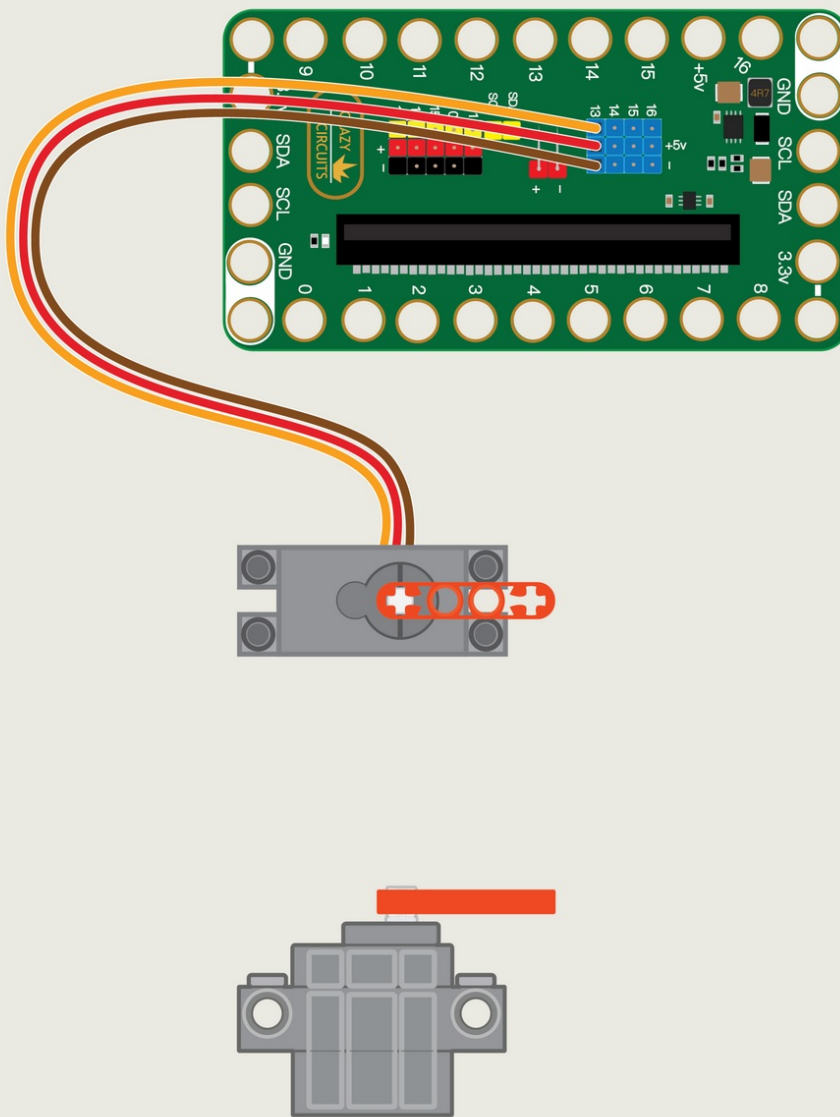




CH24-C - Servo Angles

Connect a 270° Servo to a Bit Board and control it with code.

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INTRODUCTION

Connect a 270° Servo to a Bit Board and control it with code.

We'll explore how to control a servo motor.



TOOLS:

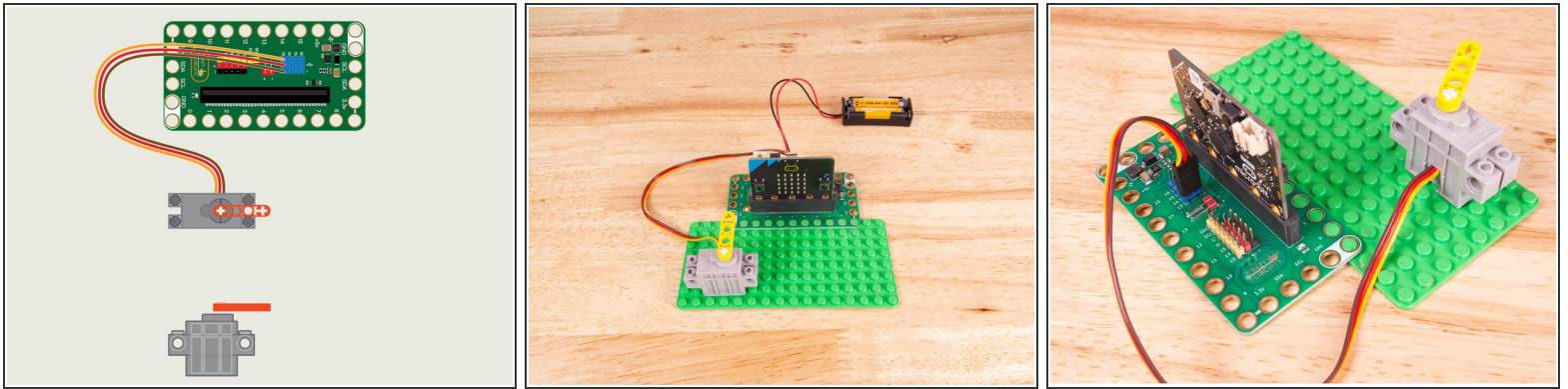
- [Computer](#) (1)



PARTS:

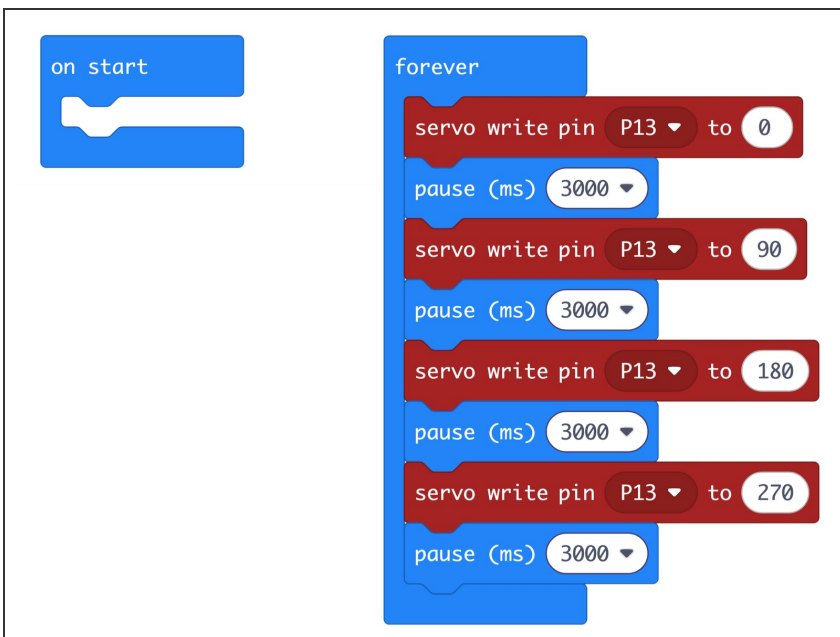
- [Crazy Circuits Bit Board](#) (1)
- [micro:bit](#) (1)
- [Brick Compatible 270 Degree Servo](#) (1)

Step 1 — Connect the 270° Servo



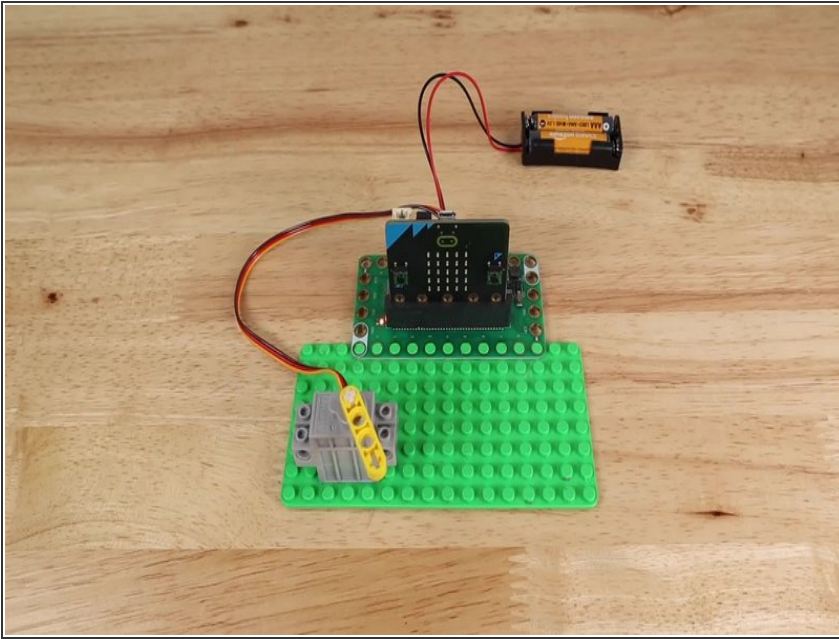
- The **270 Degree Servo Motor** has a 3-wire connector on the end that can plug directly into the pins on the back of the Bit Board.
- Make sure the **Orange Wire** is closest to the number **13** for the **Pin 13** column.
- Then the **Brown Wire** should be closest to the micro:bit (in the - row) and the **Red Wire** will be in the middle (the **+5v** row).

Step 2 — Load the Code



- If you've never used a micro:bit before you'll want to check out this guide: [Bit Board V2 Setup and Use](#)
- We're going to load the following code for our **Servo Angles** program:
https://makecode.microbit.org/_64AaVe8mP...
- We'll move the servo to a number of positions, **0**, **90**, **180**, and then *it will attempt to* move it to **270**.
- There's a pause between each move, to allow the servo to move and then stop for a bit.

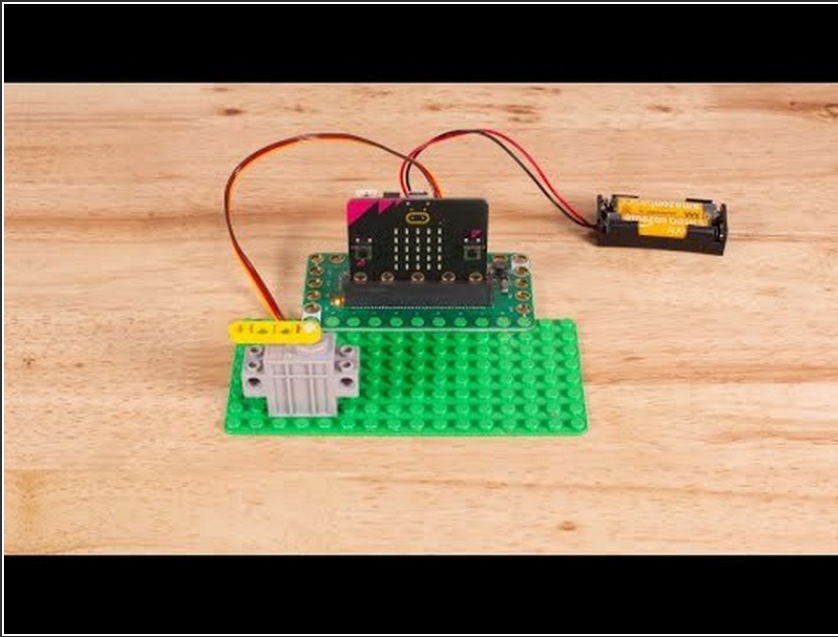
Step 3 — Test it Out!



- Once the code is loaded it should start running immediately.
- ① You can power the micro:bit via the USB cable you used to load the code, but now that we are using servos we recommend using a battery pack plugged into the Bit Board.
- ★ The [Blue Pins](#) on the Bit Board provide extra power (5 volts instead of 3 volts) by **boosting the voltage** coming from the battery pack. This helps improve servo performance, especially with multiple servos.
- The servo should start at the 0 position (all the way clockwise) then move to the center, and finally all the way anti-clockwise). **But wait!** Shouldn't the servo move to **four positions**? This is where it gets tricky...
- While we can see the servo moves about 270 degrees in total, MakeCode only recognizes values between **0 and 180**. This means that **180 degrees in the code is really 270 degrees** on the servo, and **90 degrees in the code is really 135 degrees** (or halfway) on the servo.

- ✦ This guide helps explain things:
[LEGO Compatible 270 Degree Servo](#)

Step 4 — Follow Along



- Follow along with our recorded Live Stream!
- ⓘ You can watch the full video of us walking through this project, along with explaining and exploring the code:
https://youtube.com/live/T8jrPuhOp_g