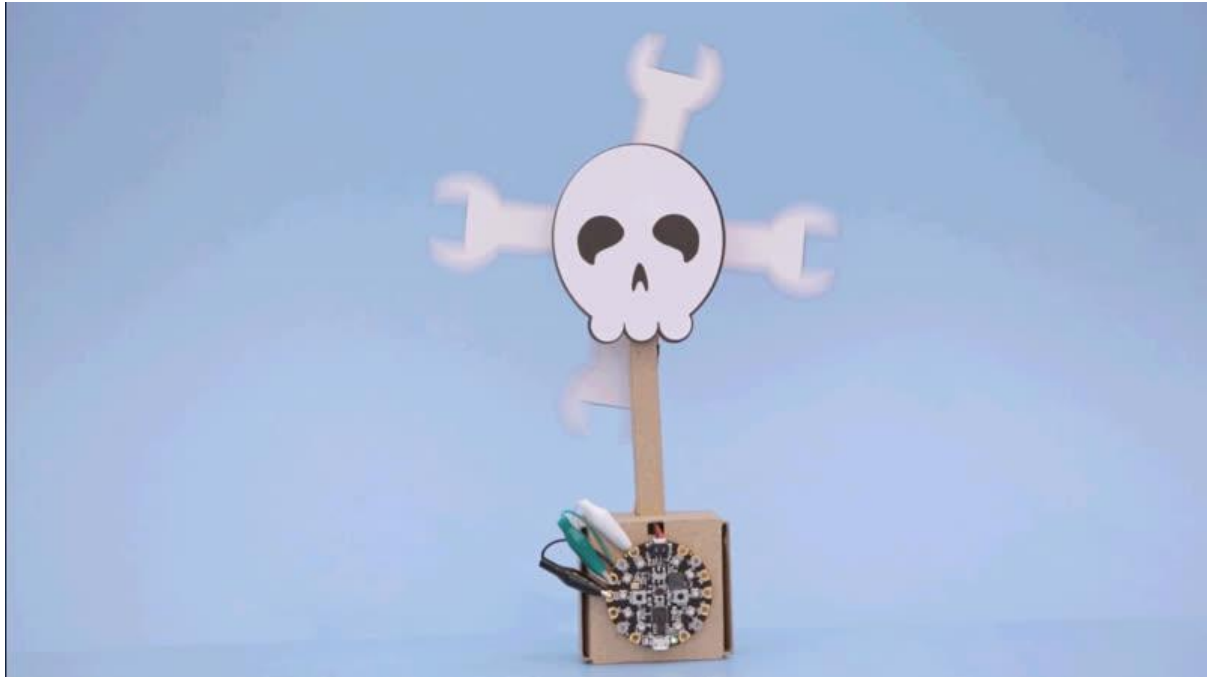




Spinning Logo

Created by Ruiz Brothers



<https://learn.adafruit.com/spinning-logo>

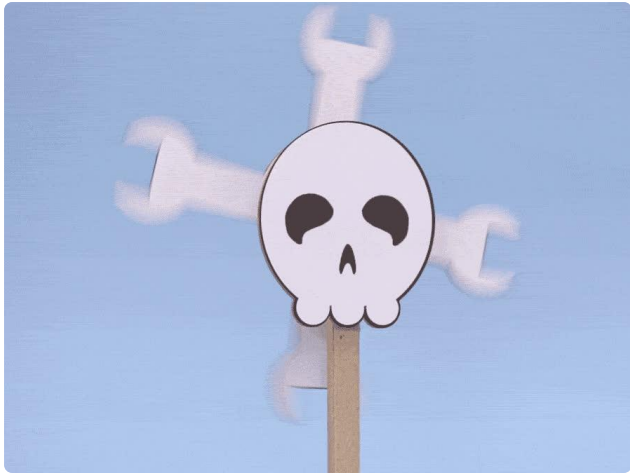
Last updated on 2023-08-29 03:43:41 PM EDT

Table of Contents

Overview	3
Circuit Diagram	6
Code	6
• WebUSB Direct Download	
Cutting	8
• Cut Shapes	
• Box assemble	
• Circuit Playground Express	
Assemble	10
• Score, Cut, Fold	
• Box: Sore, fold	
• Servo Mount	
• Wrench and Servo horn	
• Circuit Playground Box	
• Thread wires	
• Plug in Battery	
• Pole insert	
• Servo mount	

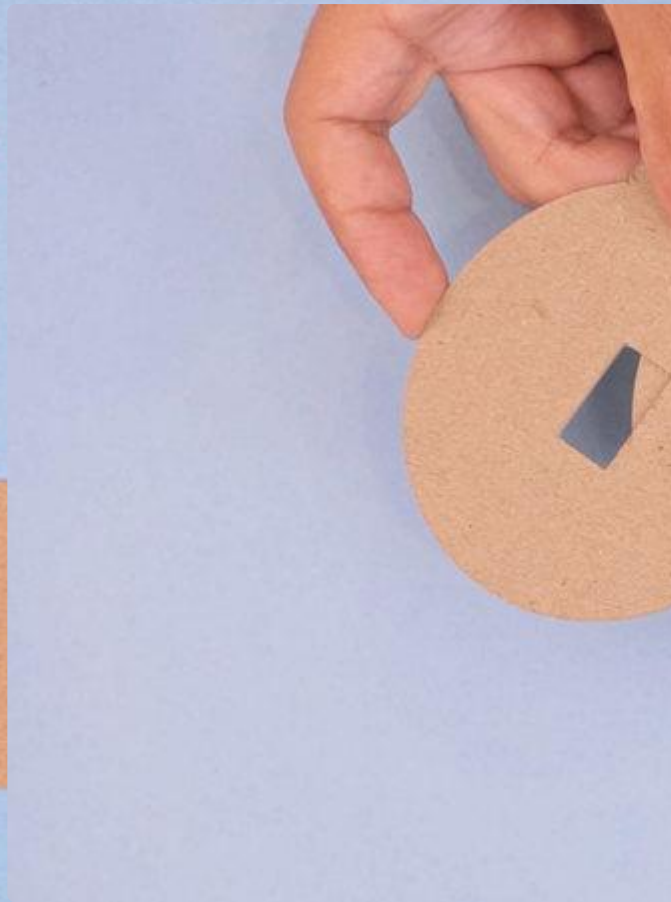
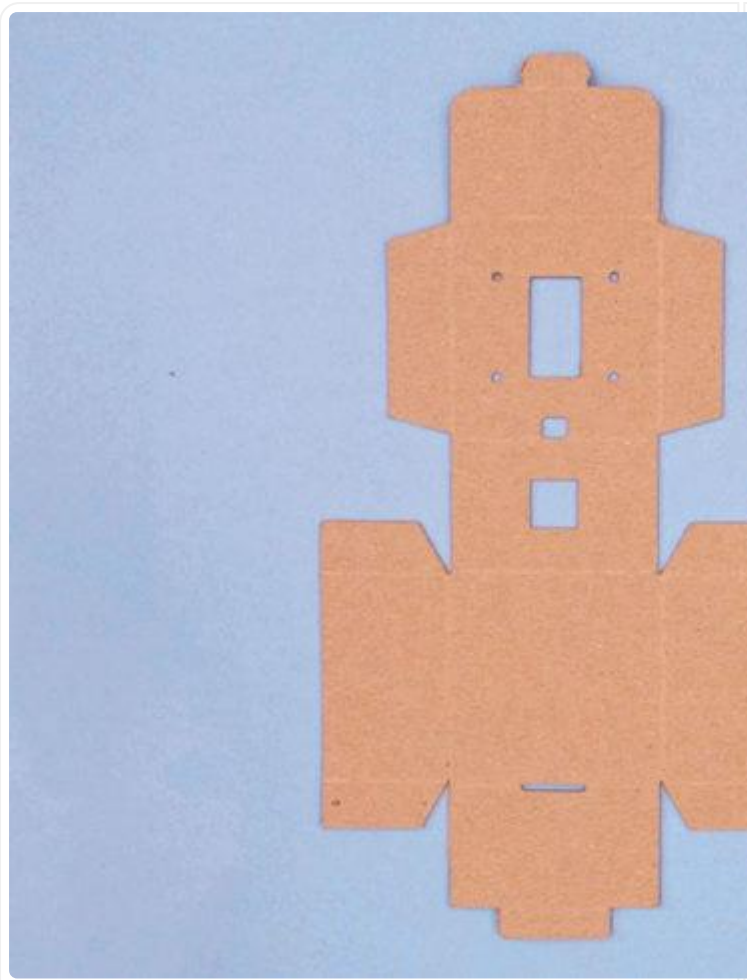
Overview

Build a paper craft hack a day logo, powered by a Circuit Playground Express!



This project is a great use of our customizable paper enclosure for the Circuit Playground. We'll use alligator clips for all of the connections so it requires no soldering! Perfect for workshops and classroom settings!

The two buttons on the Circuit Playground control the direction of the spinning wrenches but you can easily modify the code to respond to any of the on board sensors!

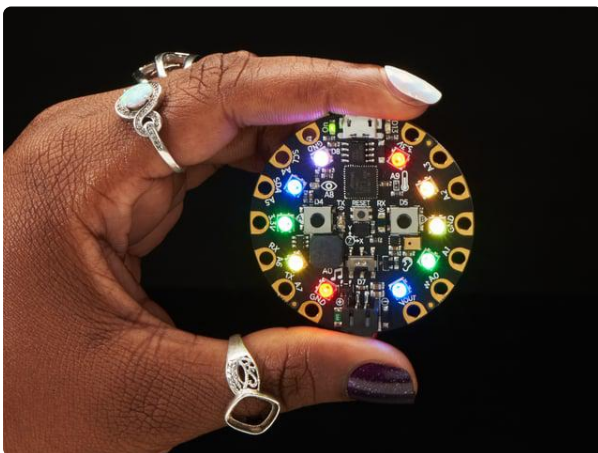


1 x .8mm Chipboard
.8mm Chipboard

<http://a.co/3PhpUSy>

1 x 1.6mm Chipboard
1.6mm Chipboard

<http://a.co/3WXples>



Circuit Playground Express

Circuit Playground Express is the next step towards a perfect introduction to electronics and programming. We've taken the original Circuit Playground Classic and...

<https://www.adafruit.com/product/3333>



Circuit Playground Bolt-On Kit

You have a Circuit Playground Express, but you need to mount it to your charming cardboard robot friend, eh? Not so easy if you...

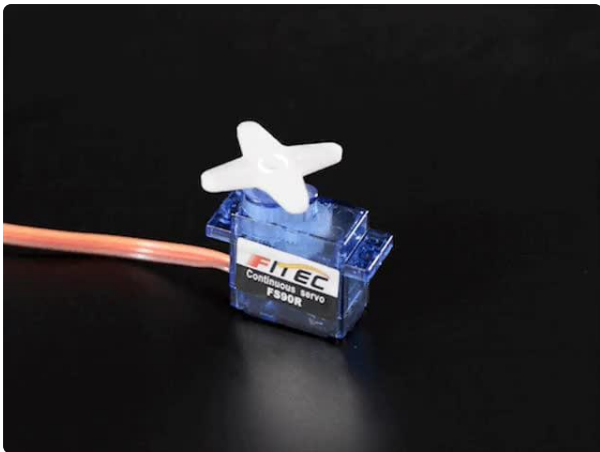
<https://www.adafruit.com/product/3816>



Small Alligator Clip to Male Jumper Wire Bundle - 12 Pieces

For bread-boarding with unusual non-header-friendly surfaces, these cables will be your best friends! No longer will you have long strands of alligator clips that are grabbing little...

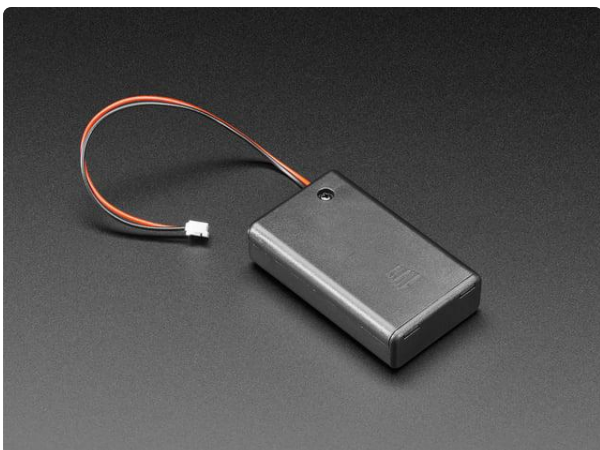
<https://www.adafruit.com/product/3255>



Continuous Rotation Micro Servo

Need to make a tiny robot? This little micro servo rotates 360 degrees fully forward or backward, instead of moving to a single position. You can use any servo code, hardware,...

<https://www.adafruit.com/product/2442>

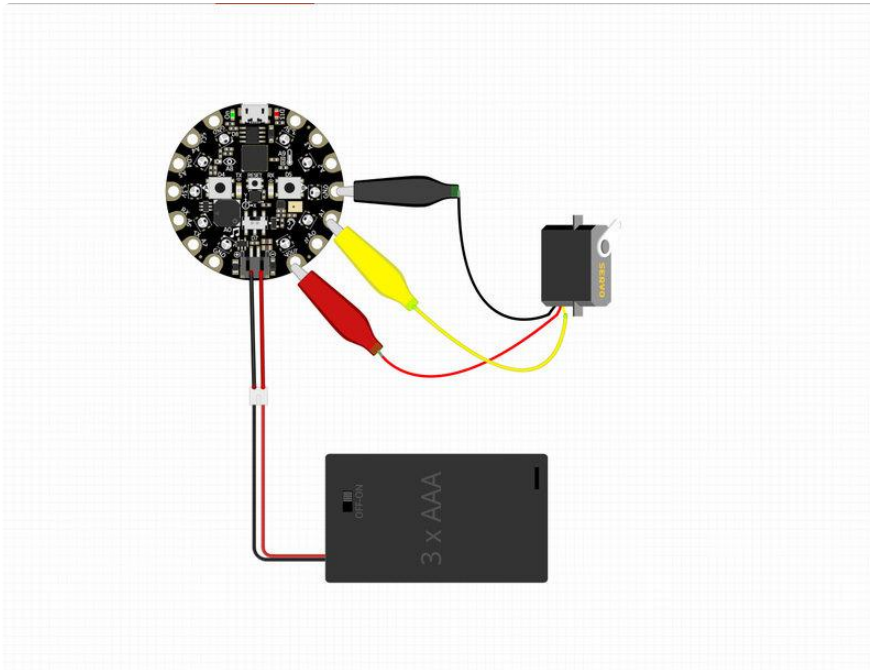


3 x AAA Battery Holder with On/Off Switch and 2-Pin JST

This battery holder connects 3 AAA batteries together in series for powering all kinds of projects. We spec'd these out because the box is slim, and 3 AAA's add up to about...

<https://www.adafruit.com/product/727>

Circuit Diagram



Ground (Brown) connects to GND on the Circuit Playground

Power (Red) connects to VOUT

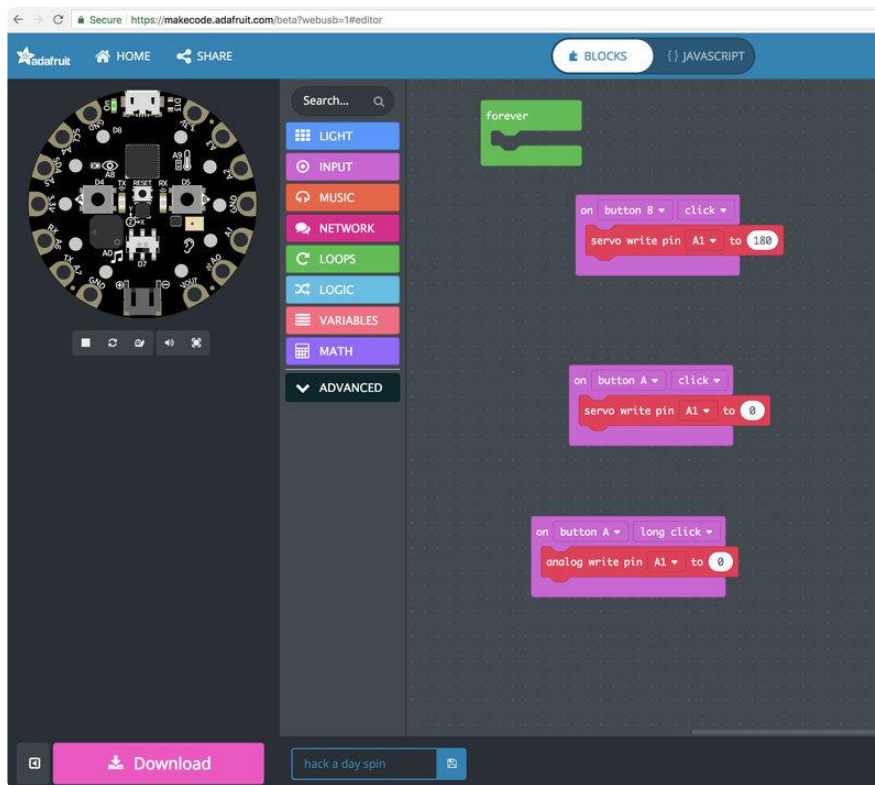
Signal (Yellow) connects to A1

Battery connects to the JST port on the Circuit Playground Express

Code

The Makecode spins the motor attached when the Circuit Playground Express detects a button press. Use the link below to open the code in a modern web browser:

Open this project code in
MakeCode



WebUSB Direct Download

MakeCode can load a program direct to your Circuit Playground Express with WebUSB using the Chrome web browser - [see this guide page \(\)](#) on setting that up.

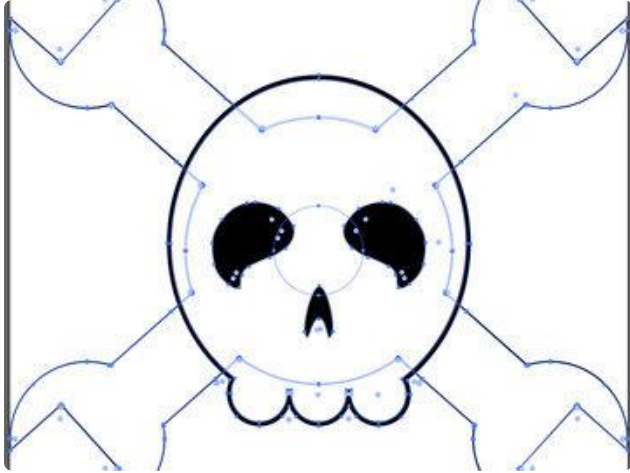
Then visit the code for the project here: [https://makecode.com/_f5MREEYjv7qf \(\)](https://makecode.com/_f5MREEYjv7qf ())

This means code edit will upload directly to the Circuit Playground Express without the need to drag and drop file onto it!

Follow the instruction to set up your board and you'll be able to quickly send code to Circuit Playground Express!

Cutting

Cut Shapes



Download and cut the parts out with scissors or use a cutting machine. The svg files are arranged in layers, so its easy to set up!

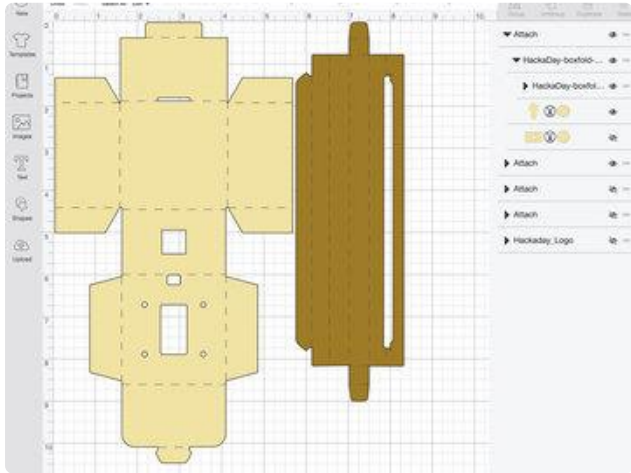
We used card stock (210gsm) for the black and white colors.

The help stiffen the skull and wrench parts, we used a [1.6mm thick chipboard](#) ().

Hackaday_Logo.svg

Box assemble

Cut out the box design and assemble the folds. The Circuit Playground Express mounts to the top of the box with four M3 Screws and M3 female standoffs. The battery sits inside the box with the wires routing through the port on the side.



We used .8mm thick chipboard for the box and the pole part.

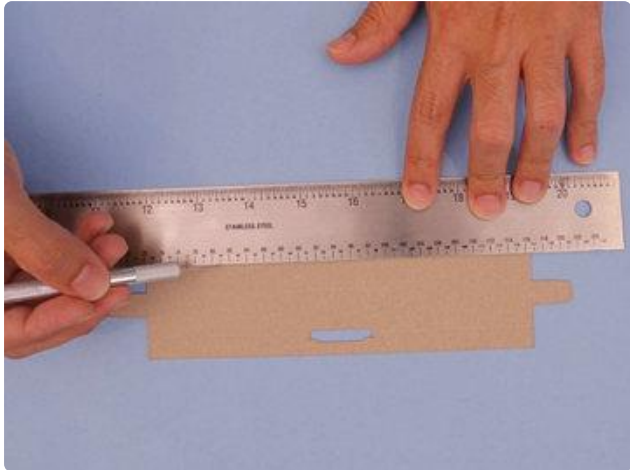
Circuit Playground Express

We used alligator clips to connect the pins but soldering would be fine. You can route the wires for the Circuit Playground Express through the center of the mounting holes for the Circuit playground Express.

[HackaDay-boxfold-cpx.svg](#)

[pole.svg](#)

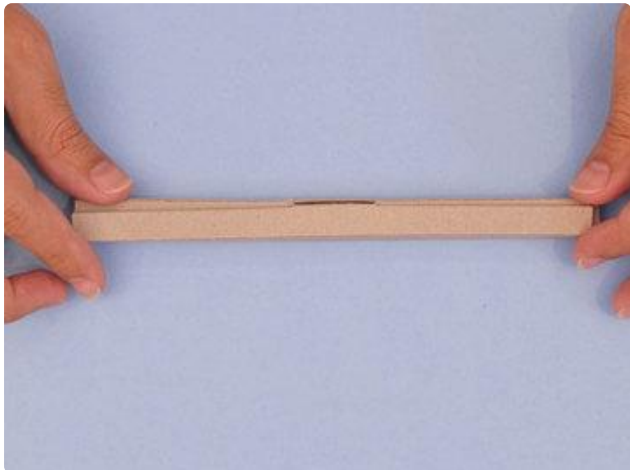
Assemble



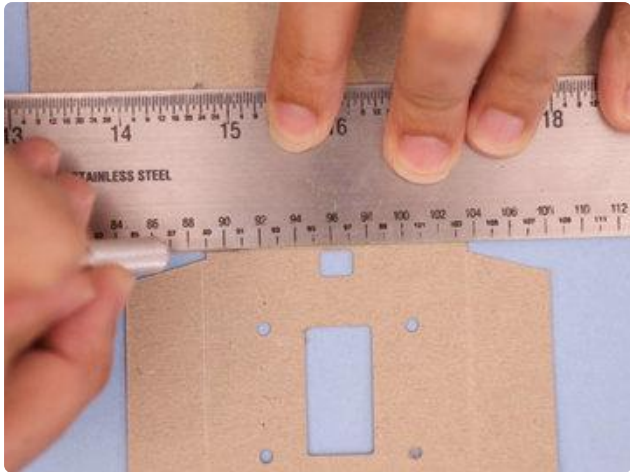
Score, Cut, Fold



First we'll start out by adding cut scores to our bend lines on the pole part. we used a hobby knife to carefully add a slight cut to each fold mark. cut less then half of the thickness of the chipboard.



Now we can flip the part over and carefully bend each cut sore. Make sure to apply a good amount of pressure to add a sharp fold. The box will not fully close if the folds are weak.

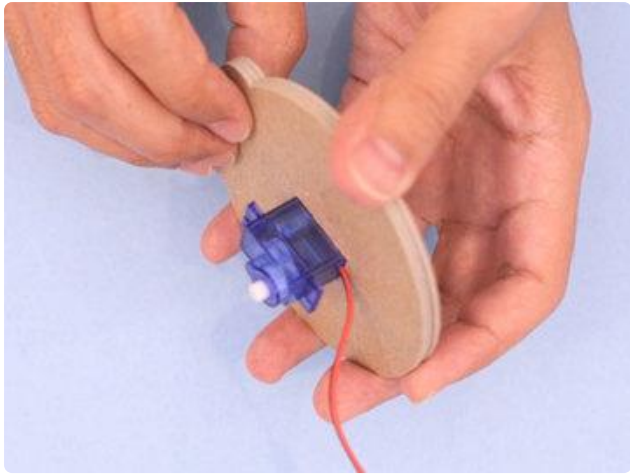


Box: Score, fold

Next we'll do the same to the enclosure box. Use a ruler to make sure all of the cut scores are aligned and even.



Apply as much pressure as you can when folding the flaps and each side of the box. We'll need each side to have a clean crease or the box will not keep its shape when folded.



Servo Mount

The Continuous Rotation Micro Servo mounts into the center of the skull part.

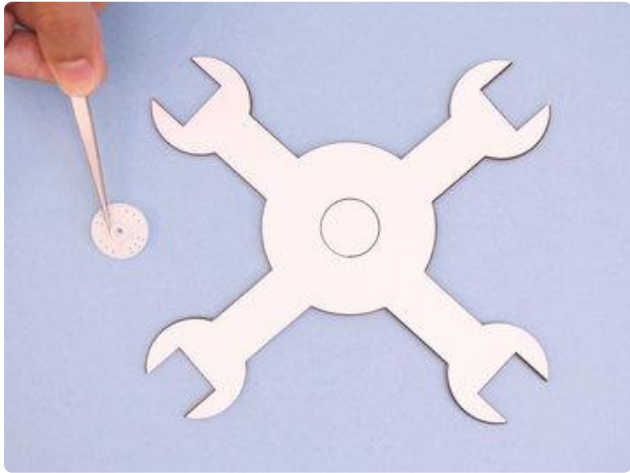
We stacked three 1.6mm chipboard pieces to build up the center mount to tightly fit the servo in place. The tolerances are tight enough to allow the servo to press fit into place without any glue.



Next we'll stack the black and white card stock pieces on top of the chipboard piece. Apply glue to each part to adhere each layer.

Wrench and Servo horn

Stack the black and white card stock layers on top of the chipboard piece.

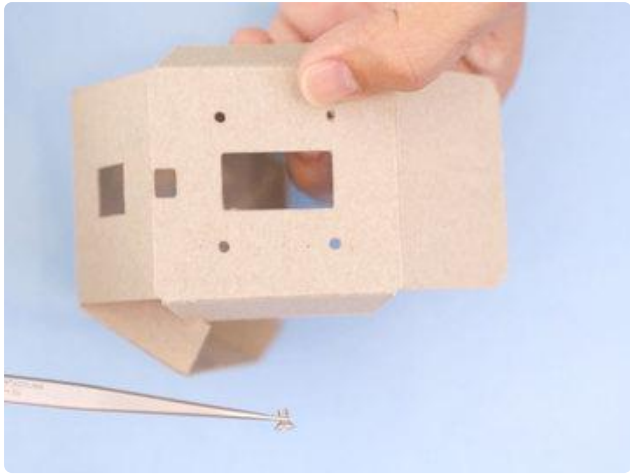


The white card stock piece prints with a center circle to indicate where to align the servo horn.

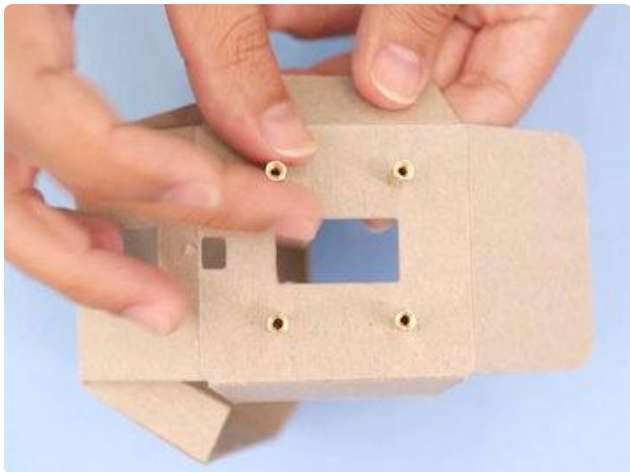
Align a circular horn and create the holes to fasten two M2x5mm screws to the Wrench part (both horn and screws included with servo).



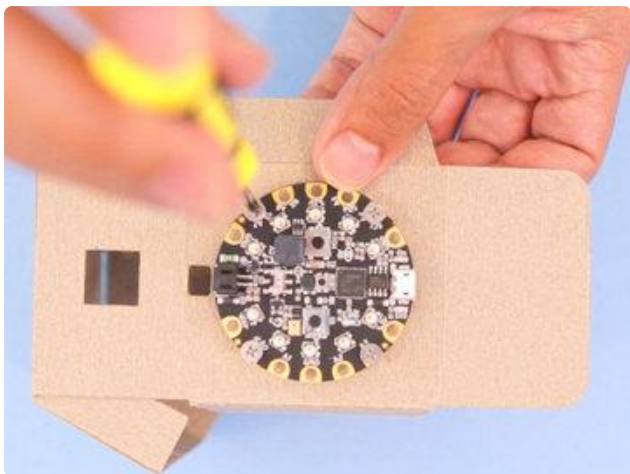
Later we'll use the longer M2x9mm screw to fasten the horn to the servo gear. Insert the screw from the back of the Wrench part, through the servo horn and into the servo gear.



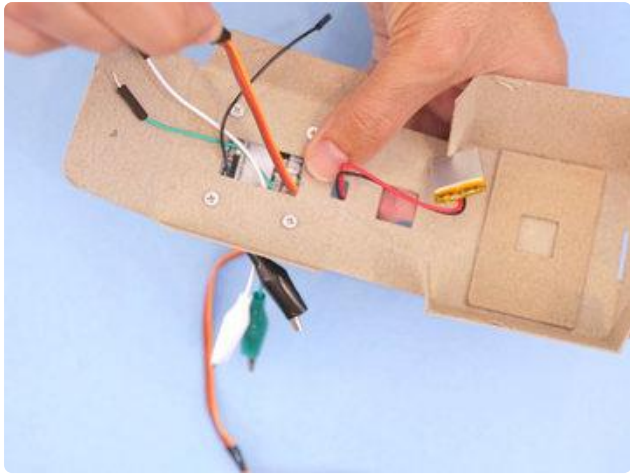
Circuit Playground Box



We can use four of the M3 screws in the [Bolt-On Kit \(\)](#) to secure the the Circuit Playground to the box.

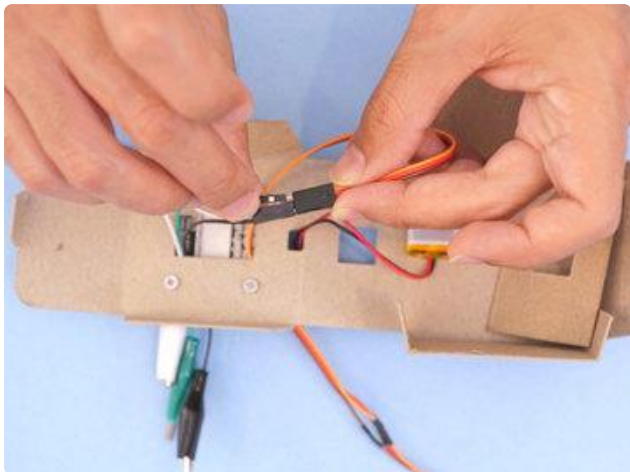


Align the Circuit Playground to the JST port next to the battery cutout. We'll use it to pass the wires through the enclosure.

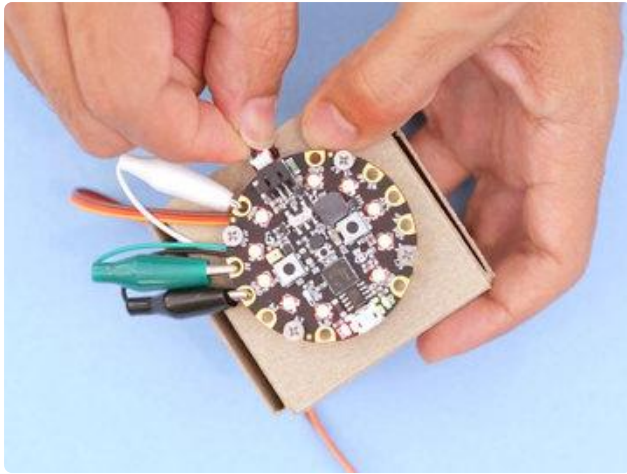


Thread wires

Now we can start to thread our alligator clips, battery wire and servo wires through the cutout under the Circuit Playground.

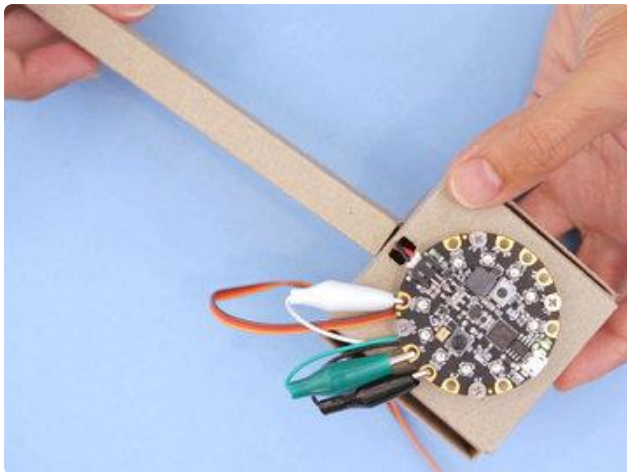


At this point we'll want to connect the alligator clips to the servo pins. Double check each connection is going to the correct pins on the Circuit Playground.



Plug in Battery

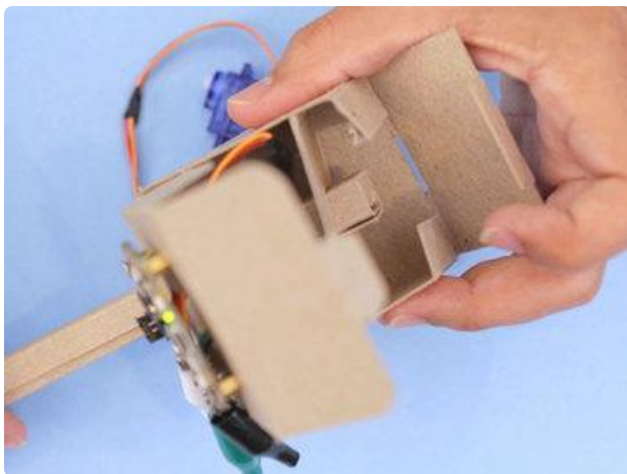
Connect the alligator clips to the correct pins on the Circuit Playground. Make sure each clip has a solid grip on each pad.

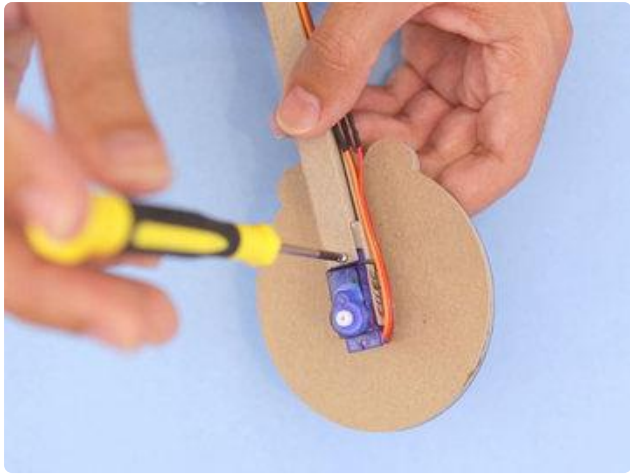


Plug the battery into the JST port on the Circuit Playground. Excess wire can be tucked back into the enclosure.

Pole insert

Next we can insert the Pole part into to the cutaway above the JST port. Pass the end into the endstop part. Align the part to keep the pole part centered.





Servo mount

Lastly, we can mount the servo to the top side of the Pole part with an M2x9mm screw. Thread the excess wire behind the pole part and back into the enclosure. We can use the wire to wedge the pole between the enclosure to straighten the pole upright.

