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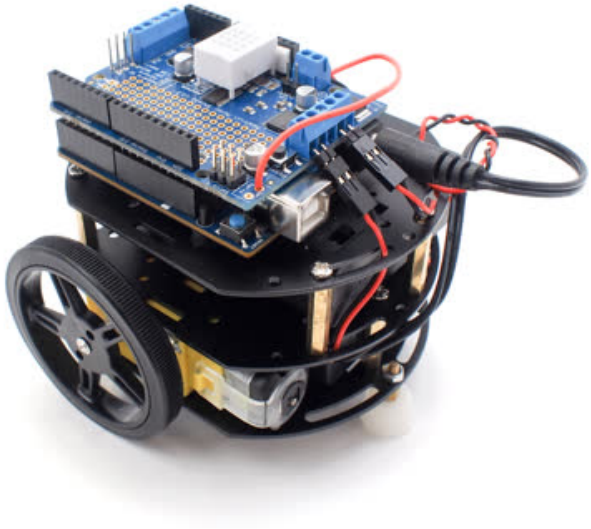
CurieBot: Arduino 101 Mini Robot Rover

Created by John Park



Last updated on 2017-04-01 02:48:27 PM UTC

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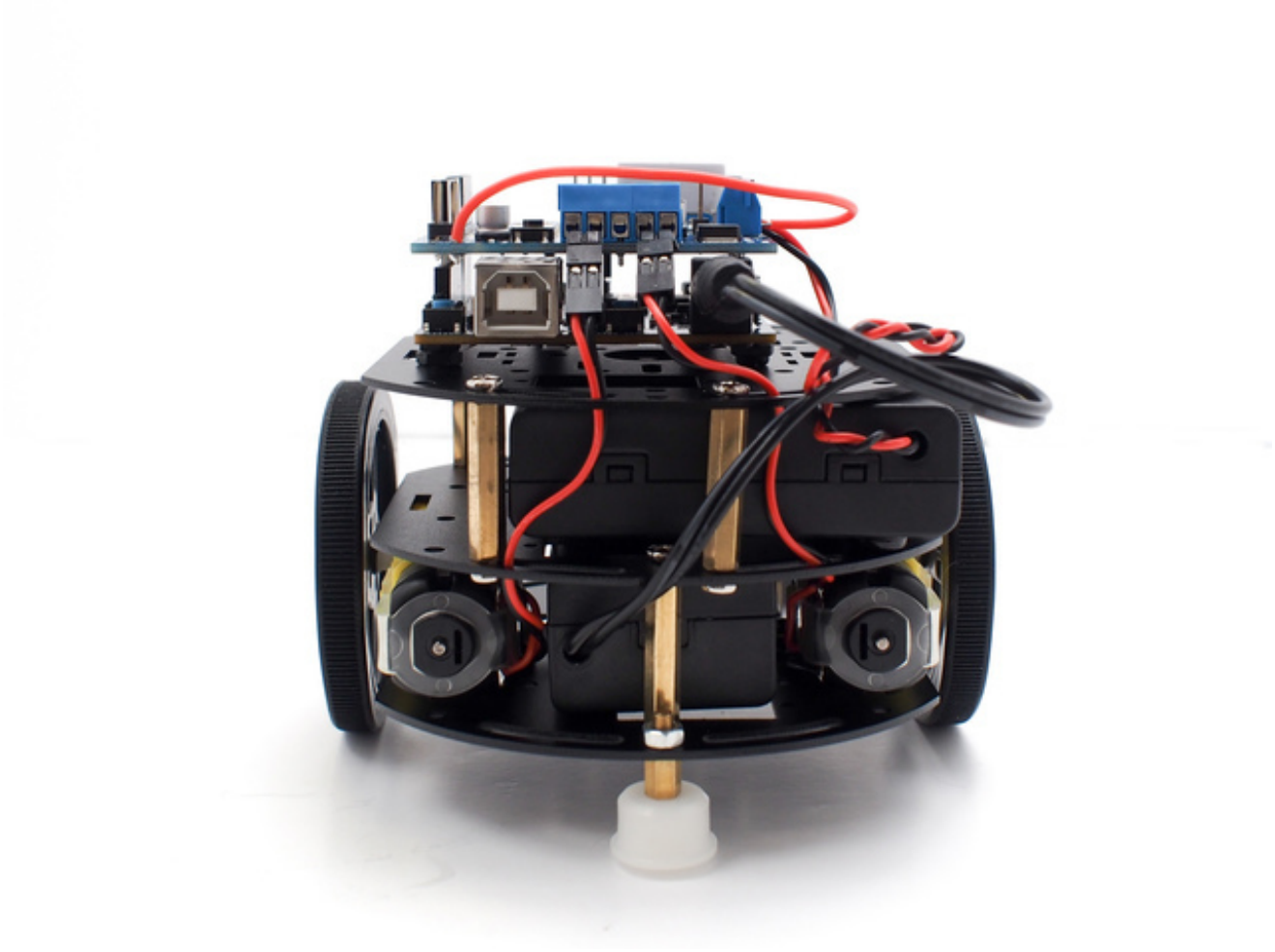
Introduction



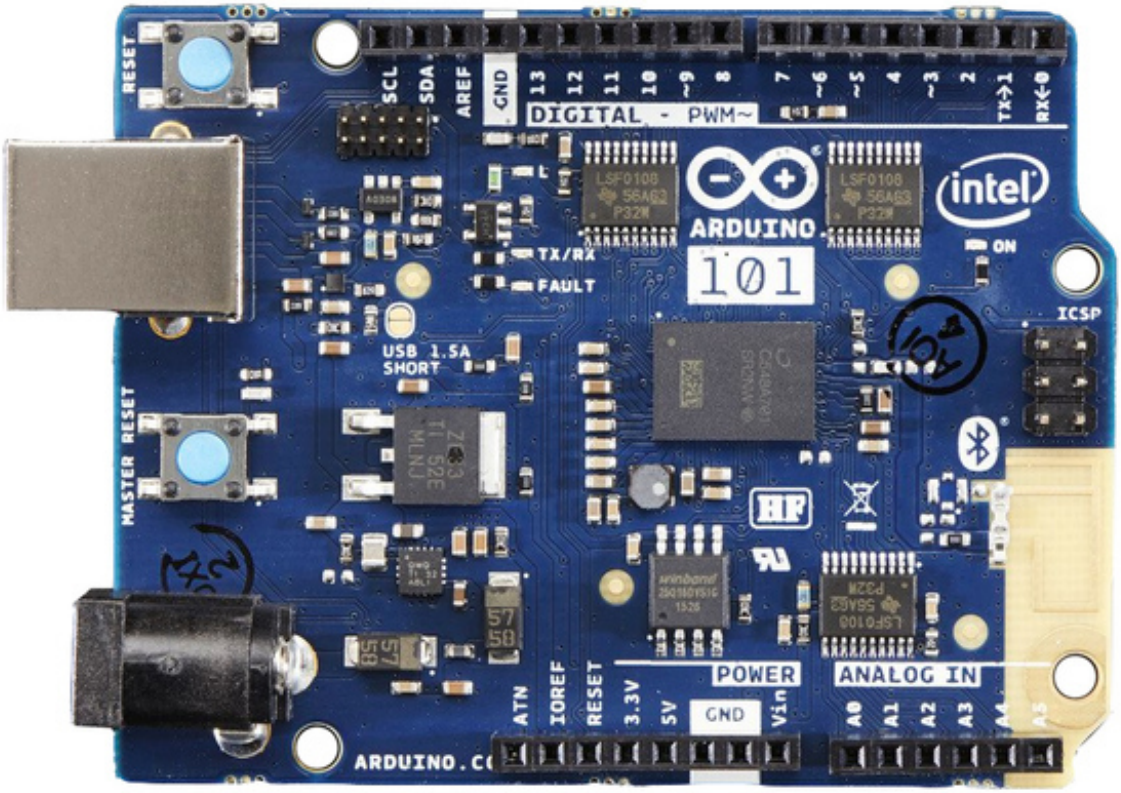
Greetings Human Friend!

Welcome to **CurieBot**, your own mobile, customizable, and *adorable*, 32-bit, Bluetooth-enabled driving robot!

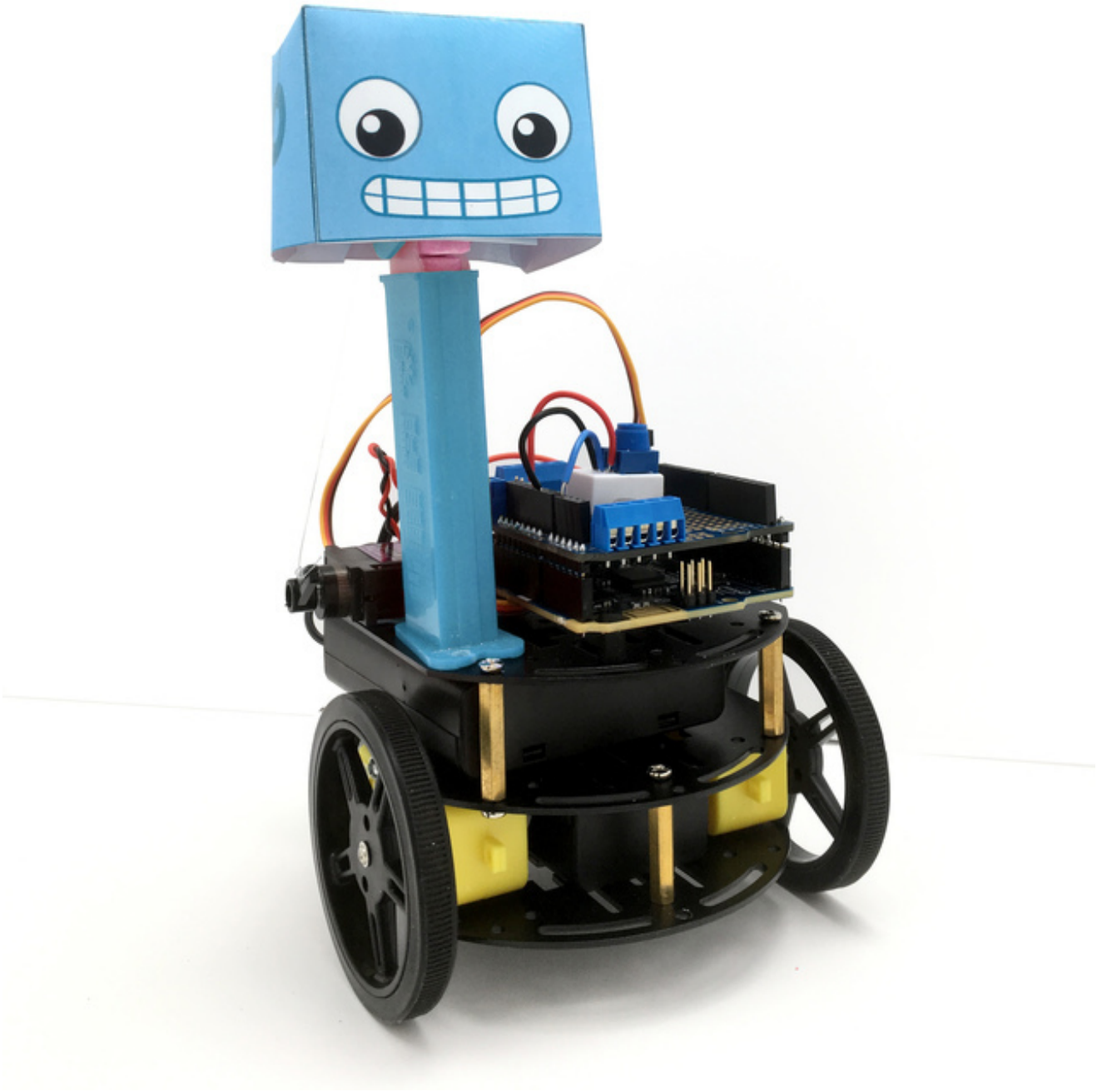
Based upon our popular three-layer round robot platform, CurieBot brings some special sauce to the table -- delicious **Arduino 101** sauce, that is! This powerful board comes in a familiar Arduino form factor, so you can use many of your favorite shields, such as the included **Adafruit MotorShield v2.**

Instead of the typical processor, this one is packing an Intel Curie 32-bit chip, which enables some very powerful on-board processing. The Arduino 101 also has a 6-axis

accelerometer/gyro, and that's not all -- it's got Bluetooth LE built directly onto the board, which enables direct control of CurieBot right from your Bluetooth-capable phone or tablet!



Build and control your robot right away, and then begin exploring all of the possibilities for modifications and expansion with this powerful new platform.



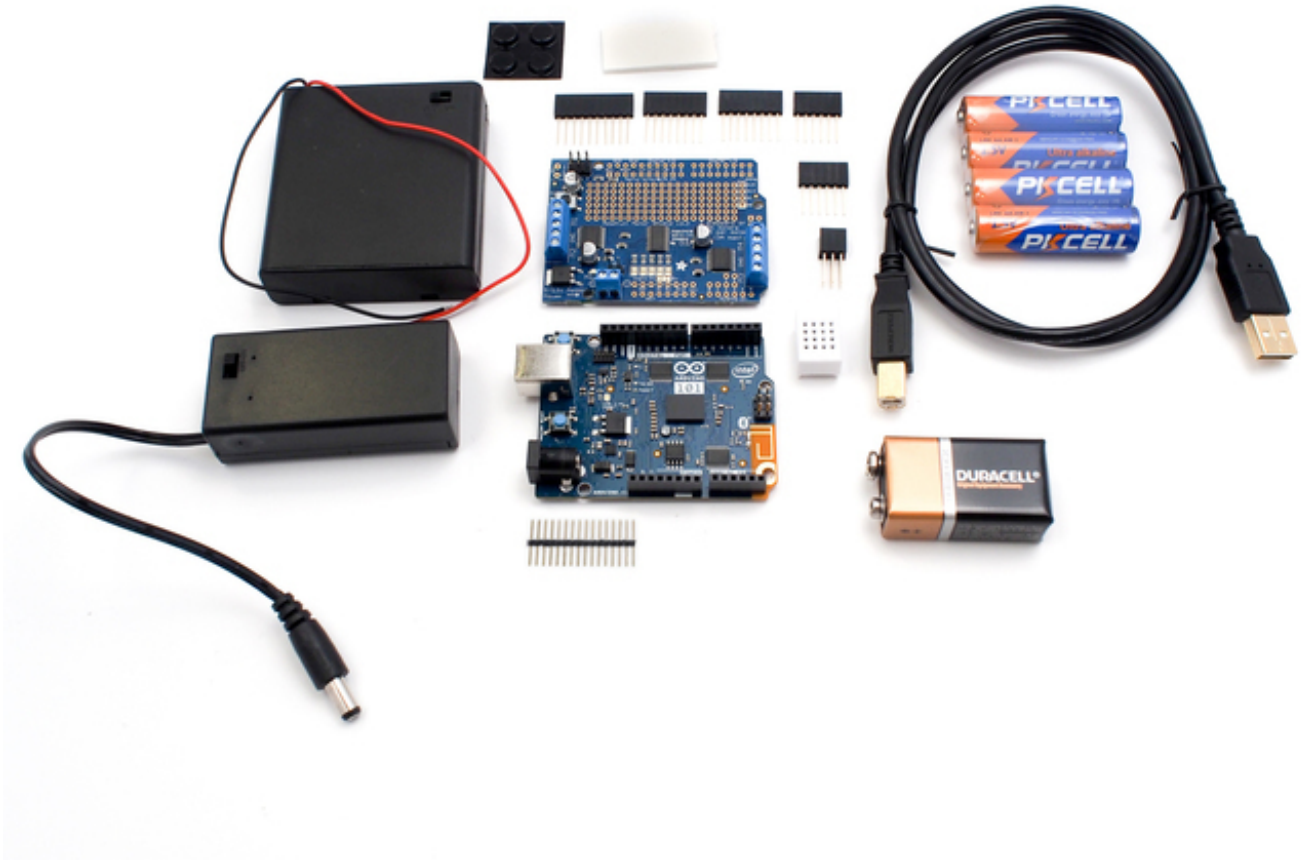
Unboxing CurieBot

CurieBot is designed to introduce you to the joys of making with electronics. We decided to come up with a fun pack of parts that:

- Could introduce a beginner to making
- Teach soldering, electronics and programming skills
- Does not assume any prior experience
- Comes with enough fun parts that could be combined and adapted for months or *years!*

Kit Contents

After a lot of thinking, here's what we came up with: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Arduino 101, USB Cable, & Batteries

- 1x Arduino 101 with Intel Curie (http://adafru.it/3033) the brains of your bot! It's a board that combines the universal appeal of Arduino with the latest technologies - like the Intel Curie module (http://adafru.it/ueG), Bluetooth LE capabilities, and a 6-axis accelerometer/gyro.
- 1x USB Cable - Standard A-B - 3 ft/1m (http://adafru.it/62) - use this to install new code onto your Arduino 101 (from any computer)
- 1x 9V battery (http://adafru.it/1321) - this battery will power your Arduino 101 (but not the motors)
- 4x AA Batteries (http://adafru.it/3349) - Use these to power your the motors of your super awesome little robot

Robot Chassis & Assembly Tools

- 1x Three layer Robot Chassis Kit in Black (http://adafru.it/3244) - This kit gives you

everything you need to build the shell of a 2-wheel-drive Mobile Platform Robot to help you channel your inner Mad Max.
- 1x Adafruit Motor/Stepper/Servo Shield v2 (http://adafru.it/1438) - Lets you drive up to 4 DC or 2 stepper motors- certainly enough motors to power the chassis kit!

Prototyping Parts and Components

- 1x - Mini Solderless Breadboard - 4x4 points (http://adafru.it/2463) - Perfect fit for your chassis kit. Add it to the prototyping area to upgrade your robot with more sensors, lights, servos and beyond!
- 1x 9V Battery Holder with switch & plug (http://adafru.it/67) - Plugs into your Arduino 101's DC jack to power the CurieBot on and off with a flick of the switch
- 1x 4xAA Battery Holder w/ On/Off Switch (http://adafru.it/sfq) - A nice portable battery holder for your robot's motor batteries.
- 1x Shield stacking headers for Arduino (http://adafru.it/85) - Solder these to your MotorShield to allow access to all pins for further upgrades later!
- 1x Rubber Bumper Feet (http://adafru.it/dLG) - Helps keep the battery packs safe and secure
- 1x Foam tape rectangle - Helps mount the battery packs
- 4x Nylon 2.5mm pan screws - For mounting your Arduino 101 to the top deck of the robot (http://adafru.it/3299)
- 9x Nylon hexnuts - Also for Arduino 101 fastening (http://adafru.it/3299)

Assembling and Wiring Your Robot

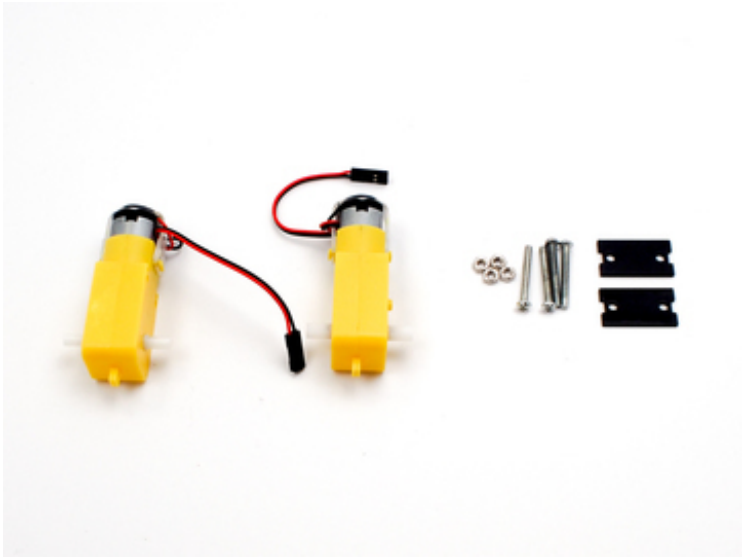
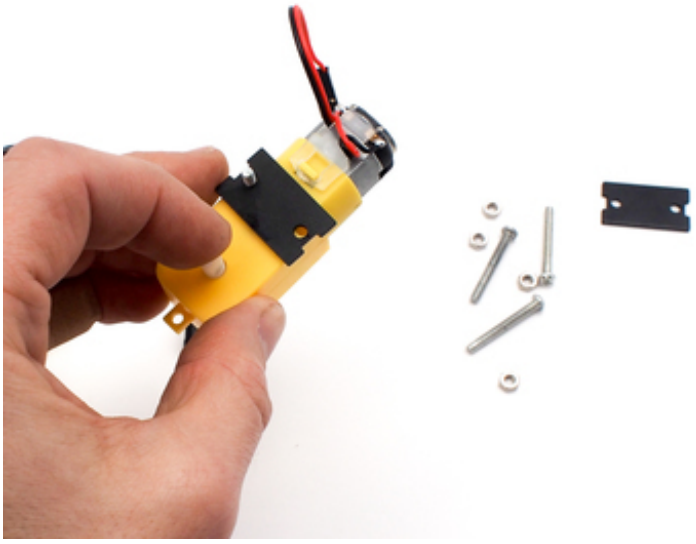
The wiring and assembly is pretty easy, and there is very little soldering required. You'll need a soldering iron and solder, diagonal cutters, a small screwdriver, and it wouldn't hurt to grab some pliers. You will also need a 9V battery, 4 x AA batteries and a USB cable to upload code to the Arduino 101 board.

First, you'll assemble the robot chassis. All the parts needed for this are inside the brown box with the 'Custom Black 2WD Robot + extra layer' sticker on it.

Motors and Wheels and Tires

To start, take the two motors, four long screws, four nuts, and two black panels.

Screw the two black panels onto the motors.

- 
- 

The metal panels go on the side with the red and black wires coming out.

Have the hex nuts on the metal panel side so they don't interfere with the wheel!

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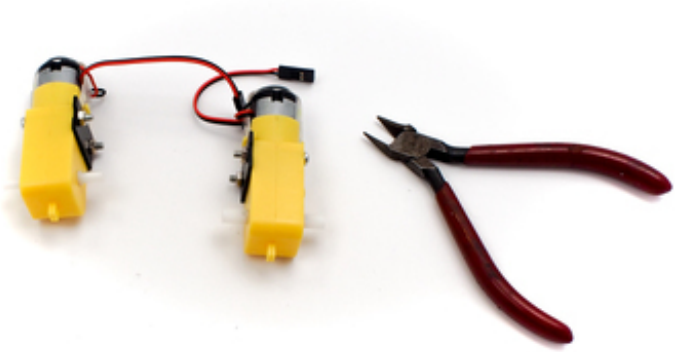
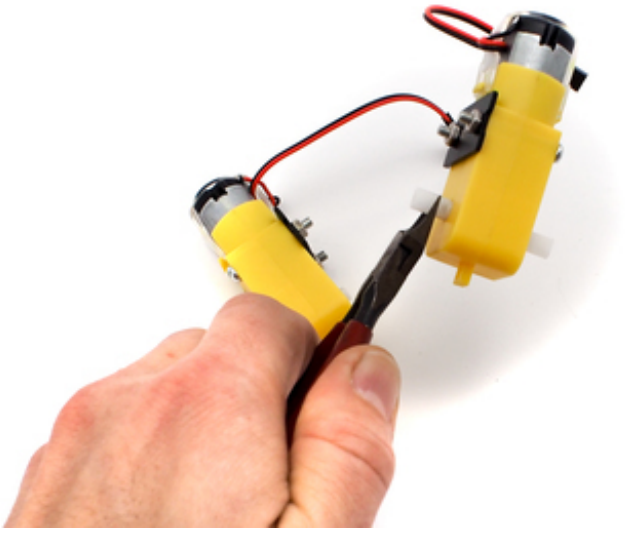
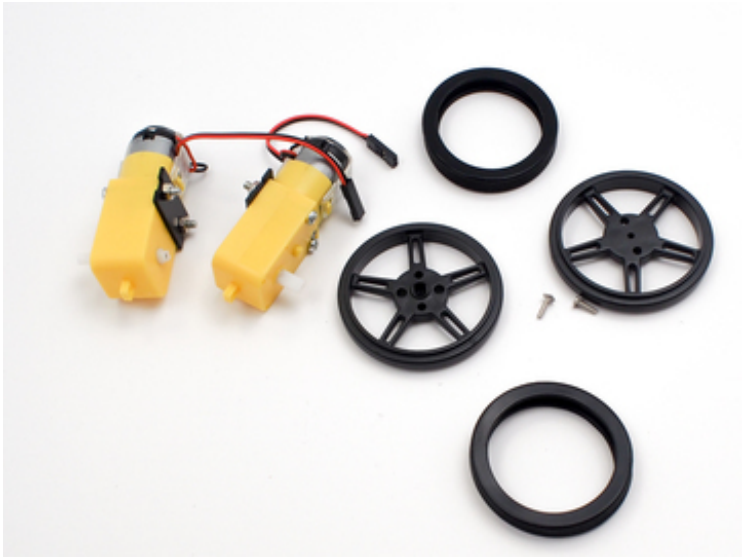
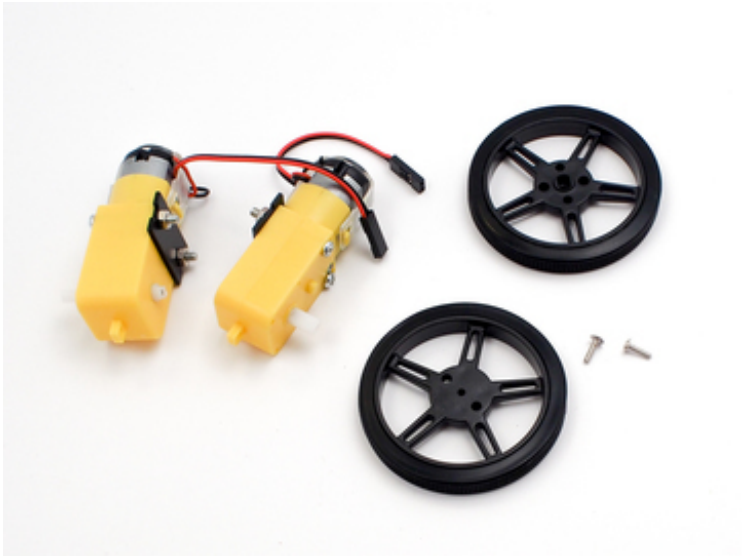
- 

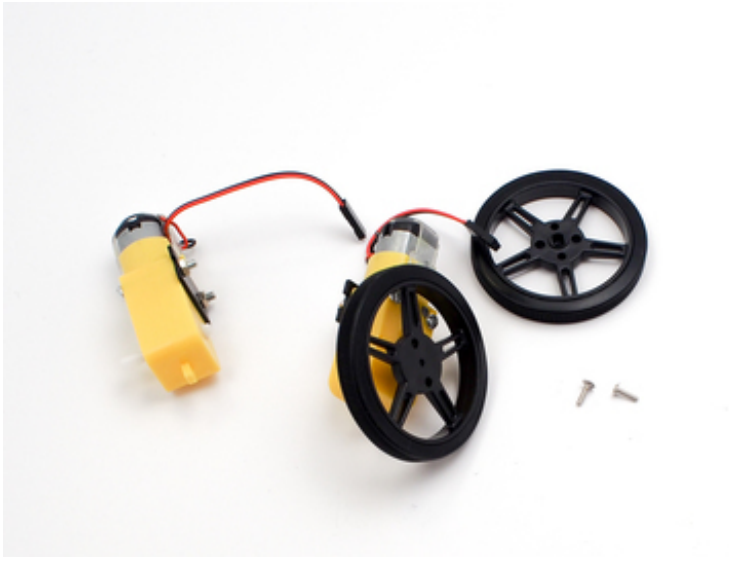
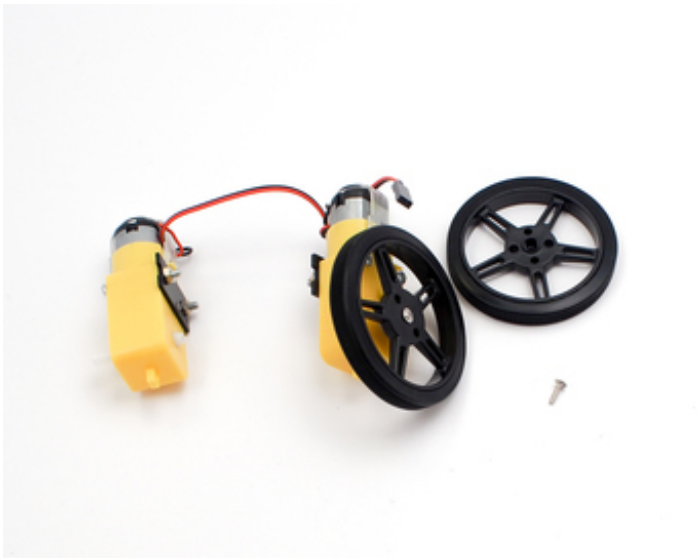
To make space for the 9V battery pack later, trim the excess off of the inner motor wheel shaft on each motor. Grab some diagonal cutters (scissors or a hobby knife will work in a pinch) and trim off about half the length of the motor wheel shaft that is on the same side as the black plate you affixed.

- 

- 

  Take the two wheels, rubber treads, and 2x small screws found in the same bag as the wheels.

  Put the rubber treads on the wheels. This is a lot of fun!
- 

- 
- 
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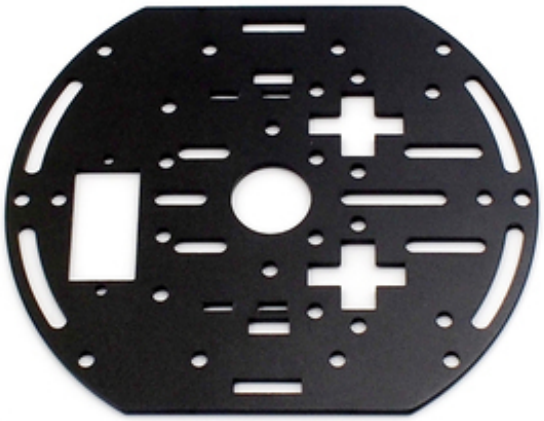
Fit the wheels onto the white knob on the motors, they will snap nicely onto the oval center.

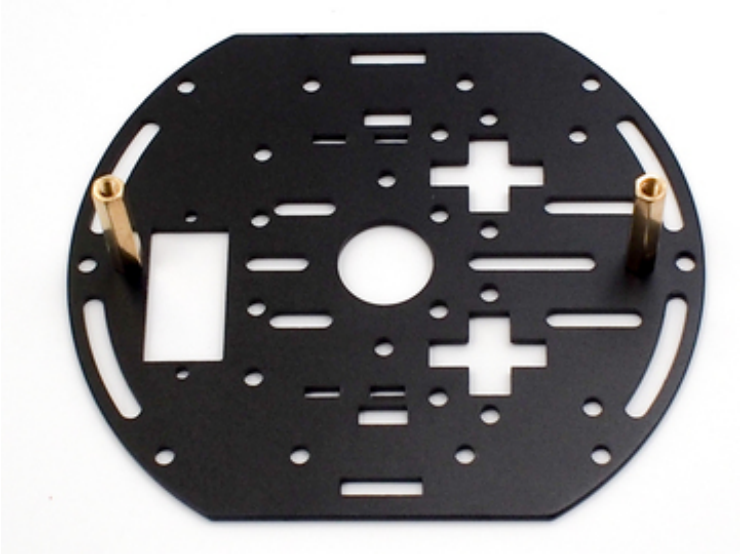
Attach the wheels into place with the tiny screws

Lower Chassis



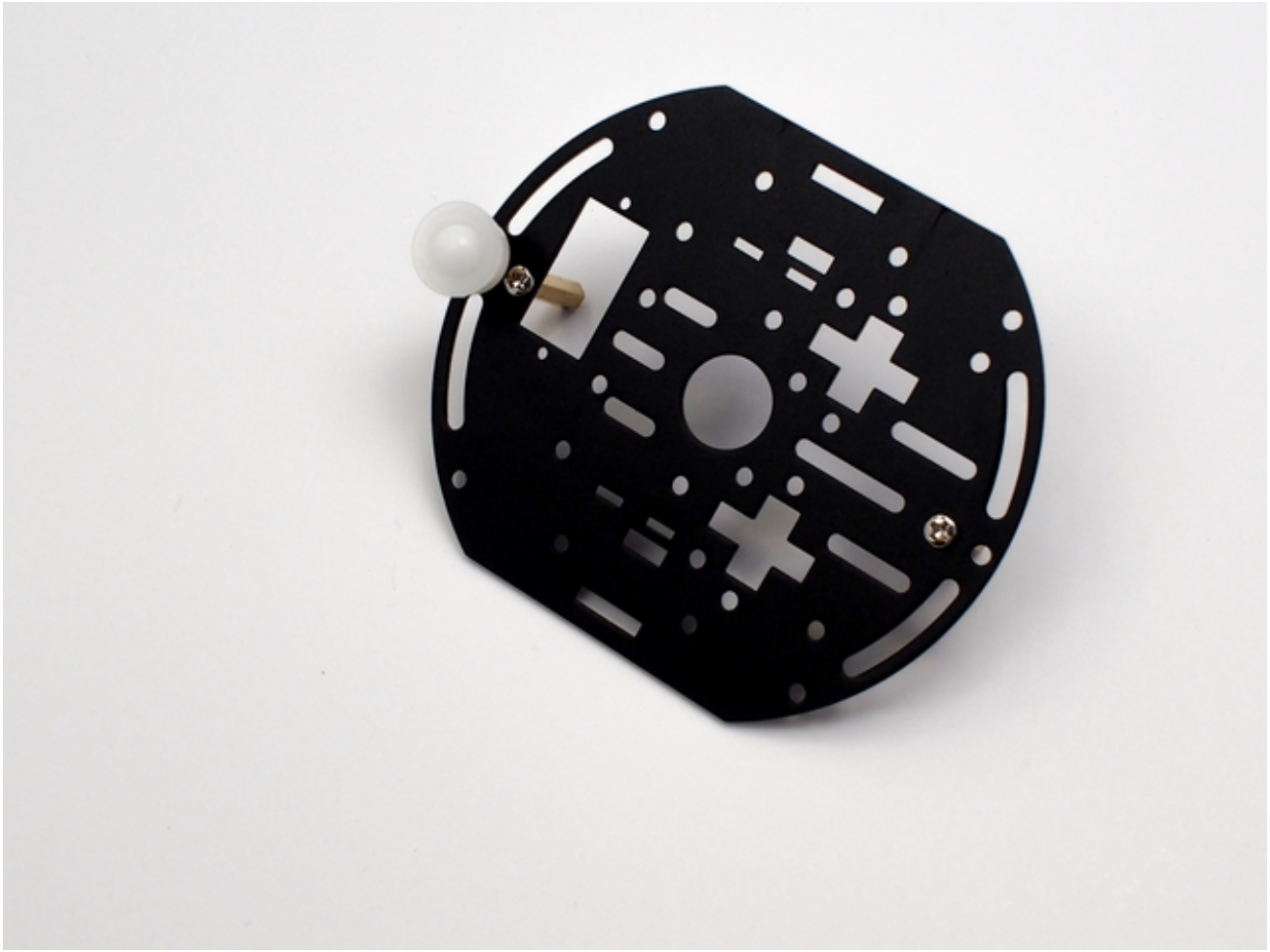
Take one of the black chassis layers. All three layers are identical.

Align it on your table as shown on the left. Note that the panel **is not symmetrical** - look on the left to see that rectangle cut out? Make sure it's aligned as you see here!

- 

Attach two of the brass standoffs onto the black chassis layer.

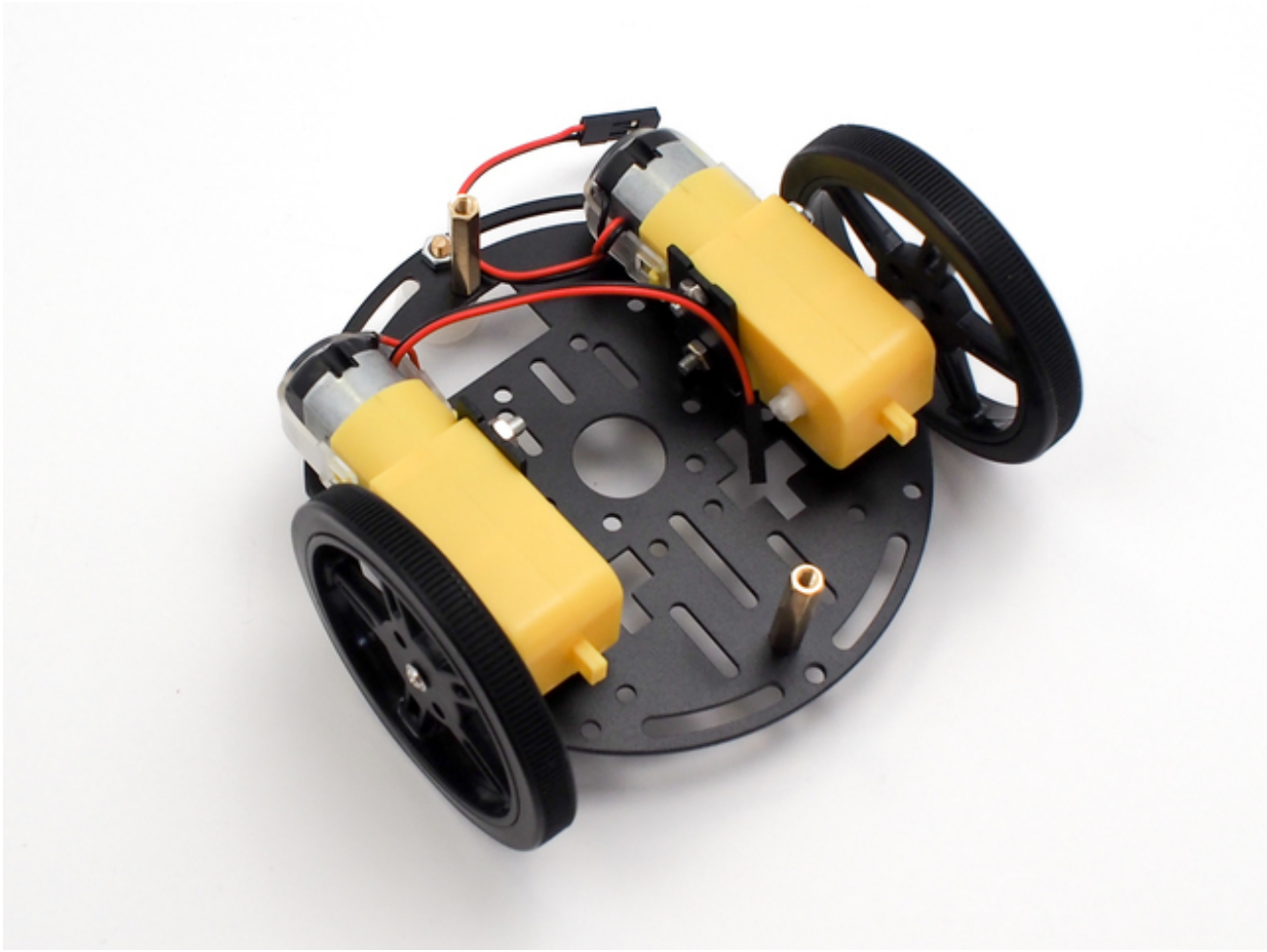
The standoffs should be screwed into the second set of holes from the outer edge - meaning the two interior holes.



Turn over the plate

Attach the white free-wheel into the exterior hole closest to the rectangular opening.

The white free-wheel should be on the opposite side of the chassis of the standoff.



Turn over the plate again

Take your assembled wheels and fit them into the chassis layer.

There are 2 slots on the black panels that you attached to your motor that should fit perfectly into the chassis layer.

The metal front of the motor will be pointing toward the side of the chassis where you placed your white freewheel

Prepare the Battery Boxes

For this step, you will need the AA battery box, 4 x AA batteries, the 9V battery box, a 9V battery the screwdriver, a sheet of 4 rubber bumpers, and double-stick foam tape.

First, open each battery box, grab out the screw, insert your batteries, and then screw the boxes shut. **Oh, and make sure you have the boxes switched to the off position.** Now, take the 4 rubber bumpers and place them as shown in the picture below. Notice how the one bumper on the left side is not in the upper left corner. Important: don't throw away the leftover piece of bumper material, we are going to use that on the next step.


1.5V
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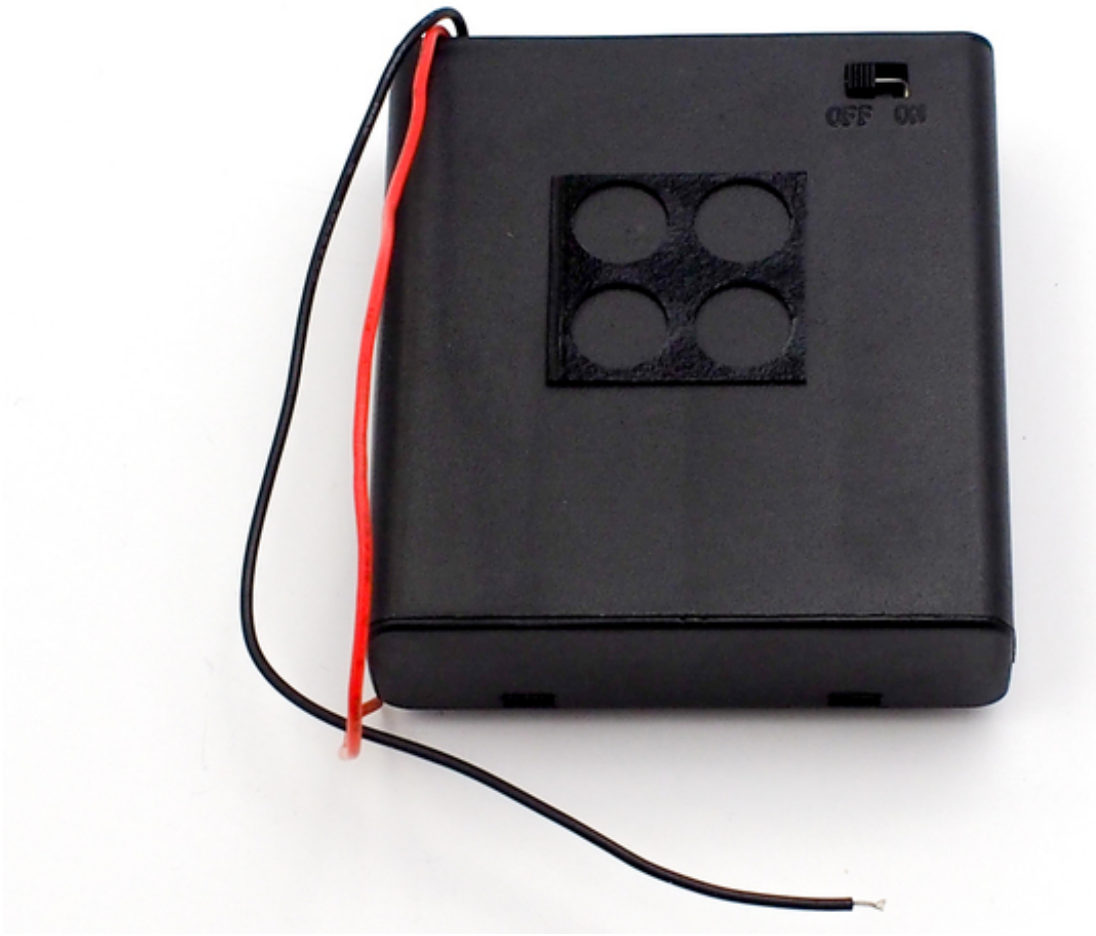
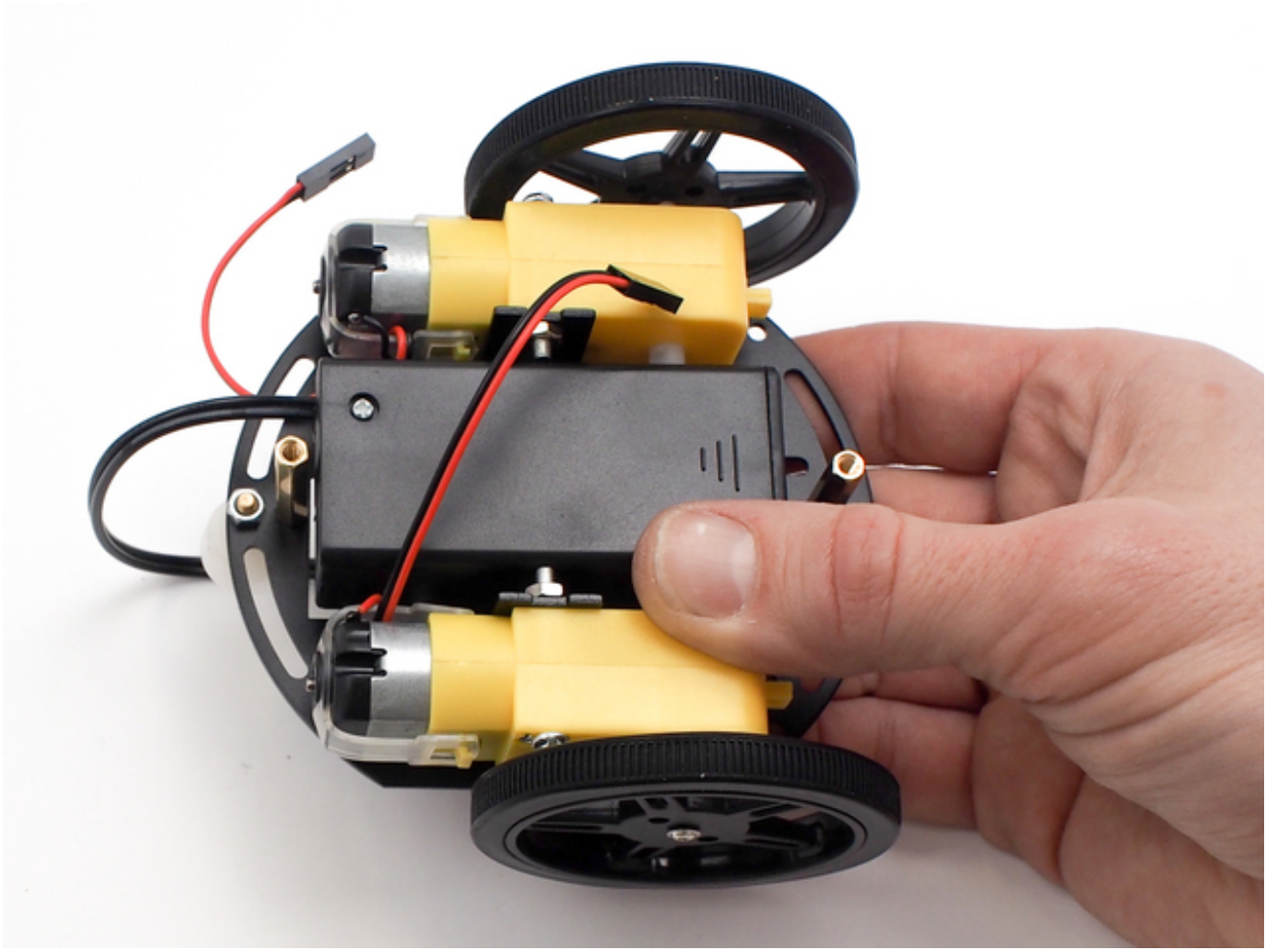
Do not discard the leftover piece of bumper material.

Flip the battery box over and place the scrap piece of the bumper material in the middle. This will help hold the battery box nice and tight between the top and middle plate of your robot.



Add the 9V Battery Box to the Chassis



Check to see that the 9V box fits between the motors -- trim more of the inner shafts if needed.

Cut a small strip of double stick tape and press it onto the side of the battery box with the 9V switch.