

This project will cost approximately \$20 including the gearmotors.

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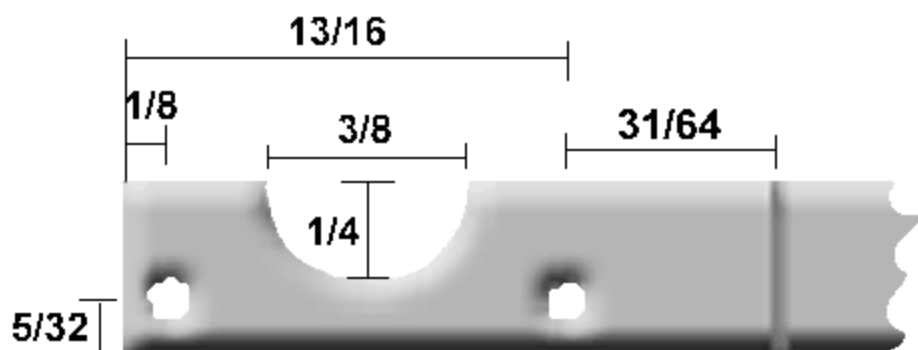
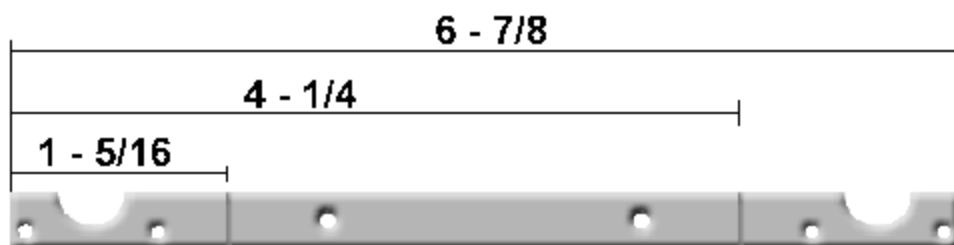
Measurements

We got some [Solarbotics GM8 Gearmotors](#) from [SolarBotics.com](#) and wanted to mount them on our Tab-Robot SUMO Bots.

So we decided to design a bracket for mounting them.

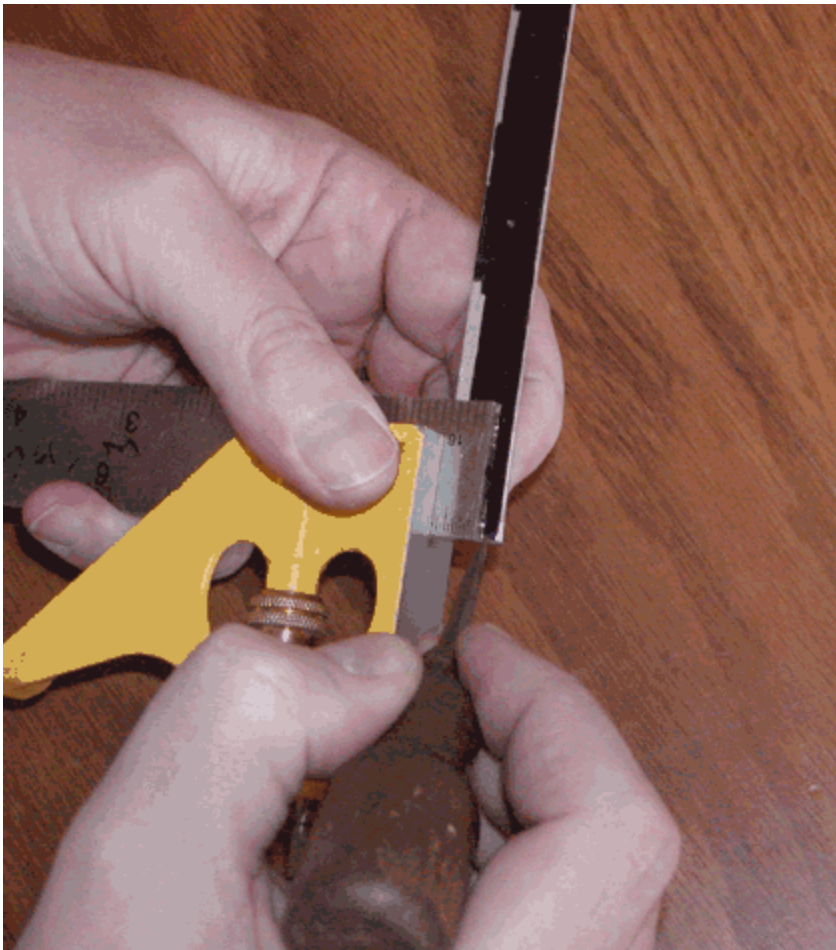
We bought a 1/16" x 1/2" x 3' length of aluminum from Lowe's for \$1.87

The next few pictures show the measurements we took from the finished brackets.





We scribed all the measurements onto the aluminum by covering most of one side of the piece of aluminum with permanent marker. Then we scribed the lines on with a combination square.



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Cutting to Length

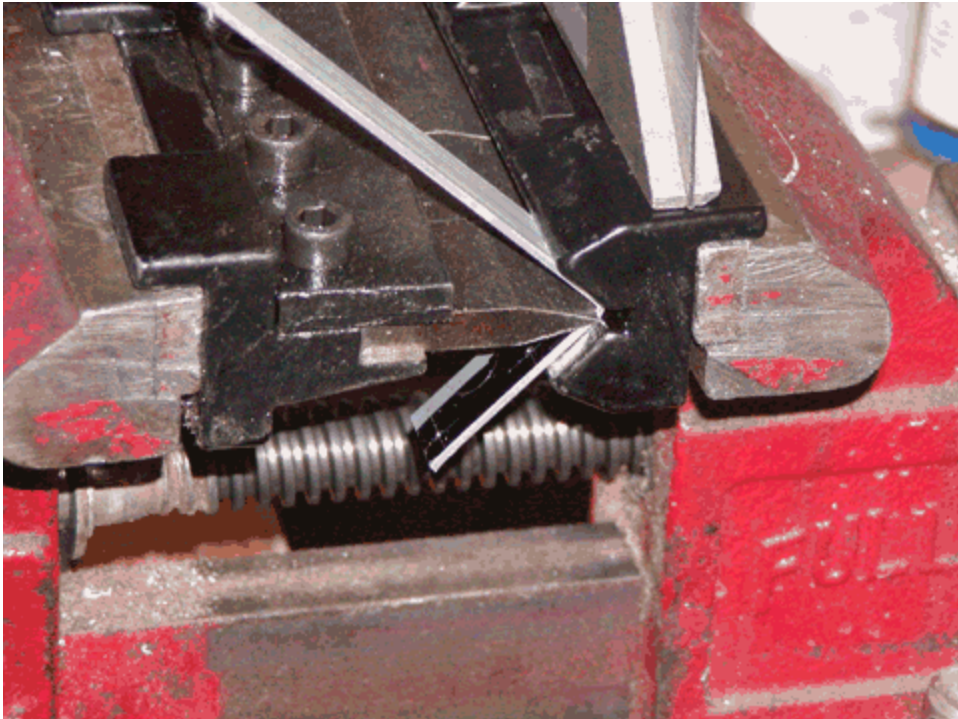
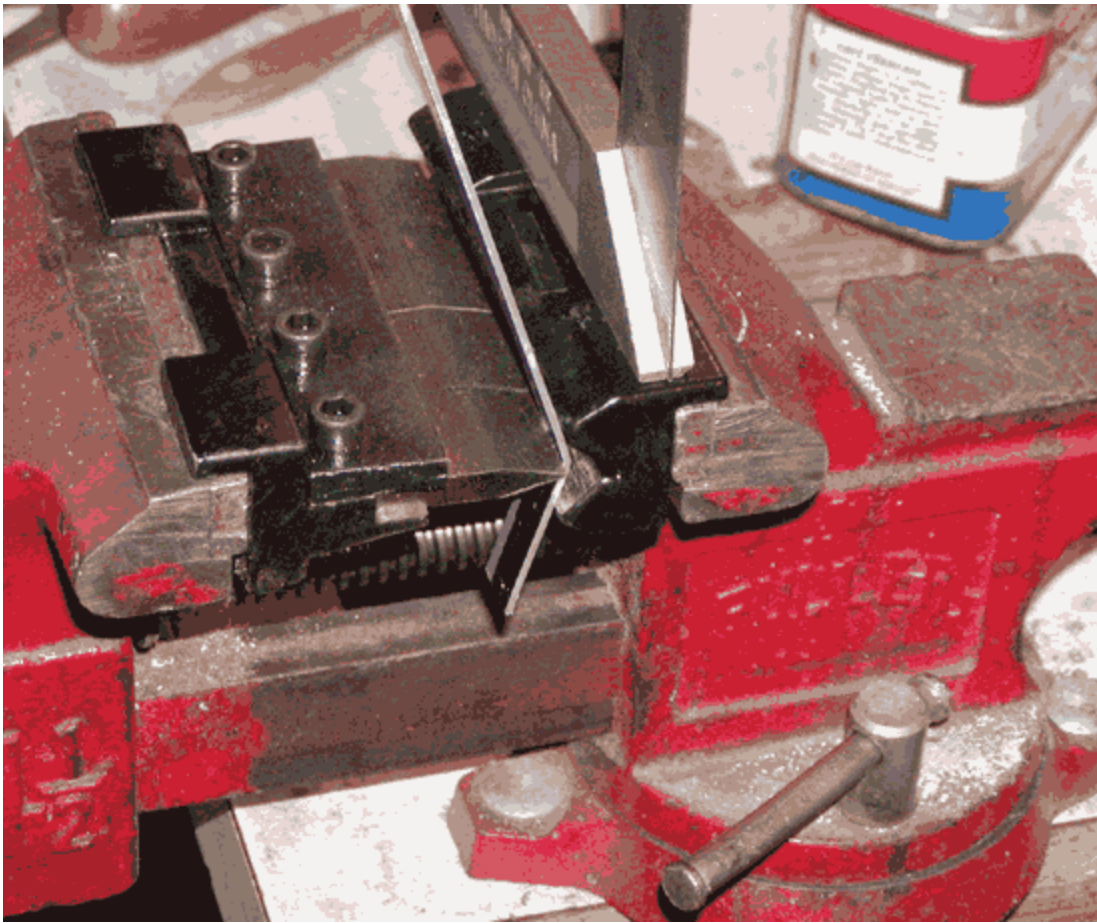
Then we used a [nibbler from Harbor Freight](#) to cut off the proper length



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Bending 90 degree angles

Then we took a magnetic mount vise press bender to it to make our 90 degree bends.





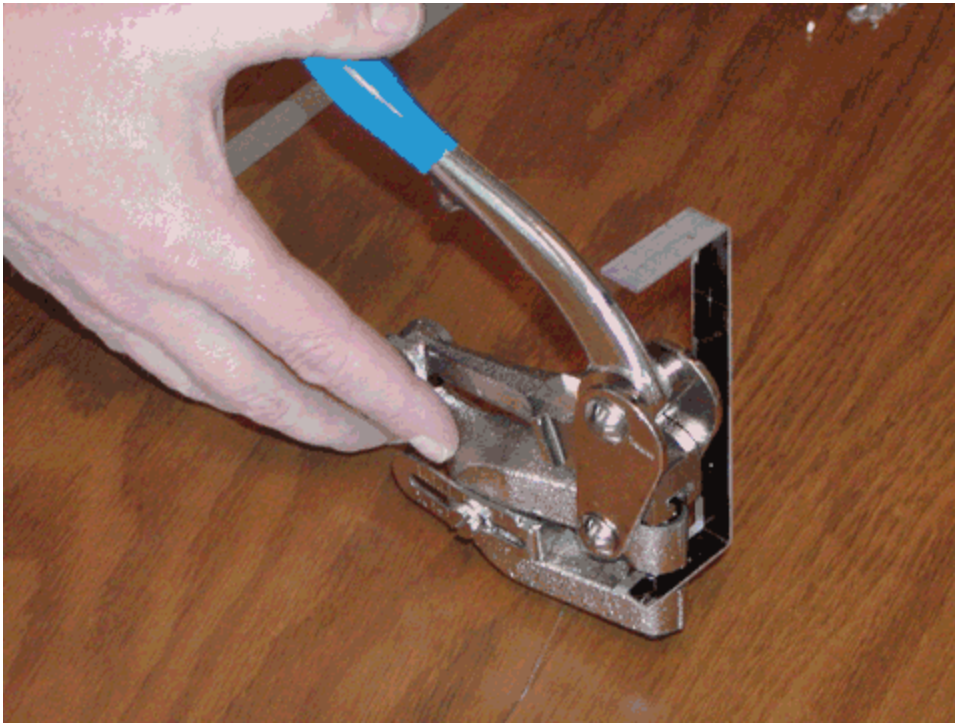
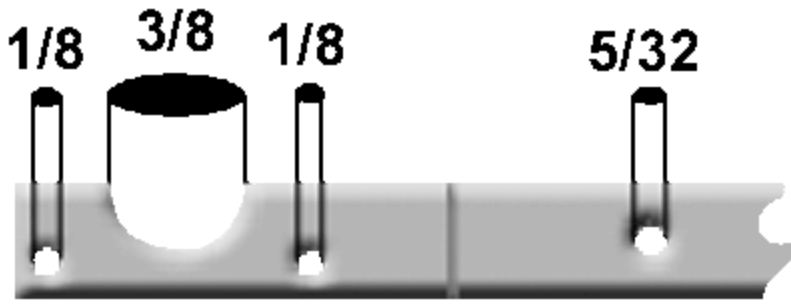
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Punching Holes

We first used a center punch to dimple the exact spot we wanted to punch our holes.



We then used a [Hand Punch from Harbor Freight](#) to actually punch the holes



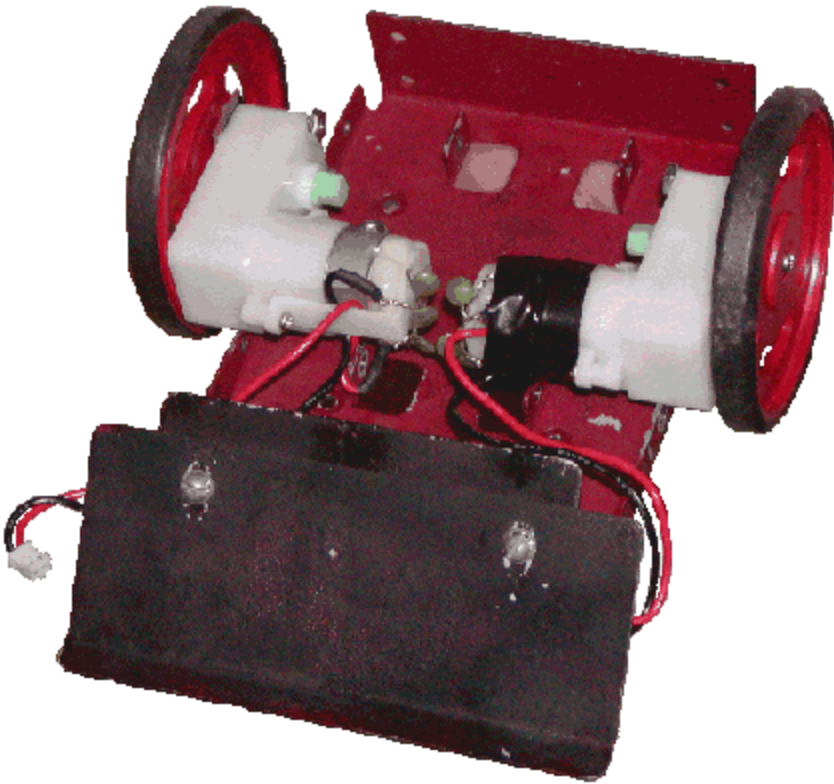
We sort of had to cheat by using a $1/4$ " punch to chew out a $3/8$ " hole.



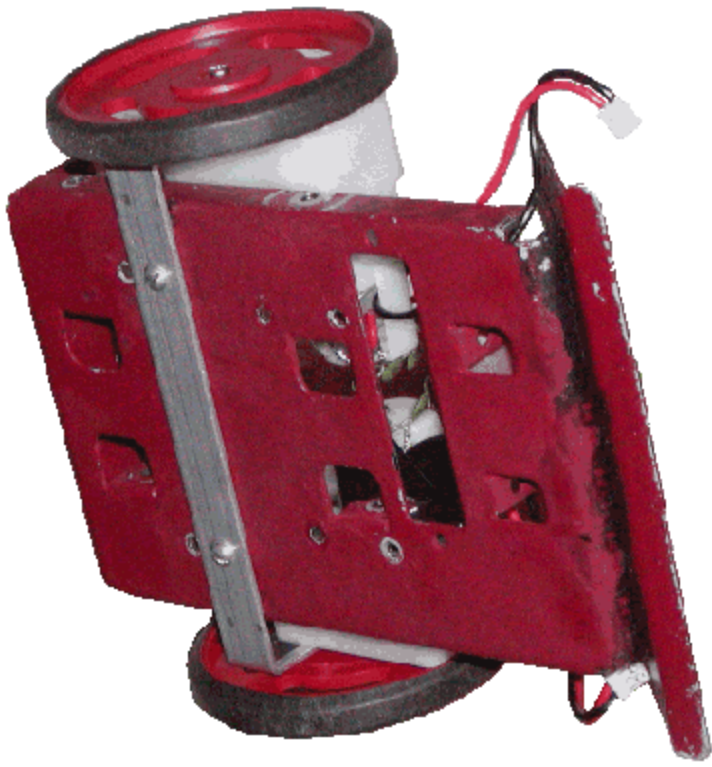
Mounting the GearMotors

We used two of the screws that originally held the motor mount to the chassis to put on the new bracket. We used two 4/32 x 3/4" machine screws with nuts to hold the gear motors onto the bracket.

If you look carefully, you can see that we added three .01m filter caps per gearmotor. One between the brushes, and one from each brush to ground (the motor case)



We had to drill new holes exactly 1/2" farther forward than the two back holes for the standoffs on the chassis. This was necessary to allow the gearmotors to fit in between the mainboard's standoffs.

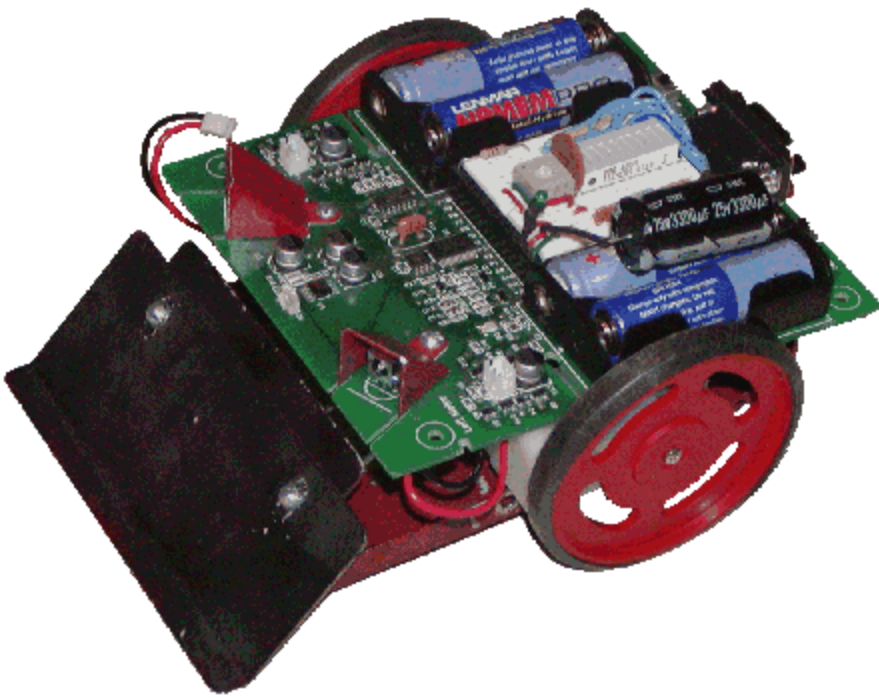


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Aligning the GearMotors

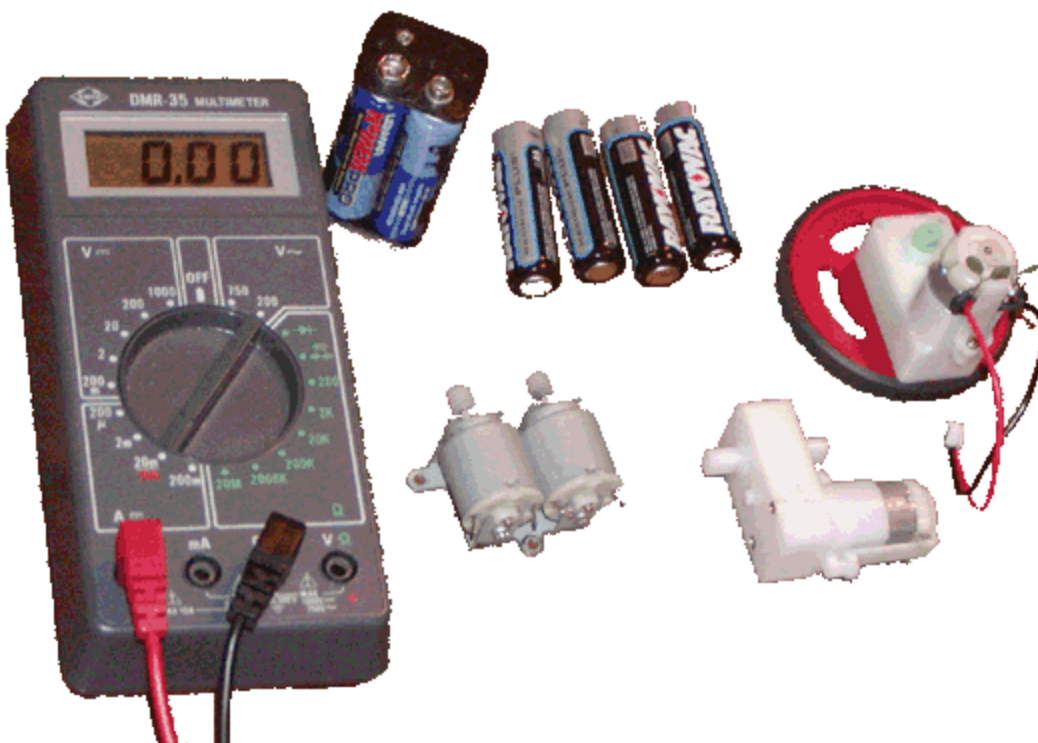
Once everything is put together, it is just a matter of alignment.

The gearmotors shouldn't be very far off. the most important thing for making sure the robot still goes straight after this mod is making sure the scoop on the front of the robot is laying flat on the ground. But if the bracket isn't straight then you will need to bend it gently until the robot can go in a straight line.



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GearMotors Current Draw Specs



Current as measured through selected motors.

Meter: DMR-35 Multimeter 10 amp scale.

	4 AA 2000mah NiMh 4.86 to 4.82 volts		4 AA Alkaline 6.51 to 6.40 volts	
	Measured Current		Measured Current	
	No Load	Stalled	No Load	Stalled
SUMOBOT Motor 1 (almost new)	0.04 A	0.50 A	0.05 A	0.64 A
SUMOBOT Motor 2 (removed from working SUMOBOT)	0.07 A	0.51 A	0.08 A	0.65 A
Solarbotics GM2 (new)	0.05 A	0.50 A	0.06 A	0.61 A
Solarbotics GM8 (new)	0.05 A	0.54 A	0.06 A	0.66 A
Tamiya 720003 (High Power Gear Box H.E. - new)	0.08 A	1.25 A	1.00 A	1.55 A

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