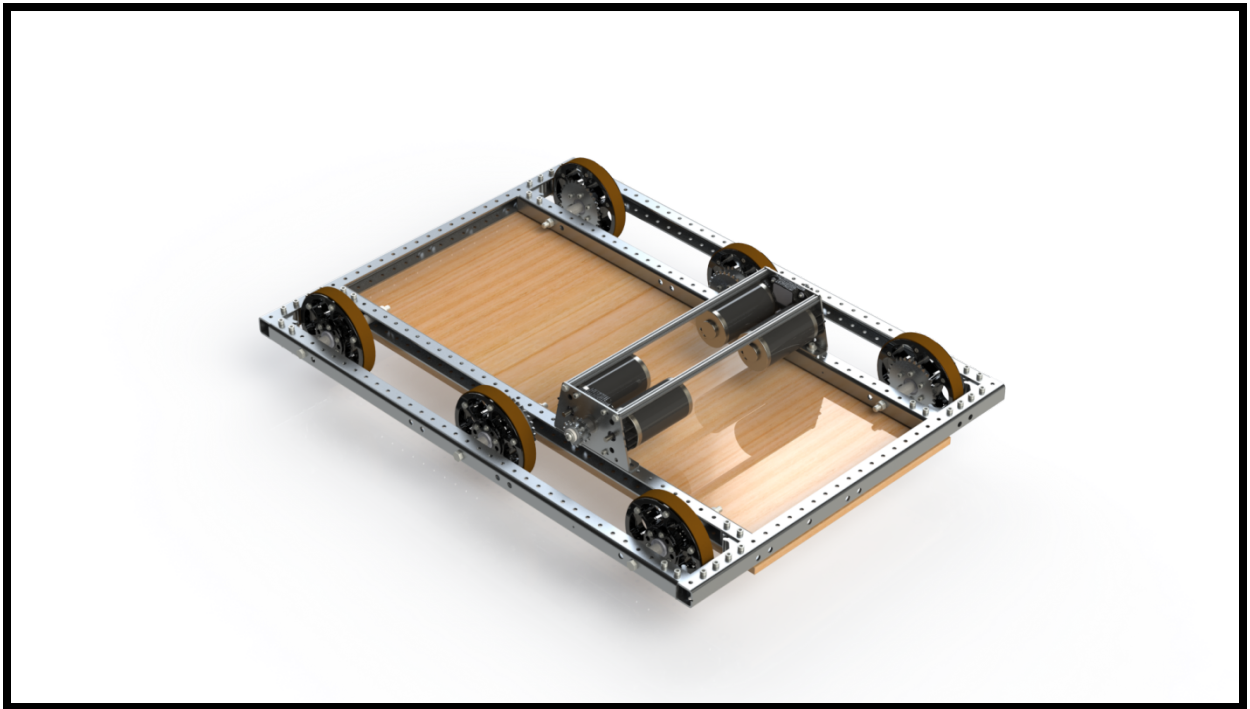


TEAM 1114 PRESENTS:

KITBOT ON STEROIDS

Assembly Instructions



Extensive Part List (all parts listed as if they were sold individually)

Part	QTY	P/N
C-Channel	6	am-0202
Corner Connect	8	am-0212
*Plywood Baseboard	1	N/A
1.86-0375 Plastic Spacer	6	am-0243
2.50-0375 Plastic Spacer	6	am-0244
500 Cross Hex Tube	2	am-0756
1/4-20 x 1-1/2" SHCS	8	am-1205
1/4 - 20 Nylock Nut	44	am-1015
1/4 id Washer	22	am-1069
1/4-20 x 5/8 SHCS	4	am-1053
3/8-16 Nylock Nut	6	am-1054
3/8-16x7 inch Hex Head Screw	6	am-1055
1/4-20x1.75 SHCS	32	am-1058
1/4-20x1 Thread Rolling Screw	4	am-1225
550 Sprocket Spacer	2	am-0651
#10-32 x 1-3/4" SHCS	24	am-1196
#10-32 x 2-1/2" SHCS	12	am-1200
3/16 thick Nylon Spacer	2	am-1181
595x500 Spacer	2	am-0763
S35-12DHE Sprocket	2	am-0736
1/2" id flanged, shielded ball bearing (FR8ZZ)	2	am-0030
Retainer clip, 8mm id	2	am-0033
3/8" id bearing, shielded (R6ZZ)	2	am-0516
CIMple Box Shaft Plate	2	am-0738
CIMple Box Housing	2	am-0739
CIMple Box Output Shaft	2	am-0740
12x520 CIM Gear	4	am-0741
56 Tooth Output Gear	2	am-0742
1/4-20 x 1/2 BHCS	2	am-1039
1/8 x 1/8 x 0.7 machine key	2	am-1043
10-32 x 5/8 SHCS w/ nylon thread lock patch	8	am-1246
2x2x10mm machine key	4	am-1121
2.5" CIM Motor	4	am-0255 / 217-2000 (VEX P/N)
#35 ANSI Roller Chain	10ft.	am-0367
#35 Masterlink for Roller Chain	6	am-0368
#35 Half Link for Roller Chain	4	am-0683
If using AndyMark Plaction Wheels		
6" Plaction Wheel w/ Roughtop Tread	6	am-0437
3/8" id 1.125 od ball bearing	12	am-0209
S35-30L Aluminum Sprocket	8	am-0737
If using VEX PRO IFI Wheels		
IFI Wheel 6" x 1" + 3/8" Bearing	6	IFI-WHEEL-610-38
30 Tooth #35 Sprocket	8	IFI-SPROCKET-35A30

*Drawing can be found at simbotics.org/kitbot

Approximate Least Tools

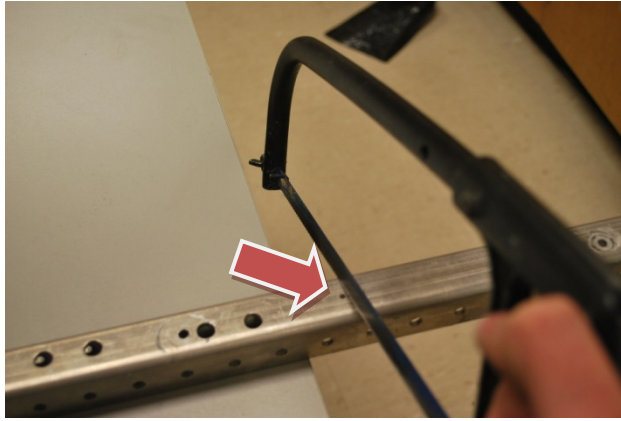
- Hacksaw
- File
- Allen keys (5/32, 3/16)
- Wrench (3/8, 7/16, 9/16)
- Hammer
- Small blocks of wood
- Needle nose pliers
- Chain break

Additional Tools

- Square
- Drill
- 1/8" drill bit
- Rivet gun
- 3/8" socket driver
- Chain puller

Part 1: Beginning to assemble the frame

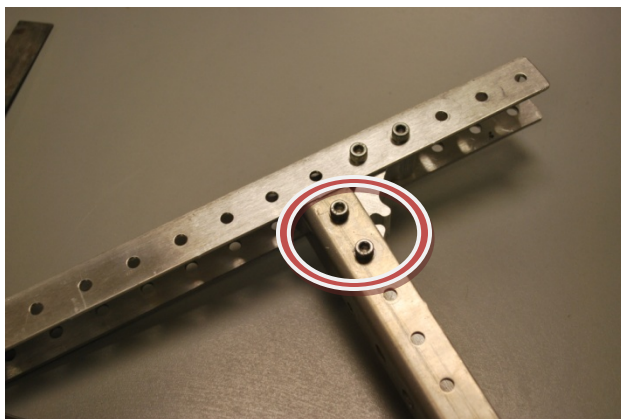
Step 1: Cut 2 of the C-Channels along the 1/8" guide hole in the rails, so that you have two 27" C-Channels.



Step 2: Attach the Corner Connects to the ends of 2 of the full length C-Channels using 1 3/4" socket head screws.



Step 3: Attach the full C-Channels with the Corner Connects to the 4th and 5th holes from the ends of the cut C-Channels, so that the full length C-Channel's flanges are facing outwards.



(Note: ensure the end of the Corner Connects with 3 holes are connected to the full length C-Channels)

(Note: ensure the all of the C-Channel's center holes are downwards while assembling)



Part 2: Treading the wheels

Your wheels may come pre-treaded, in which case, this method may be used if/when your treads need to be replaced.

Step 1: Begin by cutting your treads to length.



(Note: you may want to create a template or jig for your treads for faster replacements.)

Step 2: Lay one end of the tread in the groove of the wheel, and drill a hole through the tread and wheel for a rivet to be popped through. Leave enough room for a second rivet to be popped beside it.



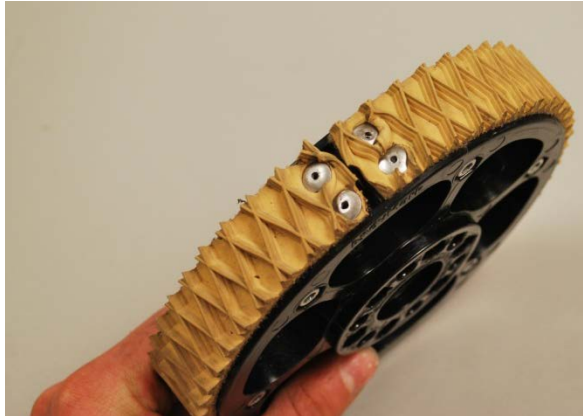
Step 3: Firmly press a rivet through the holes and pop the rivet.



Step 4: Drill the second hole and pop the rivet.

Step 5: Stretch the tread around the wheel ensuring there are no “bubbles”, and cut off any excess tread if necessary.

Step 6: Drill another 2 holes and rivet this end in place.



Step 7: Add additional rivets in a few places around the wheel to reinforce.



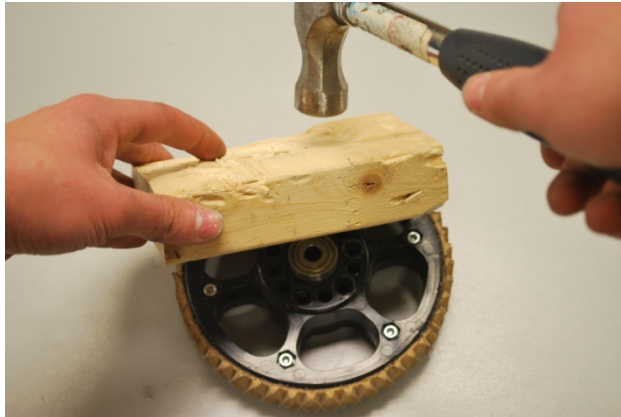
(Note: avoid drilling holes directly in the center of Plaction wheels, as a rivet may slightly separate the wheel at its seam)

(Note: if using IFI Wheels opposed to AM Plaction wheels, align the holes drilled in the tread with the pre-punched holes in the wheel.)

Part 3: Attaching wheel hardware

Using AndyMark Plaction wheels

Step 1: Take the Plaction wheel and lay it down as you press a 3/8" bearing into it by hitting a block of wood over top of it with a hammer.



Step 2: Flip the wheels over onto another block of wood, pressing a second 3/8" bearing into the opposite side.



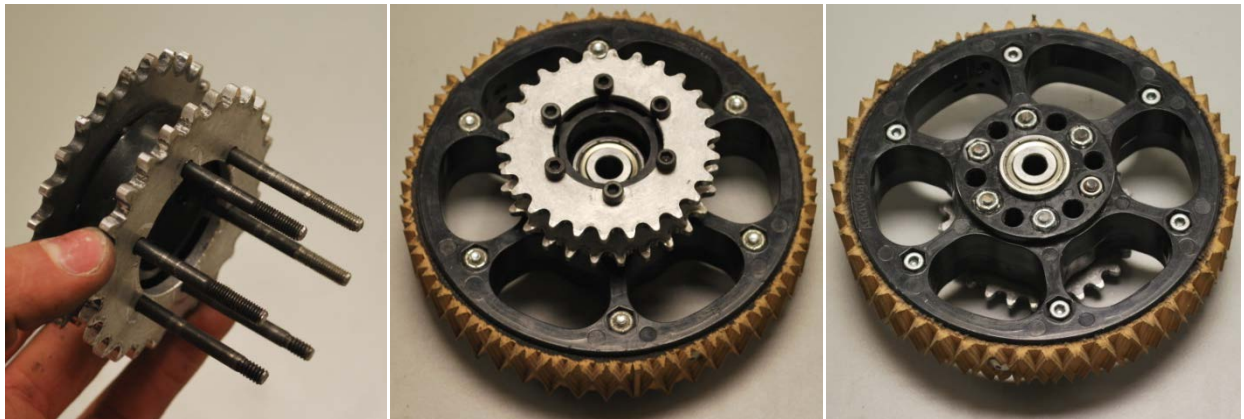
(Note: the wood prevents the bearings from being damaged.)

Step 3:

For the outer wheels (4): Place 1¼" 10-32 socket head screws through each hole in one of the #35 30 tooth plate sprockets. Then place the sprocket with screws through the wheel and tighten each screw down with 10-32 nylock nuts.



For the center wheels (2): Place 2½" 10-32 socket head screws through each hole in one of the #35 30 tooth plate sprockets. Next place one .55" sprocket spacer, and another #35 30 tooth plate sprocket. Then place the sprockets with screws through the wheel and tighten each screw down with 10-32 nylock nuts.



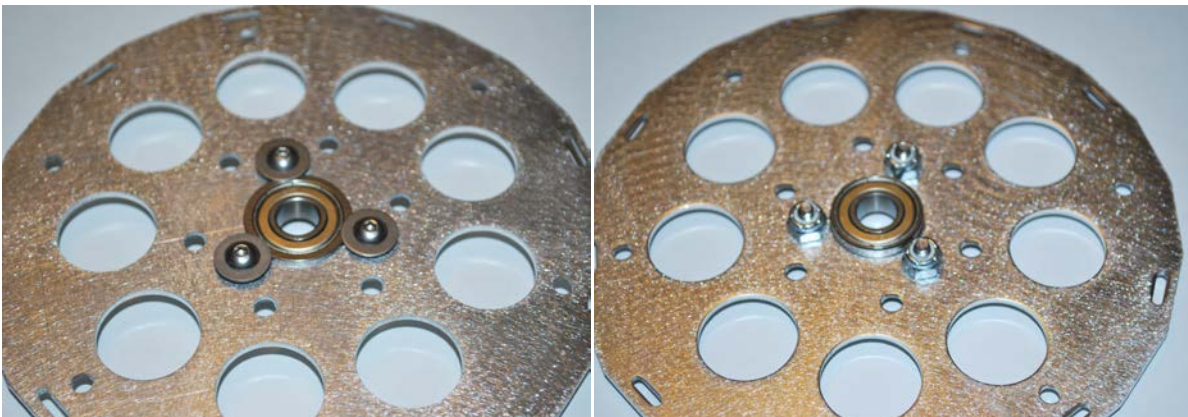
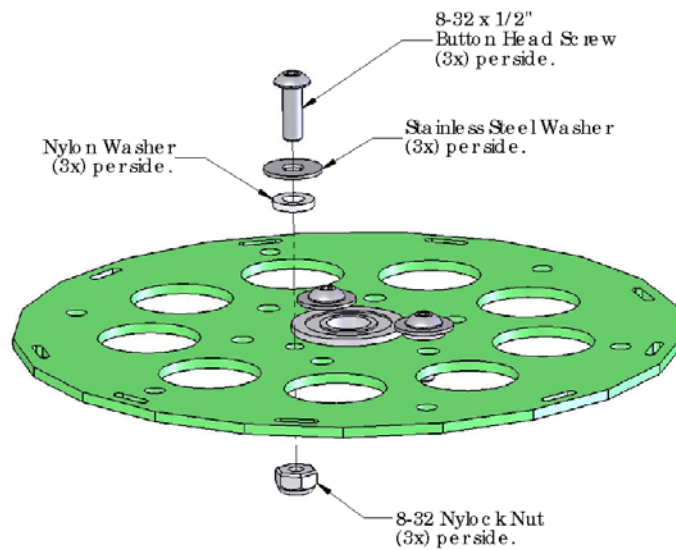
(Note: be sure not to over tighten the nut holes in the Plaction wheels, as this may damage the wheel)

Using VEX PRO IFI wheels

Step 1: Insert 3/8" flanged bearings into the center bearing holes of one of the wheel hub plates.



Step 2: Attach Bearing Retainer Screws and Washers to the wheel hub in each location as shown below.



Step 3: Take one of the plates and attach six 8-32 Threaded Standoffs using ½" 8-32 screws with nylon patches.



Step 4: Insert the wheel rim pieces into the hub such that all the rim tabs are fully engaged in their respective wheel hub slots.



(Note: Due to the high-tolerances required to create a rigid wheel, the rim pieces may require some "forcing" to insert properly. It is acceptable to slightly bend the rim such that it inserts into the wheel hub.)

Step 5: Attach Bearing Retainer Screws and Washers to a #35 30 tooth sprocket in the same manner as the wheel hub.



Step 6:

For the outer wheels (4): Place 1" 10-32 socket head screws through each hole of the #35 30 tooth sprocket with bearing. Then place the 3/8" sprocket spacers included with the sprockets over each screw. Next place the wheel hub plate and tighten each screw down with 10-32 nylock nuts.



For the center wheels (2): Place 1 3/4" 10-32 socket head screws through each hole in a #35 30 tooth plate sprockets. Next place one .55" sprocket spacer, and then the #35 30 tooth sprocket with bearing. Then place the 3/8" sprocket spacers included with the sprockets over each screw. Next place the wheel hub plate and tighten each screw down with 10-32 nylock nuts.



Step 7: Assemble the other wheel hub to the assembly from Step 6. Ensure all tabs and slots are aligned and fully engaged.

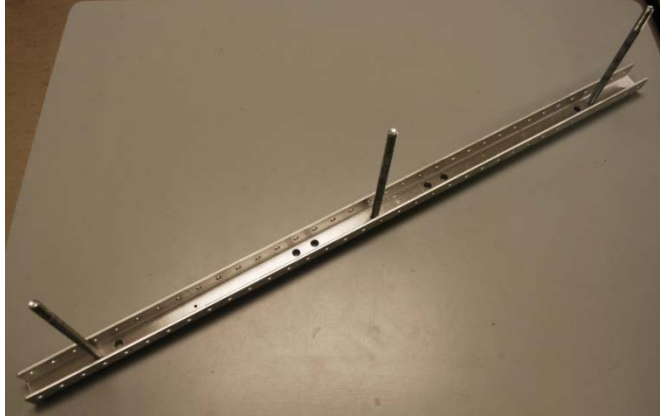


Step 8: Bolt the assembly together using six 1/2" 8-32 screws with nylon patches.

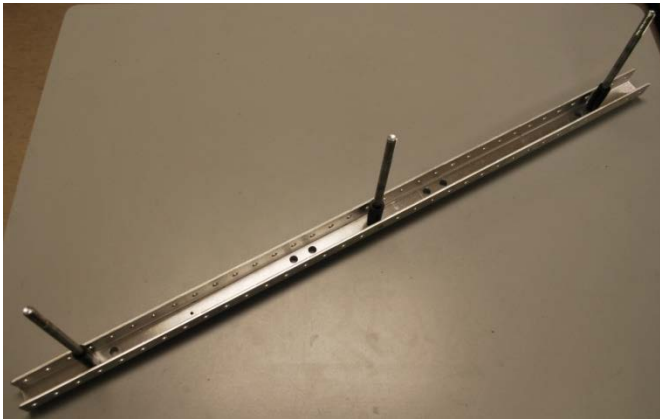


Part 4: Continuing to assemble the frame

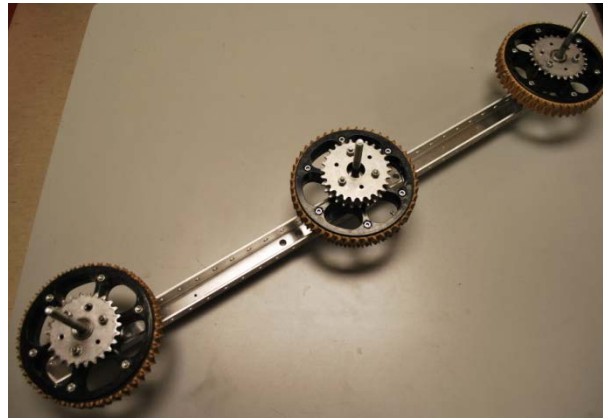
Step 1: Take one of the remaining C-Channels and place a 7" 3/8 axle bolt through each of the outer most axle holes and then the center dropped hole.



Step 2: Place a 1.86" spacer on each of the axle bolts.



Step 3: Place one of the wheel assemblies on each of the axle bolts, sprocket side away from the C-Channels. Single sprocket wheels should be on the outer axles, while the center axles should hold a double sprocket wheel.



Step 4: Place one 2.50" spacer on each of the axle bolts.



Step 5: Take a Corner Connect and attach them in the end holes of the C-Channels.

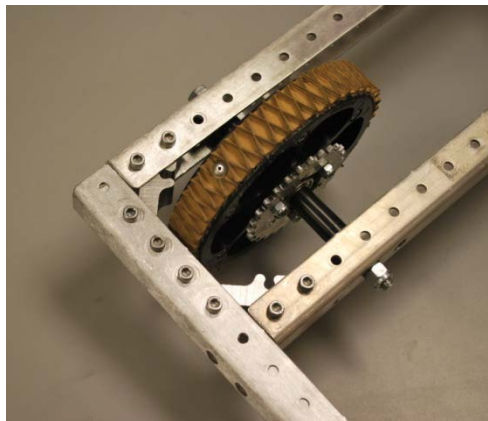
(Note: ensure the end of the Corner Connects with 3 holes is connected to the full length C-Channels.)

Step 6: Slide each of these rails (C-Channel with axles, wheels and Corner Connects), into the previously assembled frame (from Part 1), with the axles going through

(Note: ensure the all of the C-Channel's center holes are downwards while assembling)

Step 7: Attach the Corner Connects into the 2nd and 3rd holes of the cut C-Channels.

Step 8: Apply 3/8-16 nylock nuts to the ends of all of the axle bolts. Tighten them enough for the wheels to spin freely, with little to no lateral movement of the axle.

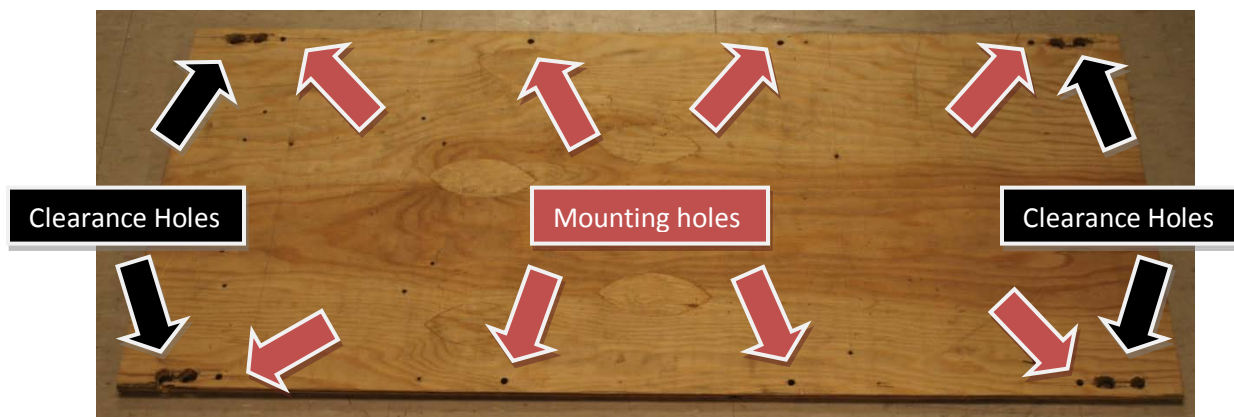


Part 5: Attaching the baseboard

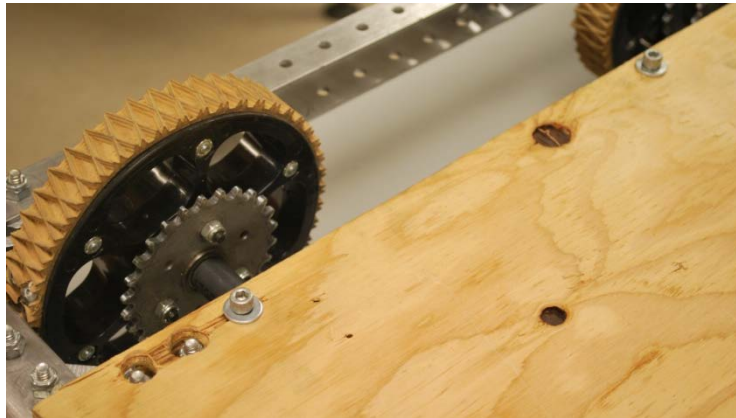
Step 1: Have a piece of 1/2" plywood cut to 37.25" by 17".

Step 2: Following the drawing at simbotics.org/kitbot, drill clearance holes for the chassis nuts, or cut out the indicated area in the corners of the baseboard.

Step 3: Drill mounting holes for screws to mount the board to the chassis. Either 1/4-20 (17/64" clearance hole) or 10-32 (13/64" clearance hole) screws may be used.

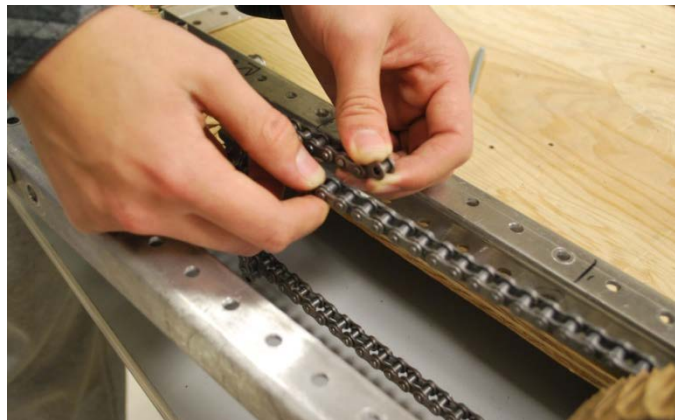


Step 4: Align the baseboard with the bottom of the chassis and place a screw with washer through each of the mounting holes. Tighten the screws down with the appropriately sized nylock nut.

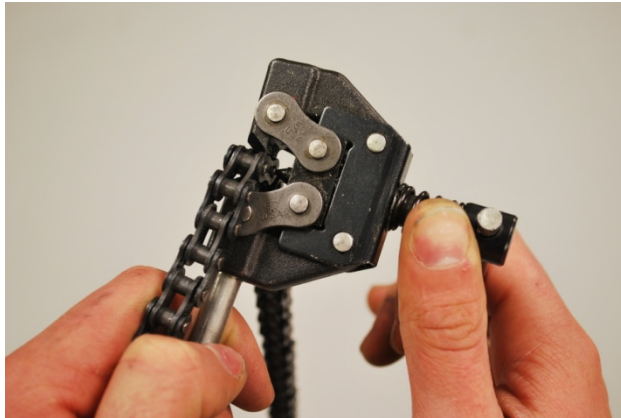


Part 6: Beginning to attach chain

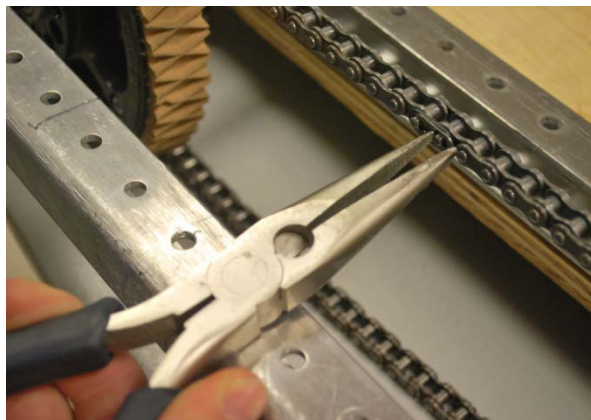
Step 1: Wrap the chain around its path to find the length to cut the chain to (remember to include the masterlink and any half-links in this length).



Step 2: After finding the length, use a chain break tool to cut the chain to size.



Step 3: With the appropriate chain length, wrap it around the sprockets, and apply the master link. The use of a chain puller may aide in the insertion of the masterlink.



(Note: the length of the chains on 1114's Kitbot on Steroids with #35 12 and 30 tooth sprockets is 101 links, 62 links, and 57 links. For an odd number of links, a half-link must be used.)

Part 7: Assembling the gearboxes

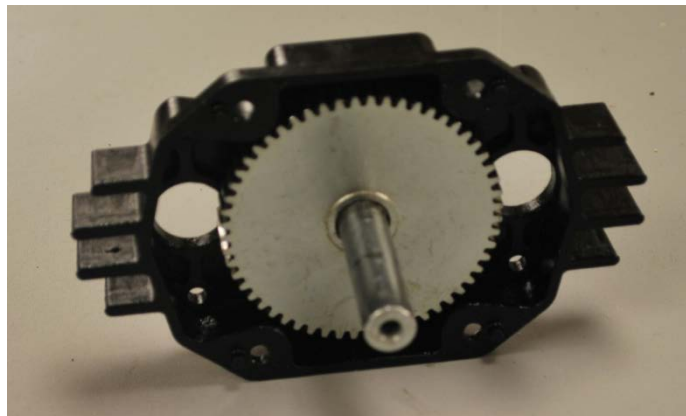
Step 1: Take the plastic housing and firmly press in the 3/8" bearing. If needed, press in with a hammer and block of wood.



Step 2: Slide the end of the output shaft into the 3/8" bearing.



Step 3: Slide on the 56 tooth gear, aligning the hex of the gear and the shaft.

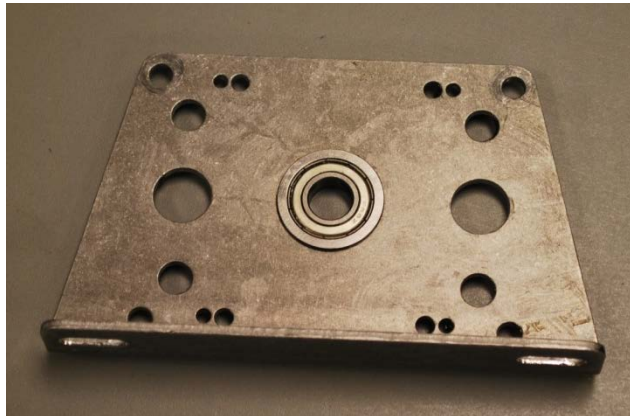


Step 4: Generously grease the gear, fully surrounding it with lubricant.



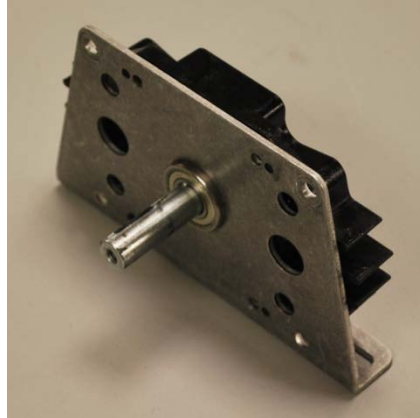
(Note: the gearboxes come with a small packet of grease, but it is a worthwhile investment to get more.)

Step 5: Press the ½" bearing into the aluminum plate, making sure the bearing's flange is on the same side as the aluminum plate's flange.



Step 6: Slide the aluminum plate and ½" bearing onto the output shaft, with the flange towards the plastic housing.

Step 7: Align the plastic housing's 4 nubs with the 4 holes on aluminum plate.



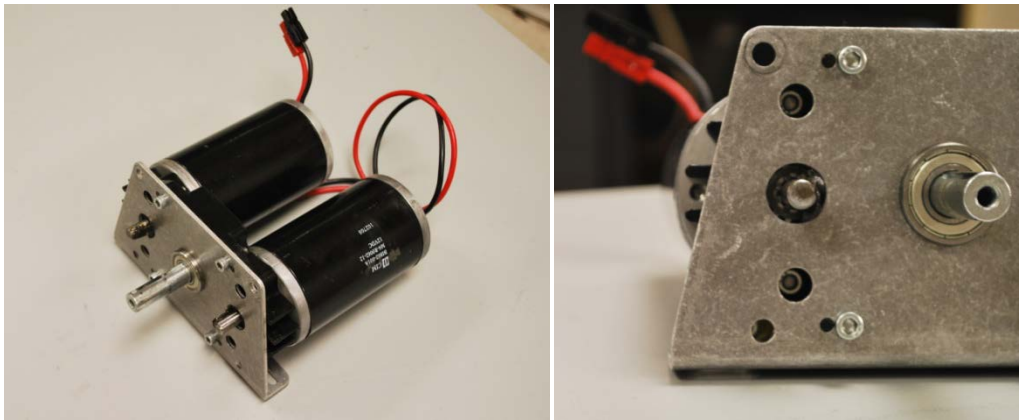
Step 8: Install 10-32 nylock nuts into the nut holes in the back of the plastic housing, and screw in 5/8" 10-32 socket head screws.



Step 9: To apply the 12 tooth pinion gear to the CIM motors shaft, insert the 2mm machine key into the CIM motor keyway. Then slide the pinion over top, and then press on the 8mm retaining ring to hold the pinion in place. A 3/8" nut driver can be used to push the ring into place.

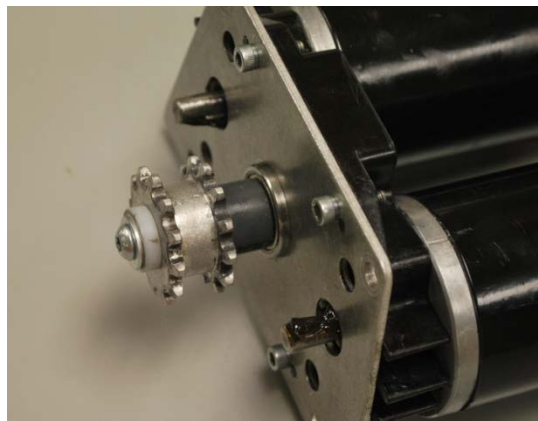


Step 10: Insert the CIM motors into the back of the plastic housing and fasten them in place using 5/8" 10-32 socket head screws with nylon patches (two per motor).



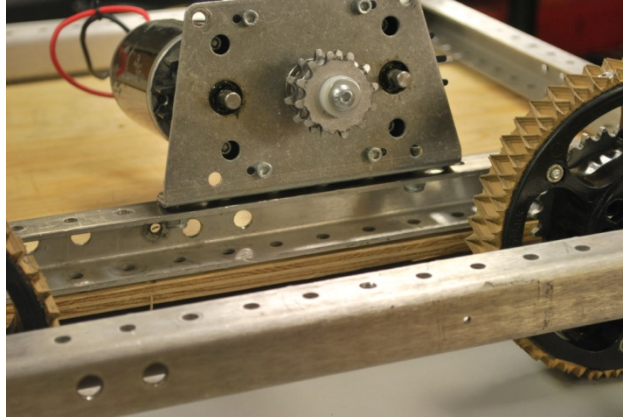
Step 11: Place a .595" spacer on the gearbox output shaft, then insert a 1/8" machine key into the output shafts keyway. Slide a #35 12 tooth double sprocket over the key, and then place a 3/16" spacer on the shaft.

Step 12: Place a 1/4" washer on a 1/4-20 button head screw and apply a small amount of thread locking fluid to the screw. Fasten the screw in the end of the output shaft to secure the sprocket and spacers on the shaft.

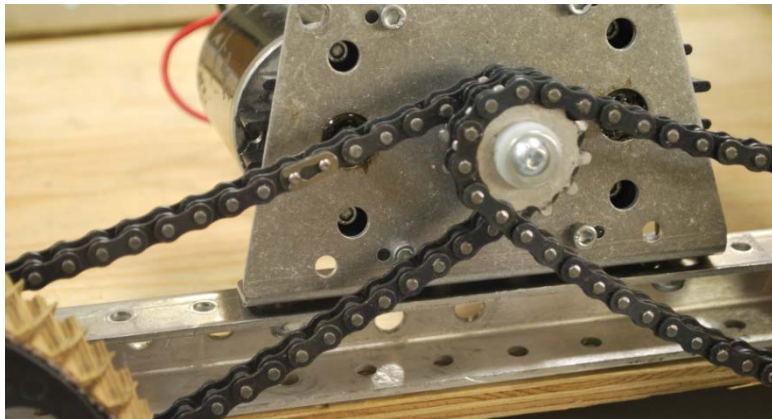


Part 8: Attaching the gearbox and final chains

Step 1: Position the gearbox between the center and back wheels, lightly fastening it with a 5/8" 1/4-20 socket head screws, 1/4" washers, and nylock nuts. The gearbox should be loose enough that it can still slide along its slots.



Step 2: Cut chains going from the gearbox to the back and center wheels, and attach them over the sprockets.

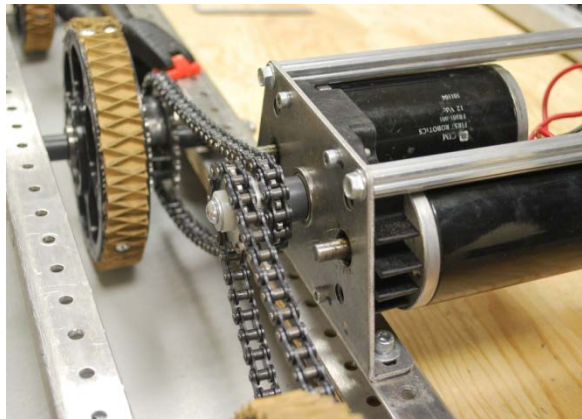


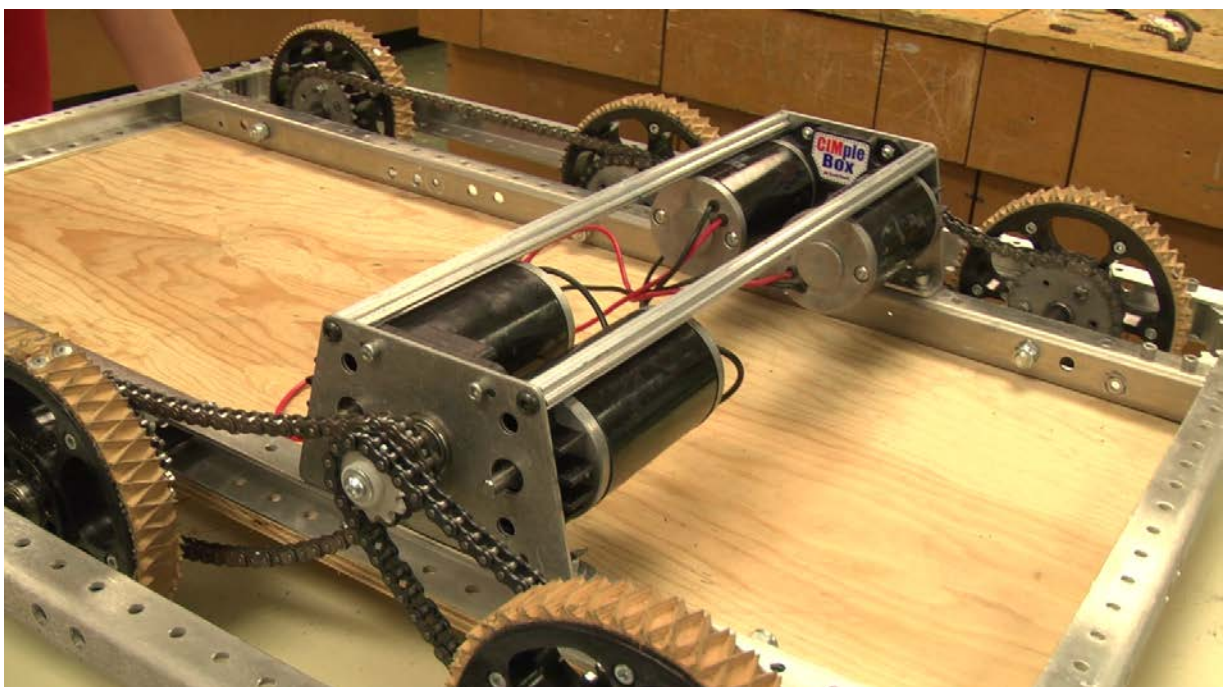
Step 3: Cut the 2 cross hex extrusions to 16 7/8" in length.



Step 4: Fasten the cross hex extrusions between the gearboxes using 1/4-20 thread rolling screws. Drive them in using a 3/8" wrench or socket driver.

Step 5: Slide the gearboxes into a position where the chain tension is about equal and fully fasten down the gearboxes by tightening the screws and nuts.





Version	Notes	Date
1.0	Initial Release	02/01/2012