

# REV

R O B O T I C S

# MINIBOT



# Assembly Guide

Version 1.1



# Getting Started

## Materials

Welcome to your new REV MiniBot Kit.

First things first, we recommend that you lay out and familiarize yourself with all of the parts.

Below is the list of parts included in your kit, along with the quantity of each.  
(visuals of parts on next page)

When you finish assembly, you WILL have extra parts.  
Don't worry, you've done nothing wrong.  
Consider those parts our gift to you. Go forth and keep creating!

<b>PART NUMBER</b>	<b>PART NAME</b>	<b>TOTAL PARTS</b>
REV-41-1317	15mm Bearing Pillow Block	8
REV-41-1303	15mm Plastic Motion Bracket	8
REV-41-1300	Core Hex Motor (cables included)	2
REV-41-1329	Through Bore Bearing - Long	12
REV-41-1326	Through Bore Bearing - Short	12
REV-41-1347	5mm x 75mm Hex Shaft	8
REV-41-1327	Shaft Collars	20
REV-41-1336	72 Tooth Plastic Gear	4
REV-41-1337	90 Tooth Plastic Gear	4
REV-41-1354	90mm Traction Wheel	4
REV-41-1325	1.5mm Spacer	28
REV-41-1324	3mm Spacer	16
REV-41-1361	M3 Nyloc Nuts	100
REV-41-1359	M3 x 8mm Hex Cap Screws	100
REV-41-1360	M3 x 16mm Hex Cap Screws	4(+)
REV-41-1431	15mm Extrusion - 225mm - 90° Ends	2
REV-41-1166	Battery Holder Plate	2
REV-41-1119	5.5mm Nut Driver	1

**NOTICE: Control System is not included in this kit**

# Recommended Control System Parts

Combine Control System components with your MiniBot Hardware Kit to create a driving bot and let your programming skills grow!

<b>PART NUMBER</b>	<b>PART NAME</b>
REV-31-1595	Control Hub
REV-31-1302	12V Slim Battery
REV-31-1299	Battery Charger
Not Available on REV's Website	Android Tablet or Cell Phone (Needed to act as robot driver's station)
REV-39-1647	Logitech F310 USB Gamepad (You can also use REV-31-1159 Gamepad as an alternative to the Logitech version)
REV-31-1426	USB Female A to Micro USB Adapter (This is the cable needed to connect from driver's station phone or tablet to Gamepad)
REV-31-1387	Switch Cable and Bracket (Not required, but can save some wear and tear on battery connections)
REV-41-1373	Hook and Loop Fastener, 13.5mm x 2m (Helpful for holding down battery and cell phones)

**NOTICE: Items listed on this page are not included in this kit**

# MiniBot Kit Components

5.5mm Nut Driver  
REV-41-1119

1



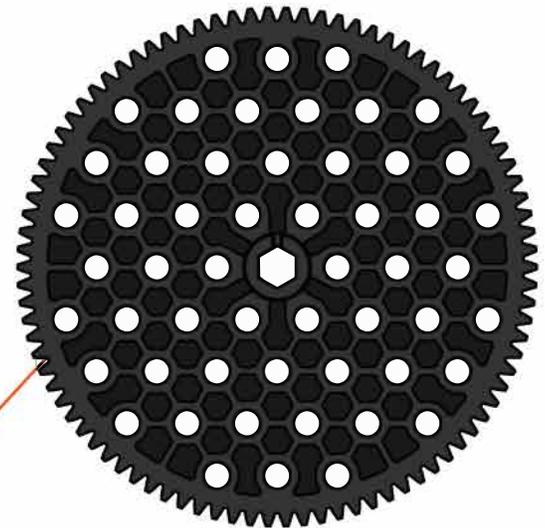
90mm Traction Wheel  
REV-41-1354

4



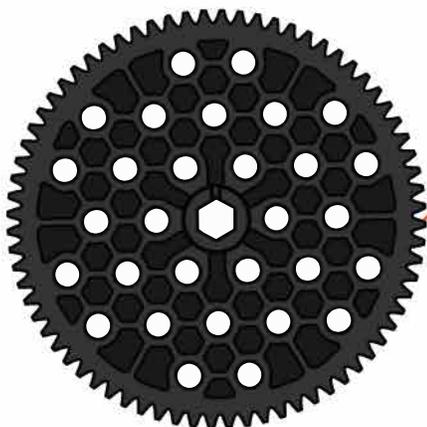
90 Tooth Plastic Gear  
REV-41-1337

4



72 Tooth Plastic Gear  
REV-41-1336

4

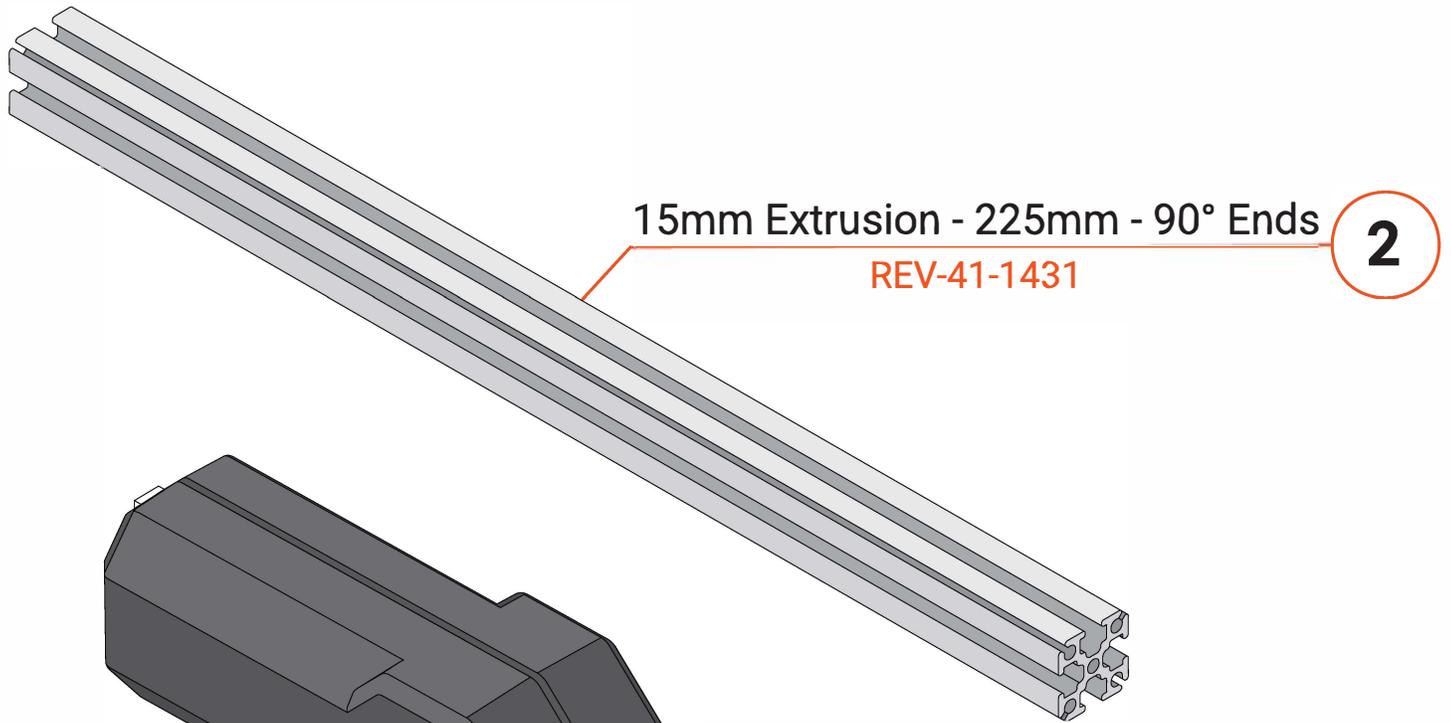


M3 Nyloc Nut  
REV-41-1361

100



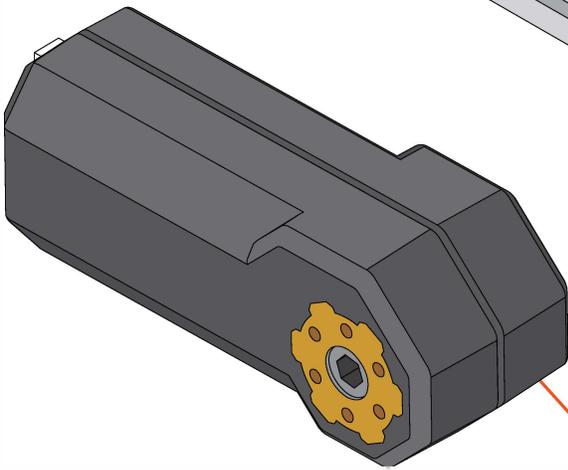
# MiniBot Kit Components



15mm Extrusion - 225mm - 90° Ends

REV-41-1431

2



Core Hex Motor

REV-41-1300

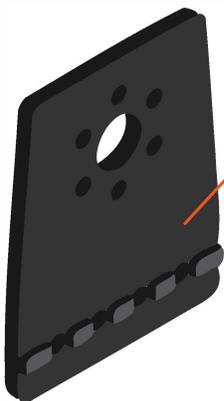
2



8

5mm x 75mm Hex Shaft

REV-41-1347



15mm Plastic Motion Bracket

REV-41-1303

8



8

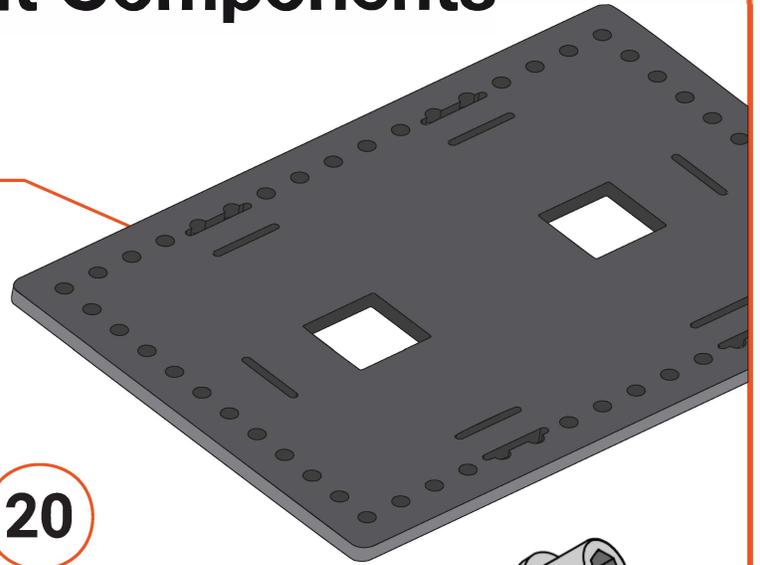
15mm Bearing Pillow Block

REV-41-1317



# MiniBot Kit Components

**2** Battery Holder Plate  
REV-41-1166



Shaft Collar  
REV-41-1327 **20**

**12** Through Bore Bearing - Long  
REV-41-1329

**12** Through Bore Bearing - Short  
REV-41-1326

M3 x 16mm Hex Cap Screw  
REV-41-1360 **4**

M3 x 8mm Hex Cap Screw  
REV-41-1359 **100**

**16** 3mm Spacer  
REV-41-1324

**28** 1.5mm Spacer  
REV-41-1325

You WILL have extra parts upon completion

# Tips and Tricks

Before you get started, here are some general tips and tricks to help you out along the way.

You'll notice that throughout your guide are small "TIP" reminders, as indicated by the symbol in figure 1.1, with a number that corresponds with one of our key tips listed here!

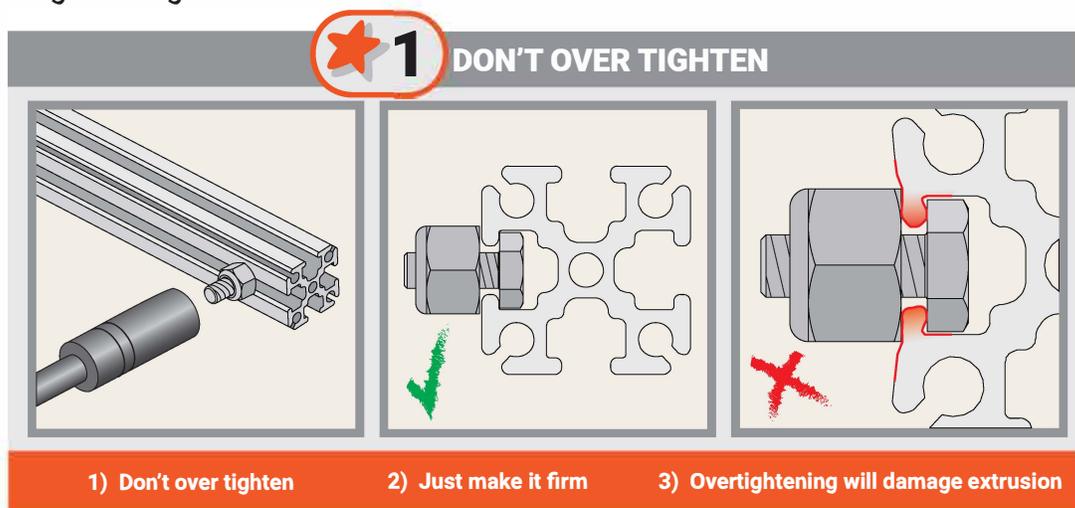


Figure 1.1

## 1. Snug, not stuck!

When tightening /securing a screw or bolt onto the extrusion, firm will do.

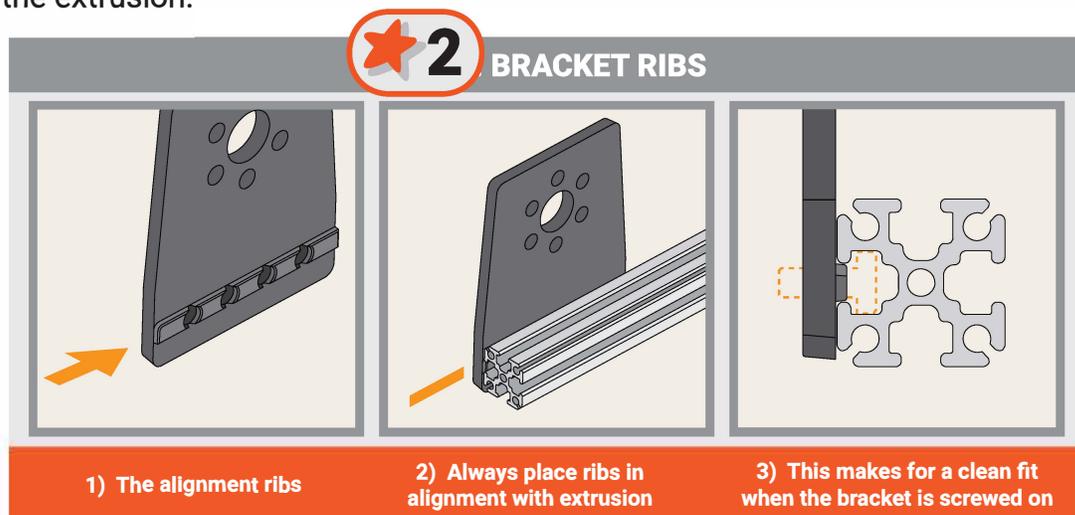
It may be tempting to keep tightening until the screw will no longer turn, but that will cause damage to the extrusion. Simply secure the screw to the point that the pressure you feel is firm, and you'll be good to go.



## 2. Bracket ribs

Pay attention to the directions of the brackets; one side will have small ribs.

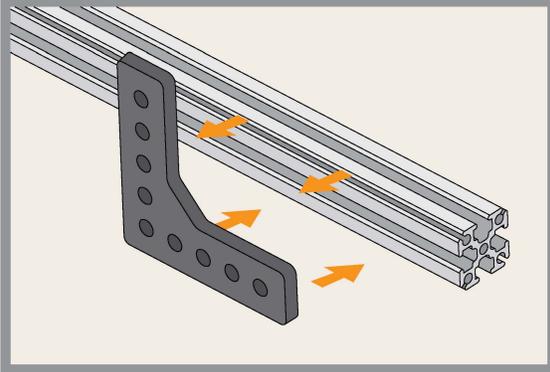
The rib side will always face the extrusion when assembling so that the ribs can help square the bracket to the extrusion.



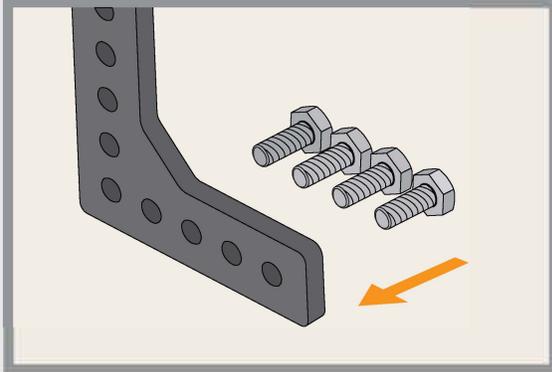
# 3. Pre-loading

The best way to use screws and bolts to secure a bracket to the extrusion, is by “pre-loading” them. This simply means that before even bringing the bracket near the extrusion, we insert all the screws that will be going through the extrusion, onto the bracket.

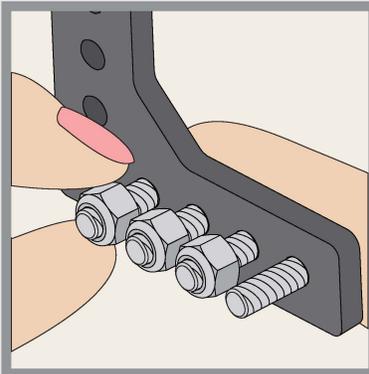
## ★ 3 PRE-LOADING



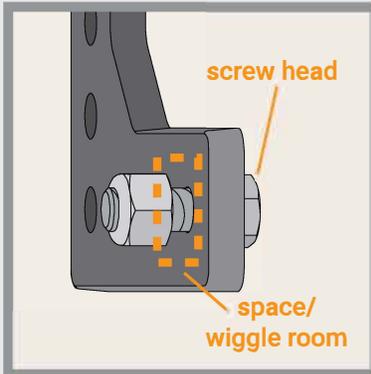
1) Make sure you know which side of your item will be facing the extrusion.



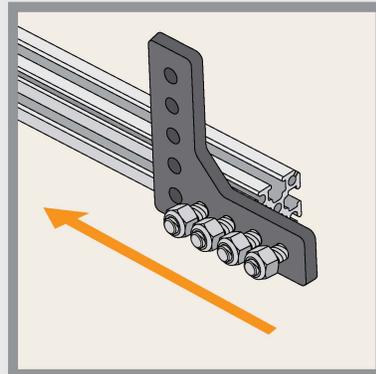
2) Thread the screws onto your piece with the screw heads on the extrusion facing side.



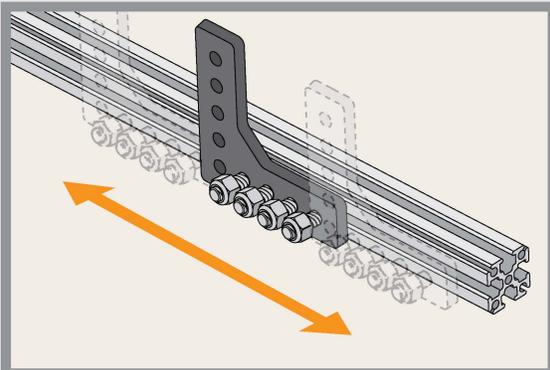
3) Just barely “finger start” the nuts onto the backs of the screws. It should be loose.



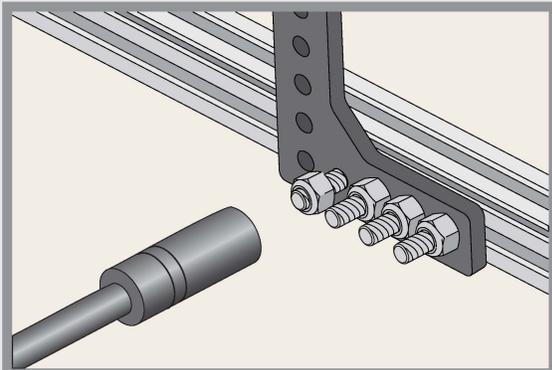
4) Do NOT thread all the way. Just enough so that the nut hangs on to the end.



5) Thread the screw heads of your piece onto the extrusion. Slight wiggling will help the screws line up.



6) You can now slide along the extrusion.

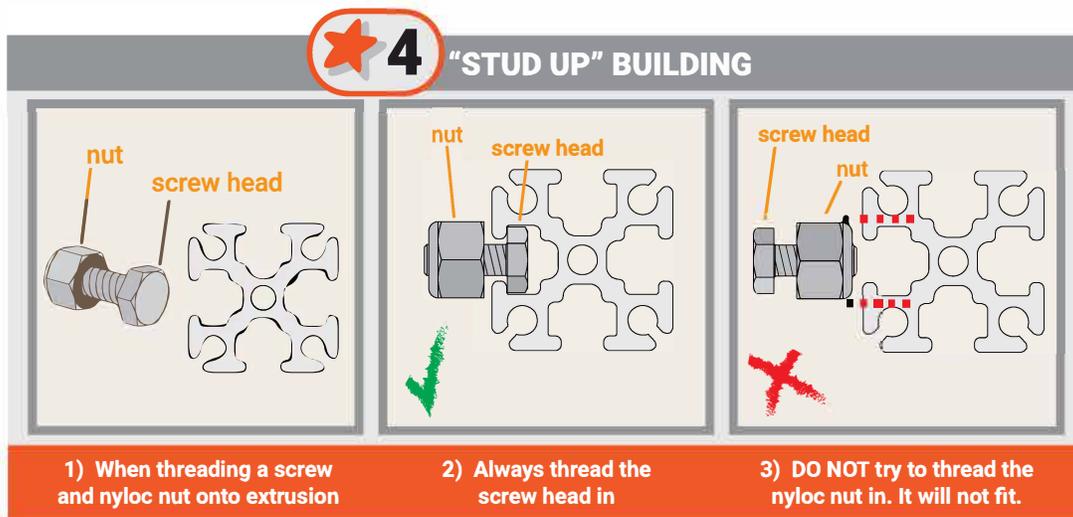


7) Once piece is placed, tighten the screws.

## 4. Stud-up Building

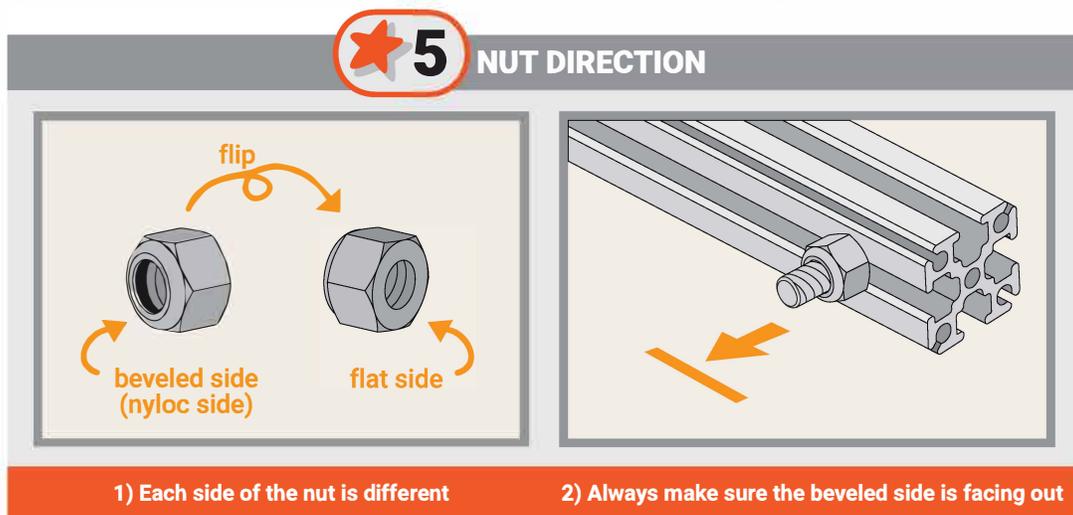
Building with the bolt head inside the extrusion and the nut sticking out is called building “stud up” and is recommended when building with the REV Robotics Extrusion System.

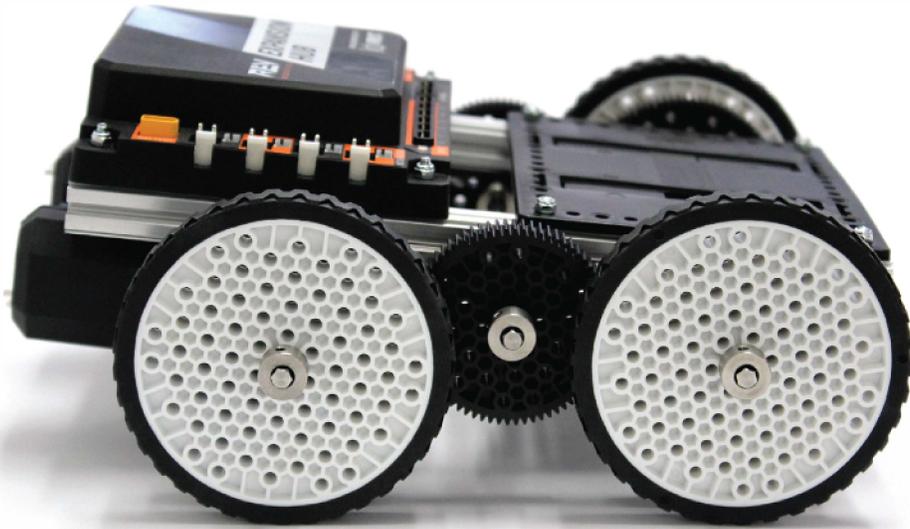
Pay attention to the direction that bolts go into the brackets, only the bolt head will fit in the extrusion, the lock nut will not fit.



## 5. Nut Direction

When using Nyloc Nuts, make sure the beveled “Nyloc” side is facing out.

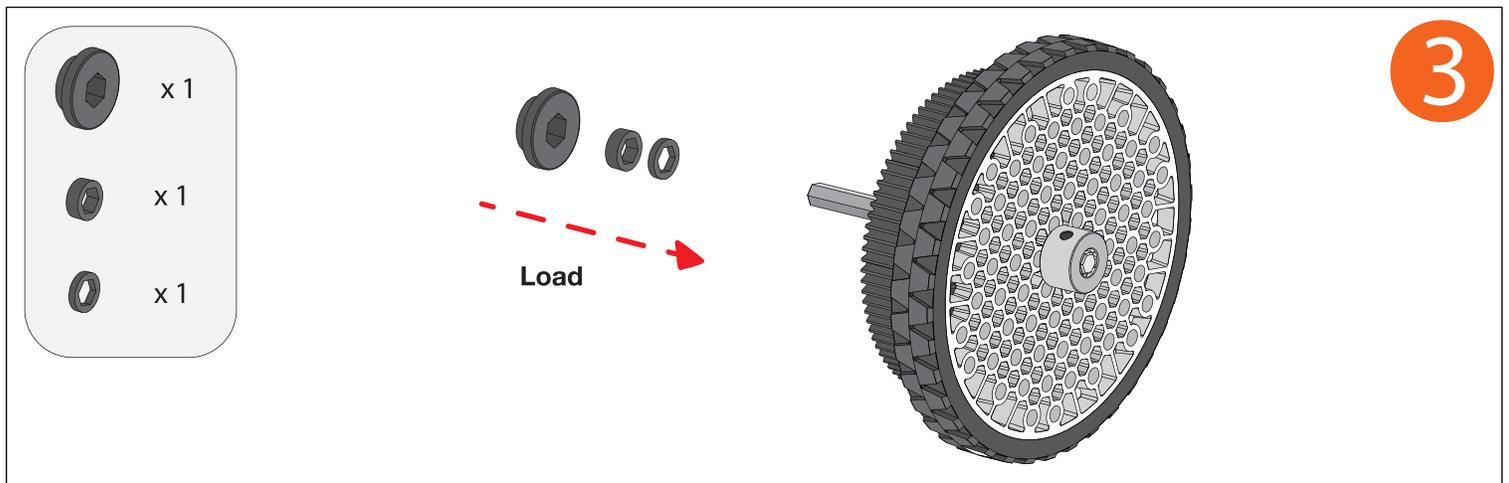
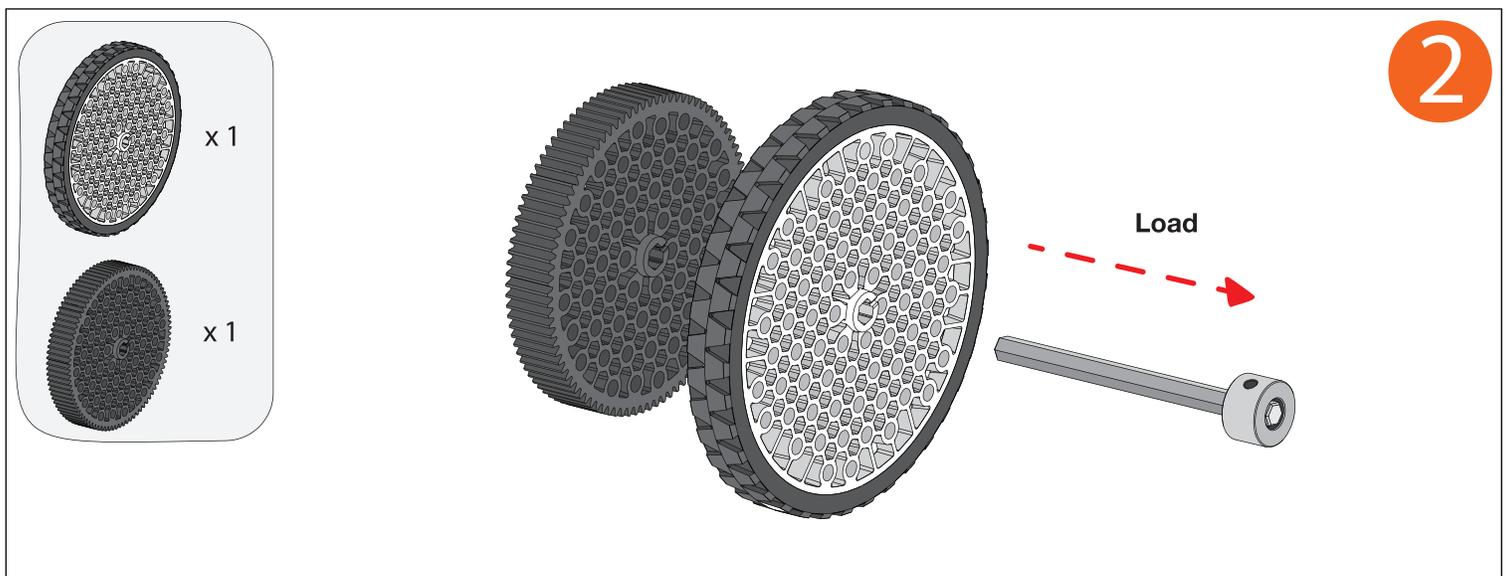
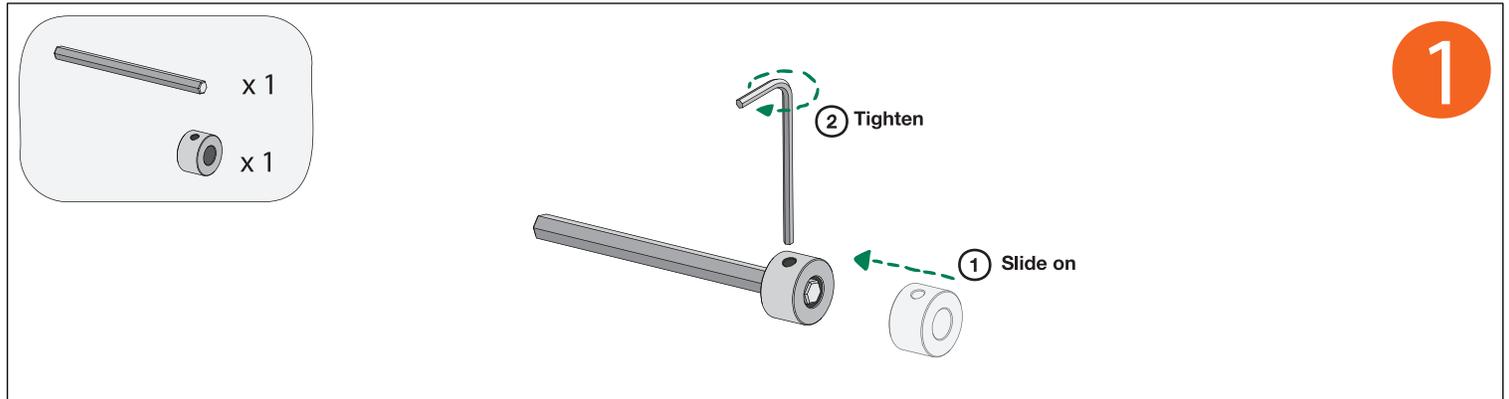


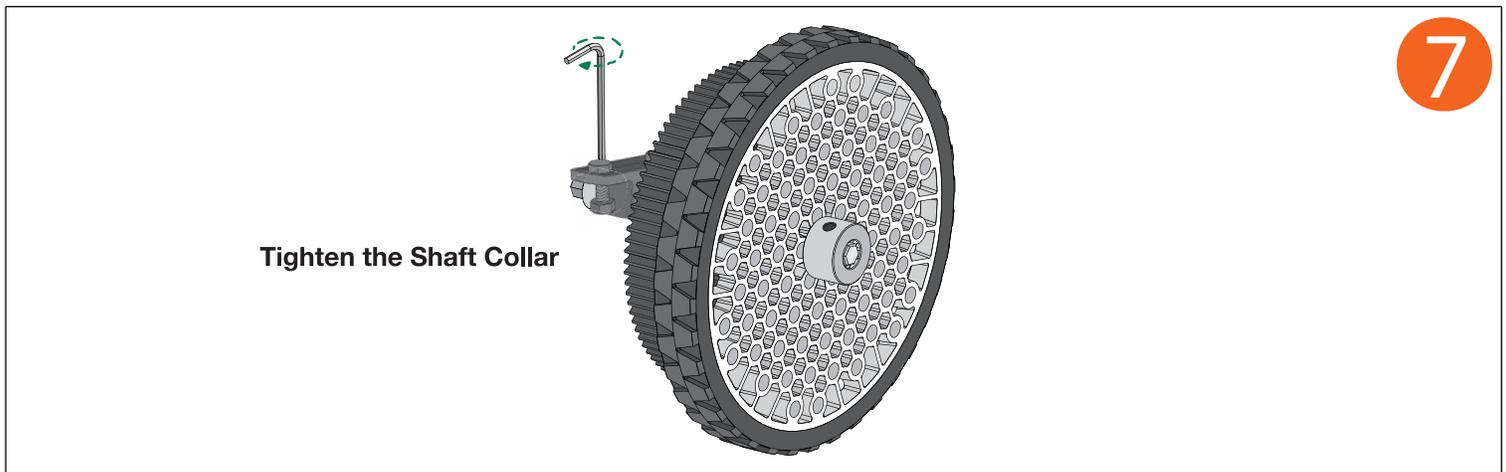
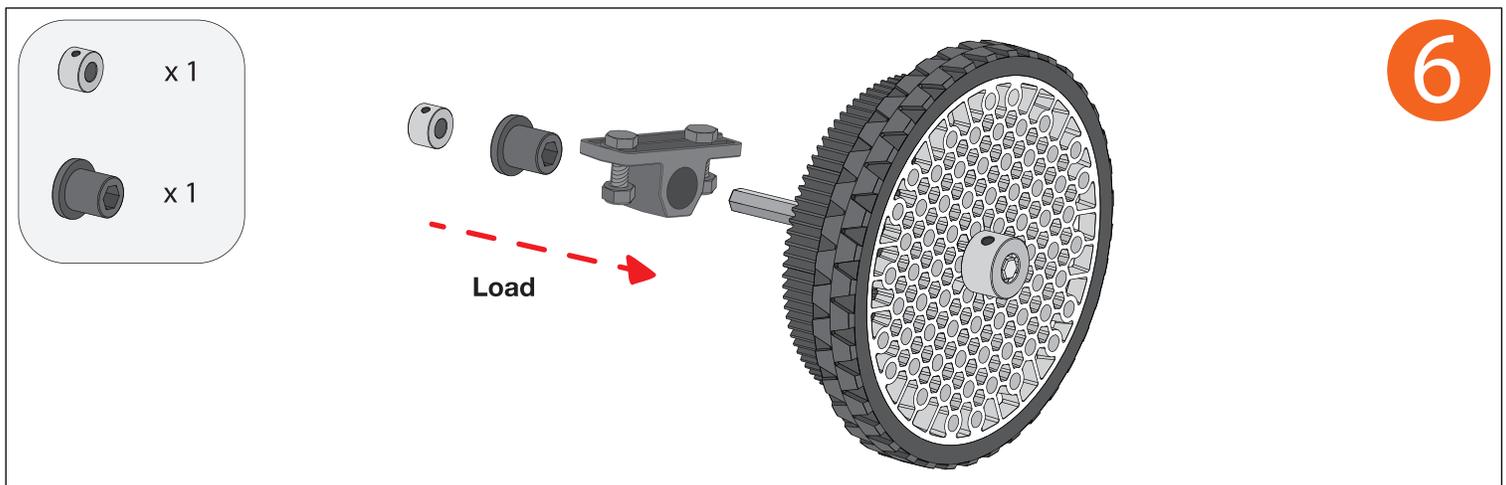
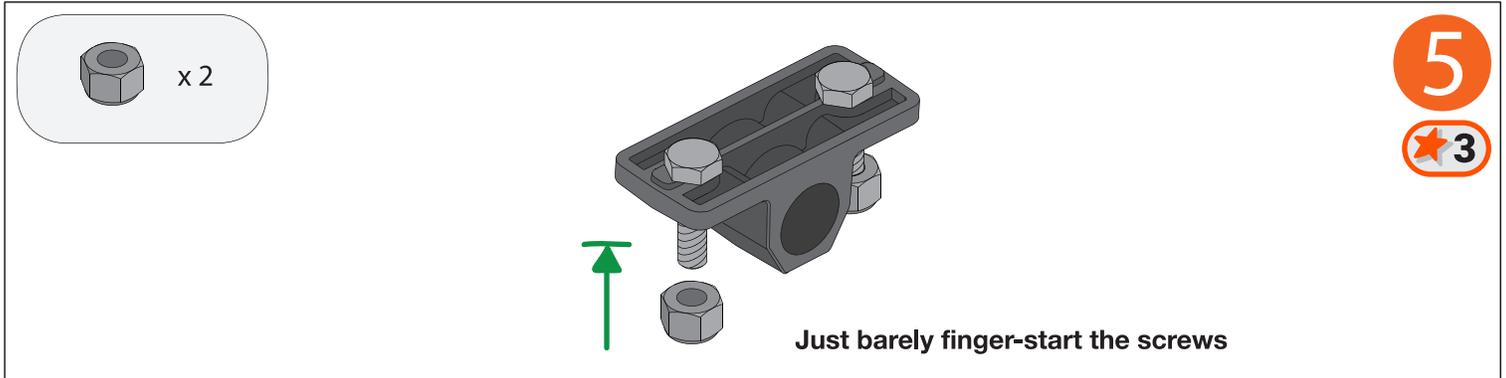
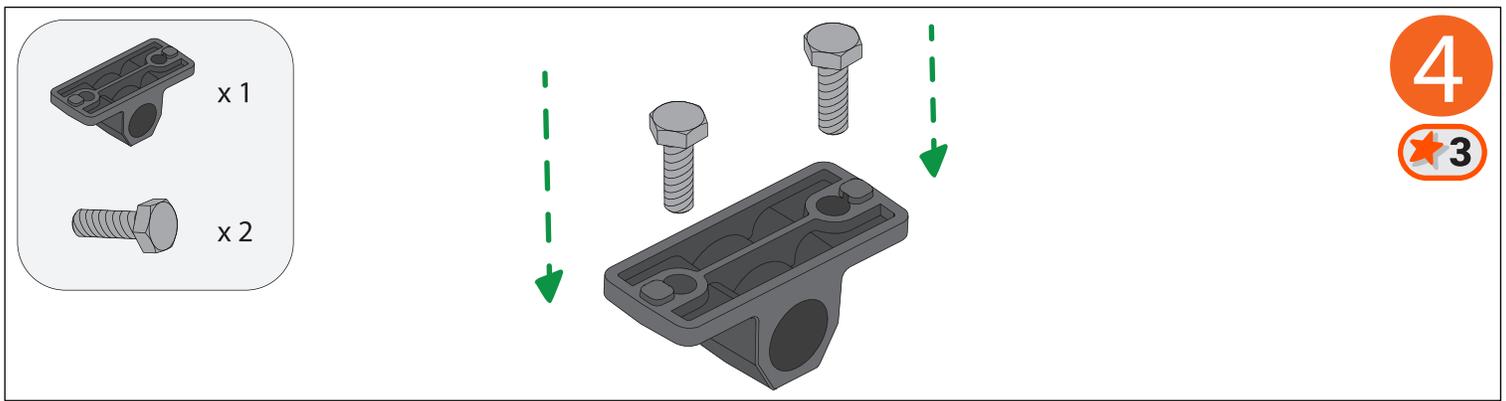


## Time to Build!

Front Axle	pg 1-2
Middle Axle	pg 3-4
Right Side Axle Motor	pg 5-9
Left Side Axle Motor	pg 10-14
Right Side Assembly	pg 15-18
Left Side Assembly	pg 19-23
Final Assembly	pg 24-28

# FRONT AXLE





Once finished, set aside your completed Front Axle, and repeat steps 1 - 7 to build a second Front Axle

# MIDDLE AXLE

**8**

x 1  
x 1

① Slide on  
② Tighten

**9**

x 1  
x 1  
x 1  
x 1

Load

**10**  
**★ 3**

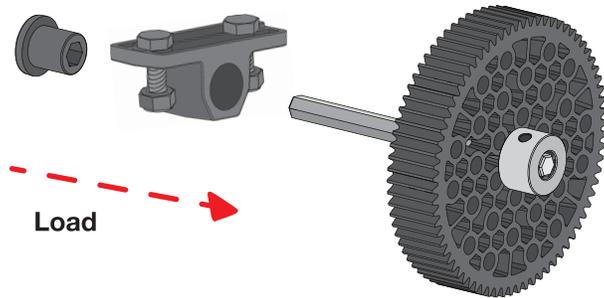
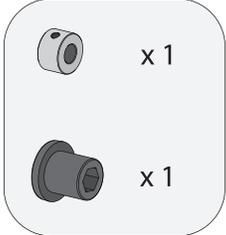
x 1  
x 2

**11**  
**★ 3**

x 2

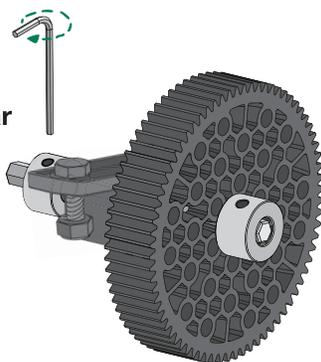
Just barely finger-start the screws

12



13

Tighten the Shaft Collar



Once finished, set aside your completed Middle Axle, and repeat steps 8 - 13 to build a second Middle Axle

# RIGHT SIDE AXLE MOTOR

**14**

x 1  
x 1

② Tighten  
① Slide on

**15**

x 1  
x 1  
x 1  
x 1  
x 1  
x 1

Load

Once assembled, set this part aside until Step 25

**16**

**★ 3**

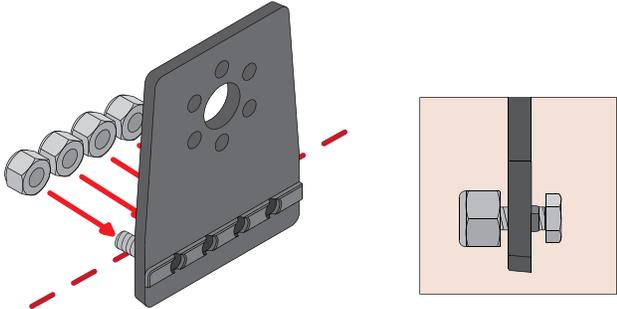
x 1  
x 4

Load

 x 4

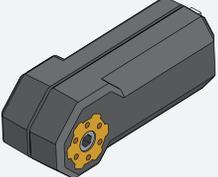
17

★ 3

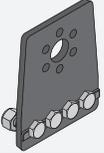


Finger start the screws

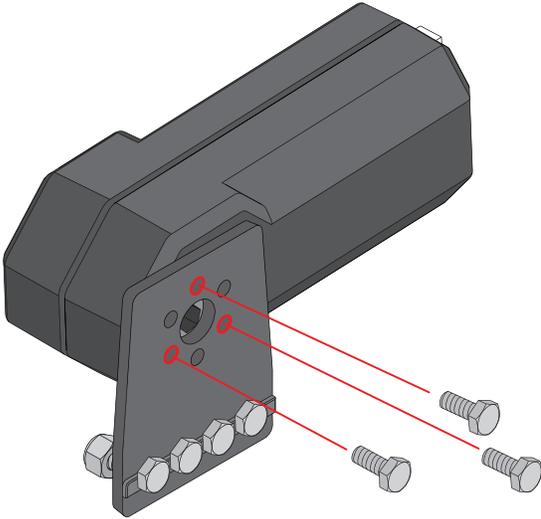
After completing steps 16 and 17, set the completed part aside and repeat the steps again to assemble a second part, identical to the first

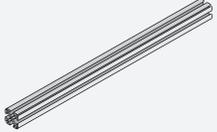
 x 1

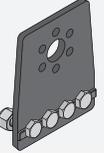
 x 3

 x 1

18



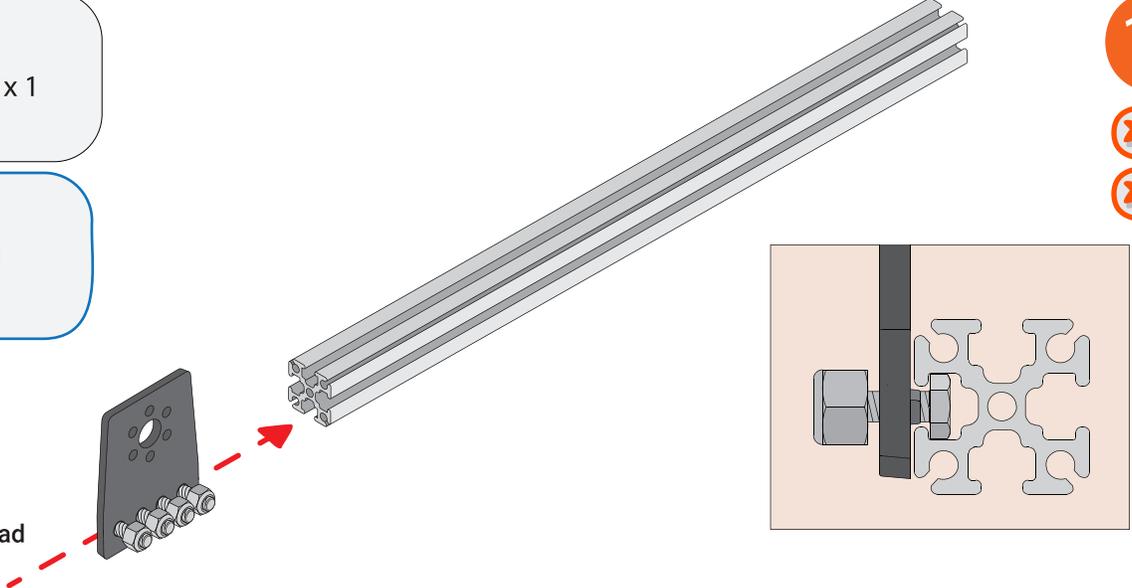
 x 1

 x 1

19

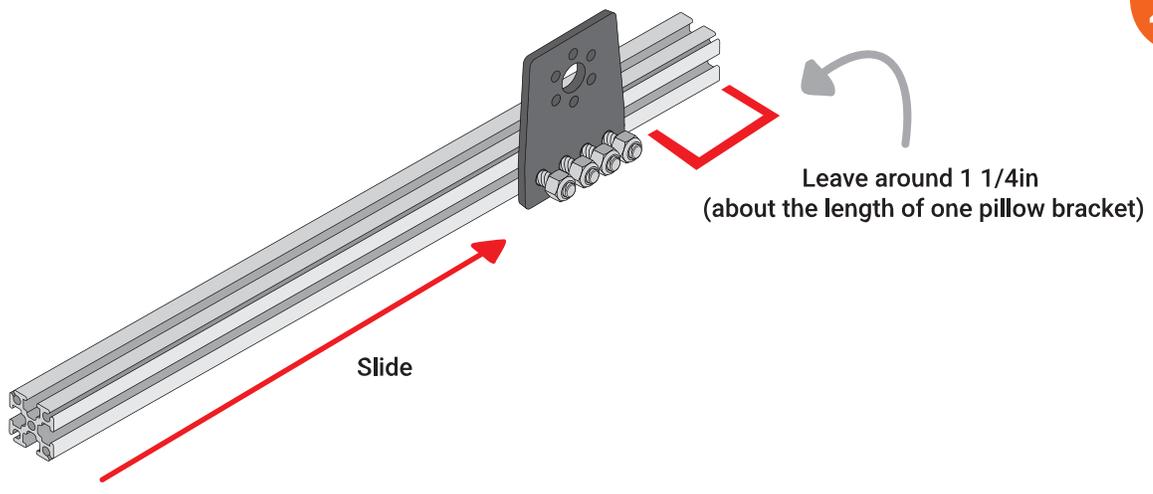
★ 2

★ 4



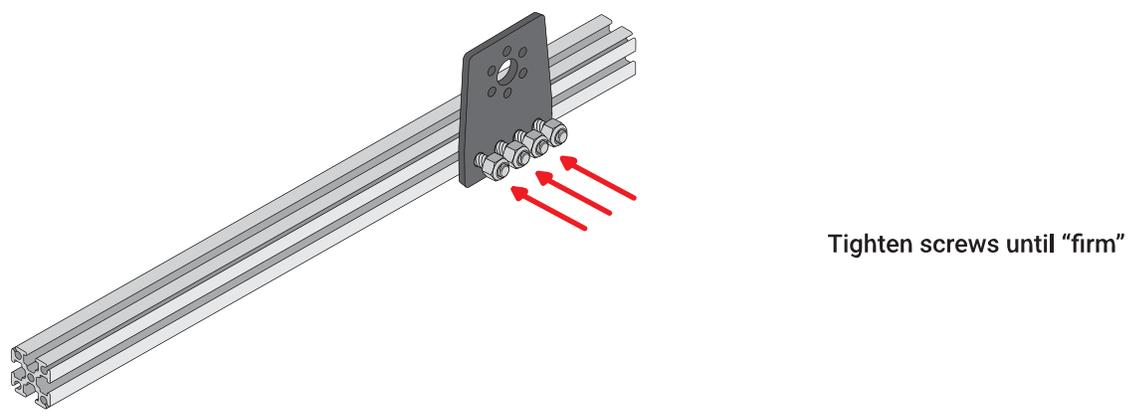
Load

20



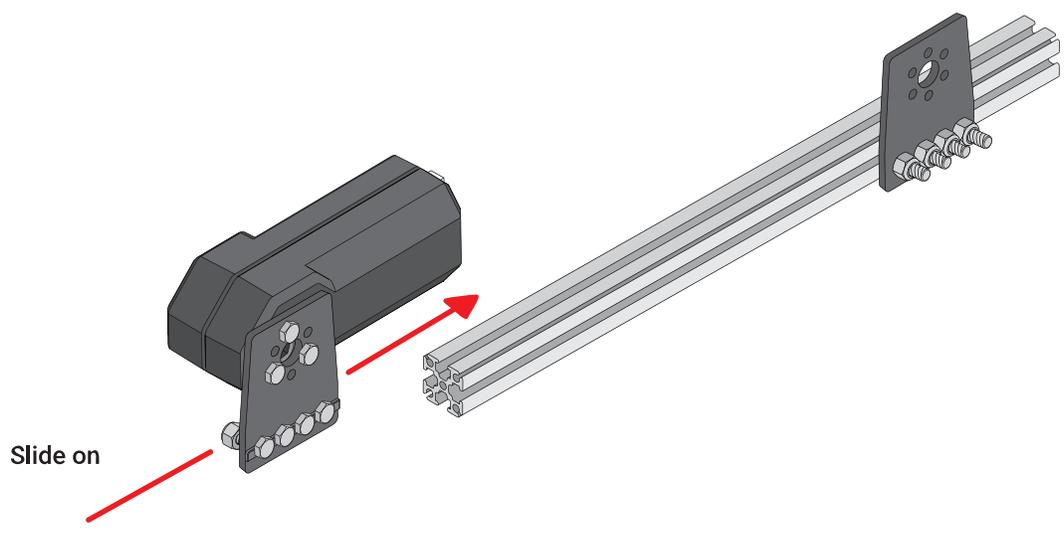
21

★ 1

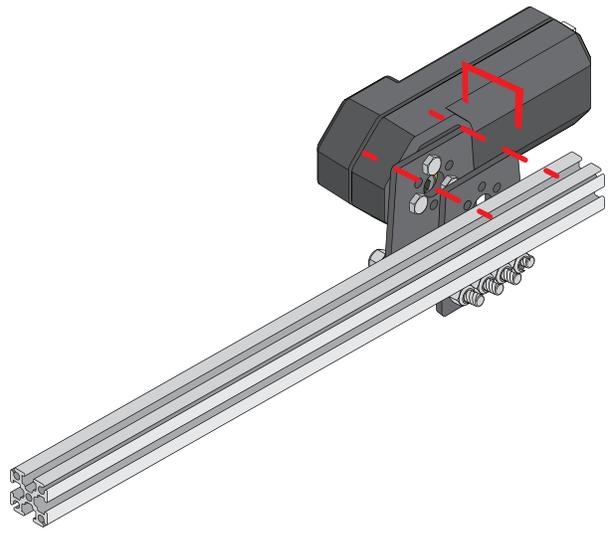


Tighten the screws only until "firm." Do not over tighten.

22



23

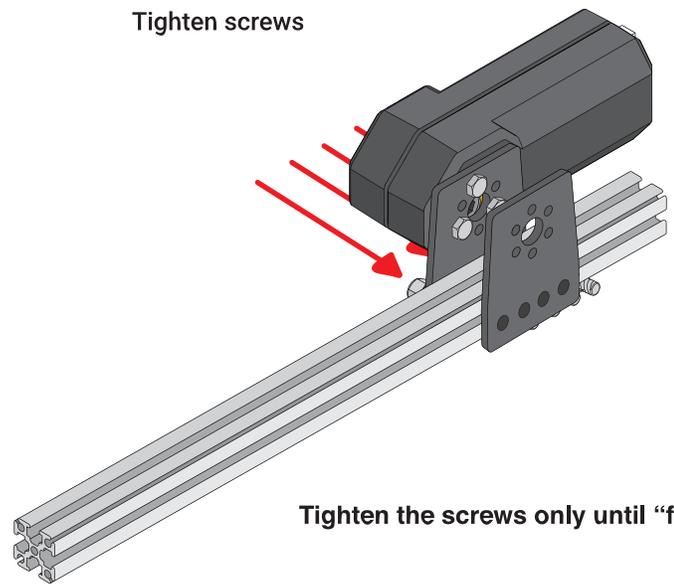


Align the Brackets

24

★ 1

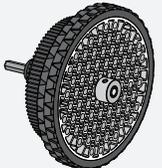
Tighten screws



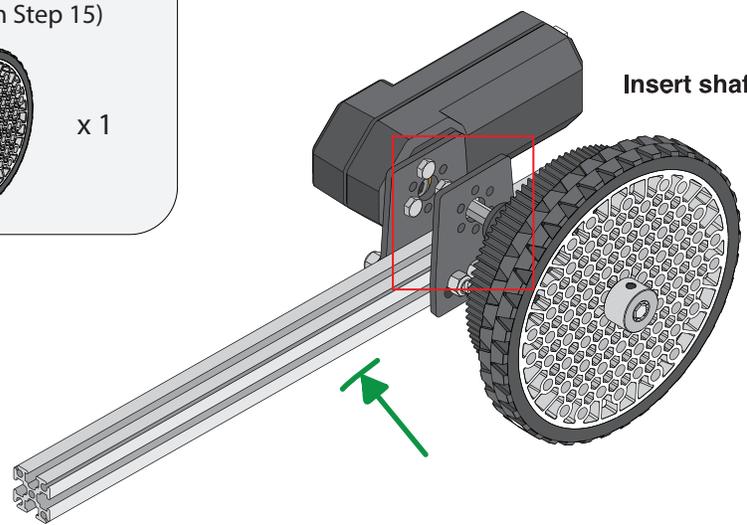
Tighten the screws only until "firm." Do not over tighten.

25

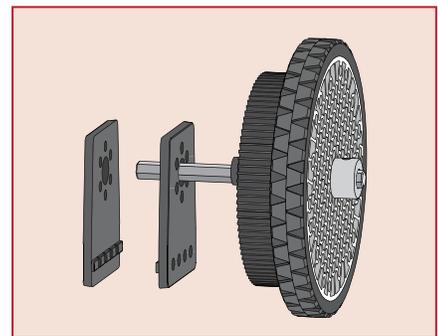
(previously assembled part from Step 15)

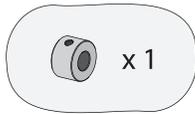


x 1

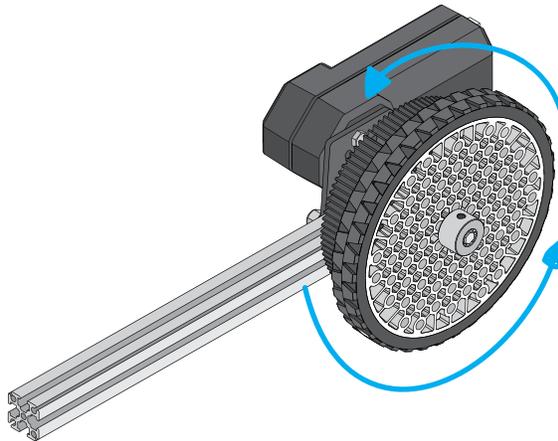
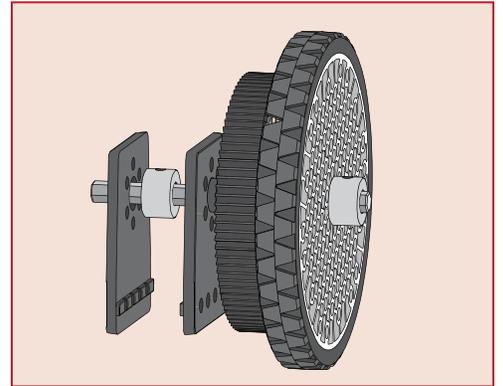
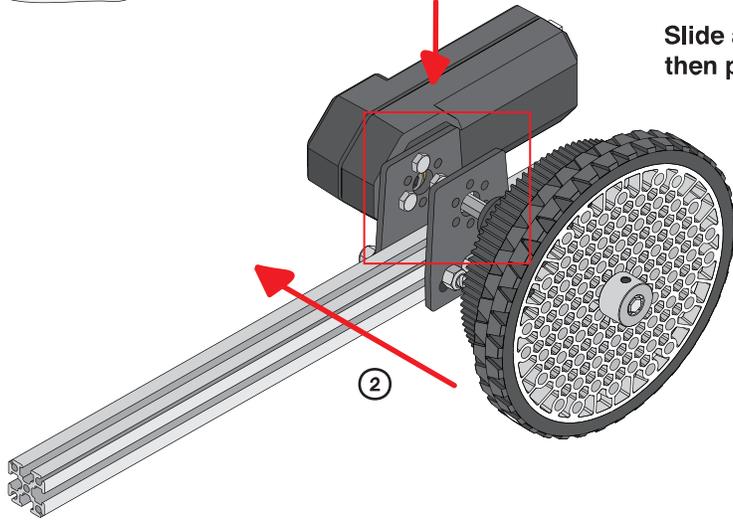


Insert shaft through the first motion bracket, then stop and hold





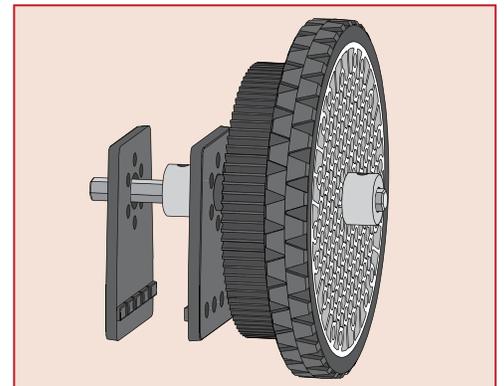
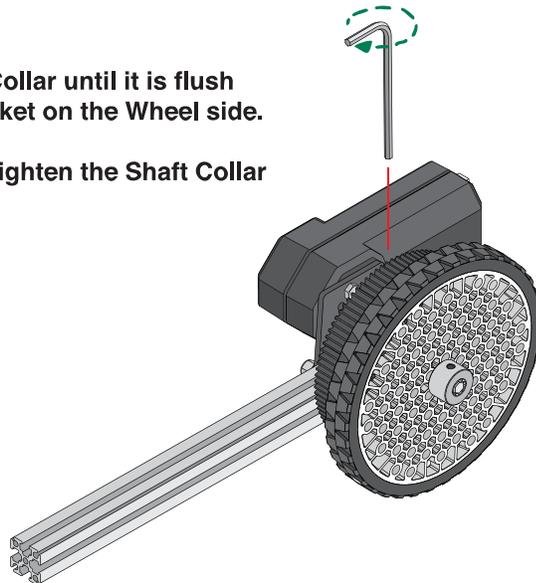
Slide a Shaft Collar onto the end of the Shaft, then proceed to push the Shaft into the Motor



Turn the wheel a couple of times to make sure that the Shaft is fully inserted into the Motor. You should feel some tension.

1) Slide the Shaft Collar until it is flush with the Motion Bracket on the Wheel side.

2) Once positioned, tighten the Shaft Collar



# LEFT SIDE AXLE MOTOR

**29**

x 1  
x 1

① Slide on  
② Tighten

**30**

x 1  
x 1  
x 1  
x 1  
x 1

Load

Once assembled, set this part aside until Step 40

**31**

x 1  
x 4

Load

★ 2  
★ 3

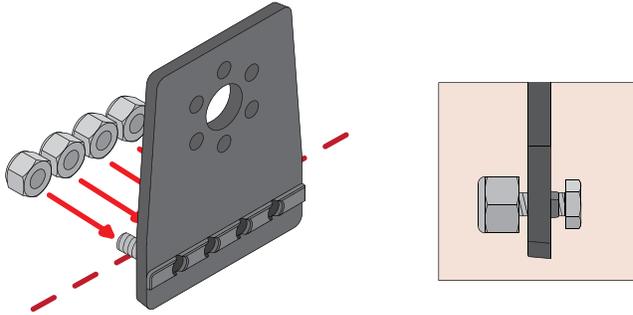
 x 4

32

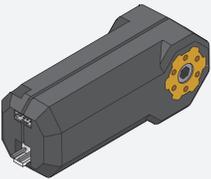
★ 2

★ 3

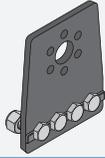
**Finger start the screws**



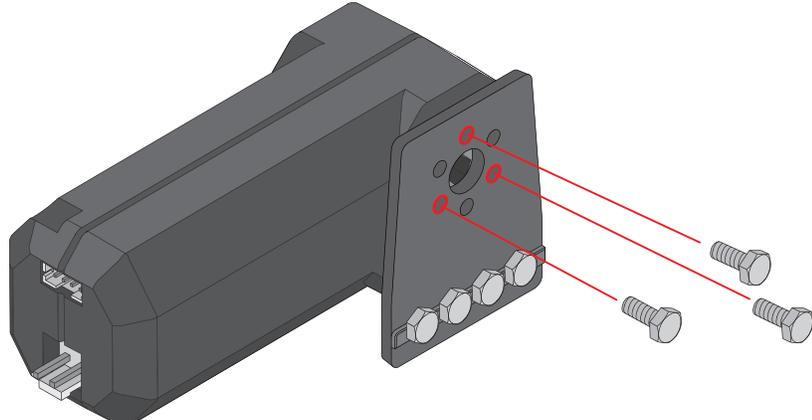
After completing steps 31 and 32, set the completed part aside and repeat the steps again to assemble a second part, identical to the first

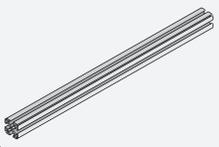
 x 1

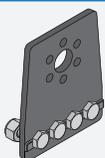
 x 3

 x 1

33



 x 1

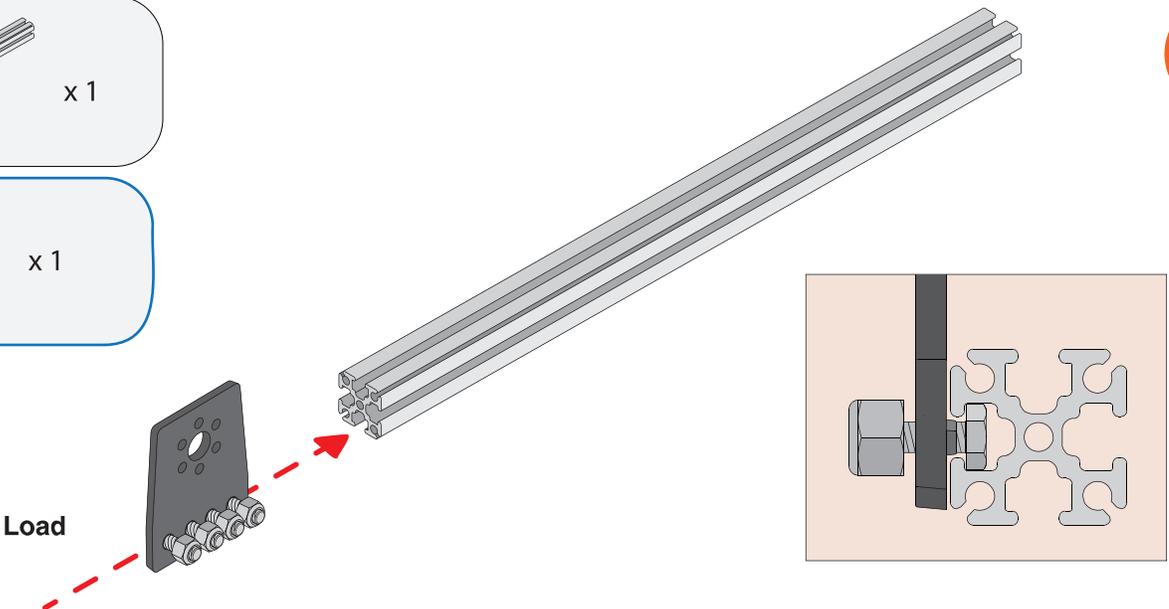
 x 1

34

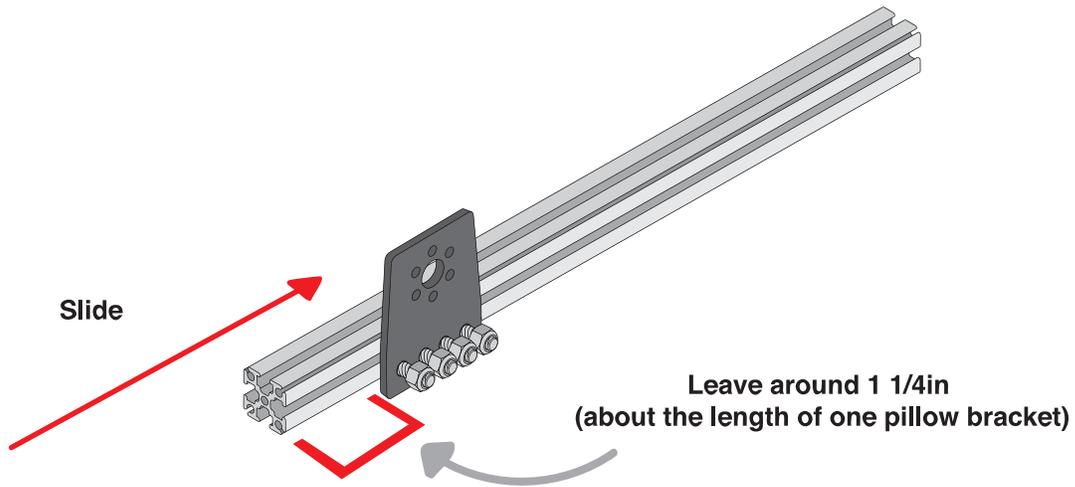
★ 3

★ 4

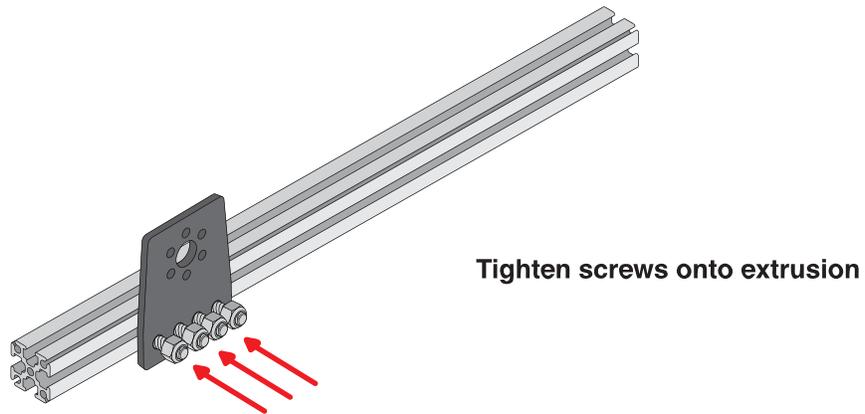
**Load**



35

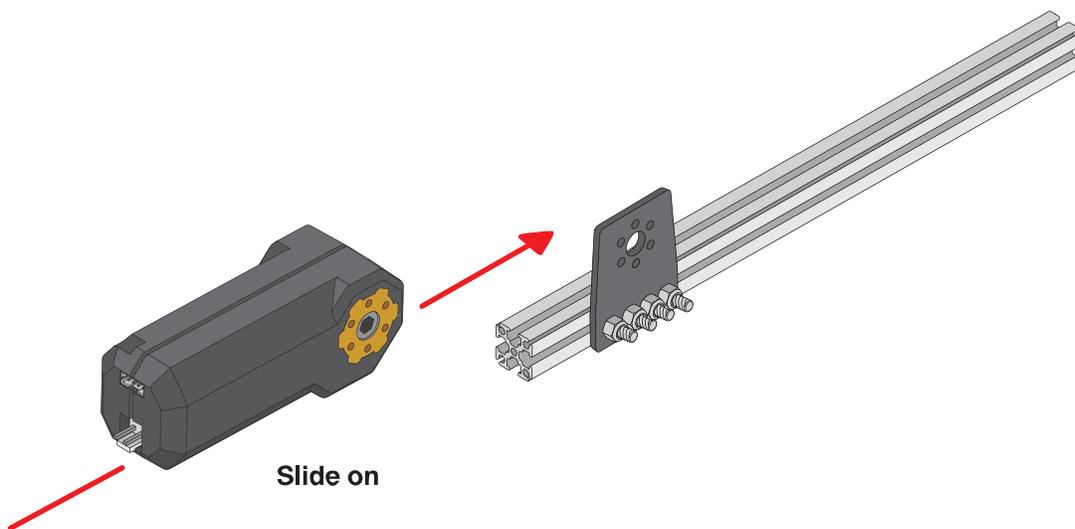


36

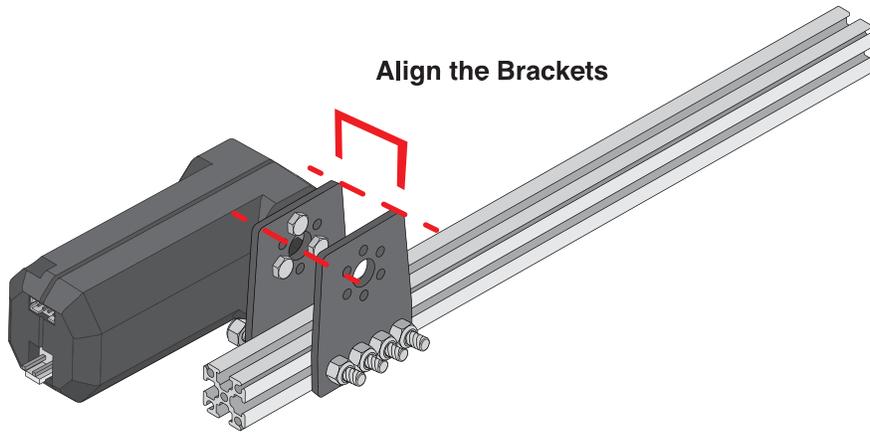


Tighten the screws only until "firm." Do not over tighten.

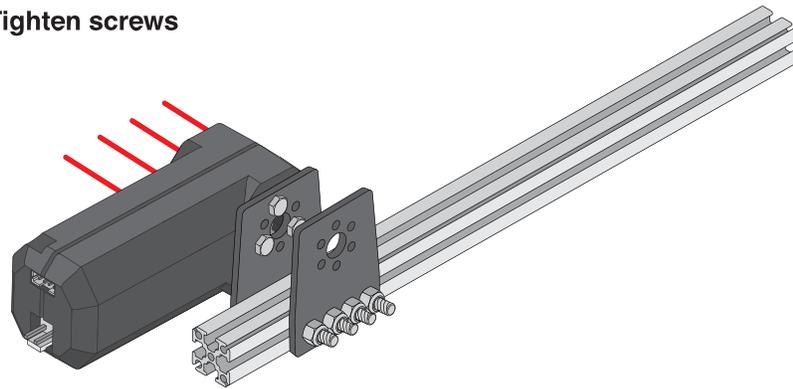
37



Align the Brackets

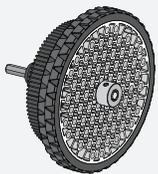


Tighten screws

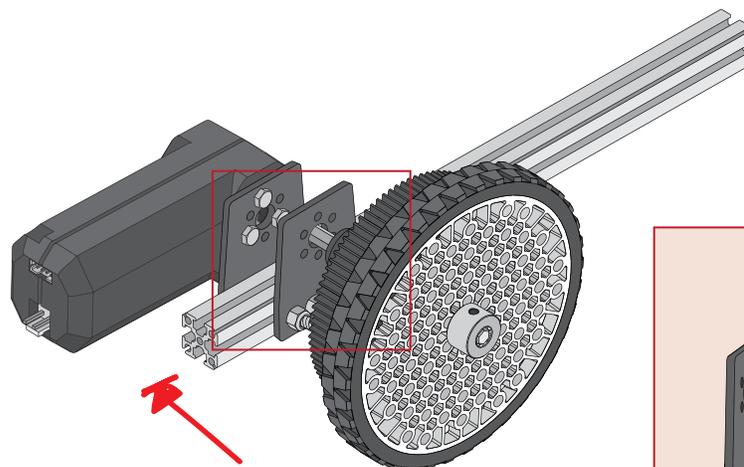
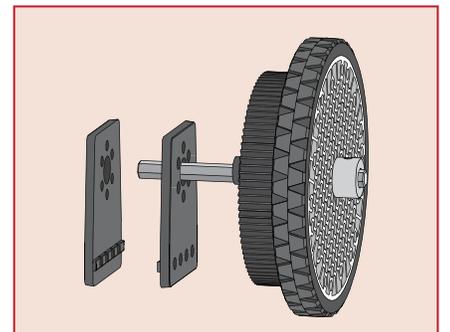


Tighten the screws only until "firm." Do not over tighten.

(previously assembled part from Step #30)



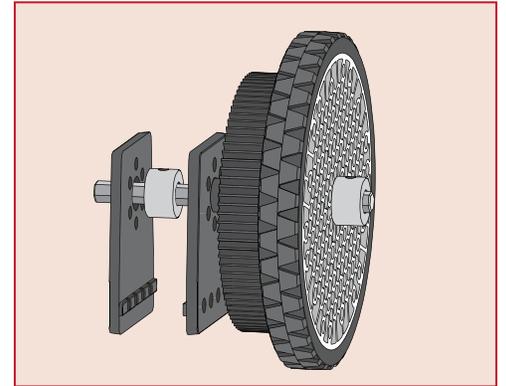
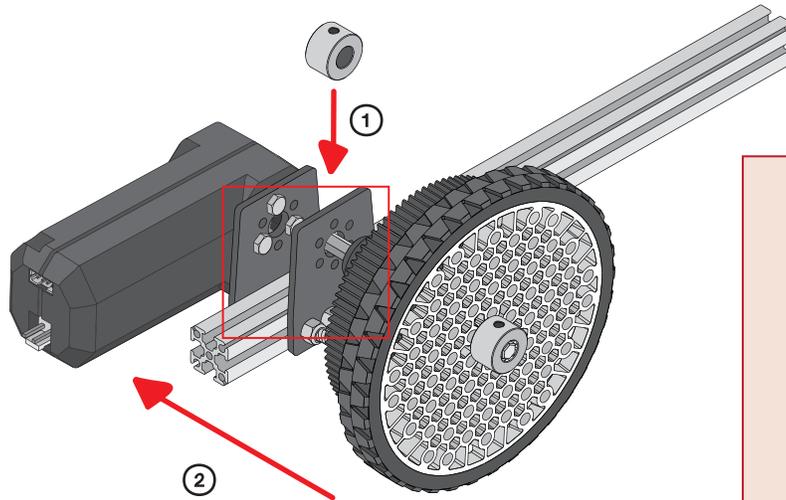
x 1

Insert shaft through the first motion bracket,  
then stop and hold

 x 1

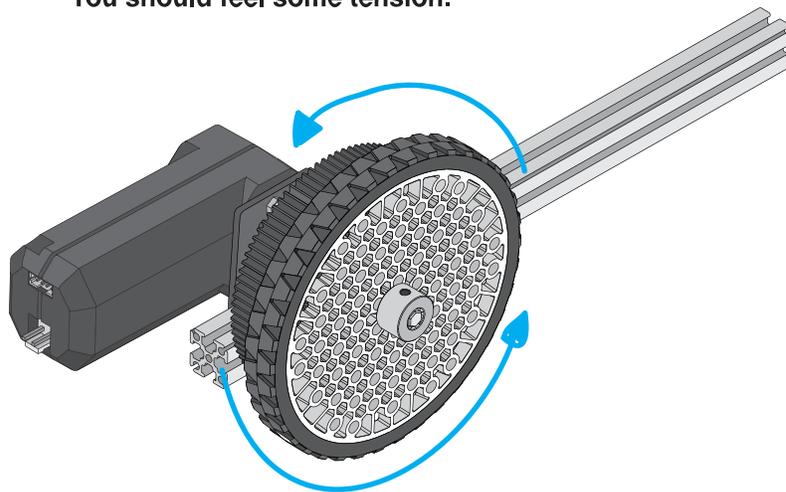
Slide a Shaft Collar onto the end of the Shaft, then proceed to push the Shaft into the Motor

41



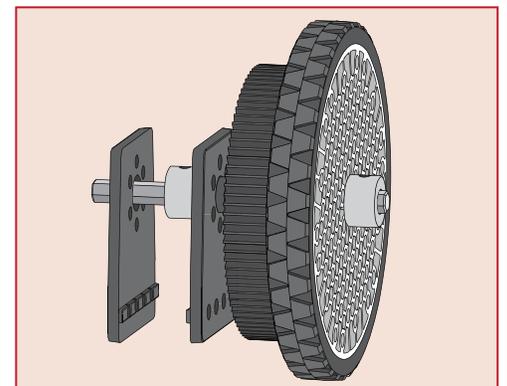
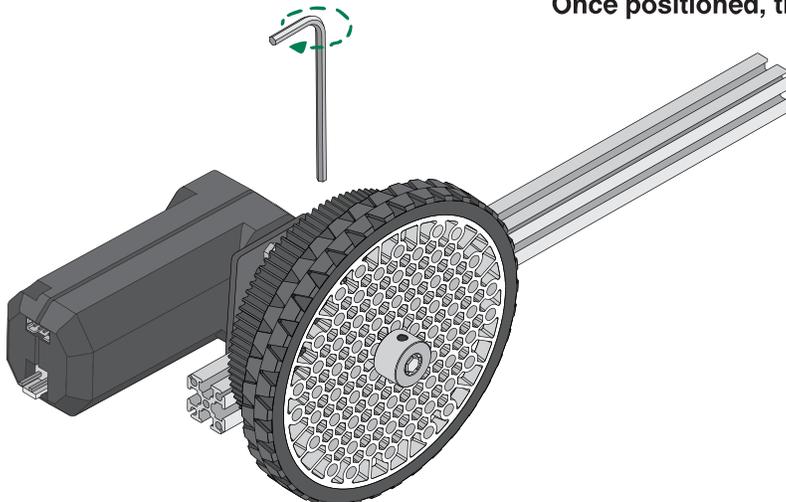
Turn the wheel a couple of times to make sure that the Shaft is fully inserted into the Motor. You should feel some tension.

42



Slide the Shaft Collar until it is flush with the Motion Bracket on the Wheel side. Once positioned, tighten the Shaft Collar

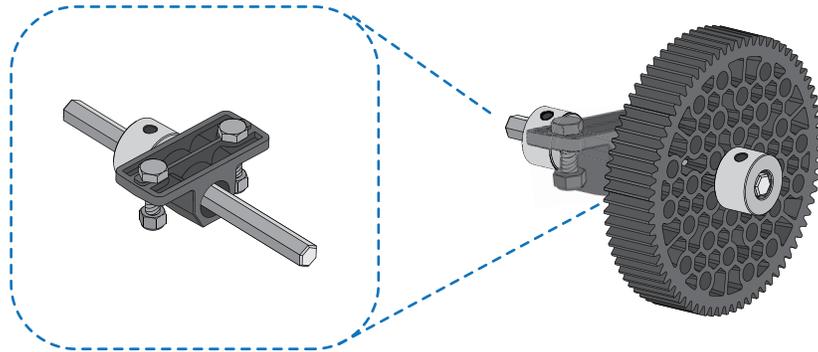
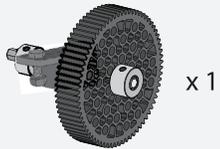
43



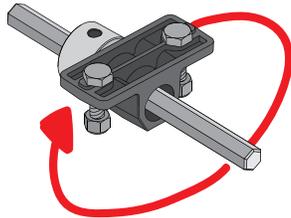
# RIGHT SIDE ASSEMBLY

44

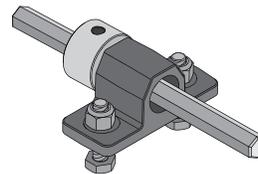
Middle Axle



1



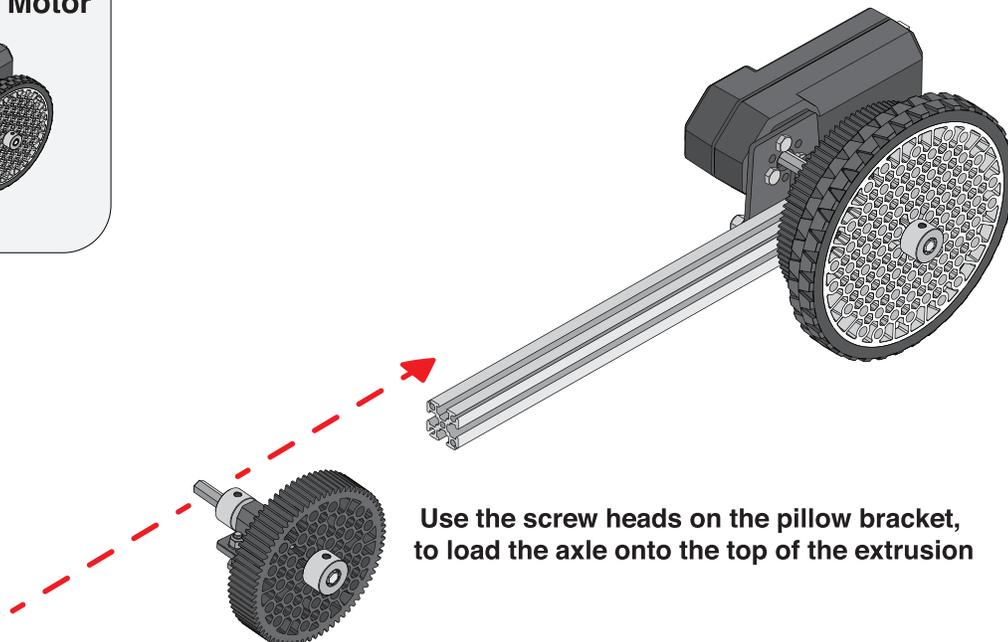
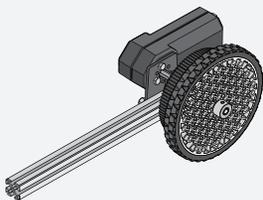
2



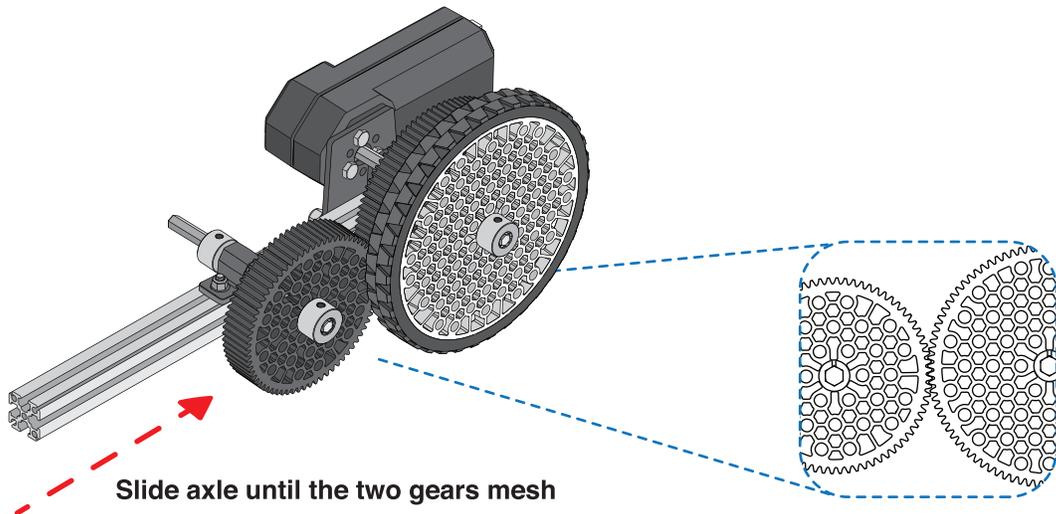
Flip/spin the pillow bracket, so that the screw heads are now facing down

45

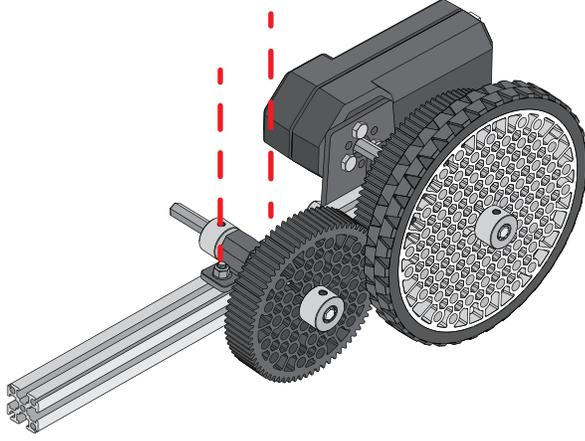
Right Side Axle Motor



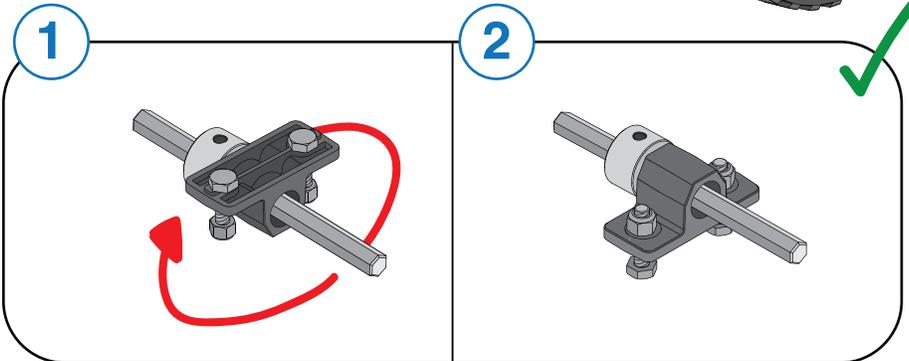
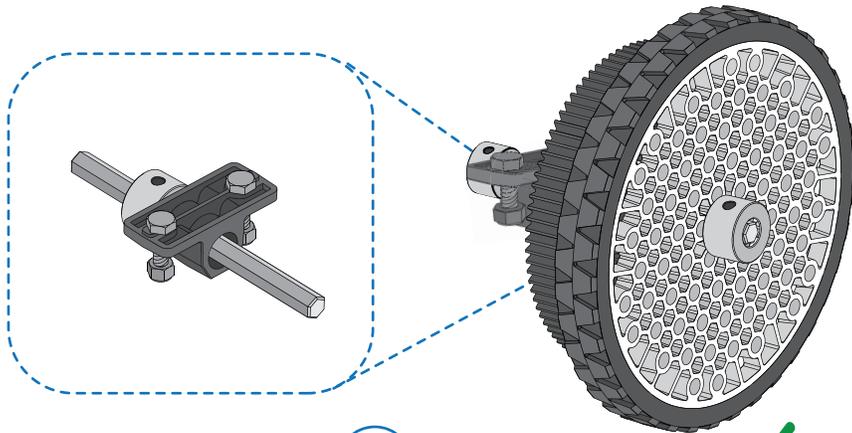
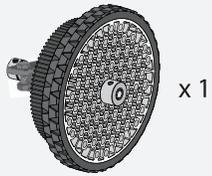
Use the screw heads on the pillow bracket, to load the axle onto the top of the extrusion



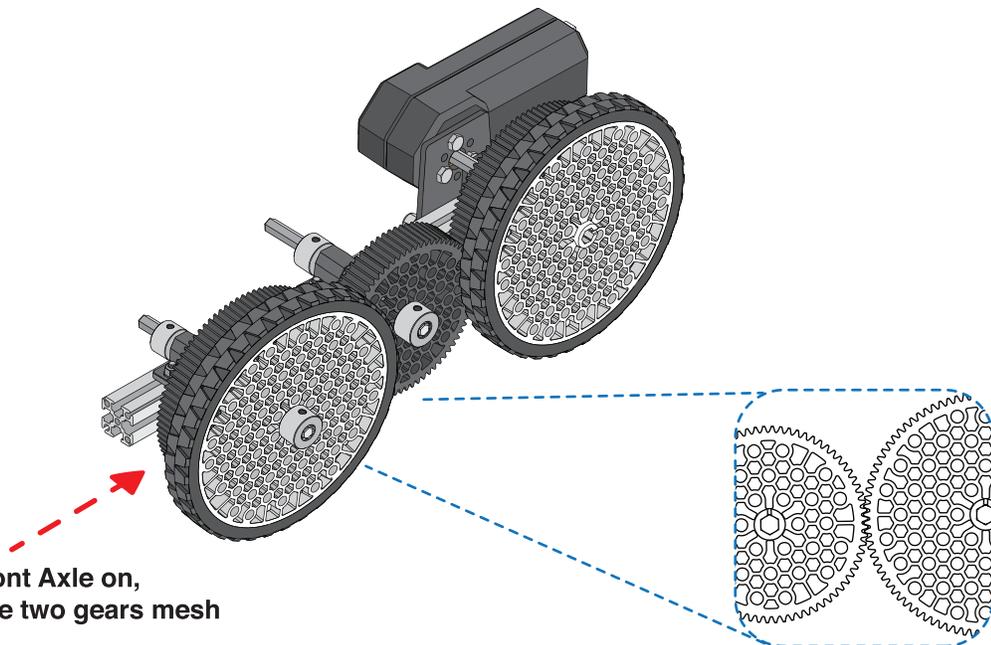
Tighten screws



Front Axle



Flip/spin the pillow bracket, so that the screw heads are now facing down

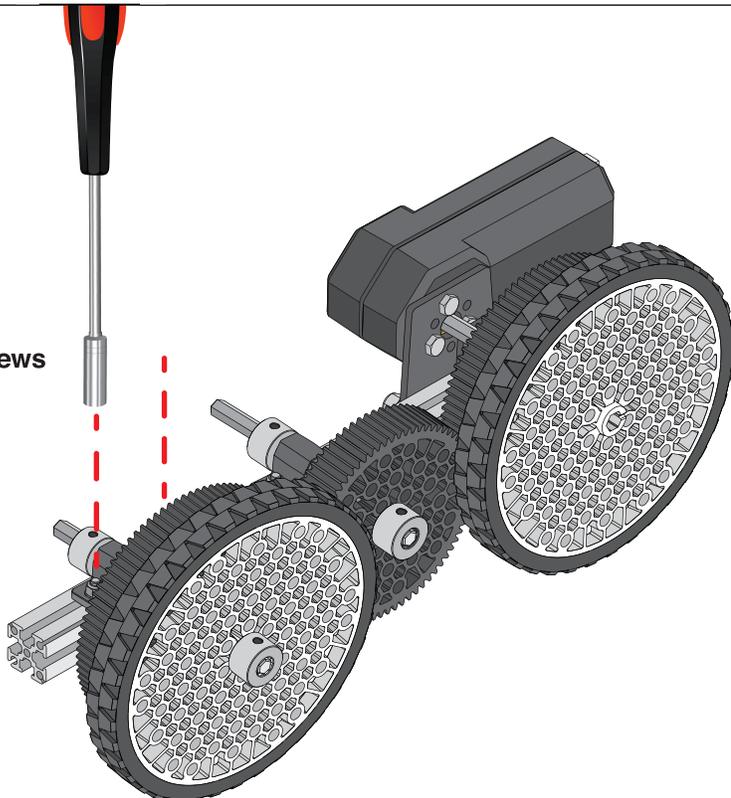


Slide the Front Axle on, to the point that the two gears mesh

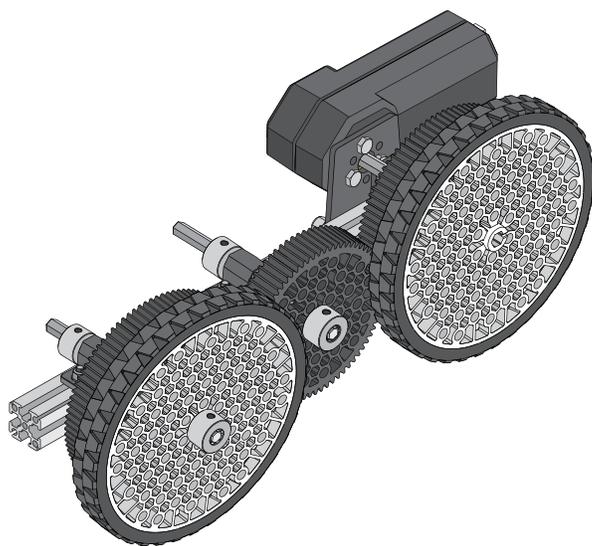
50

★ 1

Tighten screws



51

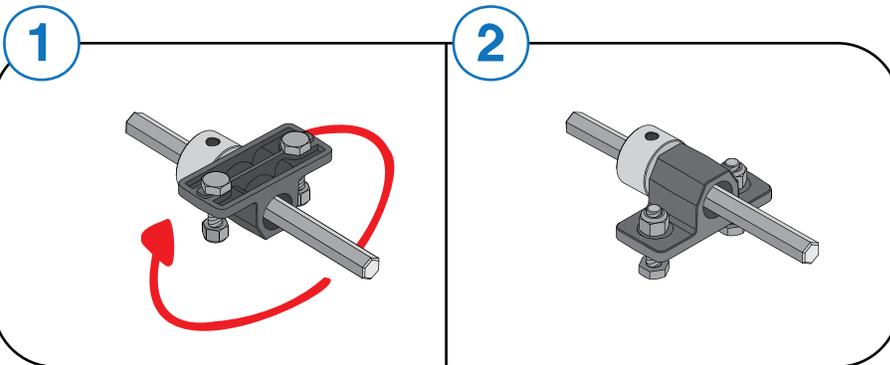
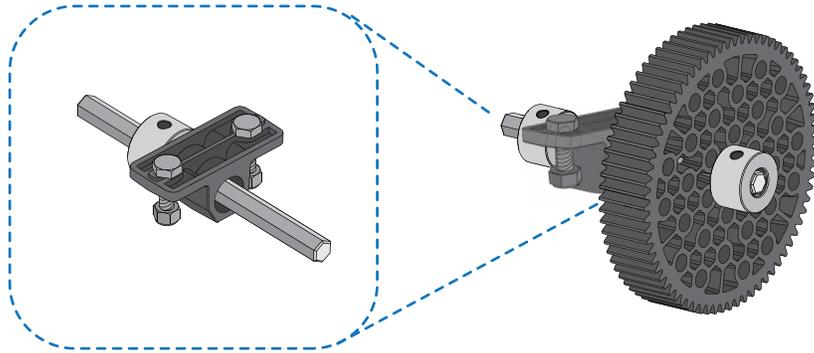
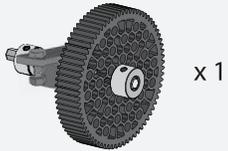


**Right Side is Complete!**

# LEFT SIDE ASSEMBLY

52

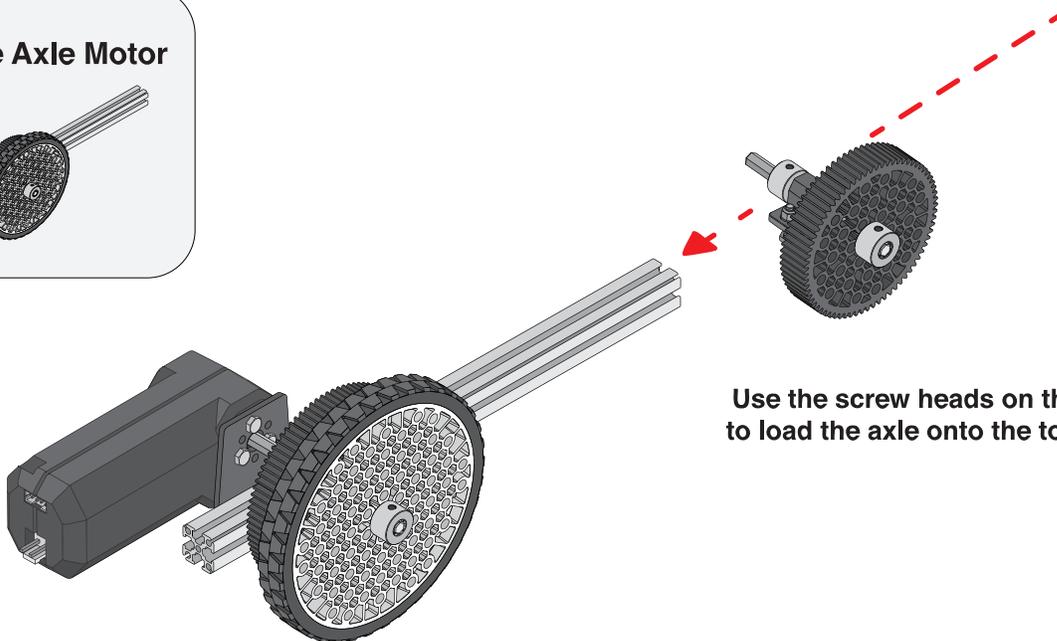
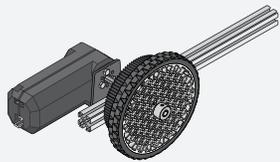
Middle Axle



Flip/spin the pillow bracket, so that the screw heads are now facing down

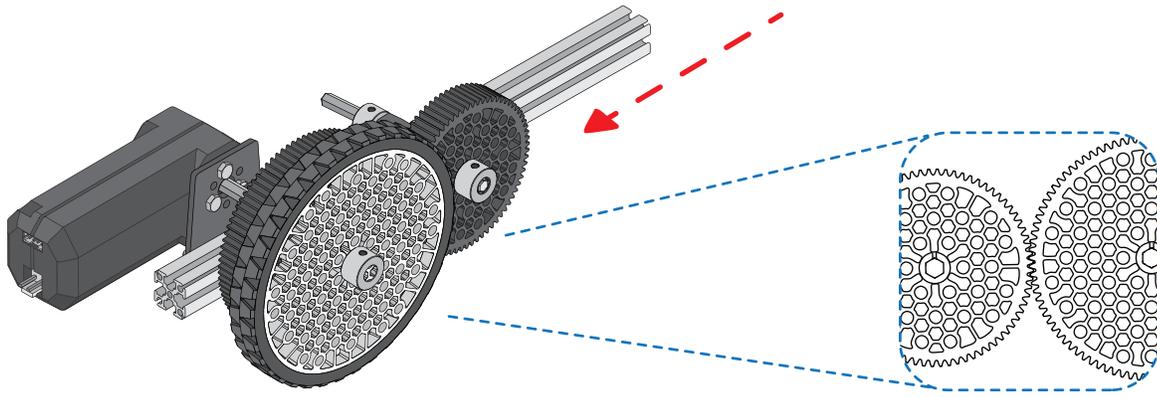
53

Left Side Axle Motor

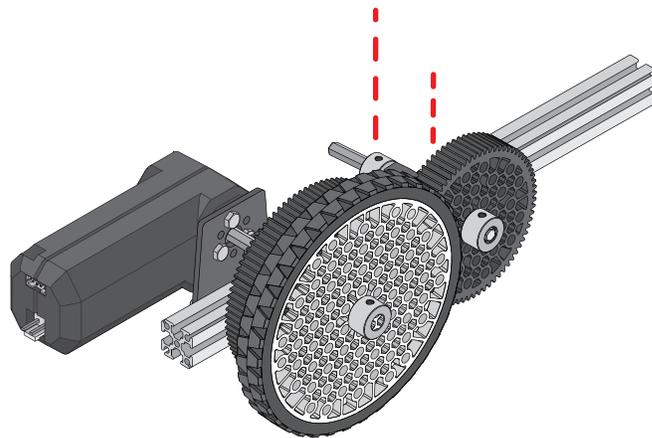


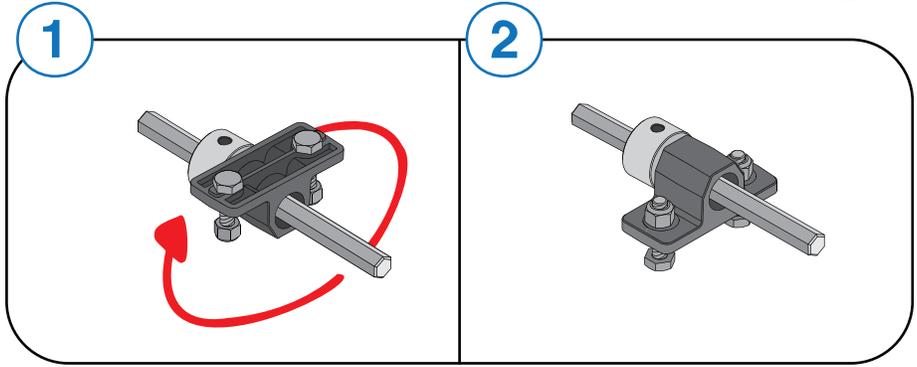
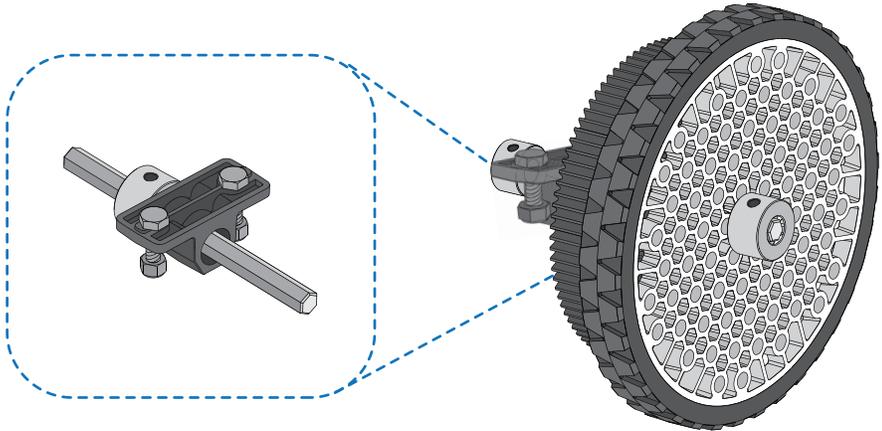
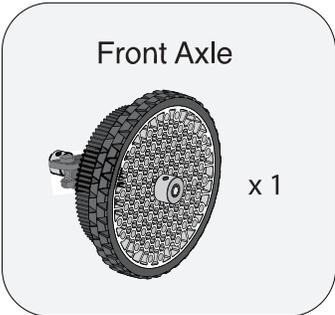
Use the screw heads on the pillow bracket, to load the axle onto the top of the extrusion

Slide the Middle Axle until the two gears mesh

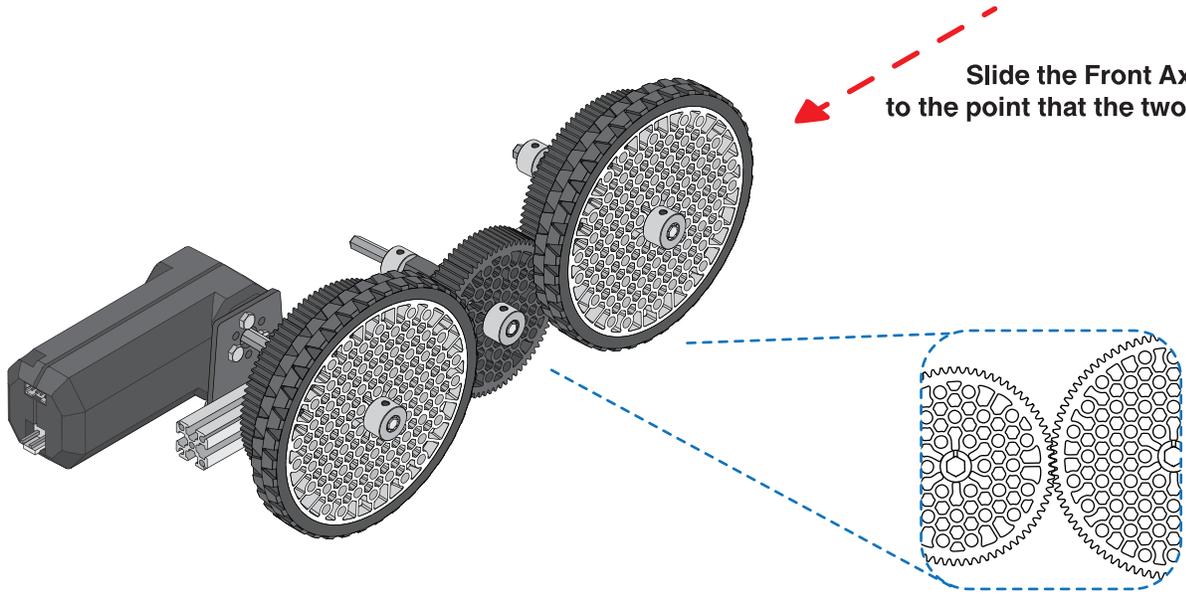


Tighten screws





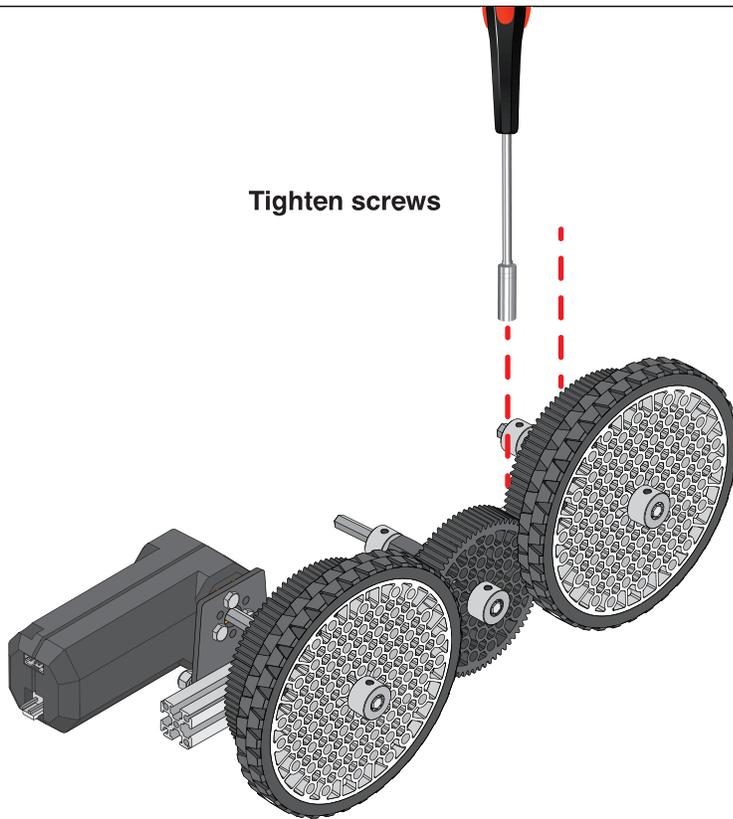
Flip/spin the pillow bracket, so that the screw heads are now facing down



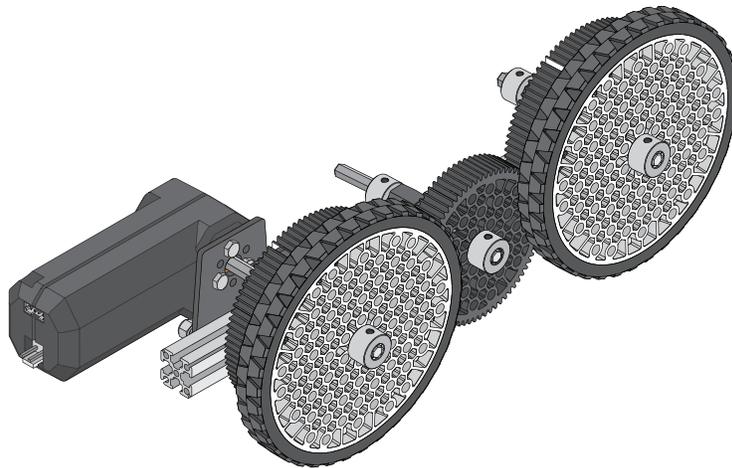
58

★ 1

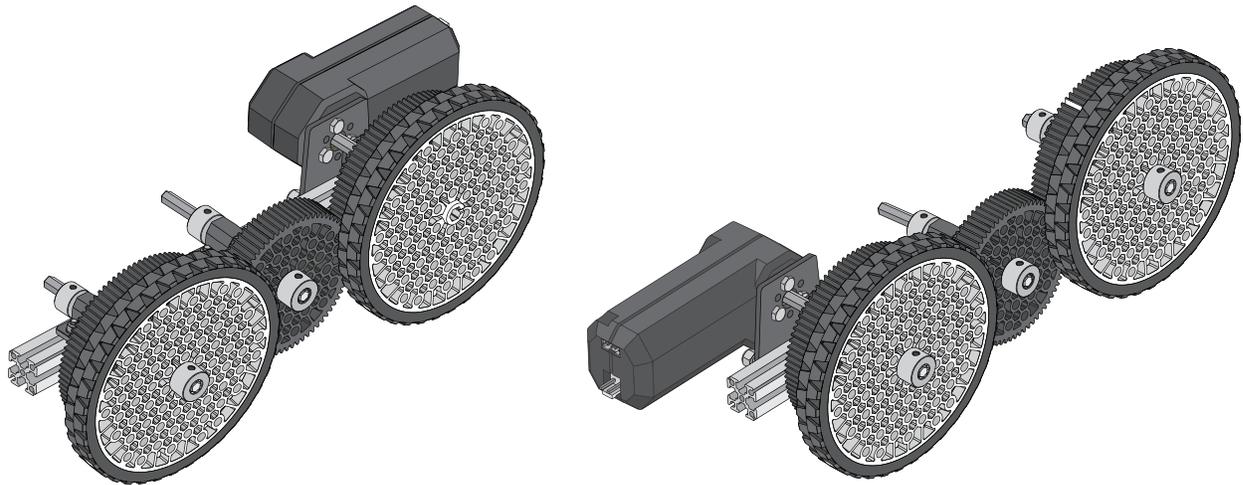
Tighten screws



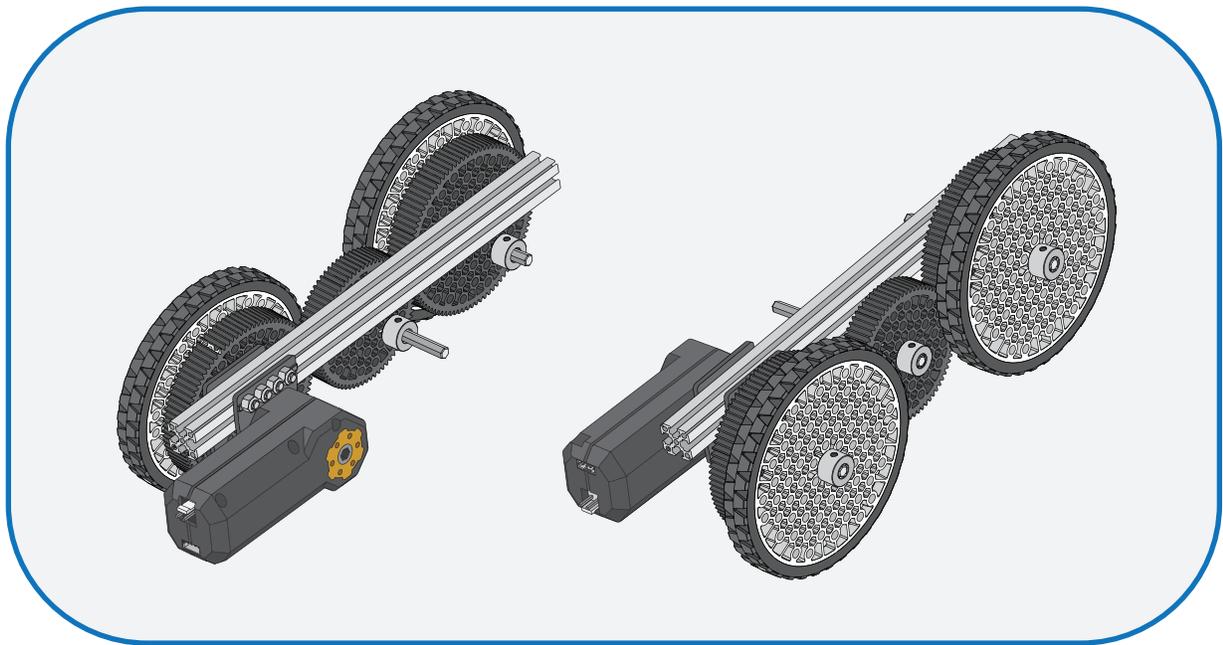
59



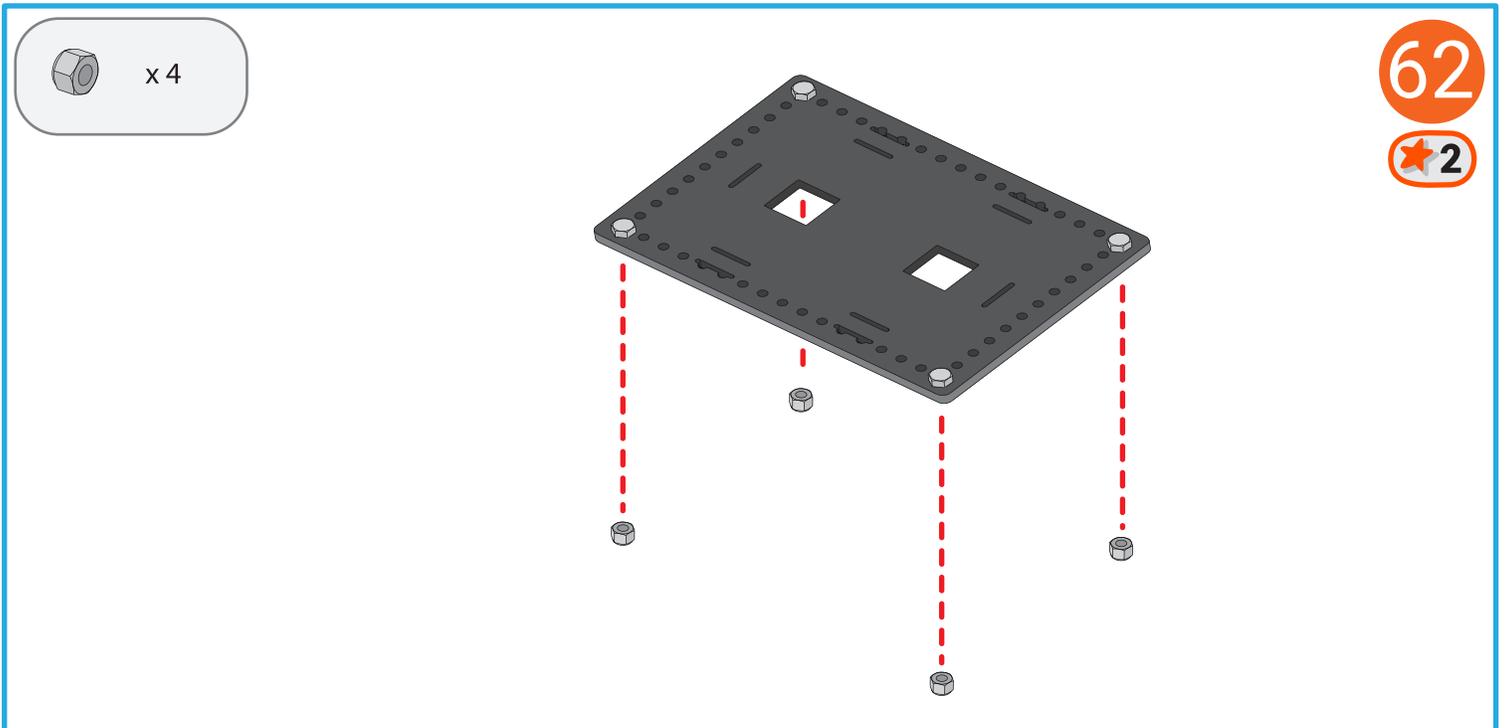
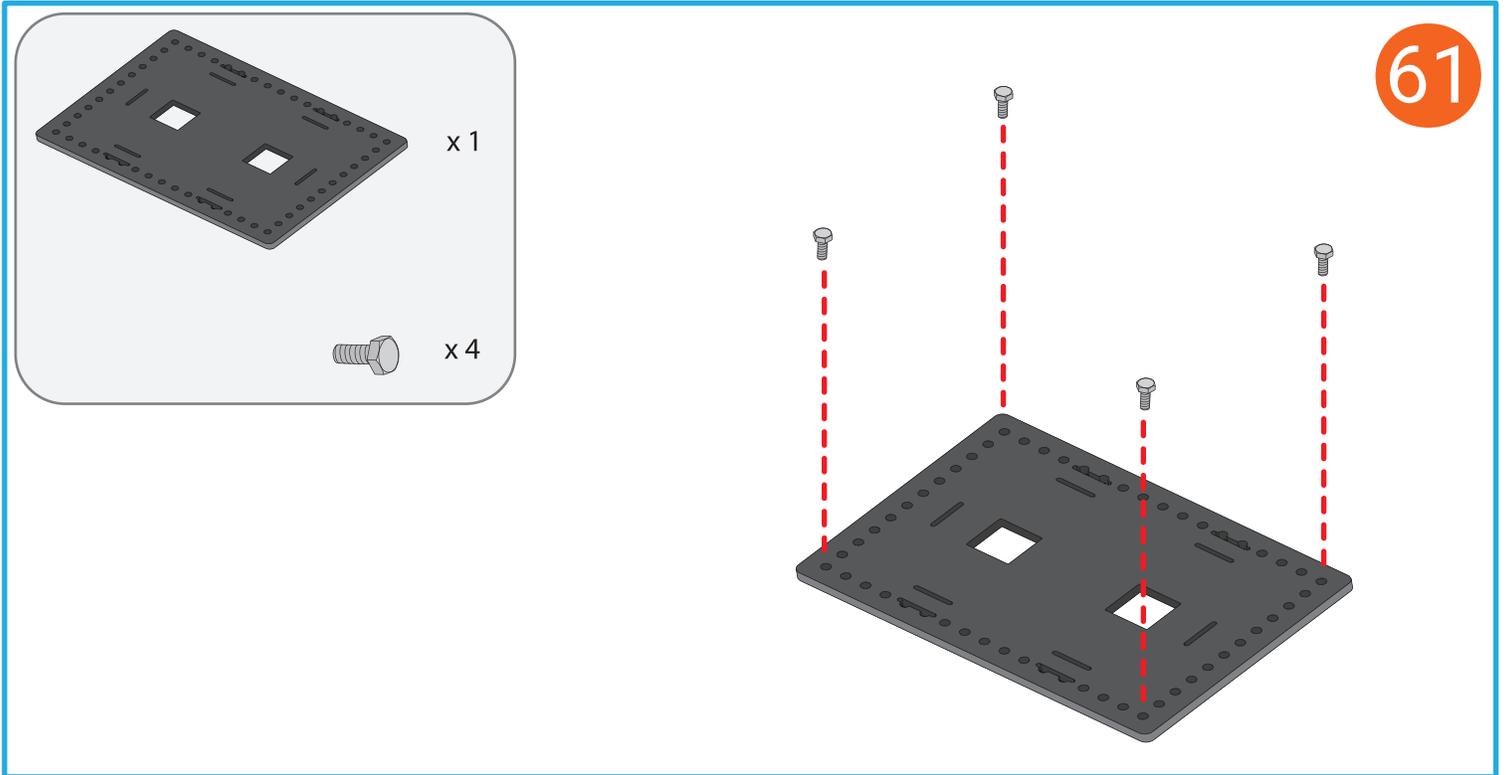
Left Side is Complete!

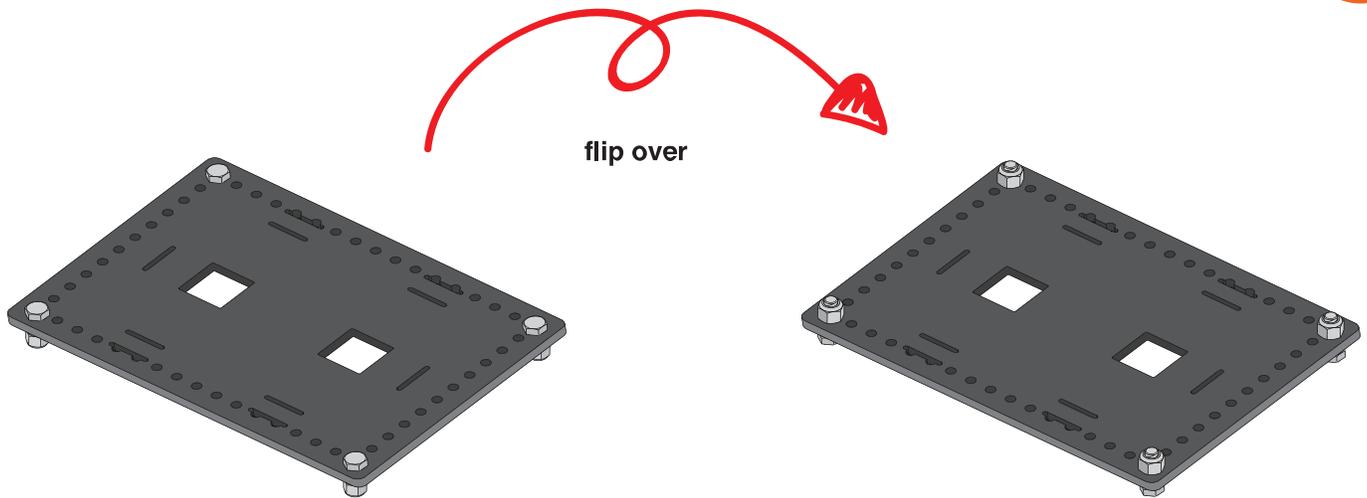


Take your two completed sides, and rotate them to match the picture below

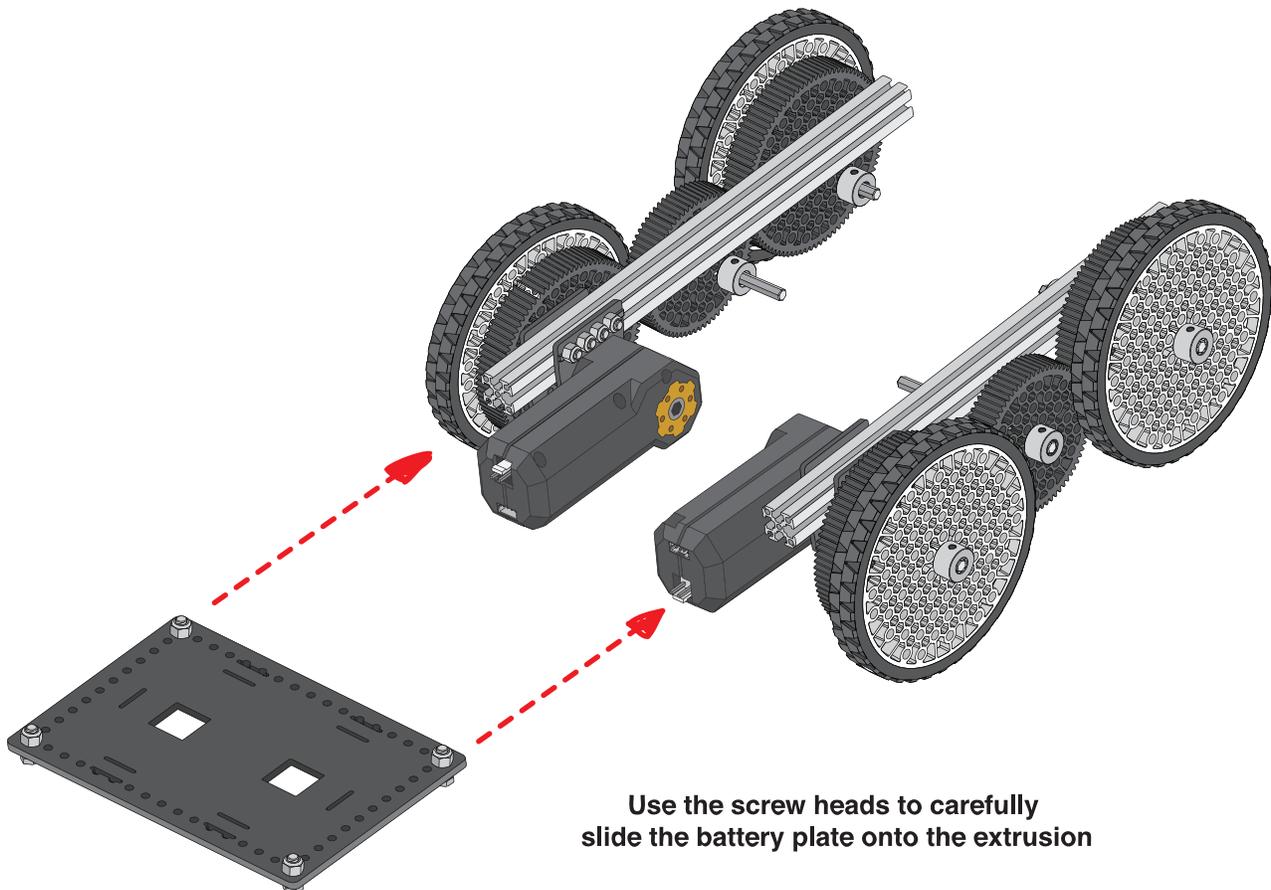


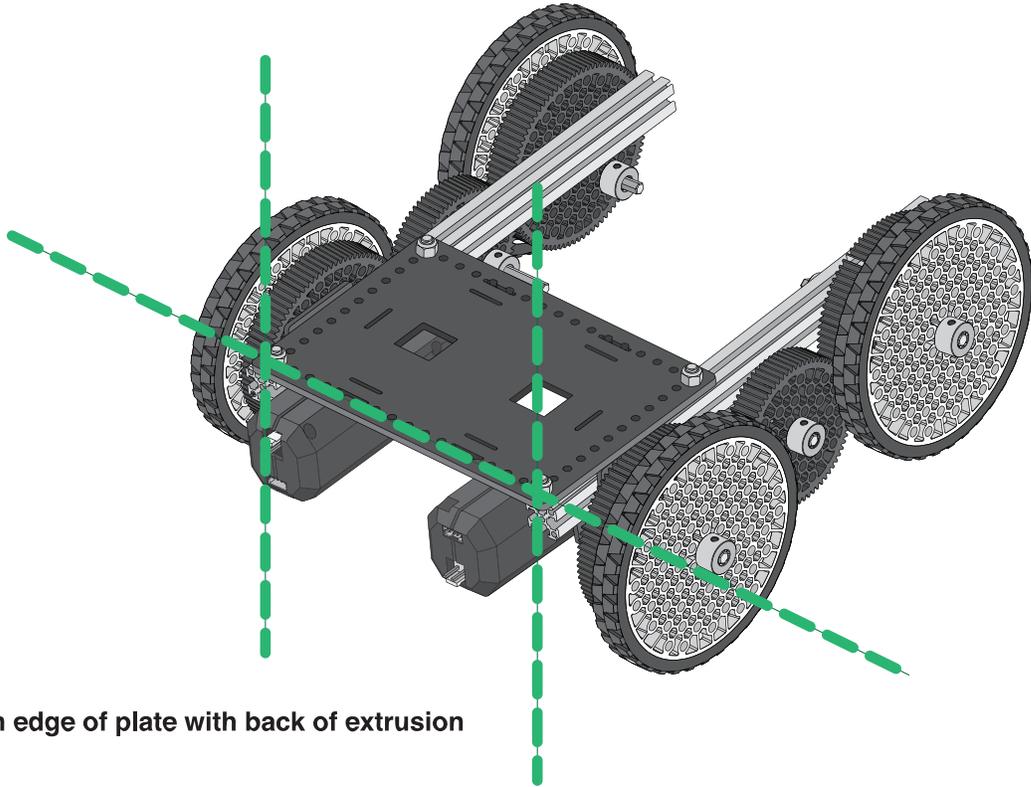
# FINAL ASSEMBLY



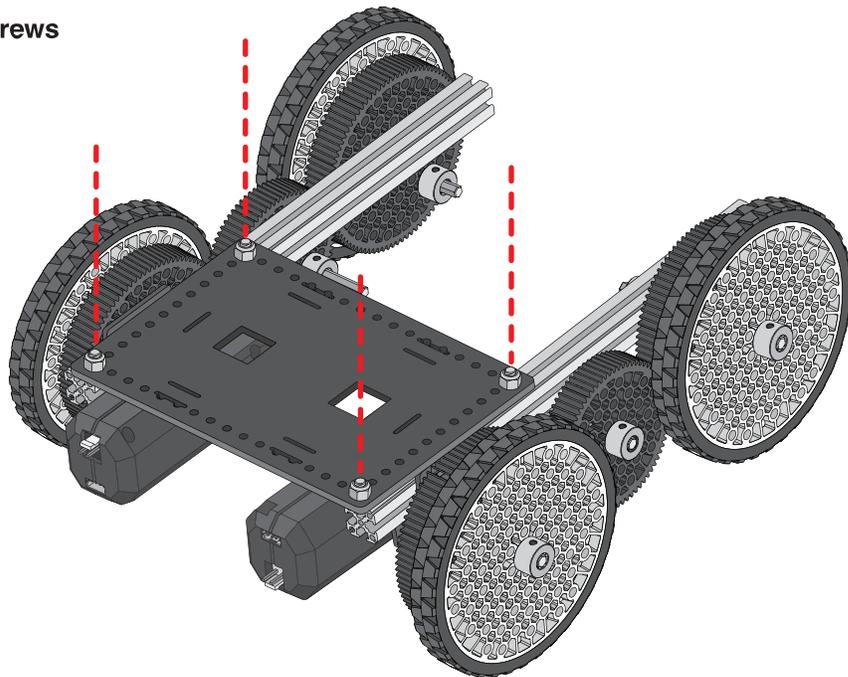


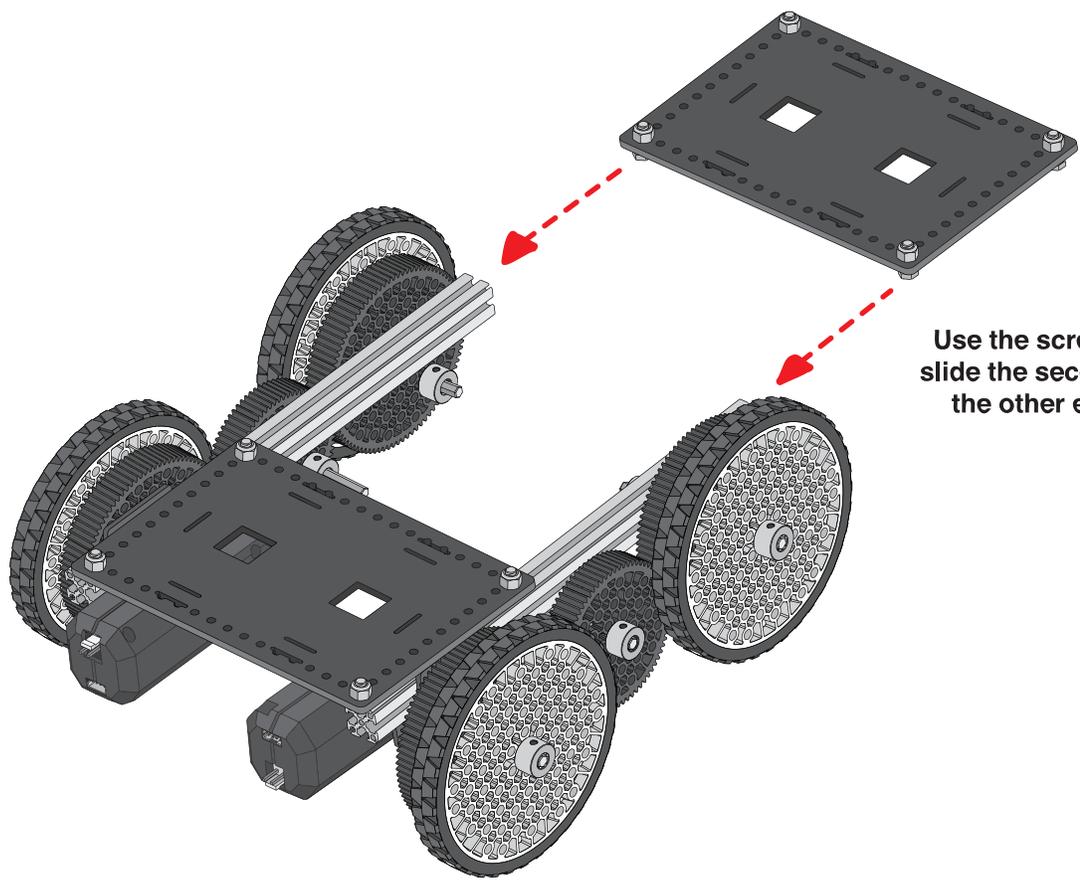
After completing steps 60 through 62, set the completed part aside and repeat the steps again to assemble a second part, identical to the first



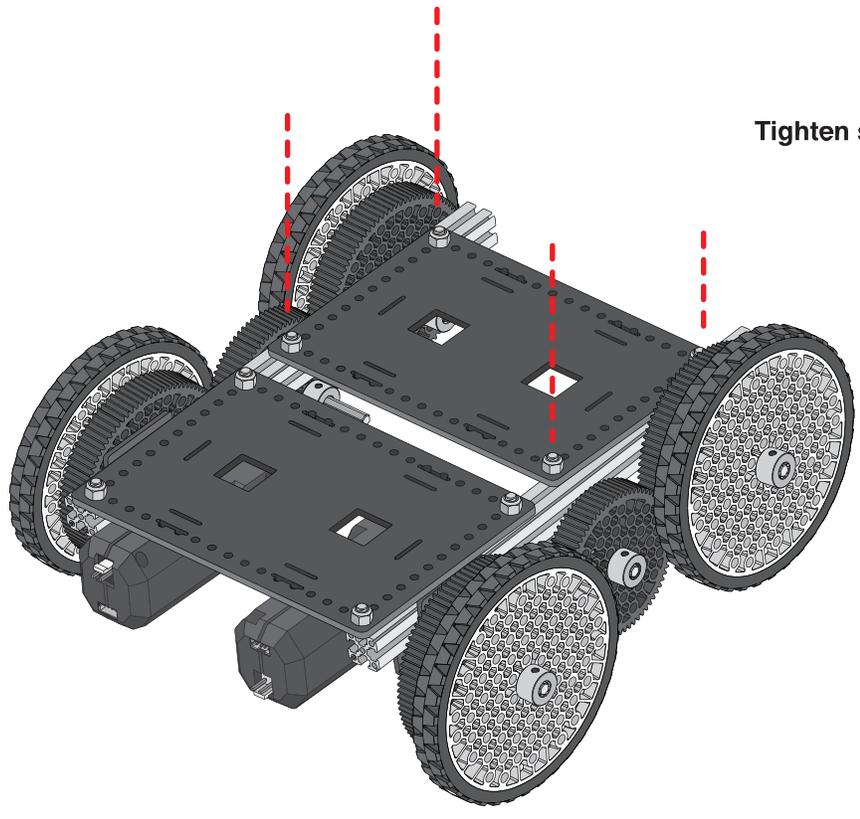


Tighten screws

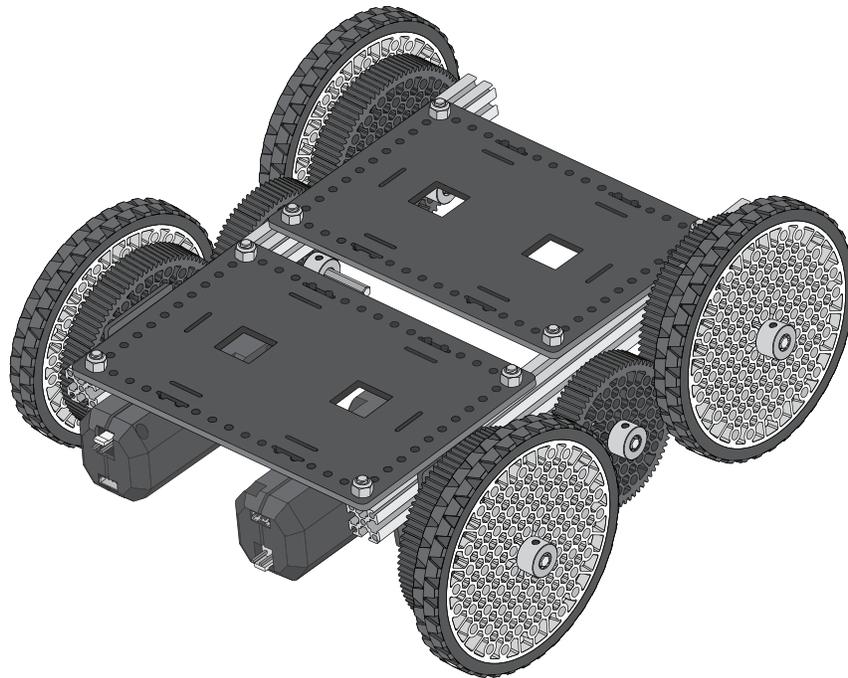




Use the screw heads to carefully slide the second battery plate onto the other end of the extrusion



Tighten screws



**Your MiniBot is Complete!**

**Have a Control Hub?  
Load your screws onto the Control Hub and instead of using  
the first battery plate, insert your Hub.**