Alum 4WD Chassis Assembly Guide.

Updated 06/10/2008.

Safety first! Wear eye protection and never touch a powered robot!

Note: Loctite or thread locks can be used on the construction of the aluminum components. However, don't use them with Lexan, as they are not necessary and may cause damage.

Note: These instructions cover several different configurations of the A4WD1 robot kits. Not every step will pertain to your kit.

Image of completed 4WD.

Step 1.
If your kit includes GHM-14 or GHM-15 (Hennkwell) motors, follow these instructions.

Because the terminals are slightly shorter on these motors, the motor wire connectors don't hold well. Cut the connectors off and solder the wires and the capacitors to the motors as shown. The heat shrink is not included.

These motors are very strong and extremely quiet with the default nylon intermediate gear. However, if you abuse the robot by going from full speed forward to full speed reverse you WILL eventually destroy the gears. The motors come with a replacement metal intermediate gear. This metal gear will not break under abuse, but the motor will be louder.

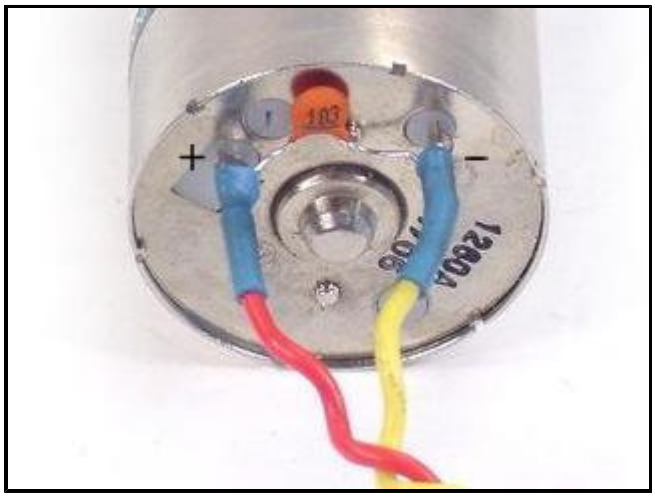


Figure 1.

Step 2.
If you're using GHM-01 through -04, -12, -13, or PGHM-01 (Hsiang Neng), and don't want to solder, follow these instructions. However, if you would like to solder the wires as shown in Step 1, feel free. It does make for a better connection.

Thread the leads of the cap through the terminals and bend them along the terminals as shown. Trim the leads flush with the bottom of the terminal.

Push the motor wire connectors on the terminals as shown. Make sure you put the red to (+) and the yellow to (-). This will make wiring the speed controllers easier later on.

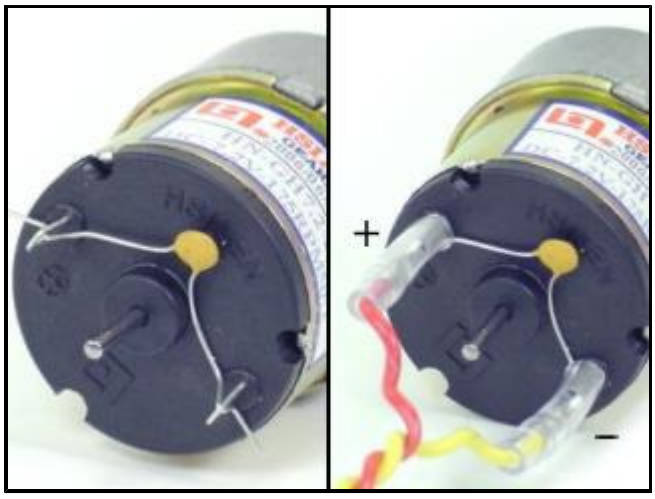
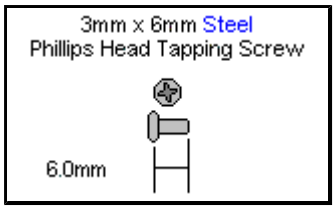


Figure 2.

Step 3.
Mount the motors into the chassis side brackets as shown, using eight of the 3mm x 6mm screws.

8 x



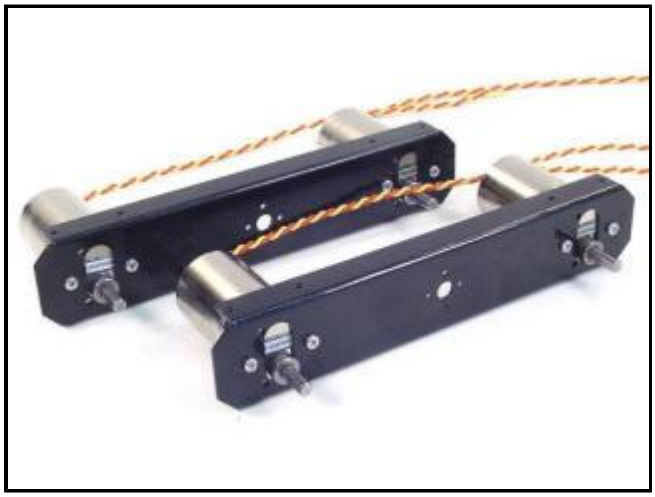
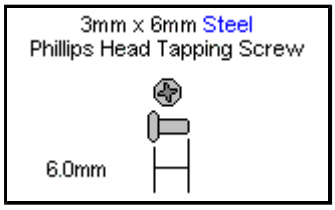


Figure 3.

Step 4.
If you are using the PGHM-01 motors, use three 3mm x 6mm screws and refer to Figure 4 for mounting instructions.

3 x



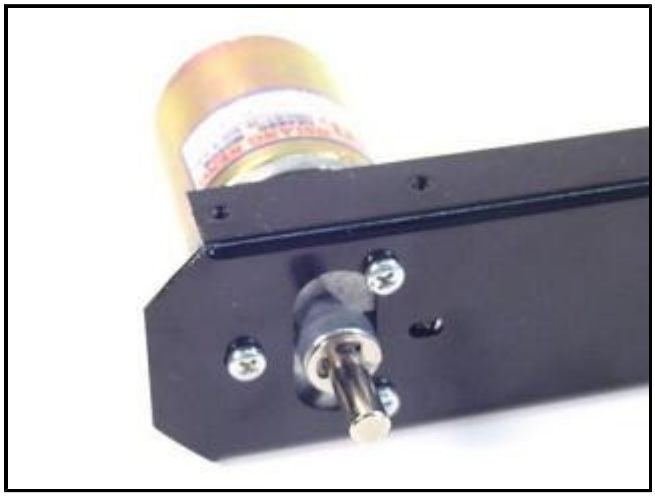
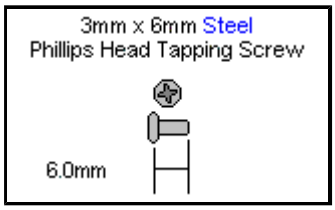


Figure 4.

Step 5.
Use eight of the 3mm x 6mm screws to connect the chassis end brackets as shown.

8 x



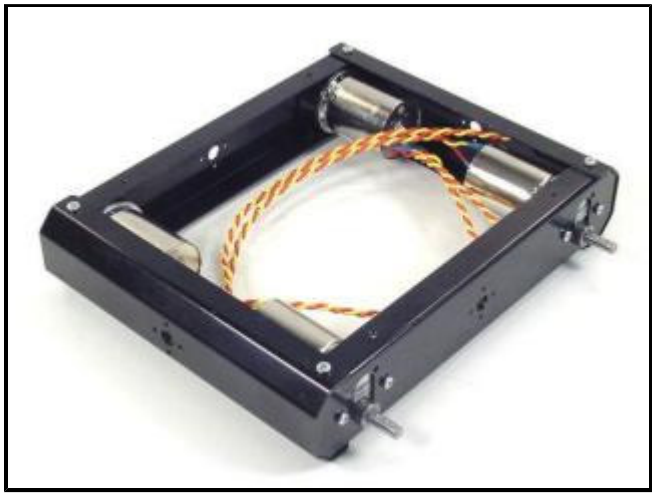


Figure 5.

Step 6.
Use four of the 3mm x 6mm screws to attach the bottom lexan panel.

4 x

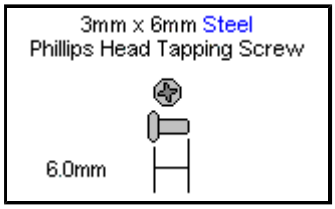


Figure 6.

Step 7.
Thread the tire-connection screw into the hub as shown, then put the hub on the motor shaft. Tighten the set screw down tightly.

Figure 7.

Step 8.
Remove the tire-connection screws, and attach the tires. Make sure to align the tire treads properly.

Figure 8.

Step 9.
Use double sided foam tape to attach the motor controller inside the chassis. Refer to Table 9 for connection information.

Terminals	Connection
M1A	Right side motor yellow
M1B	Right side motor red
B+	Battery red (+)
B-	Battery black (-)
M2A	Left side motor yellow
M2B	Left side motor red

Table 9.

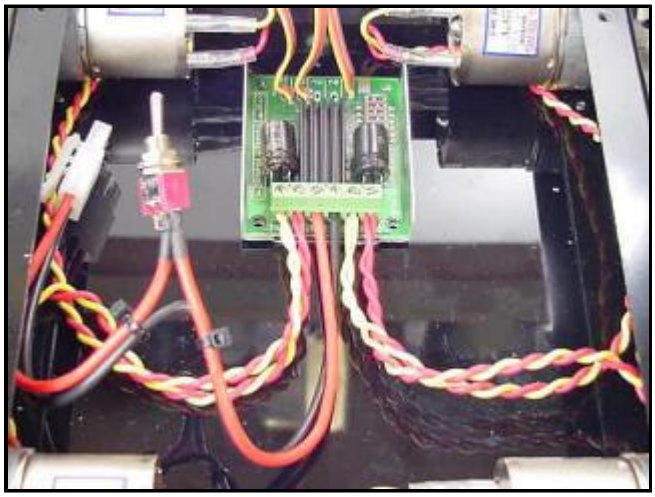
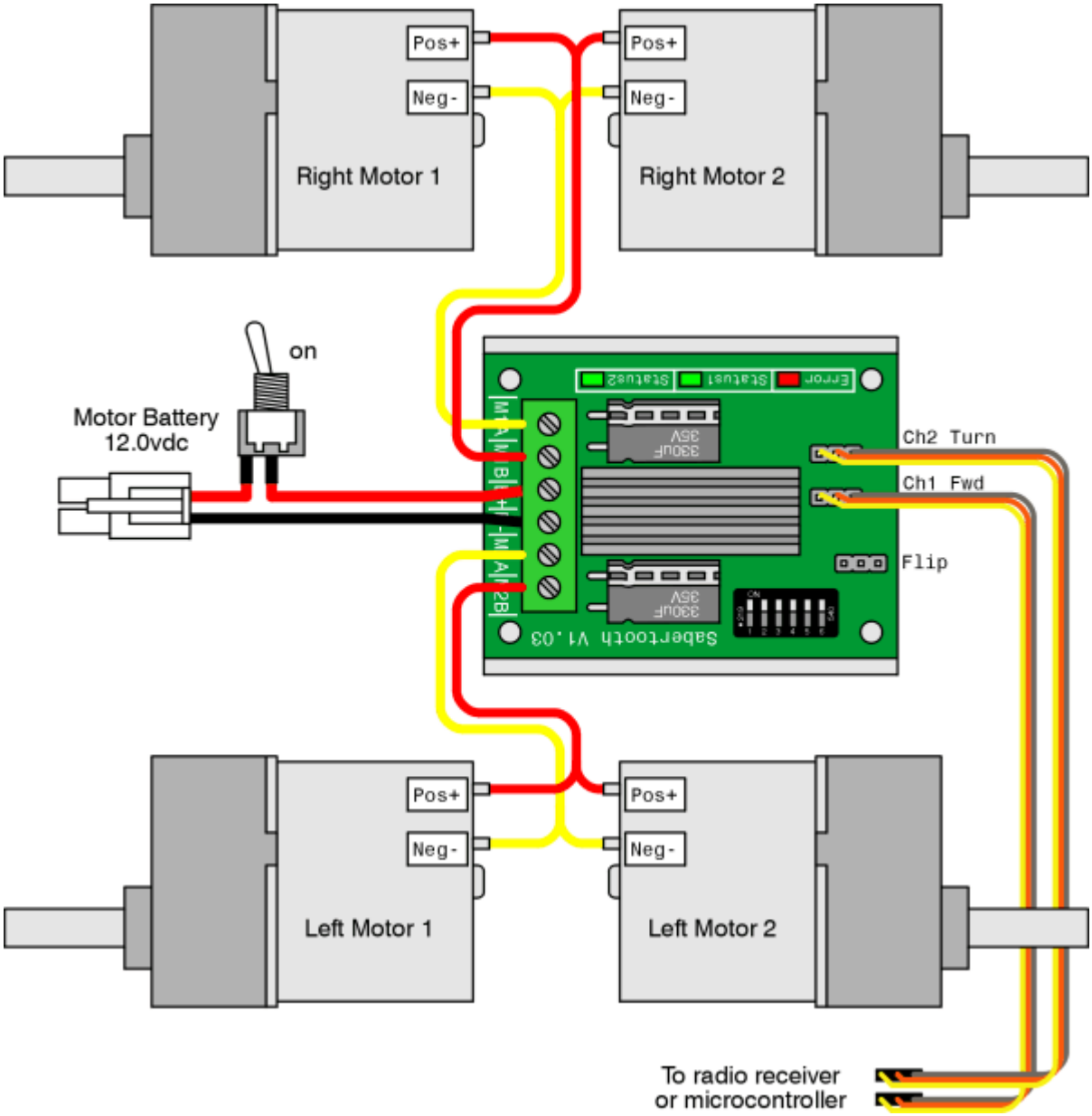


Figure 9.

Schematic - Figure 9-2.



Schematic - Figure 9-2.

Step 10.
For a single 12vdc battery, use double sided foam tape or velcro to attach the battery pack inside the chassis. Plug the battery into the wiring harness. Make sure the power switch is in the "Off" position!

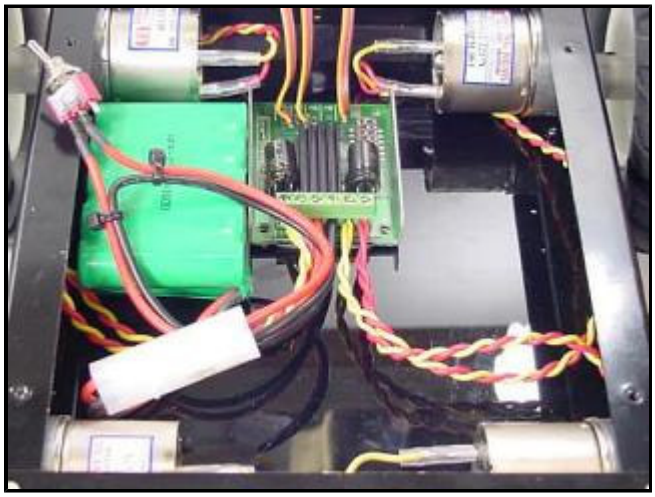
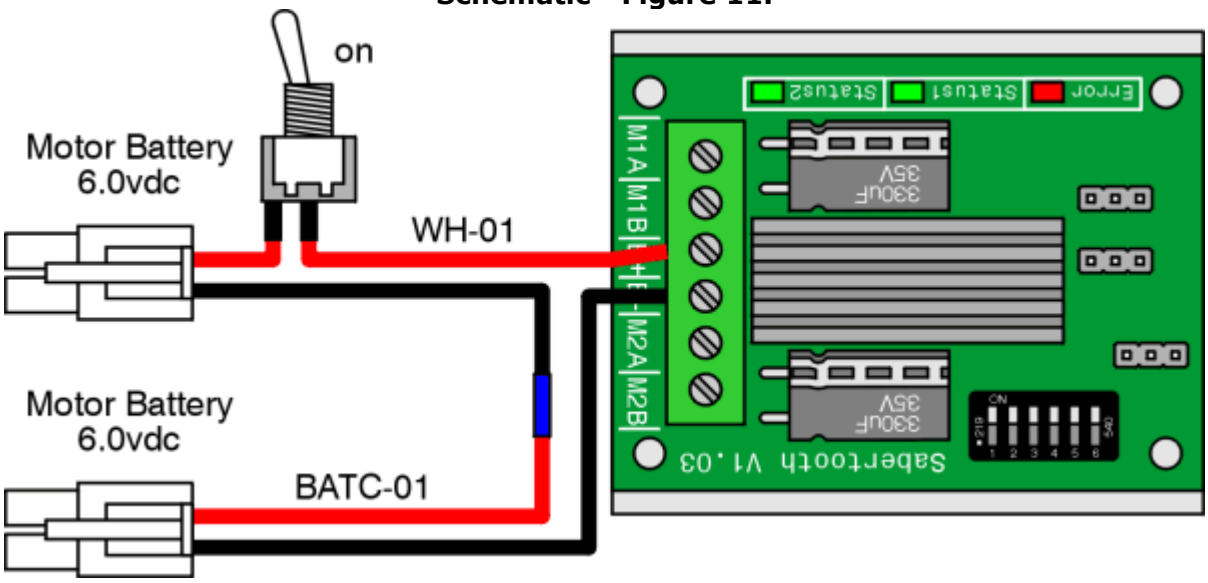


Figure 10.

Step 11.
For longer run time, two higher capacity 6.0vdc batteries can be used. Just solder the wiring harness to the battery quick connect cable (BATC-01) as shown.

Schematic - Figure 11.



Schematic - Figure 11.

Step 12.
Use double sided foam tape or velcro to attach the battery packs inside the chassis as shown. Plug the batteries into the wiring harness plugs. Make sure the power switch is in the "Off" position!

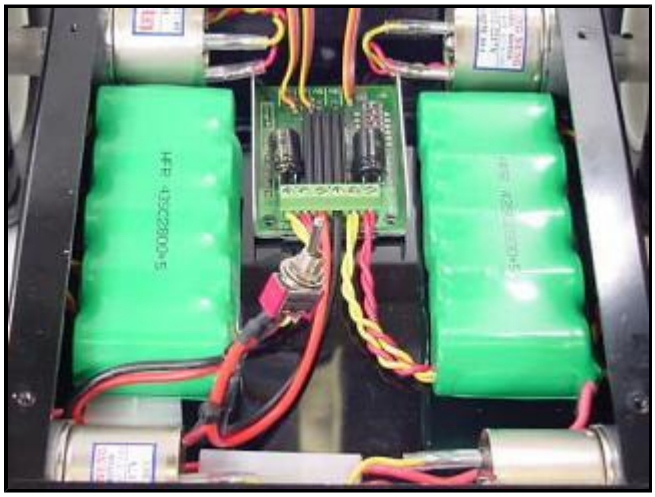


Figure 12.

Step 13.
Attach the power switch in one of the switch holes in the top lexan panel. Use four screws to attach the top panel. This completes the mechanical assembly of the robot. Move on to one of our tutorials for further development.

A note for outdoor use: The aluminum components are coated black. If you are operating the robot in rough outdoor terrain (sharp rocks, etc.) you might want to protect the bumpers from scratches. You can spray paint these parts with several thin coats of flat black acrylic to add some scratch protection. You can also place a piece of black electrical tape along the bottom and first section to further protect them.

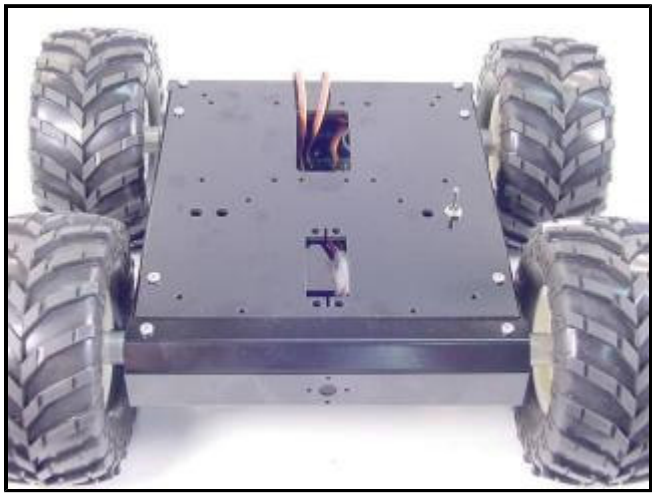


Figure 13.