



Base Kit Chain Drivetrain Build Guide

August 11, 2017

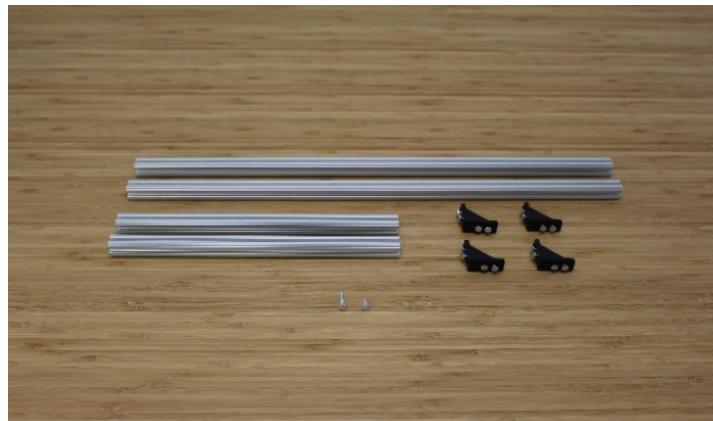
1.1 Description

This document outlines the steps required to four wheel, chain based drive train. This design should be treated a starting point and will require modification in order to address the specific needs of the robot being designed. It should be noted for best performance the center of gravity should be biased towards the Traction wheels to ensure the robot rotates about the axis at the midpoint between the Traction wheels.

1.2 Bill Of Materials

PART NUMBER	DESCRIPTION	QTY.
REV-41-1432	420mm REV Extrusion	6
REV-41-1431	225mm REV Extrusion	4
REV-41-1321	15mm Plastic Lap Corner Bracket	16
REV-41-1360	M3 X 16MM HEX CAP SCREWS	4
REV-41-1359	M3 X 8mm Hex Cap Screws	132
REV-41-1361	M3 Nyloc Nut	124
REV-41-1320	15mm Plastic Inside Corner Bracket	8
REV-41-1303	15mm Plastic Motion Bracket	4
REV-41-1317	15mm Bearing Pillow Block	8
REV-41-1347	5mm X 75mm Hex Shaft	4
REV-41-1326	Through Bore Bearing - Short	8
REV-41-1340	20 Tooth Sprocket	4
REV-41-1323	15mm Spacer	4
REV-41-1324	3mm Spacer	8
REV-41-1354	90mm Traction Wheel	2
REV-41-1327	Shaft Collar	8
REV-41-1190	90MM OMNI WHEEL	2
REV-41-1339	15 Tooth Sprocket	2
REV-41-1349	5mm X 135mm Hex Shaft	2
REV-41-1300	Core Hex Motor	2
REV-41-1343	40 Tooth Sprocket	2
REV-41-1322	End Cap Bearing	2
REV-41-1325	1.5mm Spacers	2
REV-41-1166	BATTERY HOLDER PLATE	2
REV-31-1153	REV ROBOTICS EXPANSION HUB	1
REV-41-1365	#25 Chain 10ft	1
REV-41-1366	#25 MASTER LINKS	1

1.3 Build Instructions



Collect Parts:

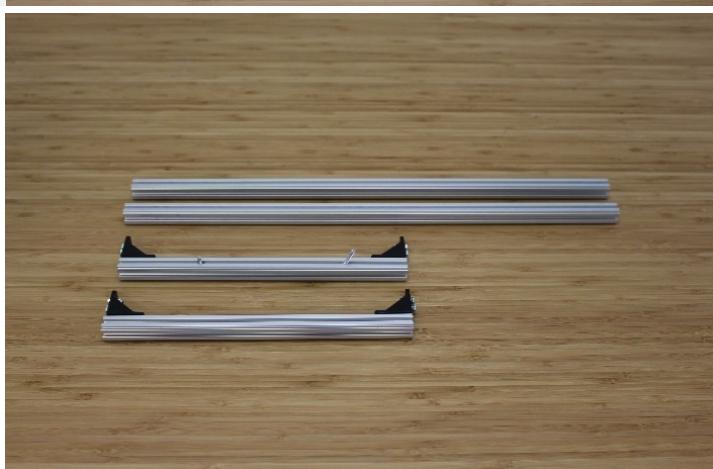
- 2x REV-41-1432
- 2x REV-41-1431
- 4x REV-41-1320
 - Pre-load with REV-41-1359 and REV-41-1361
- 1x REV-41-1359
- 1x REV-41-1360

Slide REV-41-1320 on the ends of REV-41-1431 such that the brackets and Extrusion are flush.

Tighten nuts.

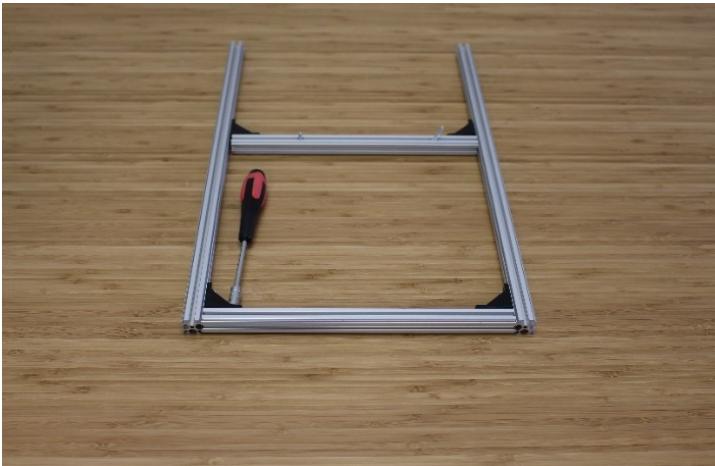


Slide REV-41-1359 and REV-41-1360 on to the one of the REV-41-1431 assemblies. Ensure REV-41-1360 is to the right of REV-41-1359 when the brackets are pointing away from the user.

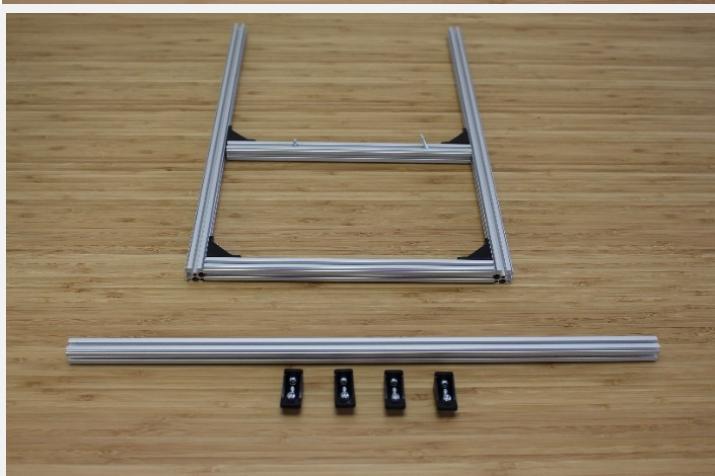


Slide the REV-41-1432 pieces onto the REV-41-1431 assemblies.





Make the ends of REV-41-1432 flush with the lower REV-41-1431 assembly.
Tighten only the bottom corners.



Collect Parts:

- 1x REV-41-1432
- 4x REV-41-1321
 - Pre-load with REV-41-1359 and REV-41-1361



Place REV-41-1321 brackets as shown. Leave screw loose.



Slide REV-41-1432 onto REV-41-1321 brackets.



Make REV-41-1432 flush with the REV-41-1431 assembly.



Measure 82.5mm from the outside edge of top REV-41-1432 to the vertical REV-41-1432 extrusion. This will center the top REV-41-1432 extrusion to frame.

Tighten REV-41-1321 bracket nuts.



Flip and tighten REV-41-1321 bracket nuts.



Collect Parts:

- 2x REV-41-1432
- 4x REV-41-1321
 - Pre-load with REV-41-1359 and REV-41-1361



Place REV-41-1321 brackets as shown. Leave screw loose.



Slide REV-41-1432 onto REV-41-1321 brackets so that corners are flush.



Tighten nuts.

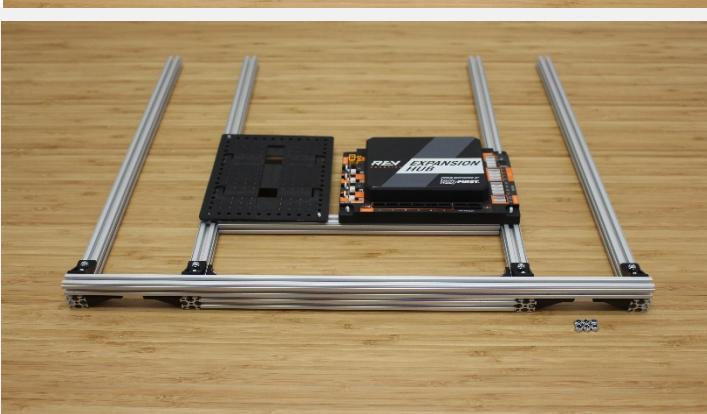


Collect Parts:

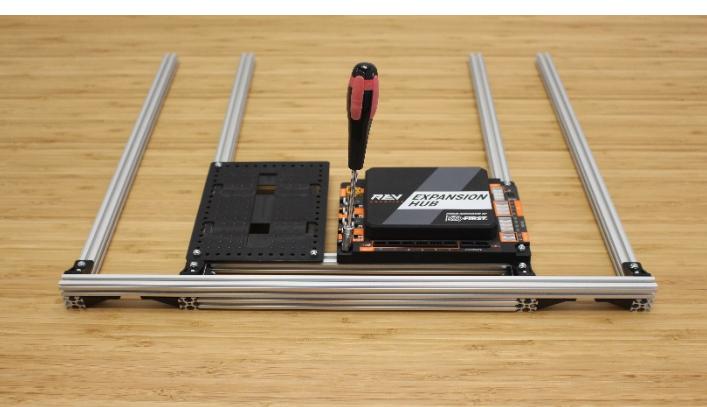
- 1x REV-41-1166
- 1x REV-41-1153
- 2x REV-41-1359
- 2x REV-41-1360
- 6x REV-41-1361



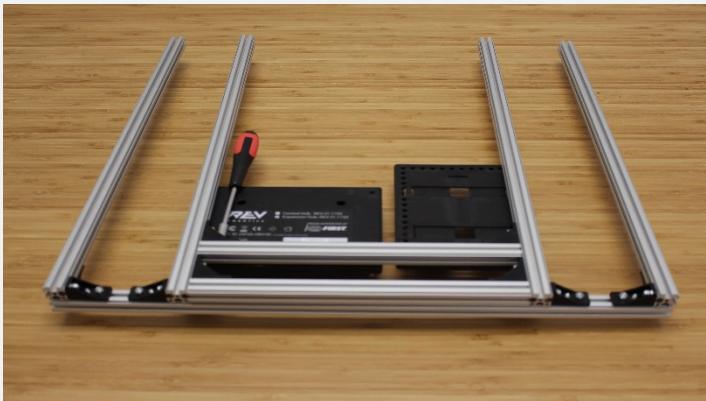
Slide REV-41-1359 and REV-41-1359 screws onto screws inside vertical REV-41-1432.



Place the REV-41-1153 and REV-41-1166 on as shown.



Add REV-41-1361 nuts and tighten down then the REV-41-1153 hub and REV-41-1166 plate so they are touching the REV-41-1321 brackets.



Flip over and tighten REV-41-1320 brackets



Collect Parts:

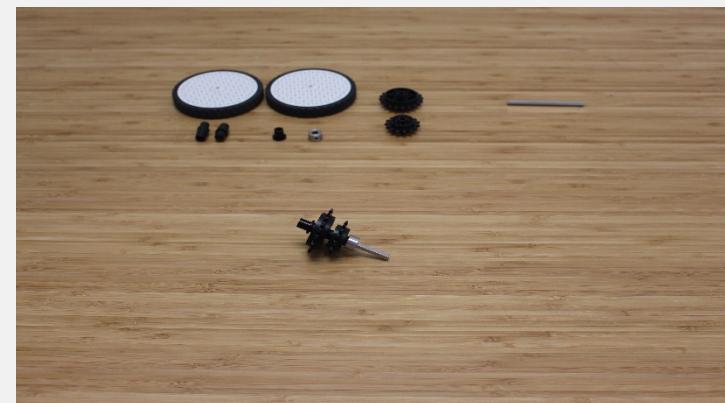
- 2x REV-41-1354
- 2x REV-41-1340
- 2x REV-41-1339
- 2x REV-41-1322
- 2x REV-41-1329
- 2x REV-41-1347
- 2x REV-41-1327



Slide REV-41-1329 so that it is flush with the end of REV-41-1347.



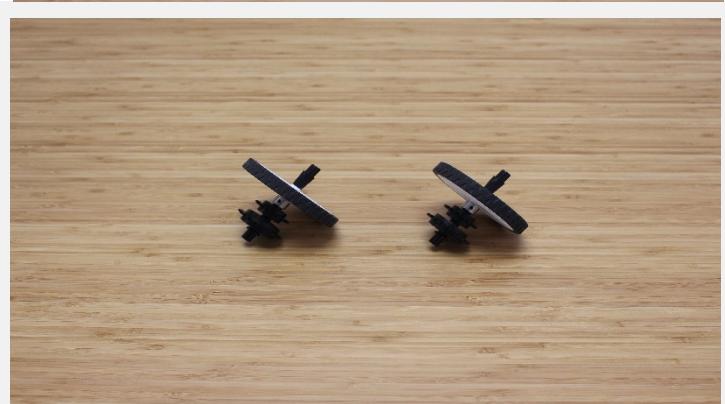
- Add the REV-41-1340 gear and REV-41-1339 gear to the axle.



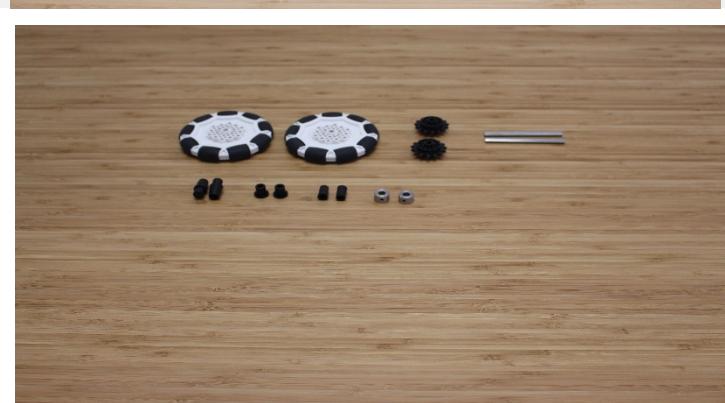
Add REV-41-1330 and tighten.



Add REV-41-1354 traction wheel and REV-41-1322 end cap bearing to the end of shaft.
Completing one traction wheel assembly.



Repeat previous steps to make two traction wheel assemblies and then set them aside.



Collect Parts:

- 2x REV-41-1190
- 2x REV-41-1339
- 2x REV-41-1322
- 2x REV-41-1329
- 2x REV-41-1347
- 2x REV-41-1327
- 2x REV-41-1323



Slide REV-41-1329 so that it is flush with the end of REV-41-1347.



Add REV-41-1323 spacer and a REV-41-1339 gear



Add REV-41-1330 and tighten.



Add REV-41-1190 Omni-wheel and REV-41-1322 end cap bearing to the end of shaft. Completing one traction wheel assembly.



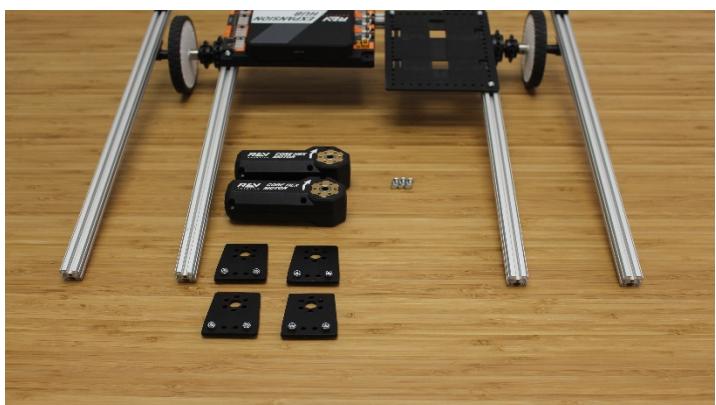
Repeat previous steps to make two Omni-wheel wheel assemblies and then set them aside.



Collect Parts:

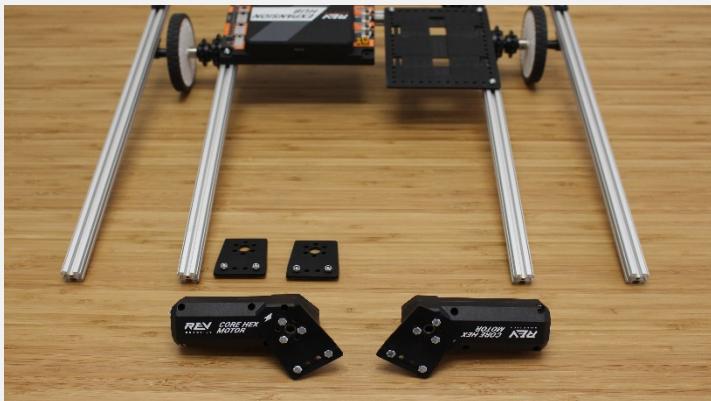
- 2x Traction Wheel assemblies
- 4x REV-41-1317
 - Pre-load with REV-41-1359 and REV-41-1361

Slide Traction Wheel assemblies with REV-41-1317 onto frame

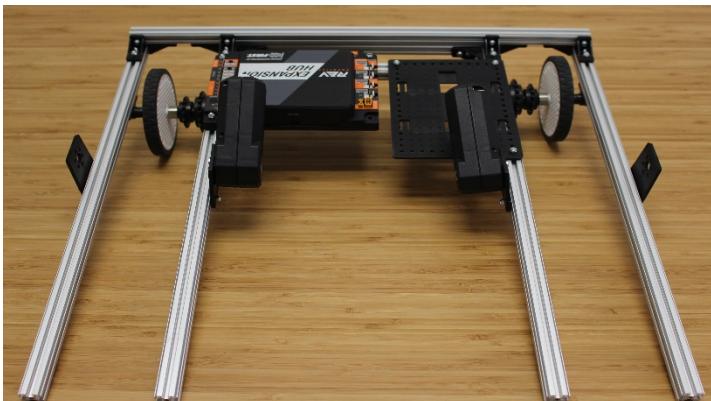


Collect Parts:

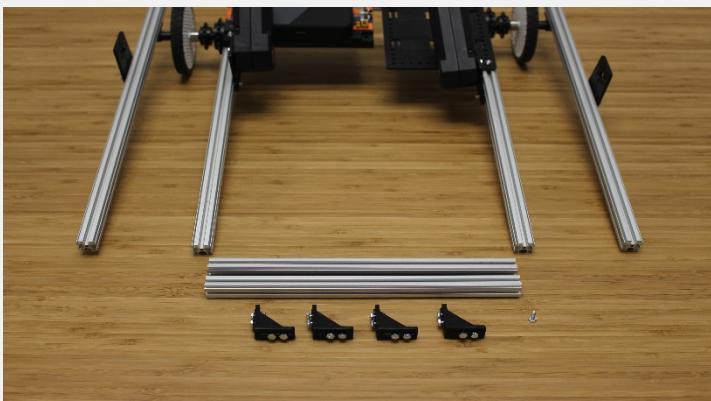
- 2x REV-41-1300
- 4x REV-41-1303
 - Pre-load with REV-41-1359 and REV-41-1361
- 6x REV-41-1359



Use REV-41-1359 screws to mount REV-41-1300 to REV-41-1303 as shown.



Slide REV-41-1303 brackets onto frame.



Collect Parts:

- 2x REV-41-1431
- 4x REV-41-1320
 - Pre-load with REV-41-1359 and REV-41-1361
- 1x REV-41-1359

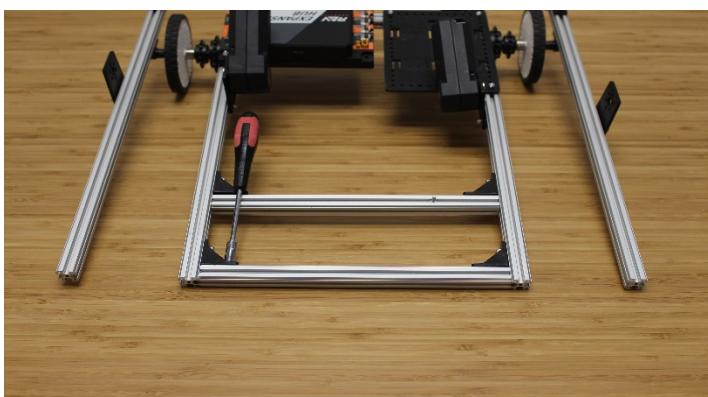
Slide REV-41-1320 on the ends of REV-41-1431 such that the brackets and Extrusion are flush.

Tighten nuts.

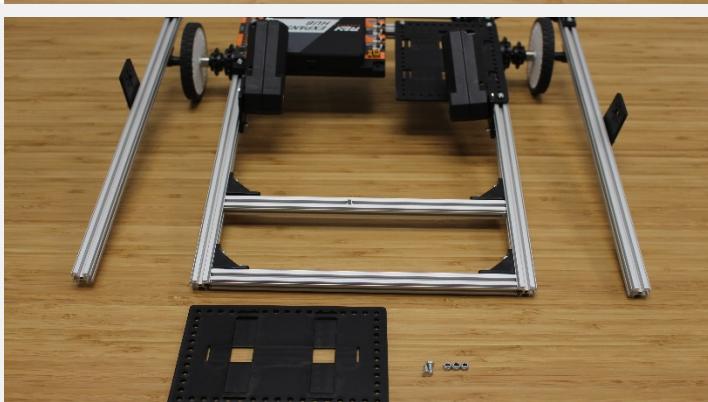




Slide REV-41-1359 onto the one of the REV-41-1431 assemblies.

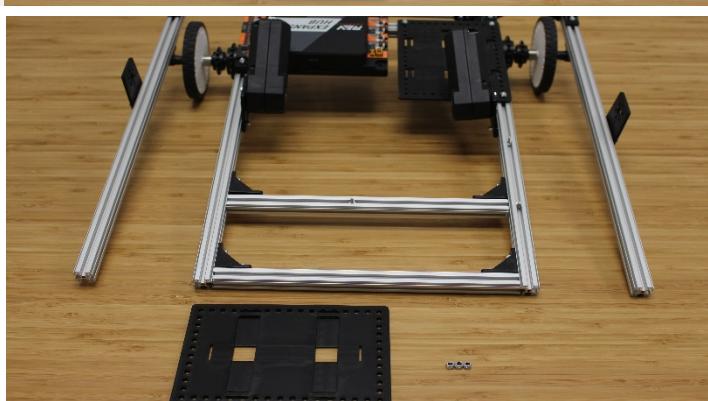


Slide on REV-41-1431 assemblies such that front set is flush. Tighten only the front set of REV-41-1320 brackets.

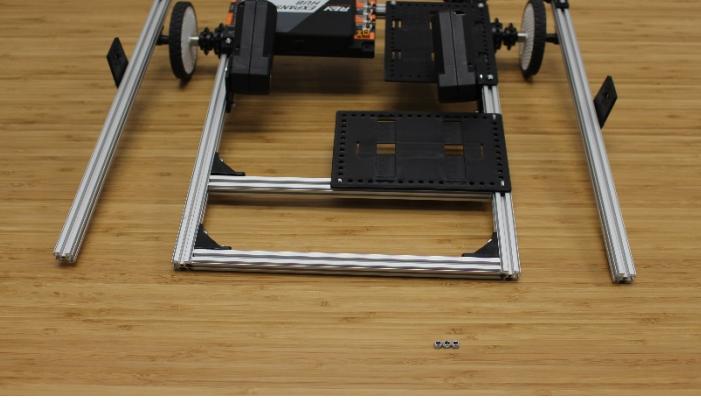


Collect Parts:

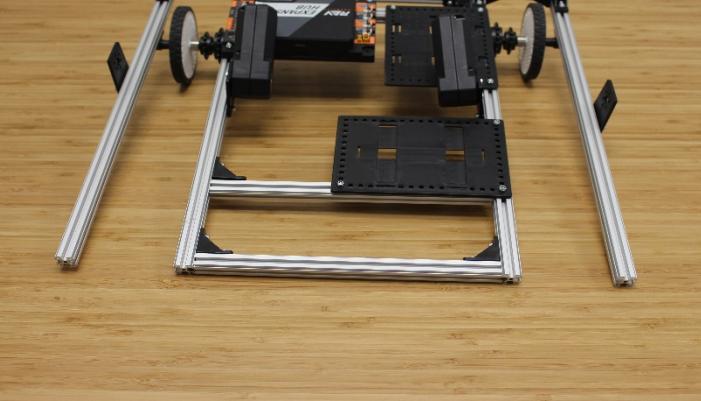
- 1x REV-41-1166
- 2x REV-41-1359
- 3x REV-41-1361



Slide REV-41-1359 screws onto frame.



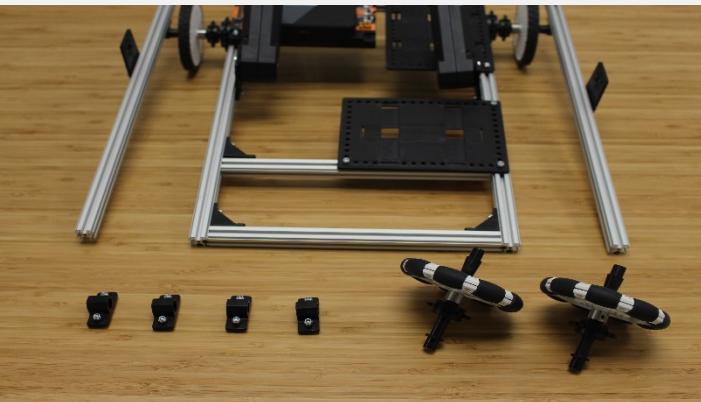
Add REV-41-1166.



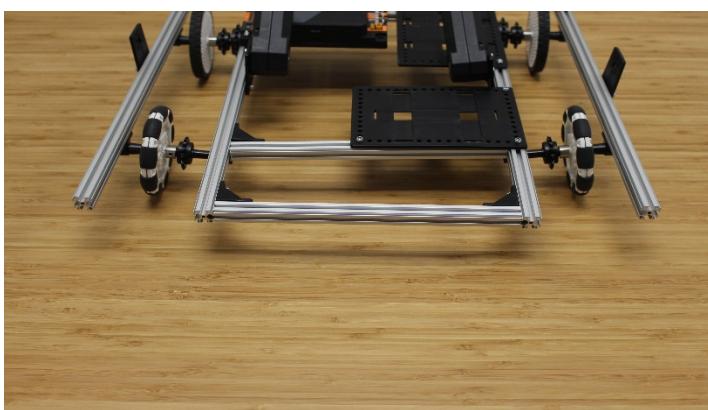
Finger tighten REV-41-1361 nuts.

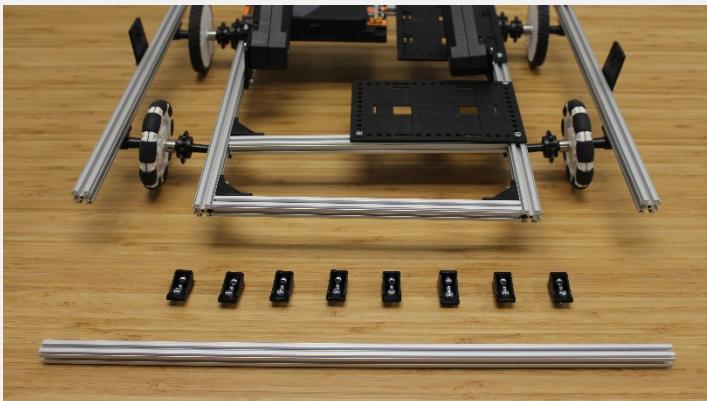
Collect Parts:

- 2x Omni-Wheel assemblies
- 4x REV-41-1317
 - Pre-load with REV-41-1359 and REV-41-1361



Slide Omni-Wheel assemblies with REV-41-1317 onto frame.





Collect Parts:

- 1x REV-41-1432
- 8x REV-41-1321
 - Pre-load with REV-41-1359 and REV-41-1361



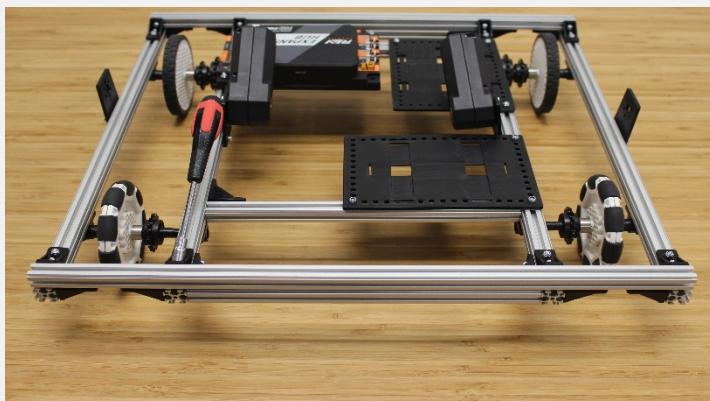
Place REV-41-1321 brackets as shown. Leave screw loose.



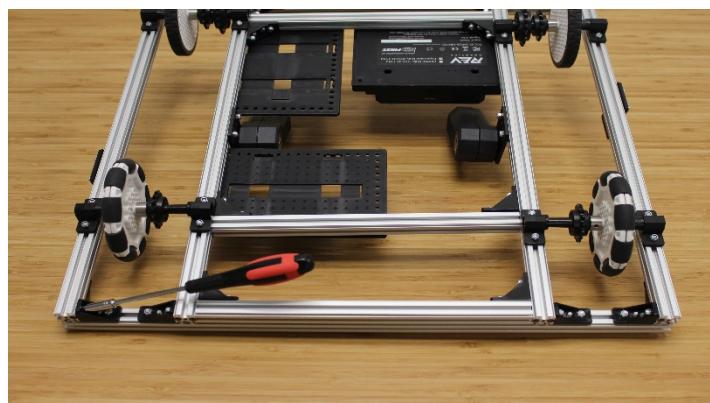
Slide REV-41-1432 onto REV-41-1321 brackets.



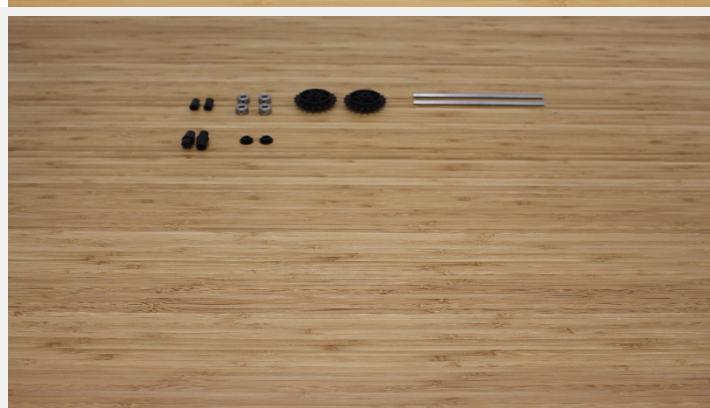
Make REV-41-1432 flush with the REV-41-1431 assembly.



Tighten REV-41-1321 bracket nuts. From the outside inwards. Be sure to keep the frame square while tightening nuts.



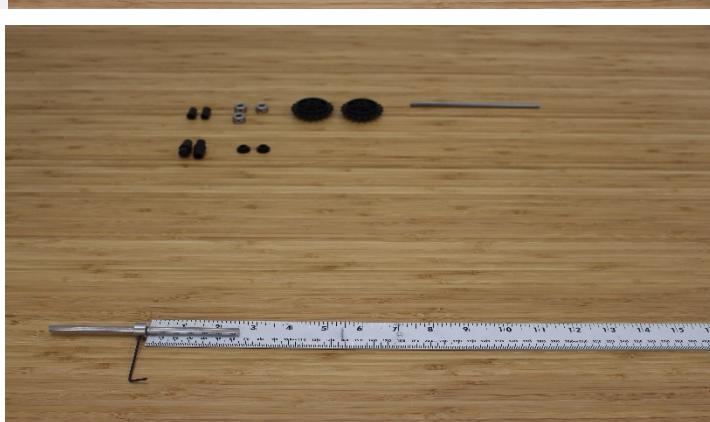
Flip and Tighten.



Collect Parts:

- 2x REV-41-1329
- 2x REV-41-1326
- 2x REV-41-1322
- 4x REV-41-1327
- 2x REV-41-1340
- 2x REV-41-1349
- 2x REV-41-1323 (not pictured)

Slide on a REV-41-1327 shaft collar and tighten it so that it is about 65mm (about 2.5inches) from the end of the REV-41-1349 shaft.





Add a REV-41-1340 sprocket, a REV-41-1326 bearing and a REV-41-1323 15mm spacer onto the right side, the side the 65mm was measured from.



Compress and REV-41-1326 bearing and a REV-41-1323 15mm spacer add REV-41-1327 shaft collar and add REV-41-1322 end cap bearing. Leave the REV-41-1327 shaft collar loose.



Repeat previous steps to make two motor shaft assemblies and then set them aside.



Collect Parts:

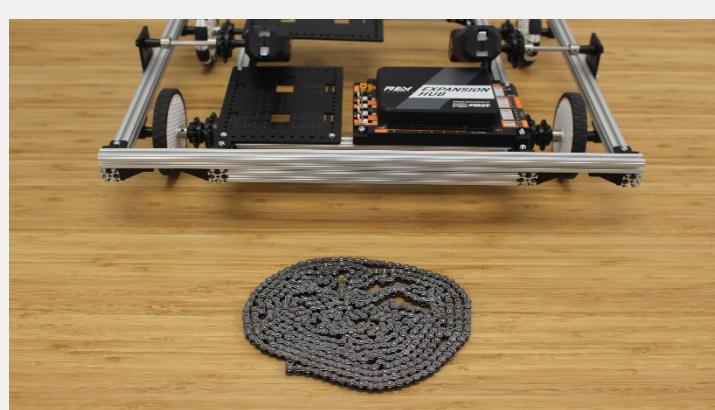
- 2x Motor shaft assemblies



Slide the motor shaft assemblies into the REV-41-1300 motor so that the bushing fits in the REV-41-1303 motion bracket. Tighten down the REV-41-1303 motion bracket

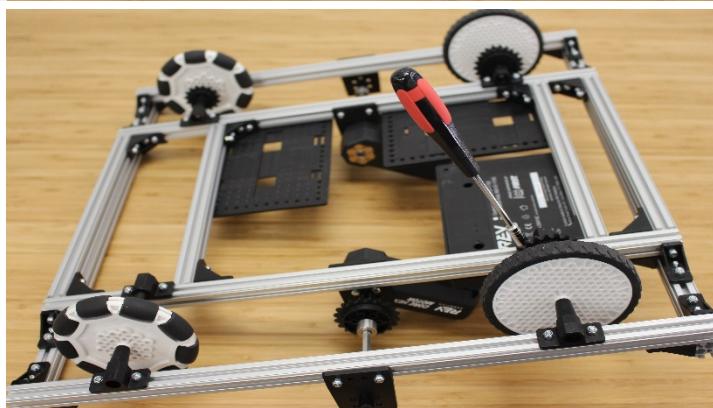


Slide the outside REV-41-1303 motion bracket into place. Ensure the shaft is square to REV-41-1300 motor and tighten down



Collect Parts:

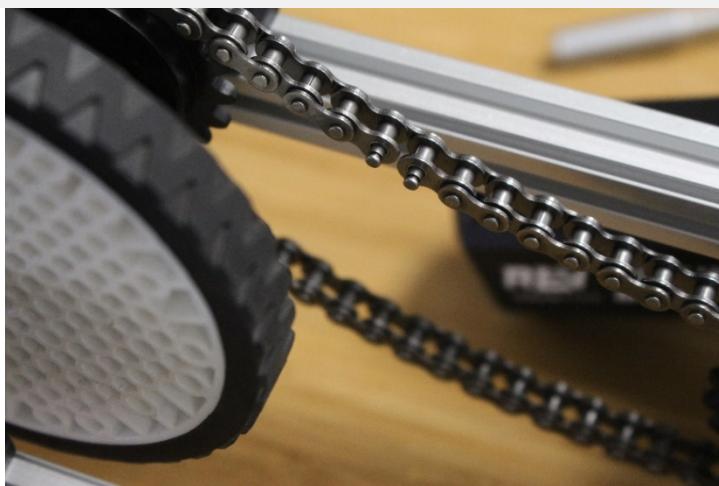
- REV-41-1365



Flip over and adjust wheels to where you want them leaving about a quarter of an inch to allow for chain tensioning.



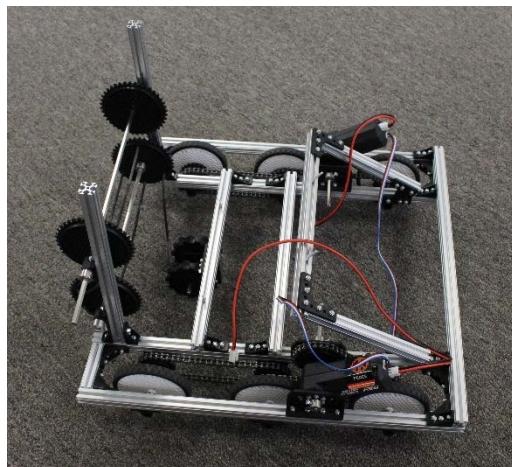
Measure and break REV-41-1365 chain. For all sections.



Use REV-41-1366 master link to join REV-41-1365 chain.



If your wheels do not rotate freely, loosen the two lap brackets on the corners and adjust them outwards just a bit until they rotate freely.



Modify the drive train as needed.

