ClassBot V2 Assembly Directions

Pre-Loading Brackets

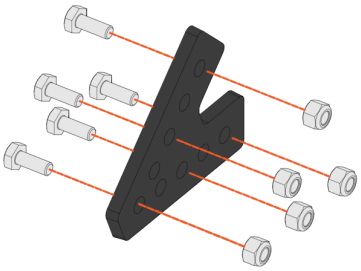
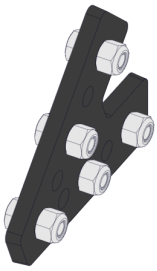
Bracket Pre-Loading Parts Required

Part Number	Description	QTY
REV-41-1317	15mm Bearing Pillow Block	8
REV-41-1320	15mm Plastic Inside Corner Bracket	10
REV-41-1307	15mm Plastic 45 Degree Bracket	2
REV-41-1624	Ultraplanetary Flat Mounting Bracket	2
REV-41-1433	15mm Metal Bent Core Hex Motor Bracket V2	1
REV-41-1485	15mm Metal Bent Servo Bracket V2	1
REV-41-1359	M3 x 8mm Hex Cap Screws	104
REV-41-1361	M3 Nyloc Nuts	104

Pre-Loading 45 Degree Bracket Steps

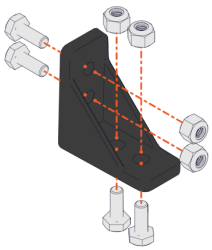
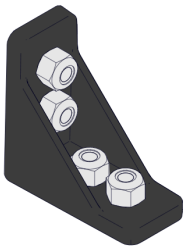
Note: Only two of the four 45 Degree Brackets in the build will be pre-loaded.

The side of the bracket with “ribs” must have the Hex Cap Screw head.

	Take a bracket and finger start one Hex Cap Screw and Nyloc Nut per hole.
	**PRE-LOADED BRACKET COMPELTE** Repeat this step until you have **two** Pre-Loaded Brackets.

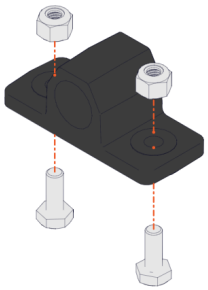
Pre-Loading Insider Corner Bracket Steps

Note: The side of the bracket with “ribs” must have the Hex Cap Screw head.

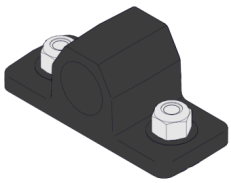
	Take a bracket and finger start one Hex Cap Screw and Nyloc Nut per hole.
	**PRE-LOADED BRACKET COMPELTE** Repeat this step until you have **ten** Pre-Loaded Brackets.

Pre-Loading Bearing Pillow Block Steps

Note: The side of the bracket with “ribs” must have the Hex Cap Screw head.



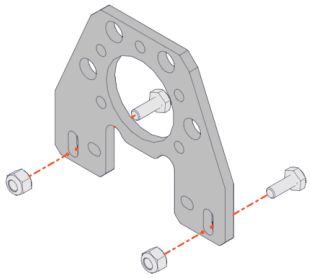
Take a bracket and finger start one Hex Cap Screw and Nyloc Nut per hole.



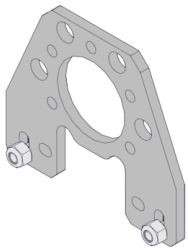
PRE-LOADED BRACKET COMPELTE

Repeat this step until you have **eight** Pre-Loaded Brackets.

Pre-Loading UltraPlanetary Flat Mounting Bracket Steps



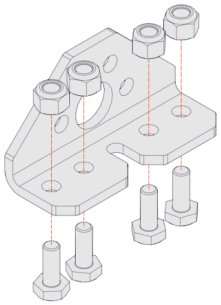
Take a bracket and finger start one Hex Cap Screw and Nyloc Nut per hole.



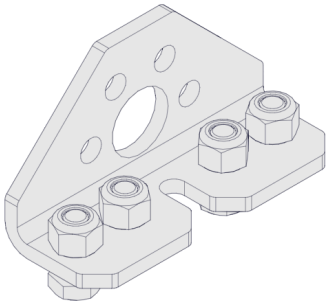
PRE-LOADED BRACKET COMPELTE

Repeat this step until you have **two** Pre-Loaded Brackets.

Pre-Loading Bent Core Hex Motor Bracket Steps

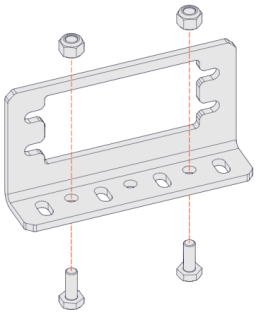


Take a bracket and finger start one Hex Cap Screw and Nyloc Nut per hole.

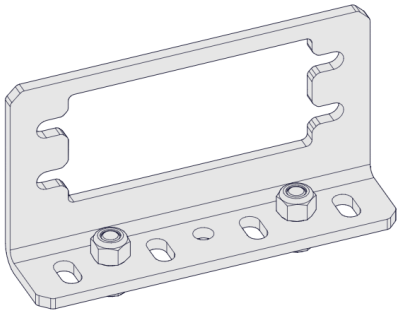


PRE-LOADED BRACKET COMPELTE

Pre-Loading Bent Servo Bracket Steps



Take a bracket and finger start one Hex Cap Screw and Nyloc Nut per hole.



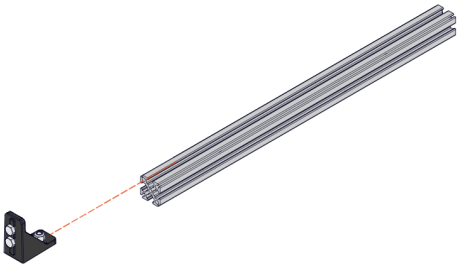
PRE-LOADED BRACKET COMPELTE

Internal Robot Frame Assembly

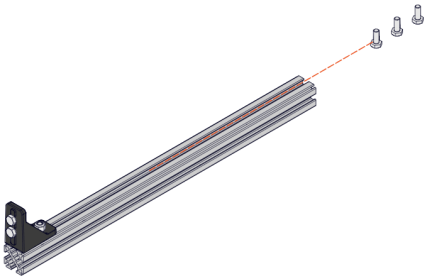
Internal Robot Frame Assembly Parts Required

Part Number	Description	QTY.
REV-41-1431	15mm Extrusion - 225mm	6
REV-41-1430	15mm Extrusion - 150mm - 45 Degree Ends	2
REV-41-1307	15mm Plastic 45 Degree Bracket	2
REV-41-1166	Battery Holder Plate	2
REV-41-1359	M3 x 8mm Hex Cap Screws	16
REV-41-1361	M3 Nyloc Nuts	16
	Assemblies	
	Pre-loaded 45 Degree Bracket	2
	Pre-loaded Inside Corner Bracket	6
	Pre-loaded Bearing Pillow Block	4

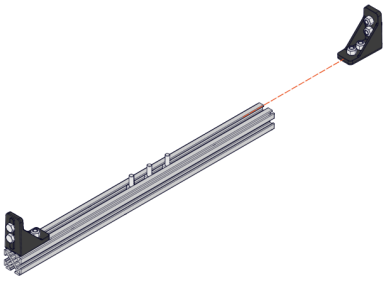
Internal Cross Member Assembly



Slide a Pre-Loaded Inside Corner Bracket into the slot of a 15mm Extrusion - 225mm. Align the outer corner of the bracket with the end of the Extrusion. Tighten the Nylock Nuts until snug.

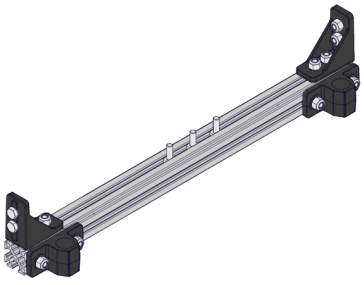


Add three M3 x 8mm Screws to the slot of the 15mm Extrusion - 225m.



Slide a second Pre-Loaded Inside Corner Bracket into the 15mm Extrusion - 225mm. Align the outer corner of the bracket with the end of the Extrusion. Tighten the Nylock Nuts until snug.

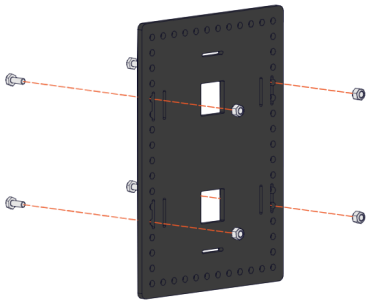
Add two Pre-Loaded Bearing Pillow Blocks to the 15mm Extrusion, as shown. The edge of the Pillow Blocks should line up with the end of the Extrusion. Tighten the Nylock Nuts until snug.



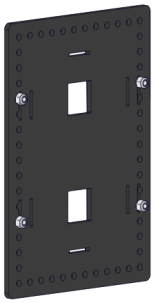
Internal Cross Member Assembly Complete.

Repeat steps above until you have **two** Internal Cross Member Assemblies. Set aside for later.

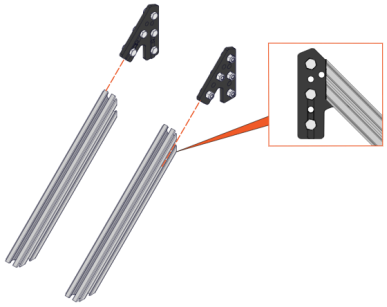
45 Degree Assembly



Pre-load four Hex Cap Screws and Nyloc Nuts per onto the Holder plate Battery Plate, as shown.



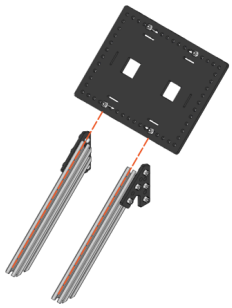
Once the screws have been pre-loaded onto the Battery Holder Plate, set the Battery Holder Plate aside.



Add a Pre-Loaded 45 Degree Bracket to a 15mm Extrusion - 150mm- 45° Ends. The bracket should be set so that the vertex holes/screws are left exposed. Only 2 of the screws will be embedded into the Extrusion. Once placed tighten the Nylon Nuts on the bracket until snug.

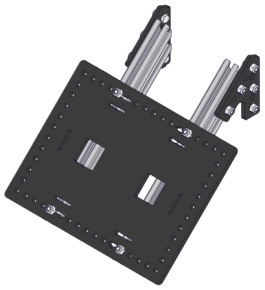
Repeat this process to get a second, **mirrored** Pre-Loaded 45 Degree Bracket and 15mm Extrusion - 150mm- 45° Ends assembly.

Note: The part of the 45 Degree Bracket left exposed will need to have enough room to fit a 15mm Extrusion, in a later step. Before moving on to the next step consider using a spare 15mm Extrusion to test that there is room to fit another Extrusion on the bracket.



Add the two Pre-Loaded 45 Degree Bracket and 15mm Extrusion - 150mm- 45° Ends assemblies to the Battery Holder Plate from the start of this assembly. Adjust the Plate so that both Extrusion pieces are in line with each other. Tighten the Nylock Nuts until snug.

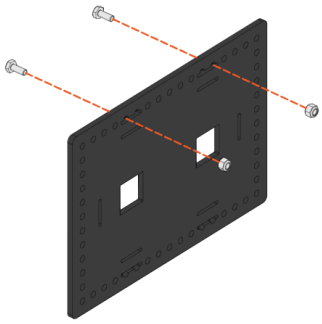
Note: In the example images the Battery Holder Plate is sitting at the base of the Extrusions. This is to ensure the Extrusions are level with each other. The Plate can be adjusted later to a different position if needed.



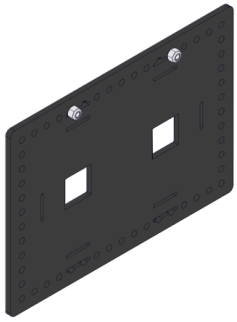
45 Degree Assembly Complete.

Set the assembly aside for now.

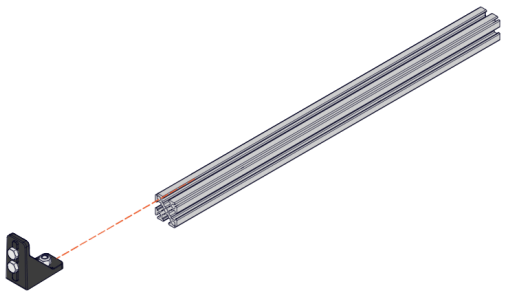
Internal Frame Assembly



Pre-load two Hex Cap Screws and Nyloc Nuts per onto the Holder plate Battery Plate, as shown.

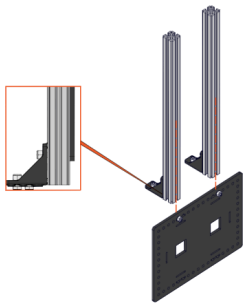


Once the screws have been pre-loaded onto the Battery Holder Plate, set the Battery Holder Plate aside.



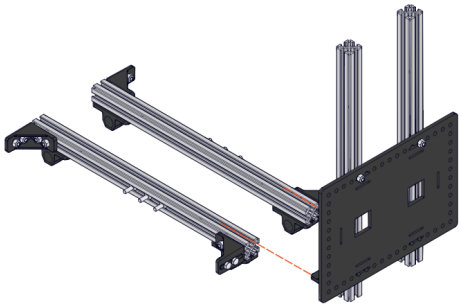
Slide a Pre-Loaded Inside Corner Bracket into the slot of a 15mm Extrusion - 225mm. Align the outer corner of the bracket with the end of the Extrusion. Tighten the Nylock Nuts until snug.

Repeat this process until you have two Pre-loaded Inside Corner Bracket and 15mm Extrusion - 225mm assemblies.

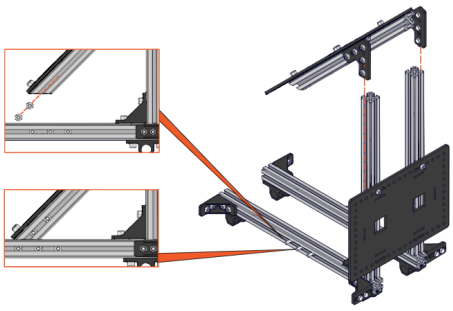


Add the two Pre-loaded Inside Corner Bracket and 15mm Extrusion - 225mm assemblies to the Battery Holder Plate from the start of this assembly**.** Adjust the Plate so that both Extrusion pieces are in line with each other. Tighten the Nylock Nuts until snug.

Note: Leave room between the ends of the Extrusions and the Edge of the Battery Holder Plate as shown in the image above. The space can be approximated for now and adjusted later to fit the Control Hub.



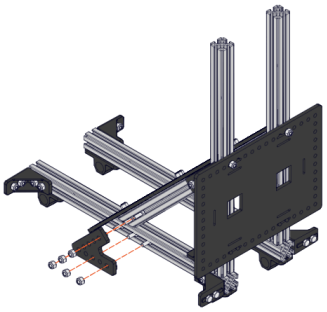
Add the Upright Assembly from above to the Internal Cross Members. Adjust until the Internal Cross Members are level with each other and the Upright Assembly is support on both Internal Cross Members. Tighten the Nylock Nuts until snug.

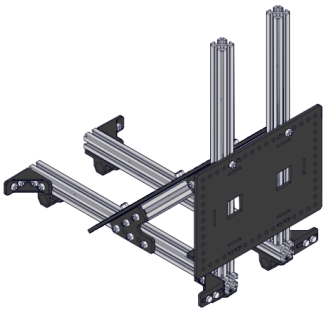


Add the 45 Degree Assembly to the Uprights. As you are sliding the 45 Degree Brackets down the Upright Extrusions add two M3 x 8mm Screws to **both** 15mm Extrusion - 150mm- 45° Ends. The screws should be on the same side of the Extrusions as the 45 Degree Brackets.

Once the Screws are added slide the 45 Degree Assembly down the Uprights until the assembly is flush with the Internal Cross members. Tighten the Nylock Nuts on the 45 Degree Brackets.

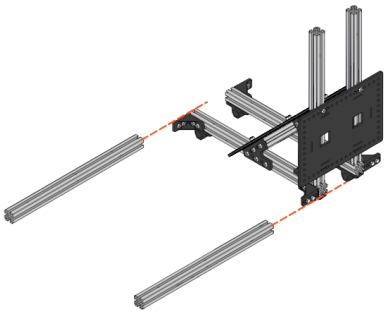
Note: It may be helpful when adding the screws to use gravity to your advantage





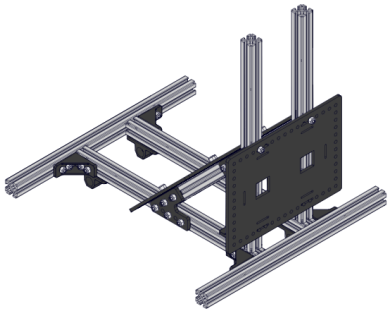
Lineup the M3 x 8mm Screws on the Internal Cross Members and 45 Degree Assembly so that a 45 Degree Bracket can be added to secure the assemblies together. Once the Bracket is added secure it with Nylon Nuts. Tighten the Nylock Nuts until snug.

Repeat until a 45 Degree Bracket has been added to both sides of the Internal Robot Frame.



Add two 15mm Extrusion - 225mm to the Inside Corner Brackets of the Internal Cross Members, as shown. The rest of the Internal Frame (i.e. the Internal Cross Member, 45 Degree, and Upright Assemblies) should be centered on each Extrusion.

Once centered tighten the Nylock Nuts on the Inside Corner Brackets until snug.



Internal Frame Assembly Complete

Set the assembly aside for now.

External Robot Frame Assembly

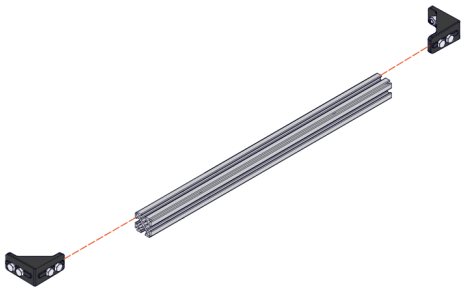
External Robot Frame Assembly Parts Required

Part Number	Description	QTY.
REV-41-1431	15mm Extrusion - 225mm	2
REV-41-1317	15mm Bearing Pillow Block	4
REV-41-1320	15mm Plastic Inside Corner Bracket	4
REV-41-1600	UltraPlanetary Gearbox Kit and HD Hex Motor	2
REV-41-1334	45 Tooth Plastic Gear	2
REV-41-1359	M3 x 8mm Hex Cap Screws	10
REV-41-1360	M3 x 16mm Hex Cap Screws	6
REV-31-1408	JST PH 4-pin Sensor Cable	2
REV-31-1413	JST VH 2-pin Motor Cable	2
	Assemblies	
	Pre-loaded Inside Corner Bracket	4
	Pre-loaded Bearing Pillow Block	4
	UltraPlanetary Flat Mounting Bracket	2
	Internal Robot Frame Assembly	1

Parts within the UltraPlanetary Gearbox Kit

Part Number	Description	QTY.
REV-41-1291	HD Hex Motor	1
REV-41-1608	UltraPlanetary Pinion Gear (on HD Hex Motor)	1
REV-41-1607	UltraPlanetary Mounting Plate	1
REV-41-1602	UltraPlanetary Cartridge 4:1	1
REV-41-1603	UltraPlanetary Cartridge 5:1	1
REV-41-1604 OR REV-41-1615	UltraPlanetary Output Stage	1
REV-41-1609-2	M3 x 30mm Cap Head Screw	6
REV-41-1609-5	M3 x 8mm Button Head Screw	2

External Cross Member Assembly



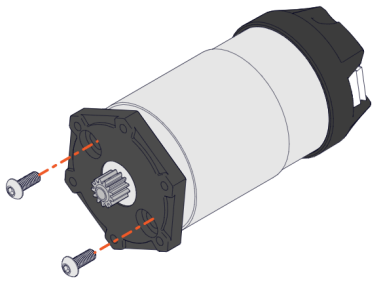
Slide two Pre-Loaded Inside Corner Brackets into the slot of a 15mm Extrusion - 225mm. Align the outer corner of the bracket with the end of the Extrusion. Tighten the Nylock Nuts until snug.

Add two Pre-Loaded Bearing Pillow Blocks to the 15mm Extrusion, as shown. The edge of the Pillow Blocks should line up with the end of the Extrusion. Tighten the Nylock Nuts until snug.

External Cross Member Assembly Complete.

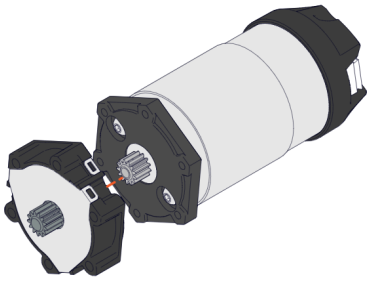
Repeat steps 1-2 until you have two External Cross Member Assemblies.

UltraPlanetary Assembly Steps



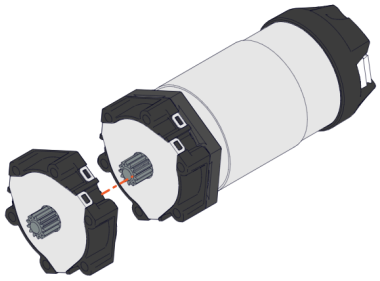
Attach the UltraPlanetary Mounting Plate to the HD Hex Motor using two 8mm Button Head Screws.

Note: Use the 2mm Allen Key to tighten these screws.



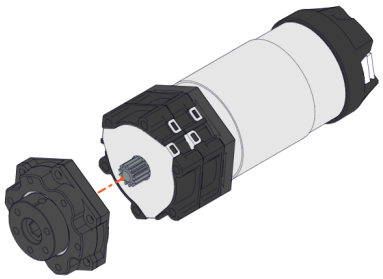
Seat the UltraPlanetary 5:1 Cartridge onto the input pinon.

Note: Placing a finger on the output of the 5:1 Cartridge and turning it helps for placement.



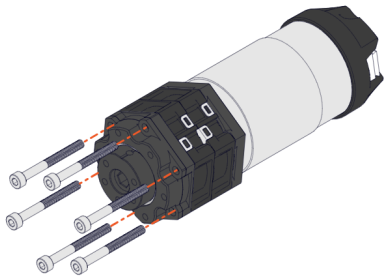
Seat the UltraPlanetary 4:1 Cartridge onto the UltraPlanetary 5:1 Cartridge.

Note: Placing a finger on the output of the 4:1 Cartridge and turning it helps for placement.



Seat the UltraPlanetary Output Stage onto the UltraPlanetary 4:1 Cartridge.

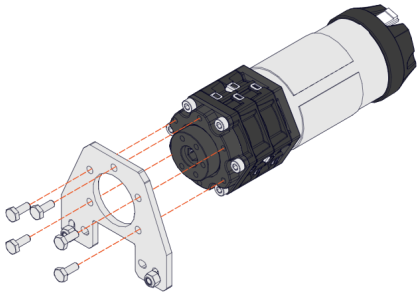
Note: Placing a finger on the output of the Output Cartridge and turning it helps for placement.



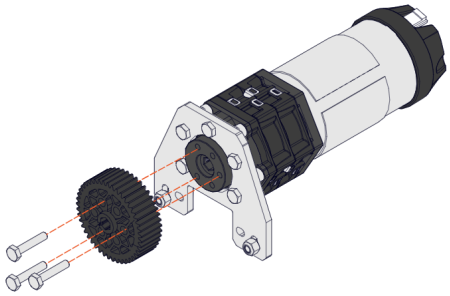
Insert six of the 30mm Cap Head Screws into the holes in the outer ring off the Output Cartridge.

Tighten these screws down until they are snug not tight using a 2.5mm allen wrench.

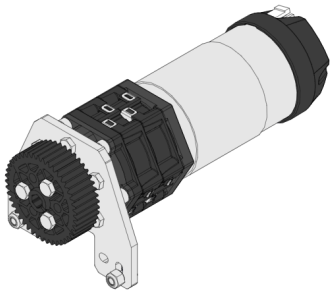
Note: The 30mm length is the 2nd longest screw provided with the UltraPlanetary Gearbox Kit.



Attach the Pre-Loaded UltraPlanetary Flat Mounting Bracket to the Output Cartridge using five M3 x 8mm Hex Head Screws. Tighten Screws until they are snug not tight.



Attach a 45 Tooth Plastic Gear to the Output Cartridge using three M3 16mm Hex Head Screws. Tighten Screws until they are snug not tight.



UltraPlanetary Assembly Complete.

Repeat steps steps until you have **two** UltraPlanetary Assemblies.

Set aside for later.

External Robot Frame Assembly

Note: In the following steps two motor and cross member assemblies will be created, that that mirror each other but are not the exact same.

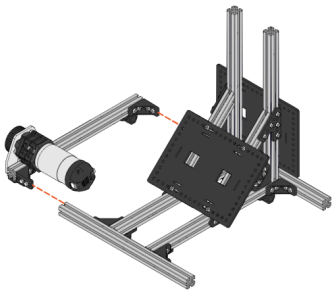
Add an UltraPlanetary Motor to the an External Cross Member by sliding the UltraPlanetary Flat Mounting Bracket through the Extrusion slot as shown. Adjust until the bracket is completely supported by the Extrusion. Tighten the Nylock Nuts until snug.

Note: going forward this will be known as the *Right Motor and Cross Member Assembly.*

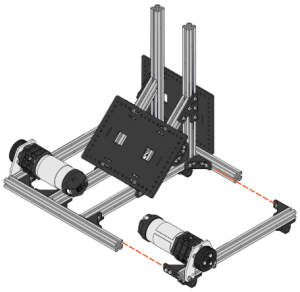
Add an UltraPlanetary Motor to the an External Cross Member by sliding the UltraPlanetary Flat Mounting Bracket through the Extrusion slot as shown. Adjust until the bracket is completely supported by the Extrusion. Tighten the Nylock Nuts until snug.

Note: going forward this will be known as the *Left Motor and Cross Member Assembly.*

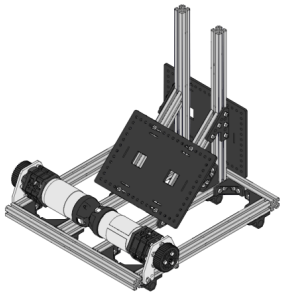
Note: Attach the JST PH 4-Pin Sensor Cables and JST PH 2-Pin Motor Cables to the Motors before moving on to the next steps.



Add the Right Motor and Cross Member Assembly to the Internal Robot Frame Assembly. The outer edge of the Motor and Cross Member Assembly should be flush with the ends of the of the Internal Robot Frame Extrusions. Once adjusted tighten the Nylock Nuts on the Inside Corner Brackets until snug.



Add the Left Motor and Cross Member Assembly to the Internal Robot Frame Assembly. The outer edge of the Motor and Cross Member Assembly should be flush with the ends of the of the Internal Robot Frame Extrusions. Once adjusted tighten the Nylock Nuts on the Inside Corner Brackets until snug.



External Robot Frame Complete.

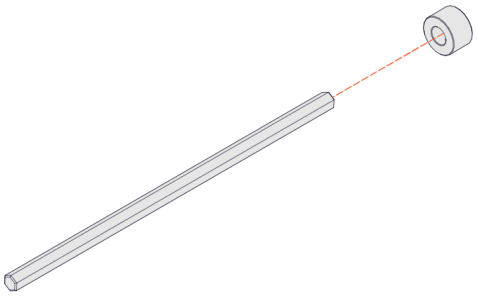
Set aside for later.

Wheel Assemblies

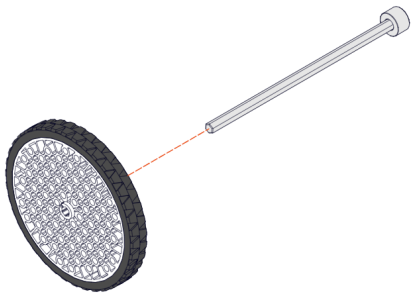
Wheel Assembly Parts Required

Part Number	Description	QTY
REV-41-1349	5mm x 135mm Hex Shaft	4
REV-41-1329	Through Bore Bearing - Long	8
REV-41-1327	Shaft Collar	12
REV-41-1190	90mm Omni Wheel	2
REV-41-1354	90mm Traction Wheel	2

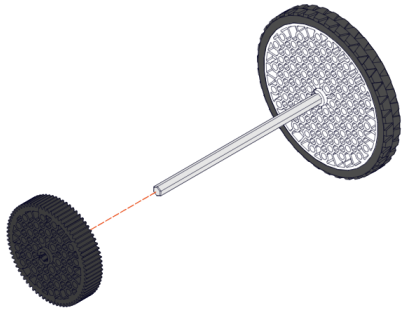
Traction Wheel Assembly



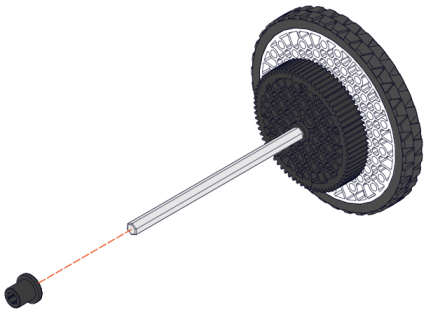
Add a Shaft Collar flush to the end of the 5mm x 135mm Hex Shaft. Tighten the Shaft Collar.



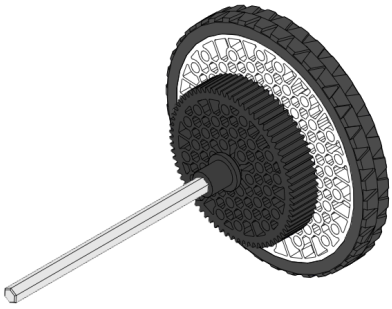
Slide a 90mm Traction Wheel onto the shaft.



Slide a 72 Tooth Gear onto the shaft.



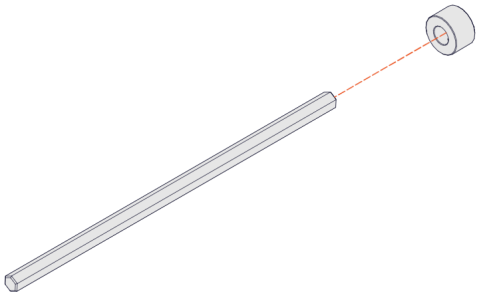
Slide a Through Bore Bearing - Long onto the shaft.



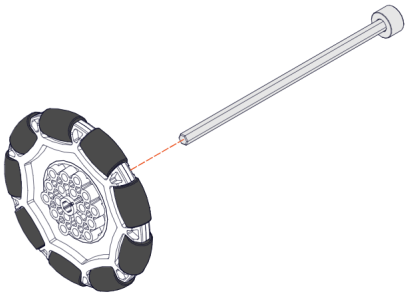
Traction Wheel Assembly Complete.

Repeat the steps above to make a second Traction Wheel Assembly.

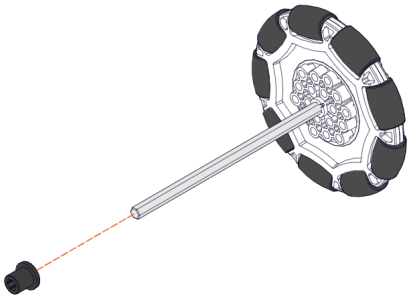
Omni Wheel Assembly



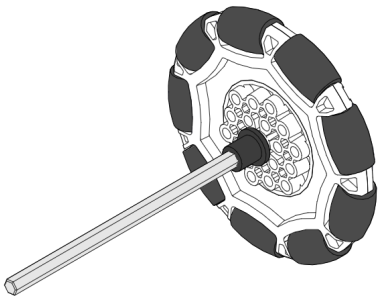
Add a Shaft Collar flush to the end of the 5mm x 135mm Hex Shaft. Tighten the Shaft Collar.



Slide a 90mm Omni Wheel onto the shaft.



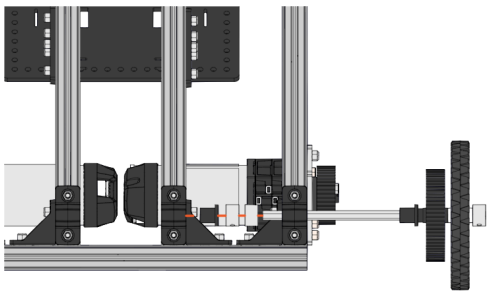
Slide a Through Bore Bearing - Long onto the shaft.



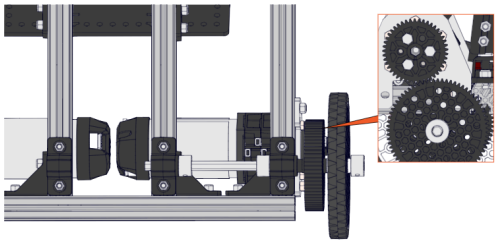
Omni Wheel Assembly Complete.

Repeat the steps above to make a second Omni Wheel Assembly.

Wheel-to-Frame Assembly



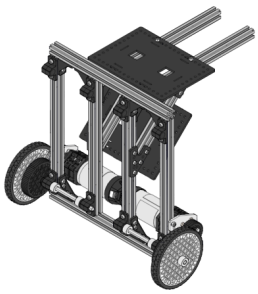
Slide a Traction Wheel Assembly through a an External Cross Member -Bearing Pillow Block, as shown. Add two Shaft Collars on the shaft and a Through Bore Bearing - Long. Both bearings should be facing toward the center of the chassis.



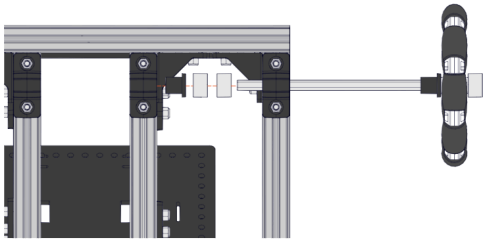
Slide the Traction Wheel Assembly through the Bearing Pillow Block on the nearby Internal Cross Member.

Note: Take time now to adjust the Traction Wheel Assembly and the UltraPlanetary Motor so that the gears are properly meshed. If needed loosen the screws on the motor bracket and slide it along the Extrusion to obtain the appropriate amount of gear mesh.

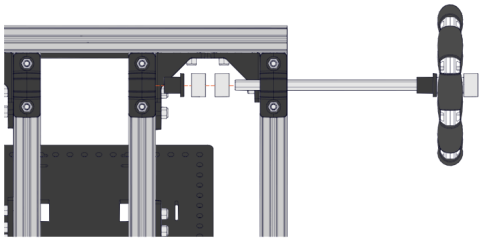
Tighten the Shaft Collars against the inside of either Bearing Pillow Block to secure the wheel as shown in the image above.



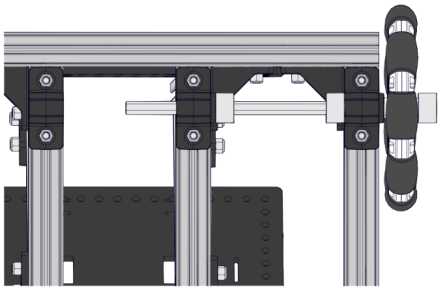
Repeat the previous steps to add the second Traction Wheel Assembly to the Robot Frame.



Slide a Omni Wheel Assembly through a an External Cross Member -Bearing Pillow Block, as shown. Add two Shaft Collars on the shaft and a Through Bore Bearing - Long. Both bearings should be facing toward the center of the chassis.

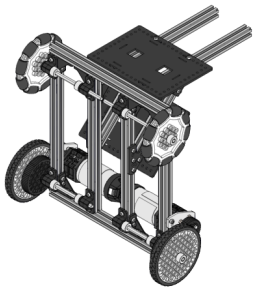


Slide a Omni Wheel Assembly through a an External Cross Member -Bearing Pillow Block, as shown. Add two Shaft Collars on the shaft and a Through Bore Bearing - Long. Both bearings should be facing toward the center of the chassis.



Slide the Omni Wheel Assembly through the Bearing Pillow Block on the nearby Internal Cross Member.

Tighten the Shaft Collars against the inside of either Bearing Pillow Block to secure the wheel as shown in the image above.



Wheel Assemblies Complete.

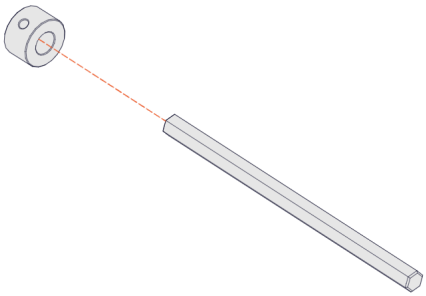
Repeat the above steps to attach a second Omni Wheel Assembly to the Robot Frame.

Arm Gear Assemblies

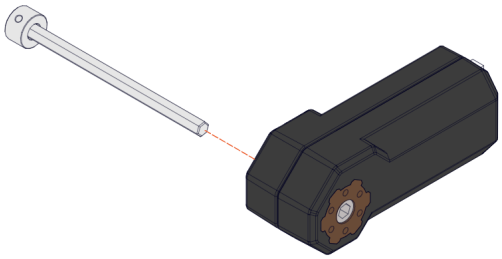
Arm Gear Assembly Parts Required

Part Number	Description	QTY
REV-41-1348	5mm x 90mm Hex Shaft	2
REV-41-1329	Through Bore Bearing - Long	2
REV-41-1327	Shaft Collar	6
REV-41-1323	15mm Spacer	1
REV-41-1300	Core Hex Motor	1
REV-41-1334	45 Tooth Plastic Gear	1
REV-41-1333	125 Tooth Plastic Gear	1
REV-41-1359	M3 x 8mm Hex Cap Screws	4
REV-41-1361	M3 Nyloc Nuts	2
REV-41-1360	M3 x 16mm Hex Cap Screws	2
	Assemblies	
	Pre-loaded Bearing Pillow Block	2
	Pre-loaded Bent Core Hex Motor Bracket V2	1

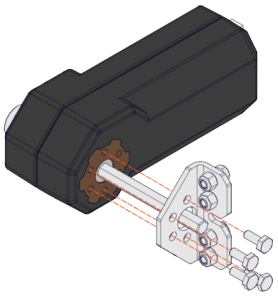
Core Hex Motor Assembly



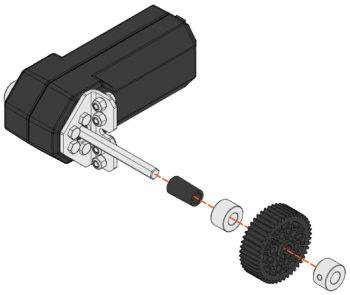
Add a Shaft Collar flush to the end of the 5mm x 90mm Hex Shaft. Tighten the Shaft Collar.



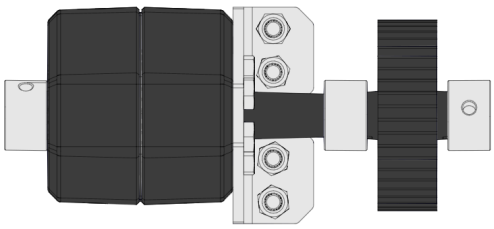
Slide a Core Hex Motor onto the shaft.



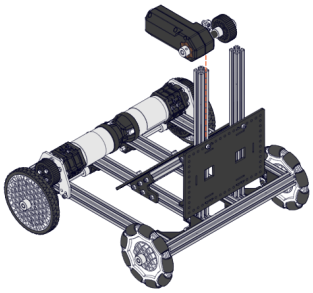
Attach the Pre-Loaded Bent Core Hex Motor Bracket to the Core Hex Motor using four M3 x 8mm Screws.



Slide one 15mm Spacer, two Shaft Collars, and a 45 Tooth Plastic Gear onto the shaft in the order shown.



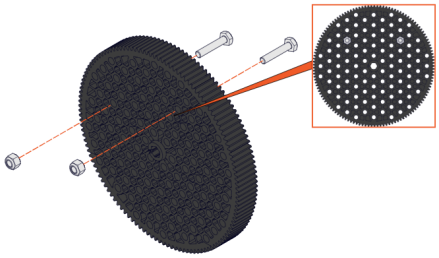
Adjust the Shaft Collars and Gear on the shaft so that the outer most Shaft Collar is flush with the end of the shaft.



Slide the Core Hex Motor Assembly down the Upright Extrusion as shown. The Bent Core Hex Motor Bracket will be on the same side of the Upright as the Battery Holder plate.

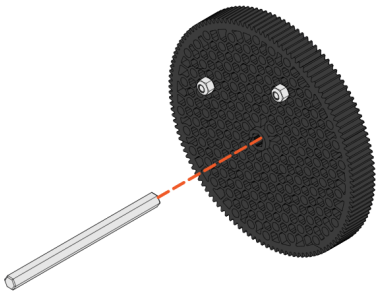
Note: The position of the bracket for now doesn't matter. Adjustments will be made in a later step to mesh the gears.

Gear Assembly



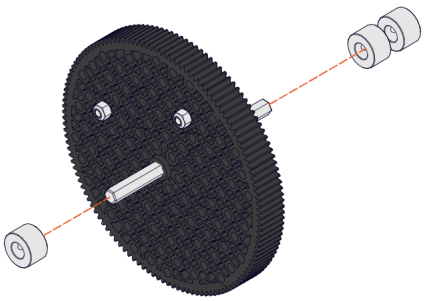
Attach to M3 x 16mm Screws to the 125 Tooth Plastic gear as shown in the image above.

Note: The screw placement in the image is a suggestion. Adjustment to the placement of the screws on the gear can be made at your discretion.

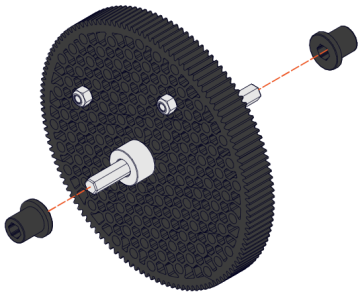


Slide the 125 Tooth Gear Assembly from step 1 onto a 5mm x 90mm Hex Shaft.

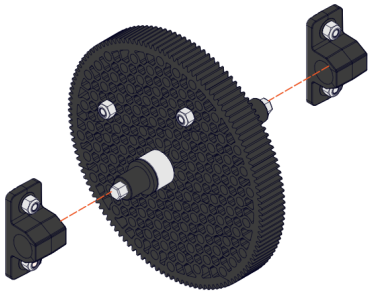
Note: The gear should sit close to the center of the shaft. Adjustments will be made in a later step.



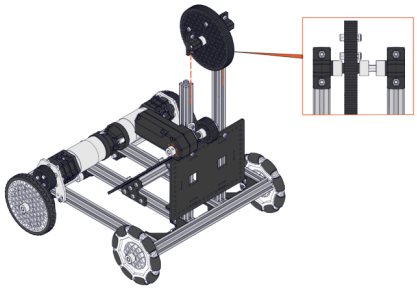
Add three Shaft Collars onto the shaft as shown. Leave the shaft collars loose for now so adjustments can be made later.



Add two Through Bore Bearing - Long to the shaft as shown



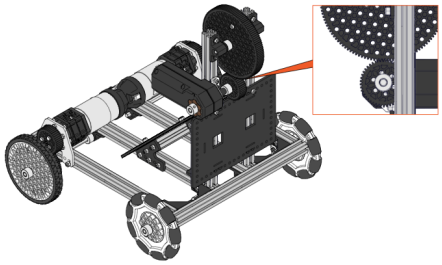
Sit two Bearing Pillow Blocks onto the Through Bore Bearings as shown.



Slide the Bearing Pillow Blocks onto the Uprights. The upper edge of the Pillow Blocks should be flush with the top of the Extrusions. Tighten the Nylock Nuts on the Bearing Pillow Blocks.

Once the Bearing Pillow Blocks are secure adjust and tighten the Shaft Collars as shown.

Note: The two outermost Shaft Collars should be flush against the bearings, securing them to the Pillow Blocks. The innermost Shaft Collar should be supporting the gear.



Adjust the Core Hex Motor Assembly so that the 45 Tooth Gear is meshed with the 125 Tooth Gear as shown.

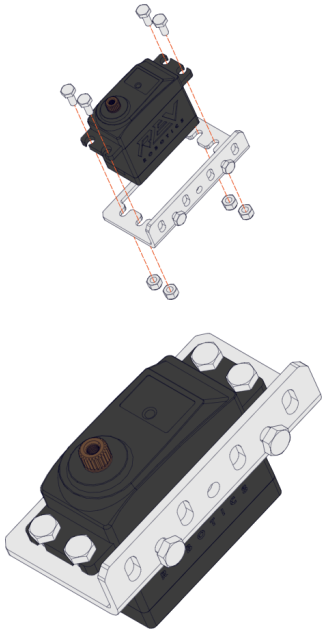
Once the Gears are meshed the **Arm Gear Assembly is complete**.

Arm Assemblies

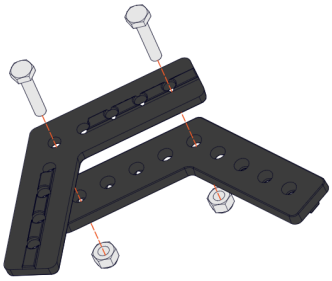
Arm Assembly Parts Required

Part Number	Description	QTY.
REV-41-1432	15mm Extrusion - 420mm	1
REV-41-1320	15mm Plastic Inside Corner Bracket	1
REV-41-1311	15mm Plastic 120 Degree Bracket	3
REV-41-1485	15mm Metal Bent Servo Bracket V2	1
REV-41-1097	Smart Robot Servo	1
REV-41-1828	Aluminum Servo Horn V2	1
REV-41-1359	M3 x 8mm Hex Cap Screws	8
REV-41-1361	M3 Nyloc Nuts	10
REV-41-1360	M3 x 16mm Hex Cap Screws	4
	Assemblies	
	Pre-loaded Bent Servo Bracket	1

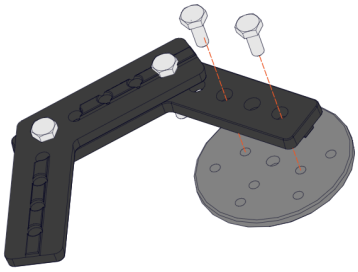
Servo Claw Assembly



Attach the Servo to the Pre-Loaded Bent Servo Bracket using M3 x 8mm Screws and Nyloc Nuts. Tighten the Nylock Nuts until snug.

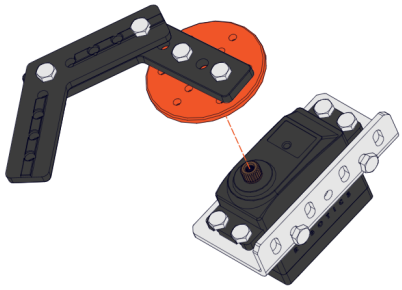


Attach two 120 Degree Brackets to each other using M3 x 16mm Screws and Nylock Nuts as show. Tight the Nylock Nuts until snug.



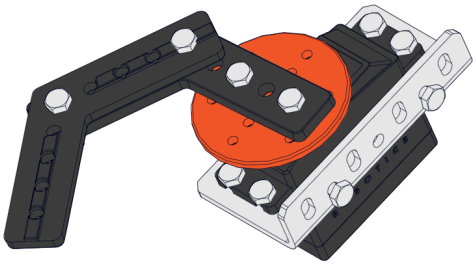
Attach the 120 Degree Bracket Assembly to the Aluminum Servo Horn using two M3 x 8mm Screws as shown. Tighten the screws until snug.

Note: The Aluminum Servo Horn is an orange aluminum, for this step it has been edit to grey so that the guides can be seen.



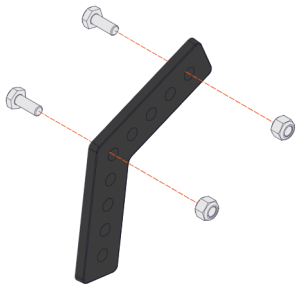
Attach the Servo Horn to the gear on the Servo.

Note: For this application the Servo Horn will just be placed onto the gear; in higher load applications the Servo Horn should be bolted to the Servo gear using a M3 Screw.

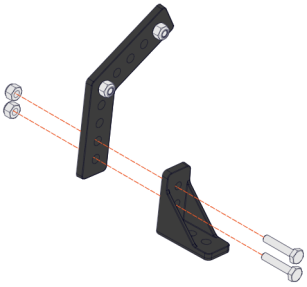


Servo Claw Assembly Complete.

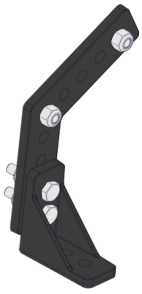
Limit Switch Bumper Assembly



Attach two M3 x 8mm Screws to a 120 Degree Bracket as shown.



Attach an Inside Corner Bracket to the 120 Degree Bracket using two M3 x 16mm Screws and Nylon Nuts as shown. Tighten the Nylon Nuts until snug.



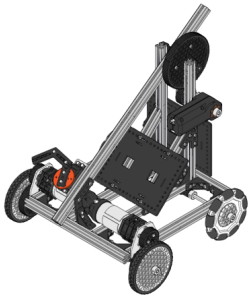
Limit Switch Bumper Assembly Complete.

Arm Assembly

Slide the Servo Claw Assembly onto a 15mm Extrusion - 420mm. Adjust to whatever position is preferred. Once adjusted secure the assembly to the Extrusion by tightening the Nylock Nuts until snug.

Slide the Limit Switch Assembly onto a 15mm Extrusion - 420mm. Adjust to whatever position is preferred. Once adjusted secure the assembly to the Extrusion by tightening the Nylock Nuts until snug.

Note: For now the positioning of the Limit Switch Bumper is flexible. After the Touch Sensor is attached, adjust the bumper so that it presses the button when the arm is all the way down.



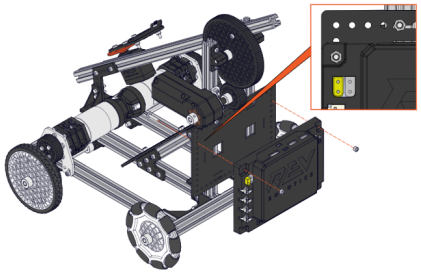
Arm Complete.

Final Assembly

Final Assembly Parts Required

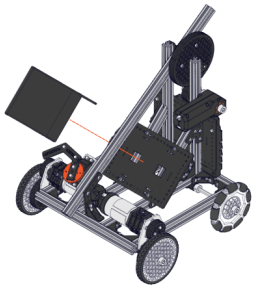
Part Number	Description	QTY.
REV-41-1359	M3 x 8mm Hex Cap Screws	2
REV-41-1361	M3 Nyloc Nuts	4
REV-41-1360	M3 x 16mm Hex Cap Screws	2
REV-31-1387	Switch Cable and Bracket	1
REV-31-1302	12v Slim Battery	1
REV-31-1595	REV Control Hub	1
REV-31-1425	Touch Sensor	1
REV-31-1408	JST PH 4-Pin Sensor Cable	4
REV-31-1413	JST VH 2-Pin Motor Cable	4
REV-11-1130	36” PWM Cable	1
REV-41-1373	Hook and Loop Fastener	2

Final Assembly

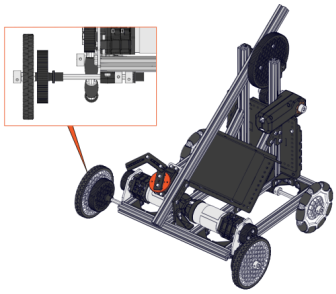


Attach the Control Hub to the Battery Holder Plate on the Uprights using two M3 x 16mm Screws and Nyloc Nuts. The Control Hub should be mounted to the plate using the third hole from the top of the plate as shown. Tighten the Nylock Nuts until snug.

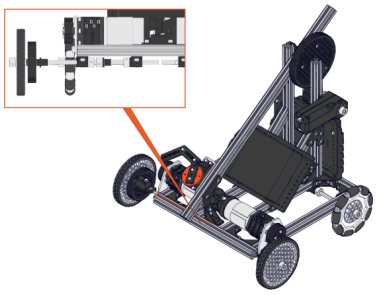
Note: The Battery Holder Plate may need to be adjusted along the Uprights in order for the Hub to fit.



Use Hook and Loop Fastener to attach at 12V Slim Battery to the Battery Holder Plate on the 45 Degree Assembly.

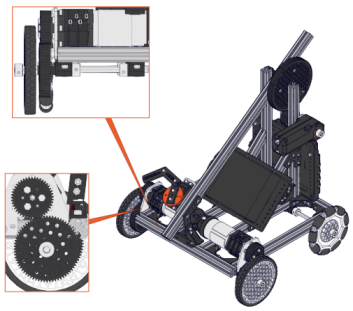


Loosen the Shaft Collars on one of the Traction Wheel Assemblies and pull the wheel partially out of the Bearing Pillow Blocks as shown.

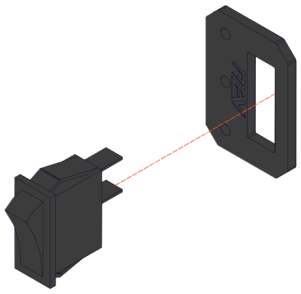
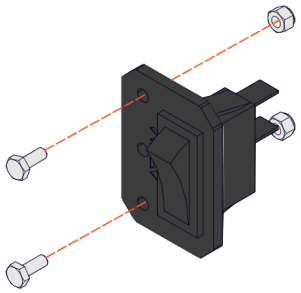
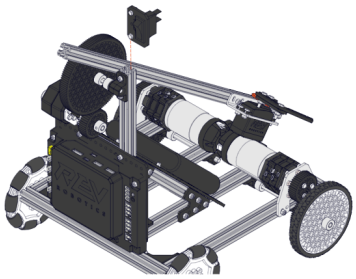


Slide a Touch Sensor, pre-loaded with M3 x 8mm Screws and Nylock Nuts, onto the Extrusion where the wheel was pulled out in the previous step. Adjust the Touch Sensor so that it is interacting with the Limit Switch Bumper on the arm.

Once the Touch Sensor is adjusted into place tighten the Nylock Nuts until snug.



Slide the Traction Wheel Assembly back into its proper place. Before tightening the Shaft Collars make sure that the gear on the wheel assembly is meshed with the gear on the UltraPlanetary Motor.

	Slide the Switch into the Switch Mounting Bracket.
	Pre-load the Switch Mounting Bracket with two M3 x 8mm Screws and Nylock Nuts.
	Slide the down the upright on the opposite side from the Core Hex Motor, The switch will sit just above the 45 Degree Assembly

Note: Connect the Control System to the Control Hub via the appropriate wires.