

RichardVannoy.info

[Home](#)
[Programming Puzzles](#)
[Videos](#)
[Feedback](#)
[Projects](#)
[*New*](#)
[Line Following Contest](#)
[Rules](#)
[Clothesline Racers](#)
[Arduino](#)
[Basic Stamp](#)
[3PI Robot](#)
[Inverted Pendulum](#)
[Perpetual Pendulum](#)
[4-Wheel Drive Rover](#)
[Categories](#)
[Line Following](#)
[Line Mazes](#)
[Sumo Robots](#)
[Robotic Contests](#)
[Tech Fests](#)
[2011; November](#)
[2011; March](#)
[2009; May](#)
[2009; May](#)
[2009; February](#)
[2008; August](#)
[Other](#)
[Links](#)
[Assembly Language](#)

Lynxmotion.com 4-Wheel Drive Rover Kit

Part 2: The Mechanics



- [Part 1: The First Steps - Assembling the documentation and deciding on the robot capabilities.](#)
- Part 2: The Mechanics - Assembling the Rover Body (This Page)
- [Part 3: The Sensors - Mounting and Testing the Sensors](#)
- [Part 4: The Main Algorithm and Source Code](#)

Polycarbonate Information Page

This five page document looks like it is designed to cover a number of different robots with different polycarbonate issues, so a couple of steps don't apply. Breaking the seal on the edges of the protective covering was tedious and annoying, but otherwise a simple process.

Tire Mounting

In Step 1, I used a metal fingernail file to sand down the imperfections on the inner rim. Fine sandpaper could also work.

WARNING!!! The instructions do not tell you about this. Go to the Alum 4WD Chassis Assembly Guide, described two sections below this, and look at Figure 8. Notice How the treads of the tires all have the inner 'pointy' part of the tread oriented toward the front of the robot. If you don't think about this before hand, you will probably just pick a random direction for each tire. I did and came out with three tires matching and on that had to be removed and remounted. Before you insert each rim, make sure that when you are done, you have two set up for the left side and two for the right side. Another way to say this... Stand up all four tires so that the treads 'point' in the same direction. On two of the tires,

the hex socket where the tire mounts needs to be on the right side, and on the left side for the other two tires.

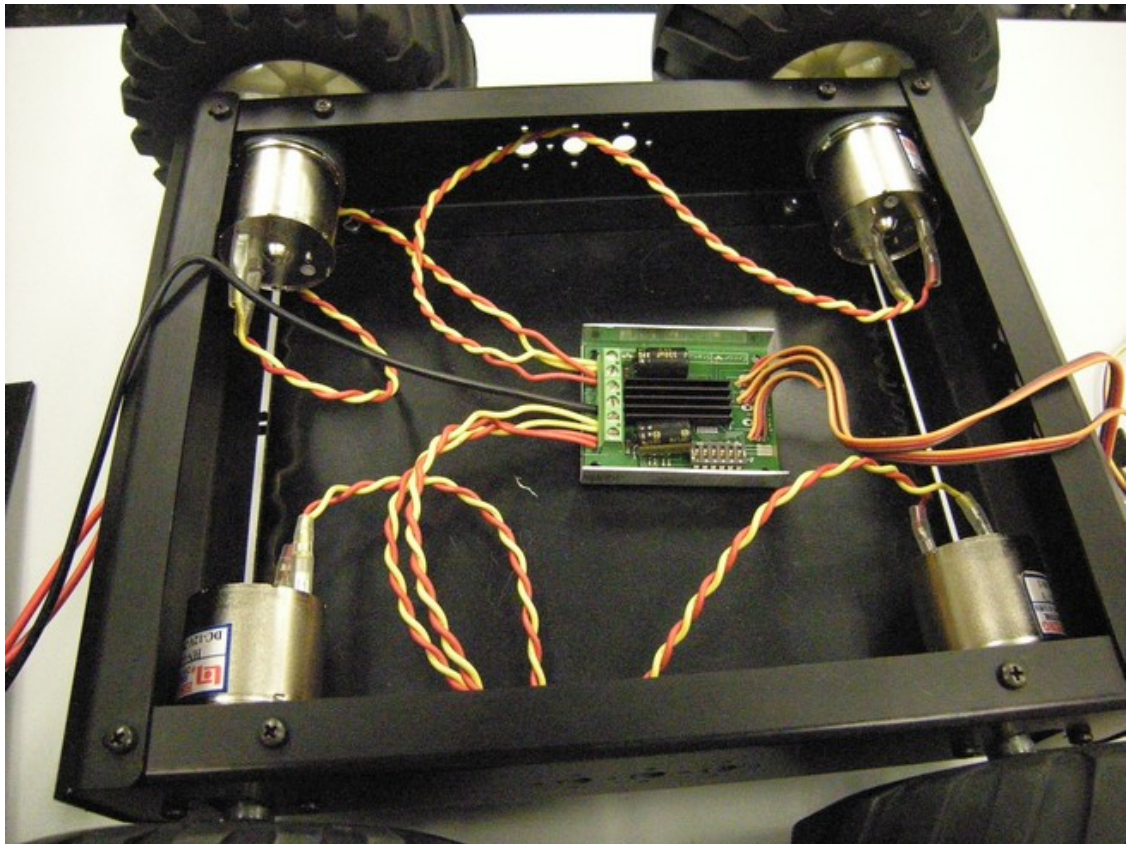
Steps 5 through 8 are harder than they sound. Getting each side of the tire on the outer groove takes considerable patience, pressure and force. On several tires, I got one side in but not the other. In one case I set the tire up on a firm table and gave the tire a hard smack with the side of my fist. This popped the second rim in place. I spent almost twenty minutes trying to mount one tire. A student who had considerable experience with remote control race cars came by and had the tire mounted in about five seconds.

Motor Wiring Mini-Guide

Capacitors are often soldered across the terminals of noisy motors to reduce the effect of electromagnetic noise caused by the motor. This one-page guide and the subsequent guide (Alum 4WD Chassis Assembly Guide. Updated 06/10/2008, Figures 1 and 2) have an error. Both guides show this capacitor installed. The size of the capacitor is not given, but in one photo, you can see '103' on the capacitor, which makes it a 0.01 uF cap. When I tried to confirm this in the Lynxmotion Forum, Jim Fry, The Robot Guy from Parallax let me know that these were low noise motors that do not require the capacitor. Jim said he would update the construction guides. This means that you can either just plug the motor connectors on to the motors, or solder them if you wish a more secure connection. They seem to fit securely, so I went with just plug them in and if they give me any trouble later, to solder them.

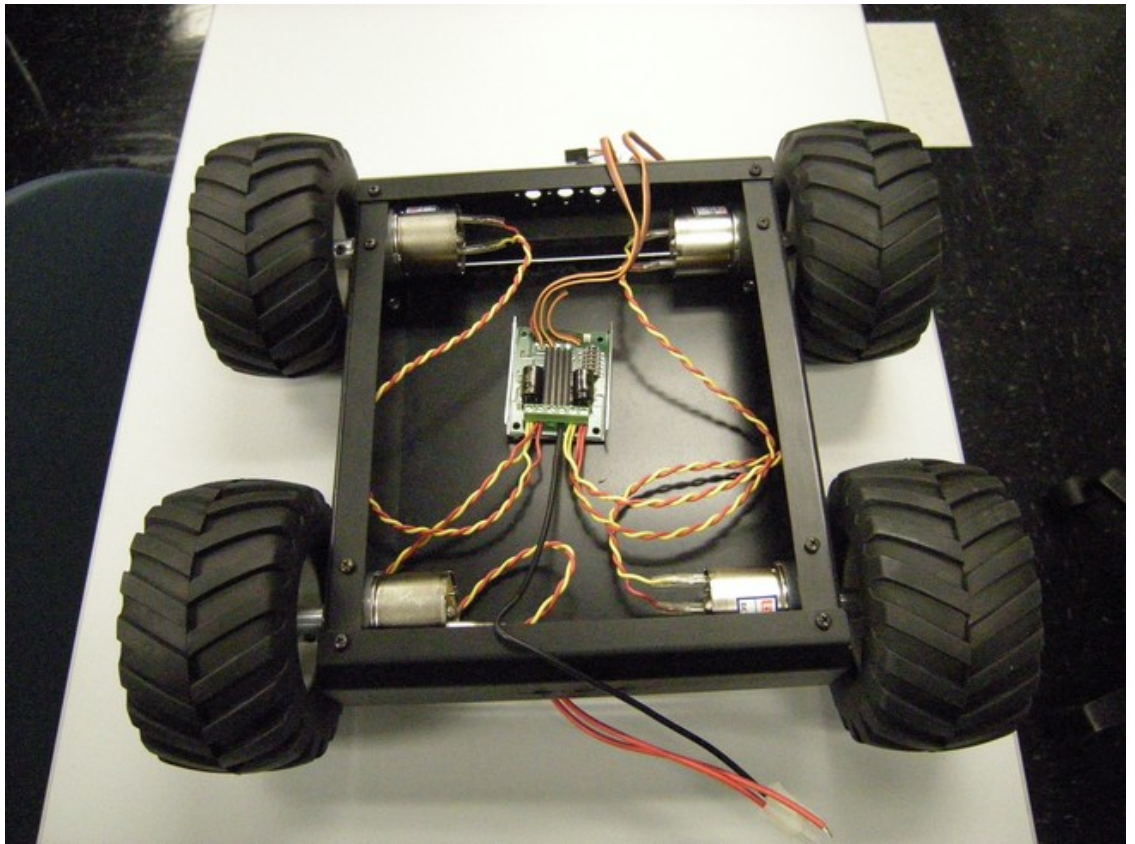
Alum 4WD Chassis Assembly Guide

Here is a shot of the chassis just before fitting the top panel. Notice the set of control wires exiting the right side of the motor controller. The third set has been clipped off since it is not used in this robot. I left the clipped leads long enough in case they would ever be used later.



In Step 5, DON'T TIGHTEN THE 8 SCREWS just yet. The next step requires you to attach the bottom plate, and you need the screws a little loose to facilitate lining up the bottom plate. After Step 6, tighten up these 8 screws.

And here is a view of the chassis and the tires at the same phase of construction. I debated on how to mount the motor controller. Since the controller, once set up, would probably never be moved, it seemed best to mount the controller on short standoffs under the mounting holes on the controller. My only doubt was the potential danger of cracking or ruining the bottom lexan plate by drilling. At Home Depot, I happened to see some velcro strips exactly the right size. Both velcro pieces had a peel-off sticky back, so one side was stuck to the floor and the other to the bottom of the controller. This seems to be holding firm.



The top lexan plate has a rectangular hole for mounting a servo. I found that the servo was just a little too big (or the hole a little too small) for the servo. The fix was easy. I got a file and gently filed down the left and right sides of the servo mounting hole until the servo just fit. After that, the servo fits nicely as shown here:

[Part 1: First Steps](#) [Part 2 Mechanics](#) [Part 3 Sensors](#) [Part 4 Source Code](#)

Please email me at RoboticsProfessor@gmail.com if you have any questions or comments.



Copyright 2007-2011 Richard T. Vannoy II, All Rights Reserved.