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Overview

Add rocket boosters to your shoes with these 3D Printed heel clips! The Heels are compatible with the Nike x Acronym Blazer Low.

The LED animations are powered by a Circuit Playground Express. The boosters light up and a pew and pew sound plays when you stomp hard!

These 3D Printed heels attach to the backs of each shoe with M3 thumb screws. The Circuit Playground is housed inside a clear case that attaches to the printed heel.

Alligator clips and machine screws make this assembly modular and can be reconfigured into different designs.

With MakeCode for the Circuit Playground Express or MakeCode Maker, we were able to quickly make this demo.

MakeCode an easy to use block based code editor that's great if you're just getting started.
Parts

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 Express for 4-H
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/4180
Lithium Ion Polymer Battery with Short Cable - 3.7V 420mAh
Lithium-ion polymer (also known as 'lipo' or 'lipoly') batteries are thin, light, and powerful. The output ranges from 4.2V when completely charged to 3.7V. This...
https://www.adafruit.com/product/4236

Adafruit Micro-Lipo Charger for LiPoly Batt with USB Type C Jack
Oh so handy, this little lipo charger is so small and easy to use you can keep it on your desk or mount it easily into any project! Simply plug it via any USB C cable into a USB port...
https://www.adafruit.com/product/4410

Small Alligator Clip Test Lead (set of 12)
Connect this to that without soldering using these handy mini alligator clip test leads. 15" cables with alligator clip on each end, color coded. You get 12 pieces in 6 colors....
https://www.adafruit.com/product/1008

NeoPixel Mini Button PCB - Pack of 5
These are the smallest NeoPixel breakouts around! Tiny, bright RGB pixels to your project. These little PCBs are only 8mm x 10mm and have two sets of three pads on the back for...
https://www.adafruit.com/product/1612
1 x Nike x Acronym Blazer Low
Nike x Acronym Blazer Low

12 x M3 Thumb Screws
M3 Thumb Screws

1/4" to 1/4" Screw Adapter - For Camera / Tripod / Photo / Video
"Simplicity is the ultimate sophistication" - Leonardo da Vinci
This 1/4" screw to...
https://www.adafruit.com/product/2632

Camera and Tripod 3/8" to 1/4" Adapter Screw
Whaddya got a screw loose or something? This 3/8" to 1/4" Adapter Screw is super handy if you're building projects that...
https://www.adafruit.com/product/2392

Adafruit Circuit Playground Express or Bluefruit Enclosure
We've got nice cases for many of our beloved boards, but the Circuit Playground Express and
https://www.adafruit.com/product/3915
6 x **M2.5x5mm screws**
M2.5 Metric Stainless Steel Phillips Flat Head Machine Screws

12 x **M2x8mm screws**
M2 Metric Stainless Steel Phillips Flat Head Machine Screws

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**Circuit Diagram**

The wiring diagram below provides a visual reference for connecting the components. It is not true to scale, it is just meant to be used as reference. This diagrams was created using the [Fritzing software package](https://adafruit.it/oEP).

Take a moment to review the components in the circuit diagram. This illustration is meant for referencing wired connections - the length of wire, position and size of components are not exact.
Wires are measured and cut to have enough slack to reach each component.

Silicone ribbon wire is used to make them easier to coil and manage each wire inside the tight spacing.

A 420mAh LiPo Battery connects to the JST port on the Circuit Playground

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**MakeCode**

**MakeCode for Adafruit Boards**

MakeCode Maker is an easy-to-use block-based programming editor that runs in the Google Chrome web browser. It’s has an intuitive interface and features lots of examples and demos.

The Maker version works with supported Adafruit boards, so you can make interactive projects with a wide selection of microcontroller boards.
NeoPixel Rocket Shoe Code

Click the links below to launch the code in MakeCode

Edit Rocket Show MakeCode
https://adafru.it/Z0B

Download Drag and Drop UF2 File - Rocket Shoes
https://adafru.it/Z0C

Pair Device and Upload
Once you have the MakeCode program open, click the edit button on the top right to open it in a new MakeCode project.

The code blocks and simulator will be ready to modify. Let's get the device paired with WebUSB.

1. Click on the Gear icon, at the top right.
2. Select Pair Device from the dropdown.
3. For the Circuit Playground Express, Click on CPlay Express and Connect.
4. Click the big blue Download button to upload the code.
on start

set strip

setup an external neopixel strip on the A0 pad of the circuit playground express

on button A click

  • stop all animations
  • stop all animations on the strip
  • While button A was pressed do

    ◦ show animation (blue chase color) for 5000 ms

on face down

stop all animations

  • run in parallel

    ◦ show animation (red orange color) for 5000 ms
What is MakeCode Maker?

MakeCode Maker, [https://maker.makecode.com](https://maker.makecode.com), is a web-based code editor for physical computing. It provides a block editor, similar to Scratch or Code.org, and also a JavaScript editor for more advanced users.

Some of the key features of MakeCode are:

- web based editor: nothing to install
- cross platform: works in most modern browsers from tiny phone to giant touch screens
- compilation in the browser: the compiler runs in your browser, it's fast and works offline
- blocks + JavaScript: drag and drop blocks or type JavaScript, MakeCode let's you go back and forth between the two.
- works offline: once you've loaded the editor, it stays cached in your browser.
- event based runtime: easily respond to button clicks, shake gestures and more

How is it related to makecode.adafruit.com?

[makecode.adafruit.com](https://adafruit.it/wmd) and [maker.makecode.com](https://adafruit.it/C9N) are editors built using the MakeCode [https://adafruit.it/Bhz] project.
In both editors, one can use drag-and-drop blocks or JavaScript to program microcontrollers.

- [makecode.adafruit.com](https://adafruit.it/wmd) specifically applies to the Adafruit Circuit Playground Express only
- [maker.makecode.com](https://adafruit.it/C9N) aims at supporting the Adafruit Express boards (and more boards from different manufacturers), with an emphasis on breadboarding support.

### Is it open source?

Yes, Maker is open source under MIT at [https://github.com/Microsoft/pxt-maker](https://adafruit.it/ND5).

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**Adafruit METRO M0 Express - designed for CircuitPython**

Metro is our series of microcontroller boards for use with the Arduino IDE. This new Metro M0 Express board looks a whole lot like our [https://www.adafruit.com/product/3505](https://www.adafruit.com/product/3505).

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**Adafruit Feather M0 Express**

At the Feather M0's heart is an ATSAMD21G18 ARM Cortex M0+ processor, clocked at 48 MHz and at 3.3V logic, the same one used in the new [https://www.adafruit.com/product/3403](https://www.adafruit.com/product/3403).
Adafruit GEMMA M0 - Miniature wearable electronic platform
The Adafruit Gemma M0 is a super small microcontroller board, with just enough built-in to create many simple projects. It may look small and cute: round, about the...  
https://www.adafruit.com/product/3501

Adafruit Trinket M0 - for use with CircuitPython & Arduino IDE
The Adafruit Trinket M0 may be small, but do not be fooled by its size! It's a tiny microcontroller board, built around the Atmel ATSAMD21, a little chip with a lot...  
https://www.adafruit.com/product/3500

3D Printing

Parts List
STL files for 3D printing are oriented to print "as-is" on FDM style machines. Parts are designed to 3D print without any support material. Original design source may be downloaded using the links below.

Edit Design
https://adafruit.it/Z3C

Edit STEP file
https://adafruit.it/Z0D
Slice with settings for PLA material.

The parts were sliced using CURA using the slice settings below.

PLA filament 220c extruder
0.2 layer height
10% gyroid infill
60mm/s print speed
60c heated bed
Supports: Everywhere, Angle 40 degrees

Assembly

Solder Wires

Measure and cut the Alligator wires short. Use ribbon cables and jumper wire to connect the NeoPixel PCBs into a shared connection.
Thread wires

Pass the wires through the cutout for the boosters.

Booster

Use three M2x8mm long screws to attach the two booster parts to the Heel
Pressfit NeoPixel

The NeoPixel PCB press fits into the booster cap. Align the threads to the booster and twist to the right to tighten.
CPX Mount

Attach the 3/8" to 1/4" Adapter Screw into the center of the CPX mount.

The battery holder attaches to the mount with M2.5x5mm long screws.
Tripod Adapter Washer

The 3D printed washer fits over the 1/4” to 1/4” Screw adapter and then attaches to the Circuit Playground case. The washer helps to space out the case when mounted.
Attach mount to Heel

The mount fits between the heel and is attached with two M2.5x5mm screws.
Alligator Clips

Attach the alligator clips to the pads on the Circuit Playground.

The 420mAh lipod battery fits in the holder with the cable facing up.

Use a JST extension cable to reach the JST port on the Circuit Playground.
Attach Heel

The heels attach to the three threads on the back of the shoes.

Use six M3x7mm PC Thumb screws to securely attach the heel assembly.

Complete!