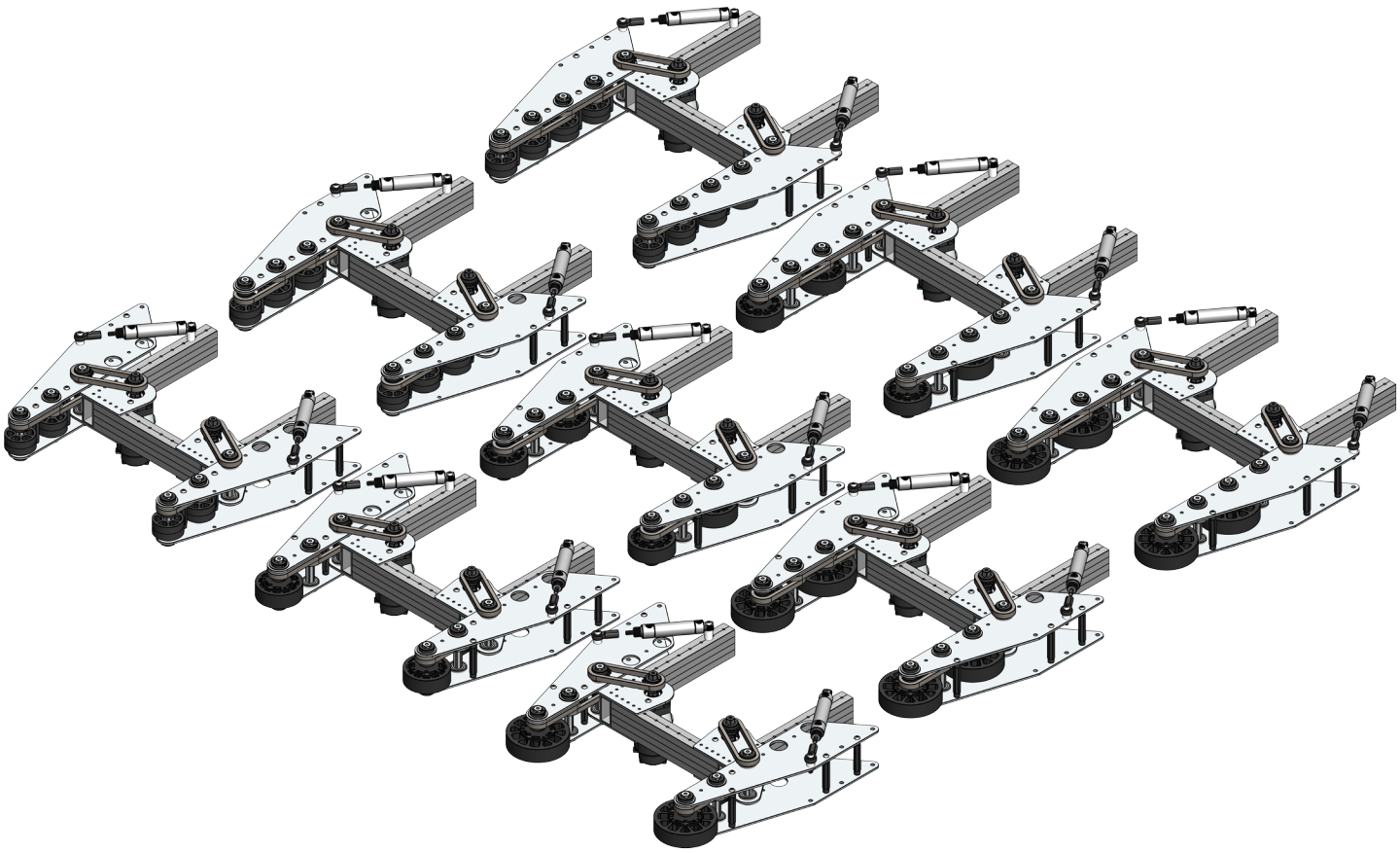
GreyT Roller Claw V2 - User Guide (Rev 1)



GreyT Roller Claw V2 - User Guide (Rev 1)

Table of Contents

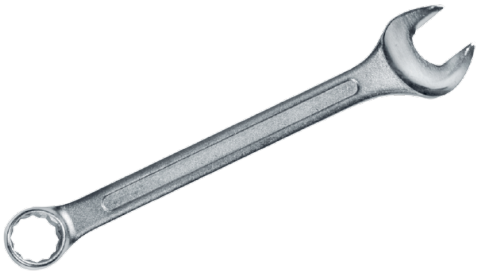
What is the GreyT Roller Claw V2?

The GreyT Roller Claw V2 is an upgrade to the original GreyT Roller Claw. Originally designed to be a simple solution for picking up 2018 Powercubes or other FRC sized objects such as balls and totes, the V2 comes with the added benefits of more adjustability and durability.

Some improvements include:

- Durable 2x1 frame construction
- Falcon support
- New VersaPlanetary mounting provides more protection for the motors and gearboxes
- 3 new claw length configurations: Long Claw, Medium Claw, Short Claw

Recommended Tools

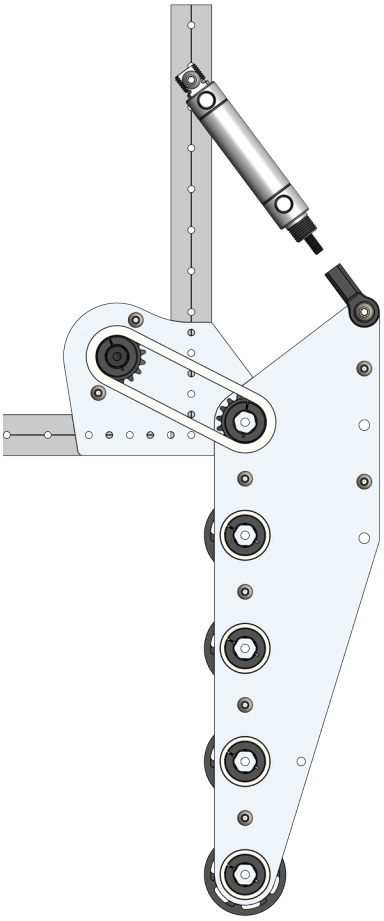
Picture	Name
	SAE/Inch Allen Set
	3/8” and 7/16” Wrench
	Rivet Gun (Pneumatic version recommended)

Claw Arm Guide

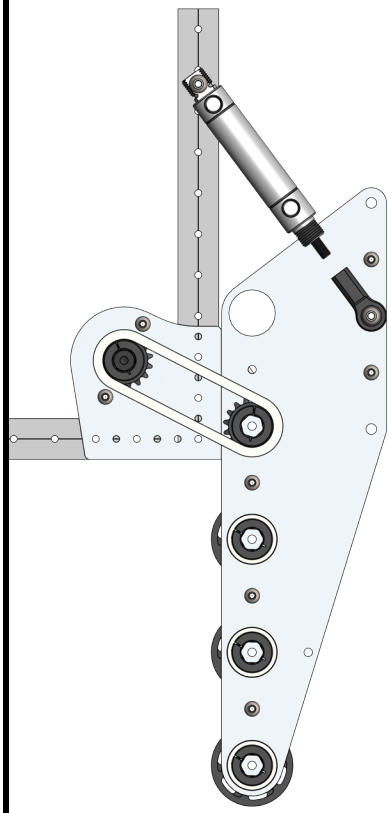
One of the newest features of the GreyT Roller Claw V2 is the ability to adjust the length of the claw arm itself. Because the rollers are powered through the claw pivot, the GreyT Roller Claw V2 can be mounted in any of the positions shown in the images below.

The following pages show more details regarding the wheel compatibility and standoff locations for each arm length configuration.

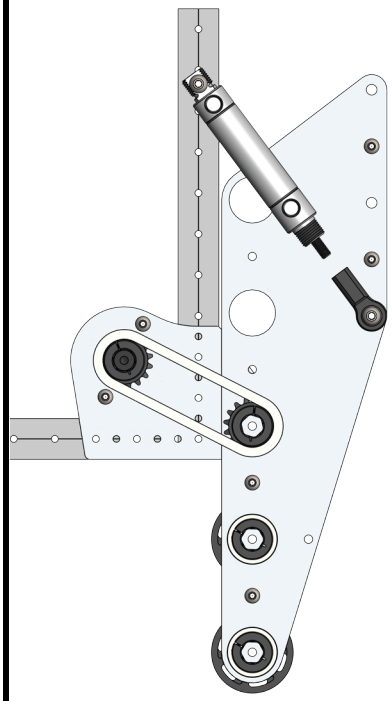
Long Claw



Medium Claw



Short Claw

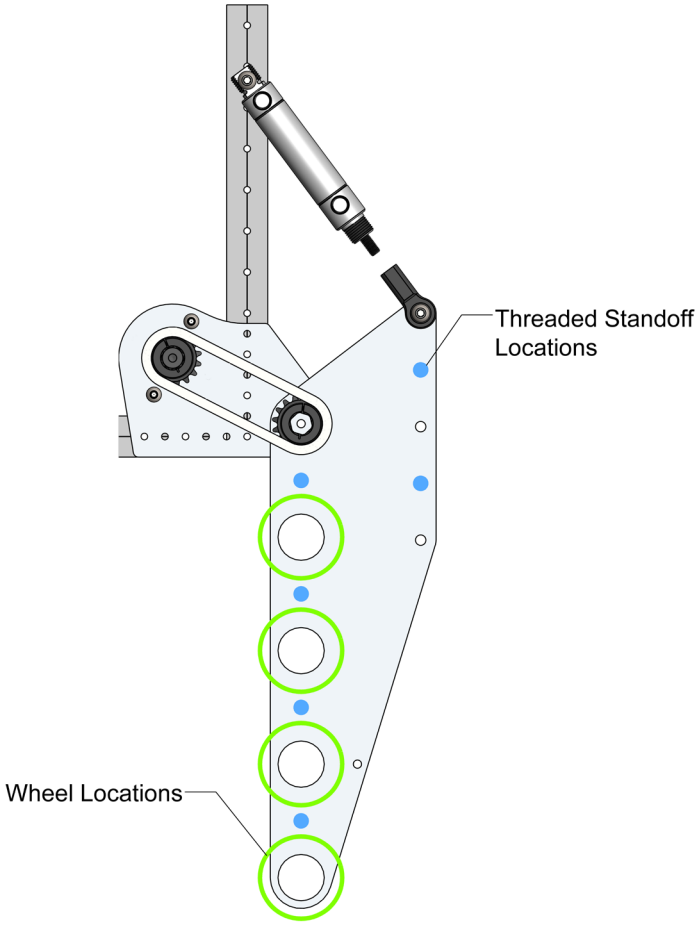


Long Claw Arm Guide

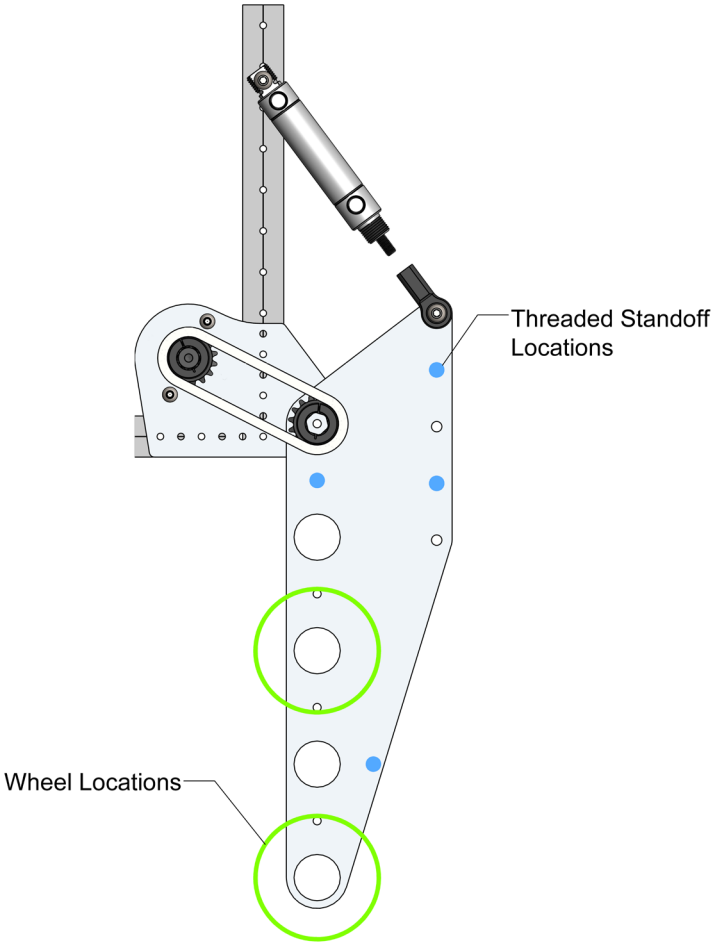
The images below mark out the possible locations for the wheels and standoffs in green and blue, respectively.

Note: If the wheels you are using are too wide to fit between the roller claw plates, you may have to cut the Roller Shafts longer and install them on top and bottom of the assembled claw.

2" Wheels



Larger Wheels



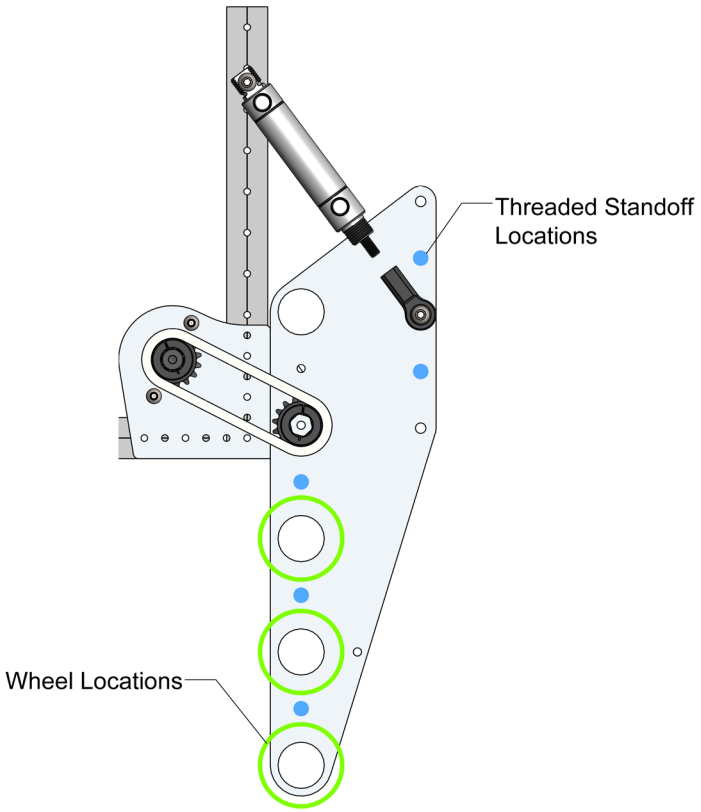
Medium Claw Arm Guide

The images below mark out the possible locations for the wheels and standoffs in green and blue, respectively.

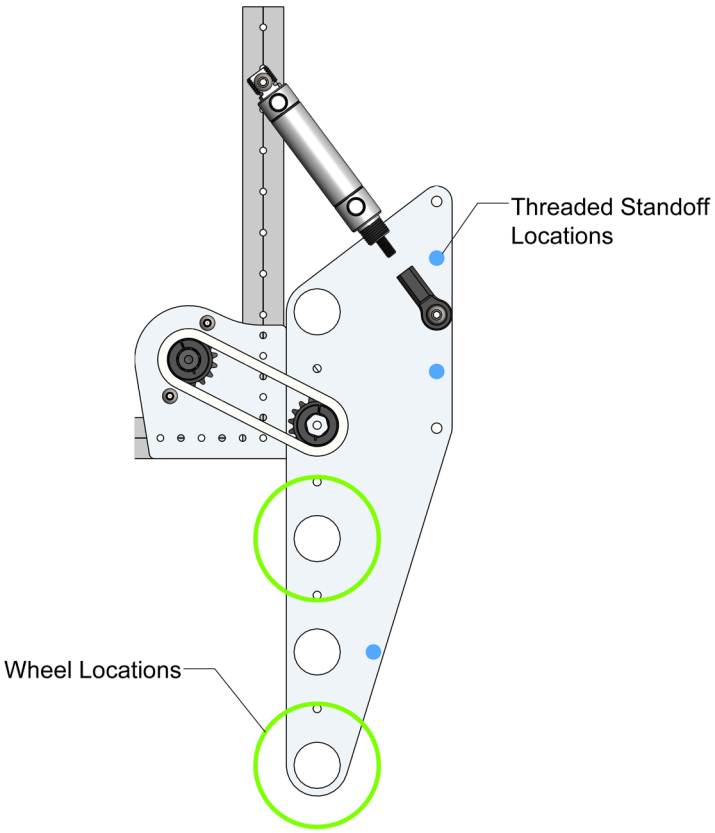
For any wheels larger than 3” you will not be able to install them in the hole closest to the claw pivot, unless you install them on top and bottom of the assembled roller claw.

Note: If the wheels you are using are too wide to fit between the roller claw plates, you may have to cut the Roller Shafts longer and install them on top and bottom of the assembled claw.

2” Wheels



Larger Wheels

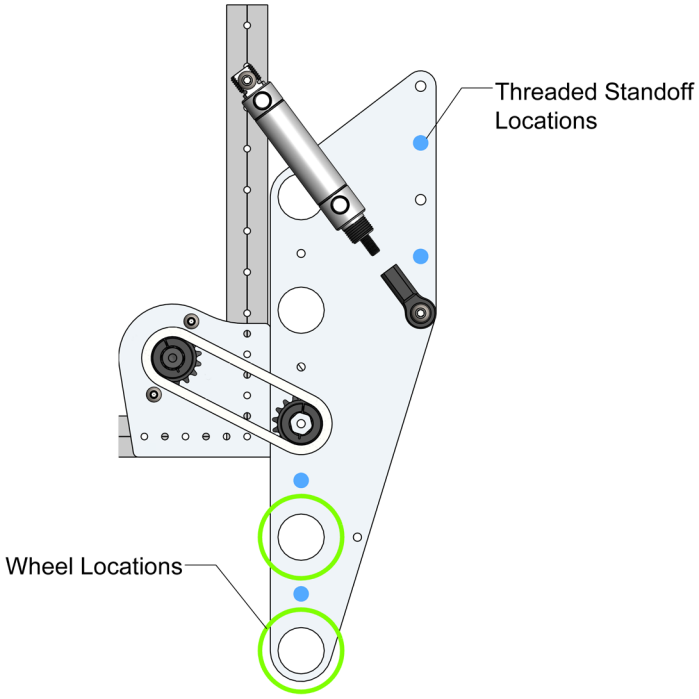


Short Claw Arm Guide

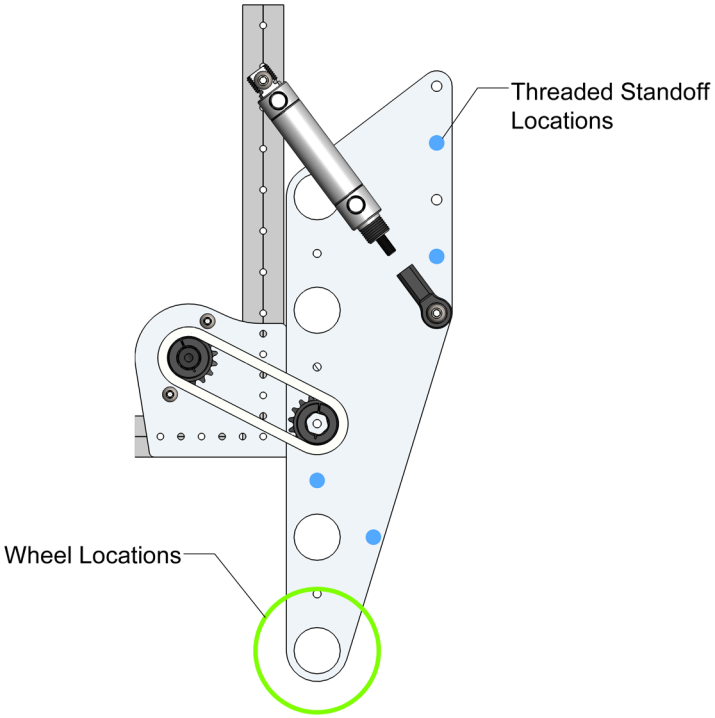
The images below mark out the possible locations for the wheels and standoffs in green and blue, respectively.

Note: If the wheels you are using are too wide to fit between the roller claw plates, you may have to cut the Roller Shafts longer and install them on top and bottom of the assembled claw.

2” Wheels



Larger Wheels



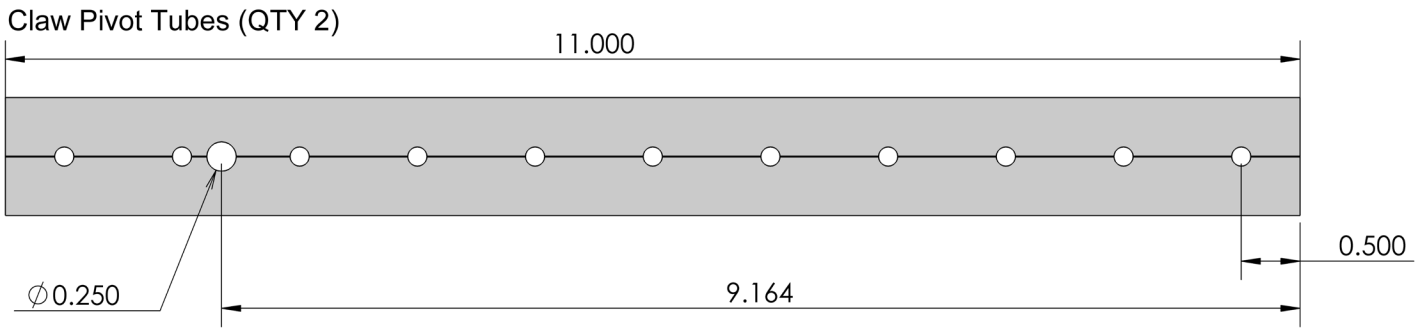
Tubing Cut Guide

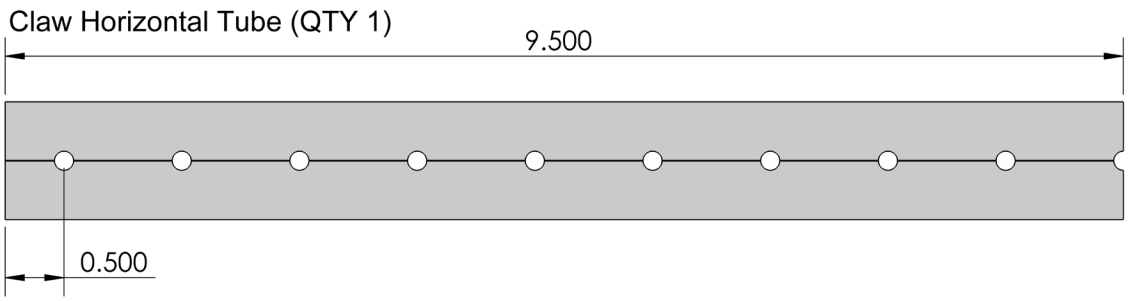
The overall length for these tubes is for the claw represented in the CAD model. This can be changed to fit the requirements of any design.

Ensure that when cutting tubes, the distance from the last hole to the end of the tube is the same as the image below. Usually this means that the tube length must be in 1/2” increments. This distance is required for the hole pattern in the pivot plates. If VersaFrame tubing is not used then tubes can be any length.

The Claw Pivot Tube length shown below is the minimum length required if you plan on mounting the piston in the same way. The minimum length for the Claw Horizontal Tube is 5.25” if using non-VersaFrame tubing.

Note: This model does not include any holes that can be used for the pivot. That will be up to the user.



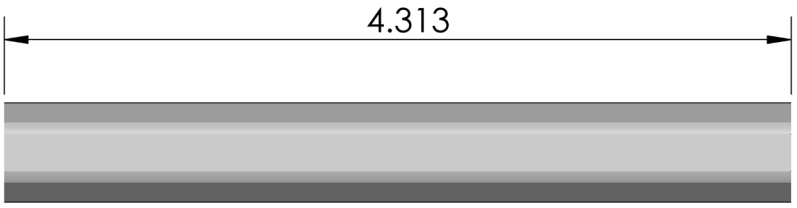


Hex Shaft Cut Guide

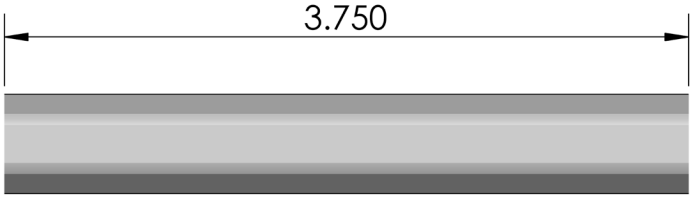
The Pivot Shaft length is universal. The roller shaft length is the minimum length required for the claw represented in the CAD model. If you plan on using wheels that do not fit inside the claw, you must cut these shafts longer to accommodate them.

The quantity listed below is for the Long Claw configuration using the 2” flex wheels. The number of Roller Shafts required to assemble the GreyT Roller Claw is dependent on the claw length and wheel size. See the appropriate Claw Arm Guide for more information.

Pivot Shaft (QTY 2)



Roller Shaft (QTY 8)

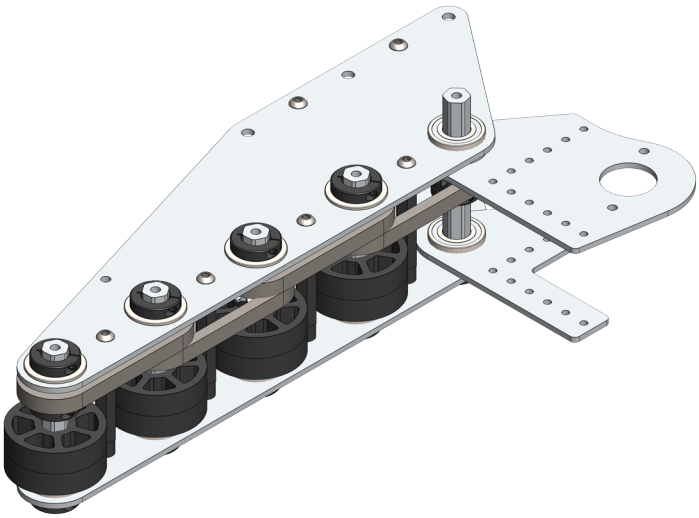


Claw Arm Assembly Instructions

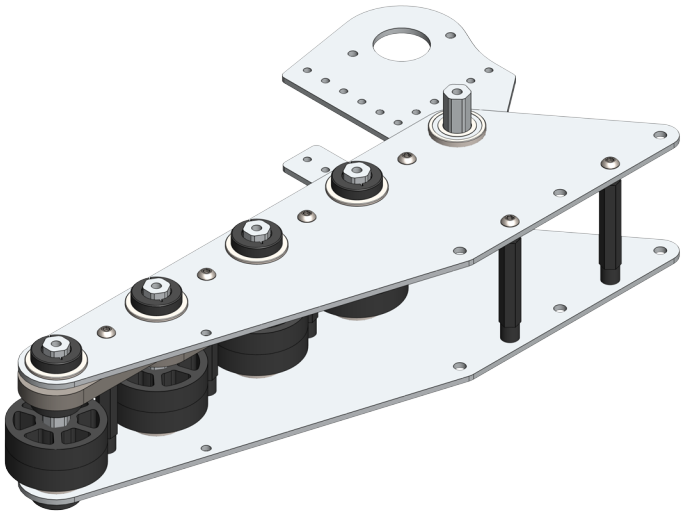
The images for the following instructions will show the steps for the Left Claw assembly in the Long Claw configuration using the 2” flex wheels. In order to assemble the Right Claw, simply mirror these steps.

Note: Blue Loctite (McMaster P/N 1004A12) is recommended on all bolts that thread into a tapped hole.

Completed Right Claw

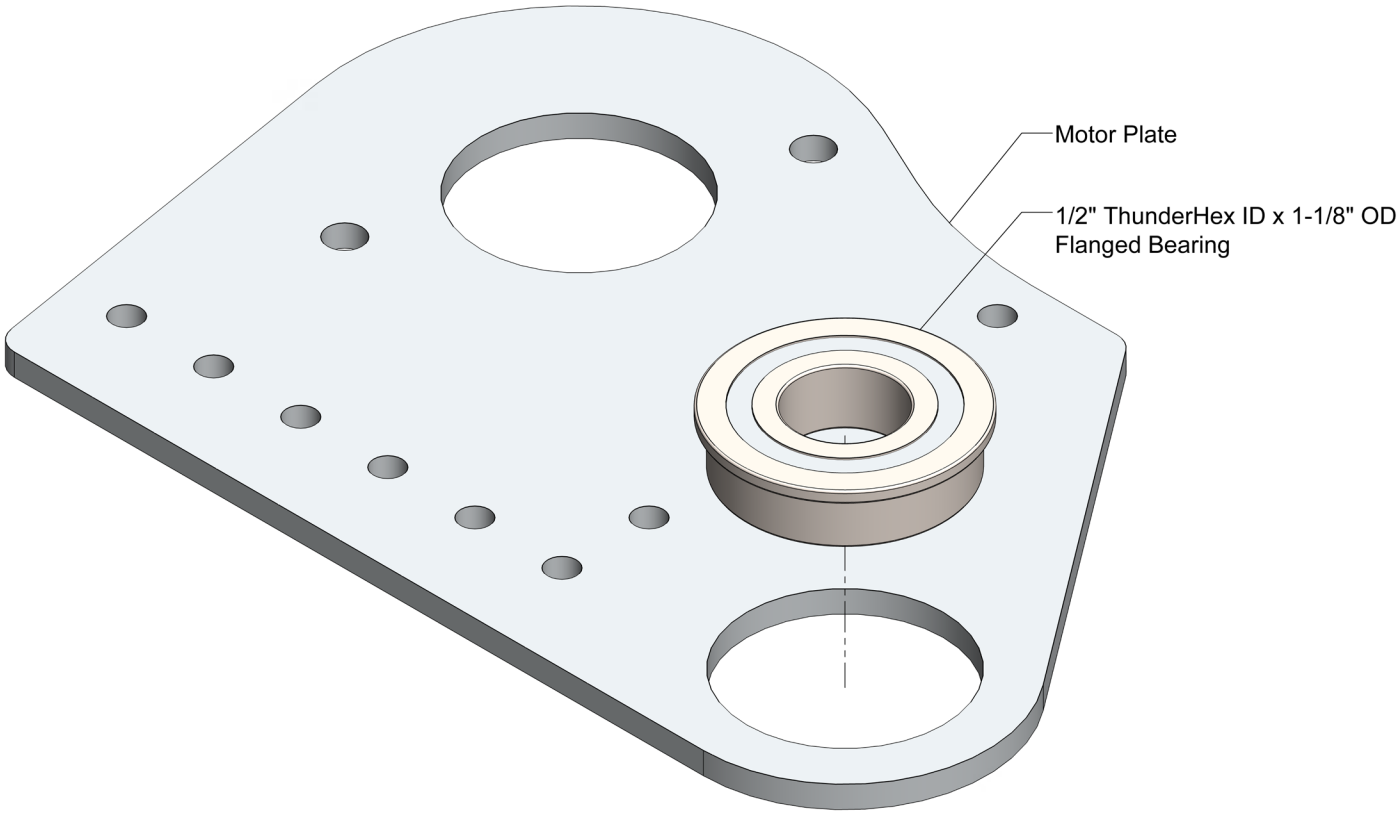


Completed Left Claw



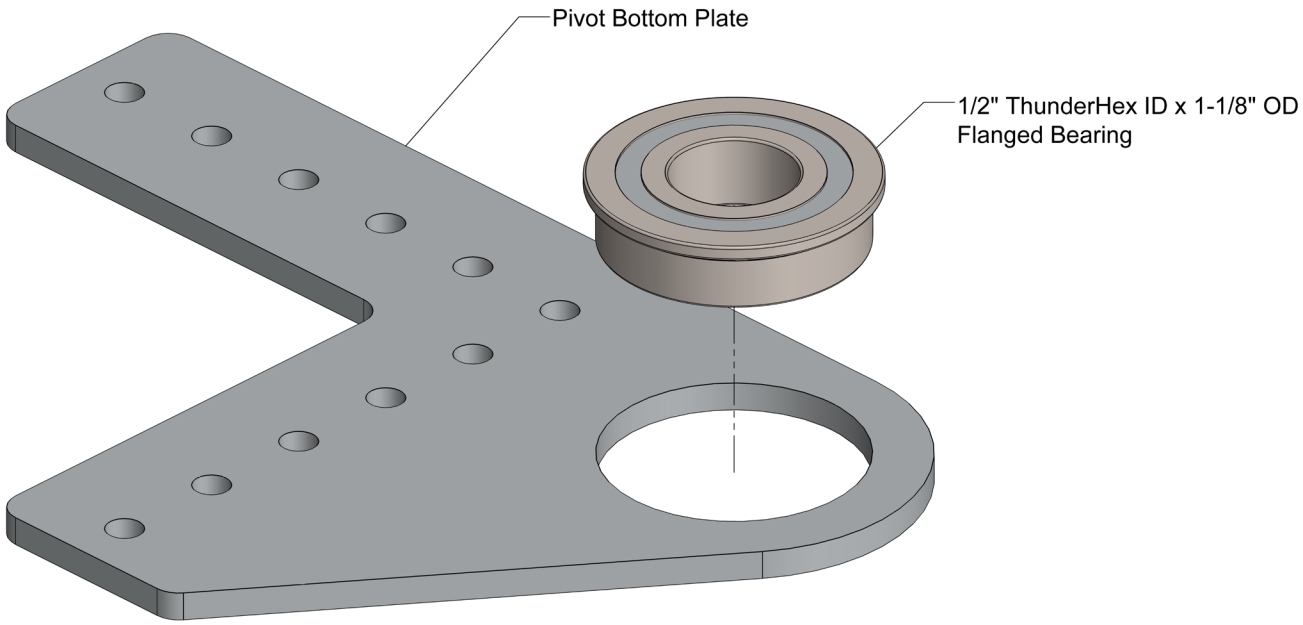
Claw Arm Step 1

This bearing will be a light press fit and may be pressed in by hand or with an arbor press. The image below shows the side the bearing must be installed from for the Left Claw. If assembling the Right Claw, install the bearing from the opposite side.



Claw Arm Step 2

This bearing will be a light press fit and may be pressed in by hand or with an arbor press. The image below shows the side the bearing must be installed from for the Left Claw. If assembling the Right Claw, install the bearing from the opposite side.

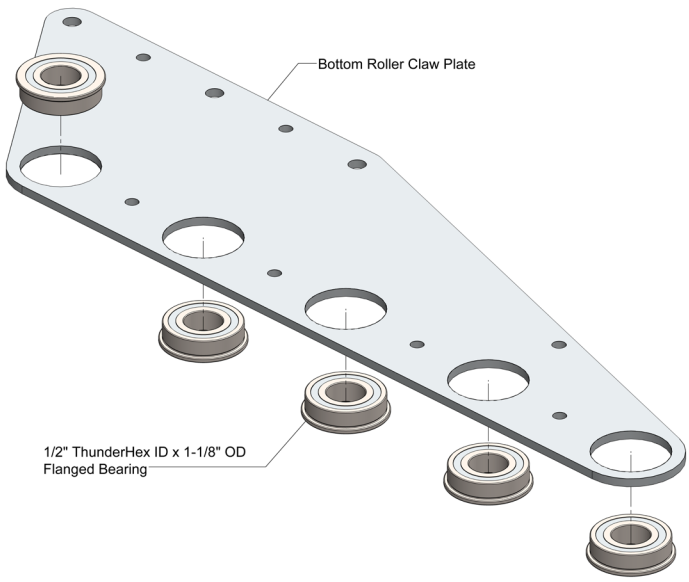


Claw Arm Step 3

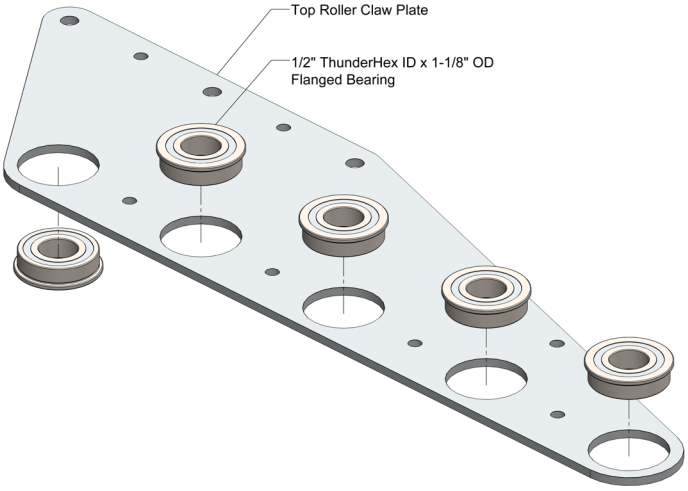
These bearings will be a light press fit and may be pressed in by hand or with an arbor press. The images below show the sides the bearings must be installed from for the Left Claw Roller Plates. The pivot bearing is installed from the opposite side of the plate as the roller bearings for both the top and bottom plate.

Note: Bearings are only required where the wheels and pivot are located. If you are assembling the claw in any of the other Arm Length configurations or plan to use any size wheel larger than 2”, see the appropriate Arm Guide at the beginning of the user guide for more information.

Bottom Plate



Top Plate



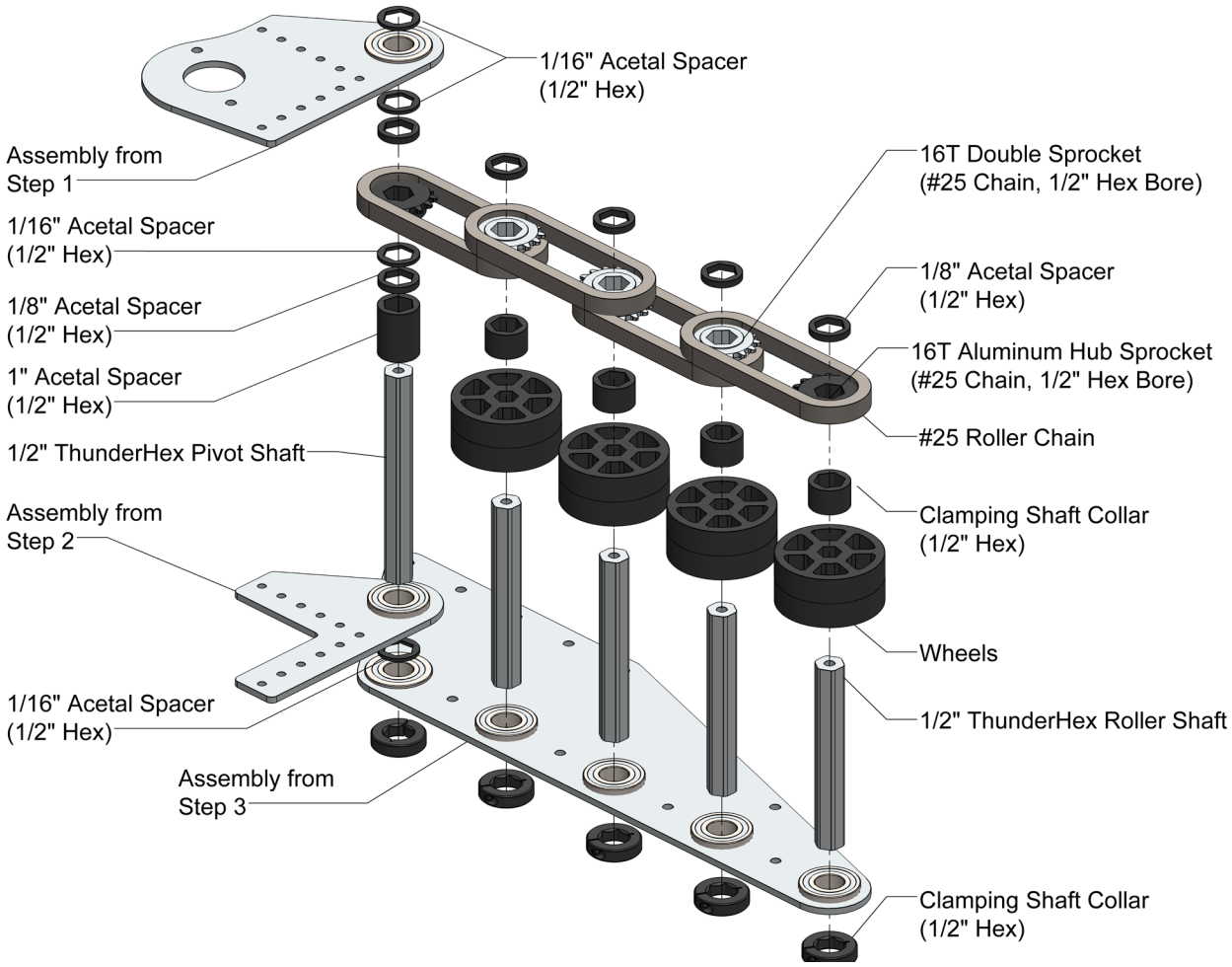
Claw Arm Step 4

Slide all components on to the Roller and Pivot Shafts in the order shown in the image below.

The Clamping Shaft Collars underneath the Sprockets should be left loose. These will be tightened during Step 6.

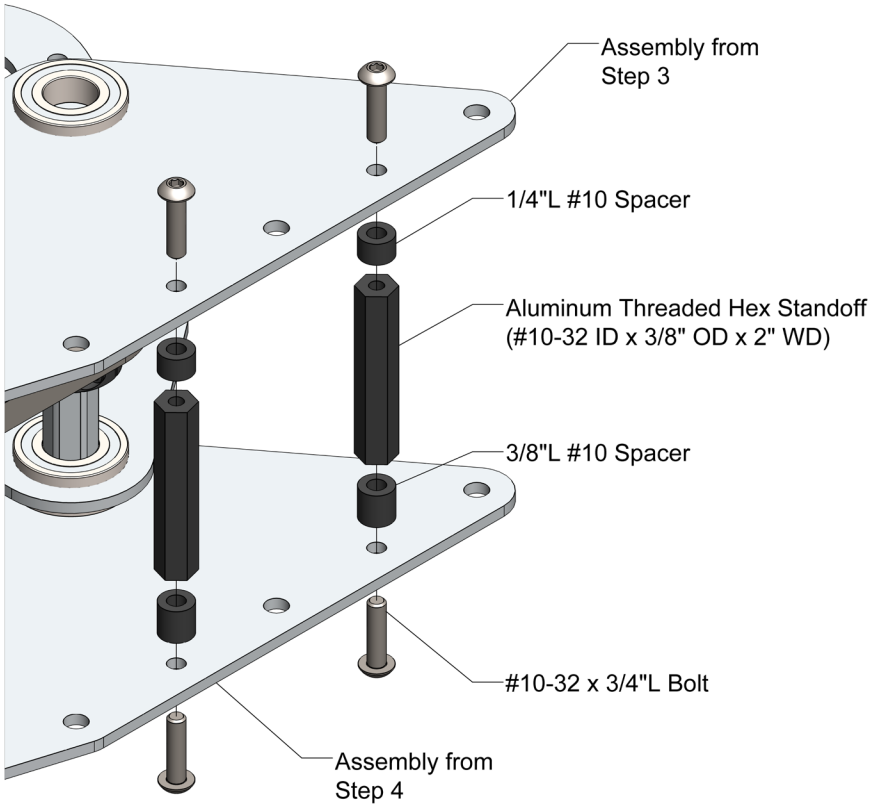
The Clamping Shaft Collars under the plate should be flush with the ThunderHex Bearings, and the Roller Shafts and Pivot Shafts must stick out far enough to be flush with the opposite side of the Clamping Hex Collar.

Note: If you are using wheels that do not fit between the claw plates, you may have to omit them from this step and install them on top and/or bottom of the roller claw arm.



Claw Arm Step 5

The image below shows the proper stackup of Spacers and Threaded Standoffs required for all configurations of the Roller Claw. For the Threaded Standoff stackup locations, see the appropriate Claw Arm Guide at the beginning of the user guide.

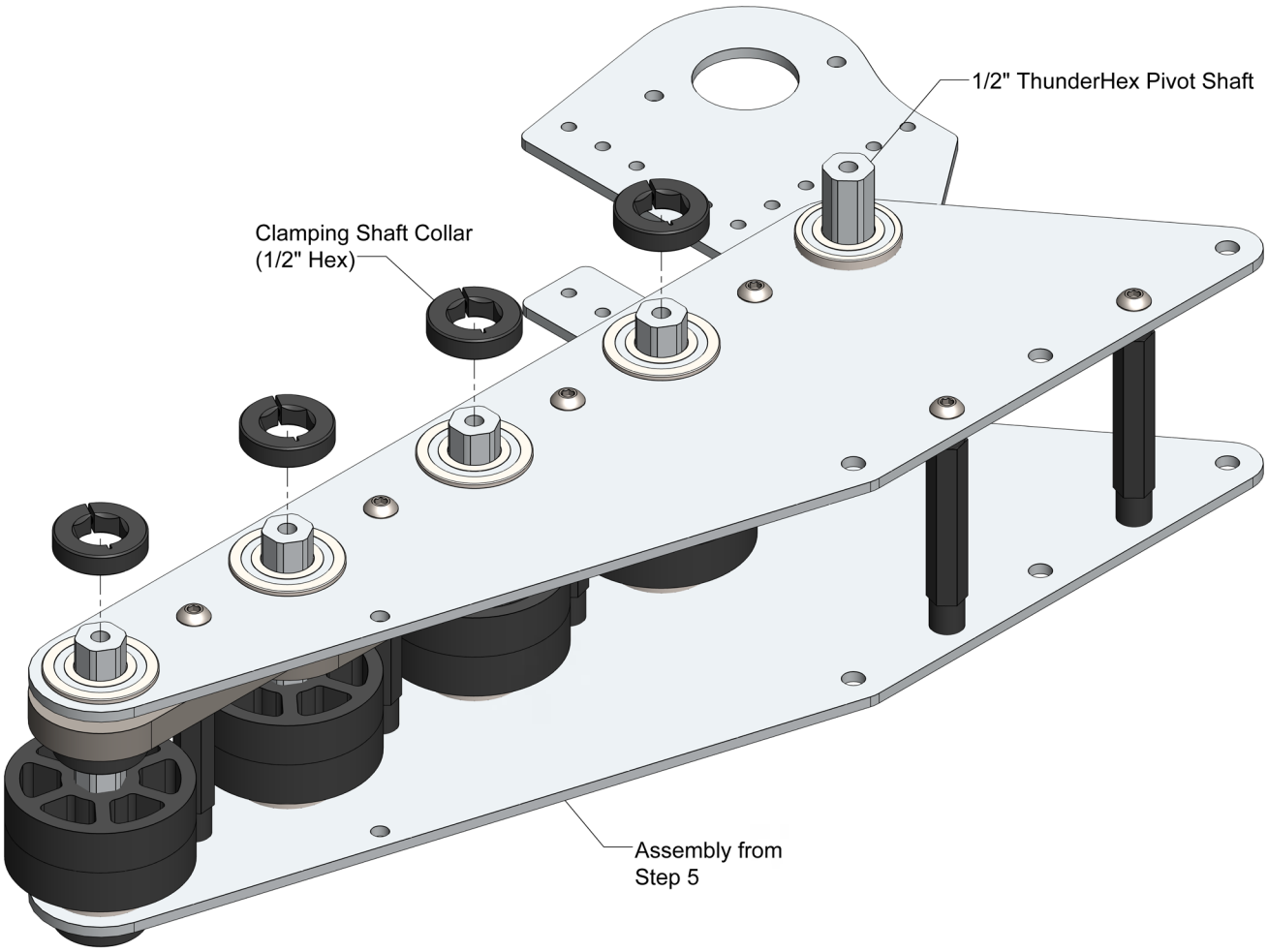


Claw Arm Step 6

Once the Top Plate is installed, Clamping Shaft Collars can be used to capture the Roller Shafts and keep them from sliding out from the bottom of the claw. The Clamping Shaft Collars on top and bottom of the claw must be flush with the ThunderHex Bearings.

The Sprockets, Spacers, and Clamping Shaft Collars should be moved flush against the bottom side of the Top Plate ThunderHex Bearings. Tighten the Clamping Shaft Collars to keep the Sprockets and Chain from sliding down.

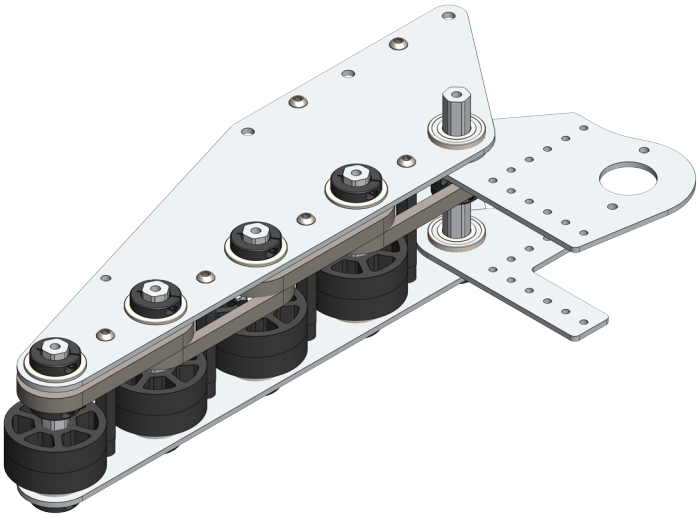
Note: A Clamping Shaft Collar can be installed on the Pivot Shaft during this step to keep it from falling out, but that shaft collar will have to be removed when the motor is installed.



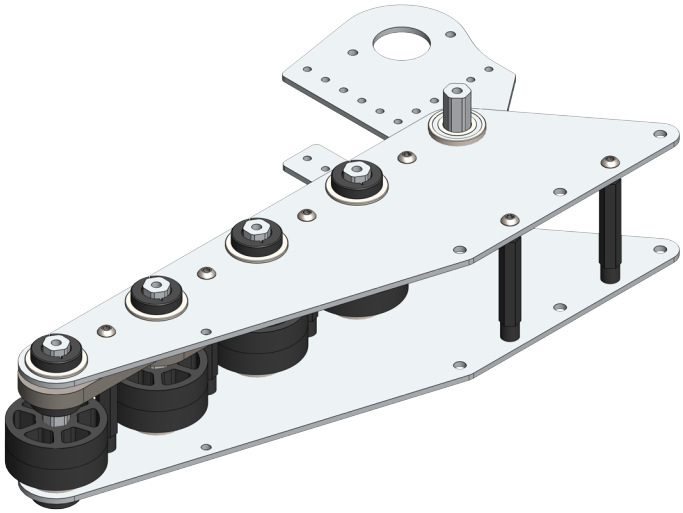
Completed Claws

The images below show two completed claws. In order to assemble the Right Claw, repeat the Claw Arm Assembly Instructions and mirror them.

Completed Right Claw



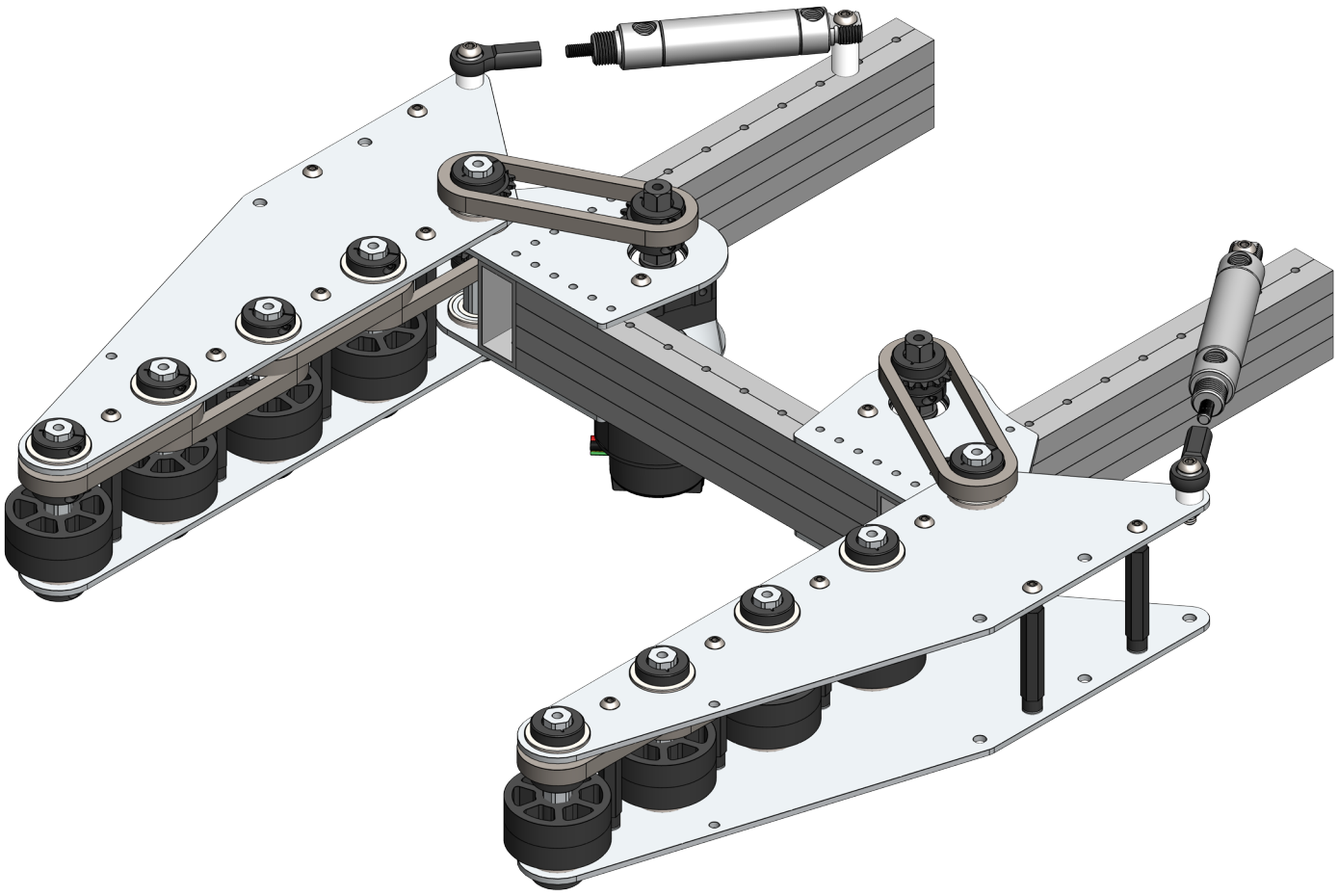
Completed Left Claw



General Assembly Instructions

For the purposes of this user guide, the images will show the assembly instructions for the GreyT Roller Claw in the Long Claw configuration with 2” flex wheels.

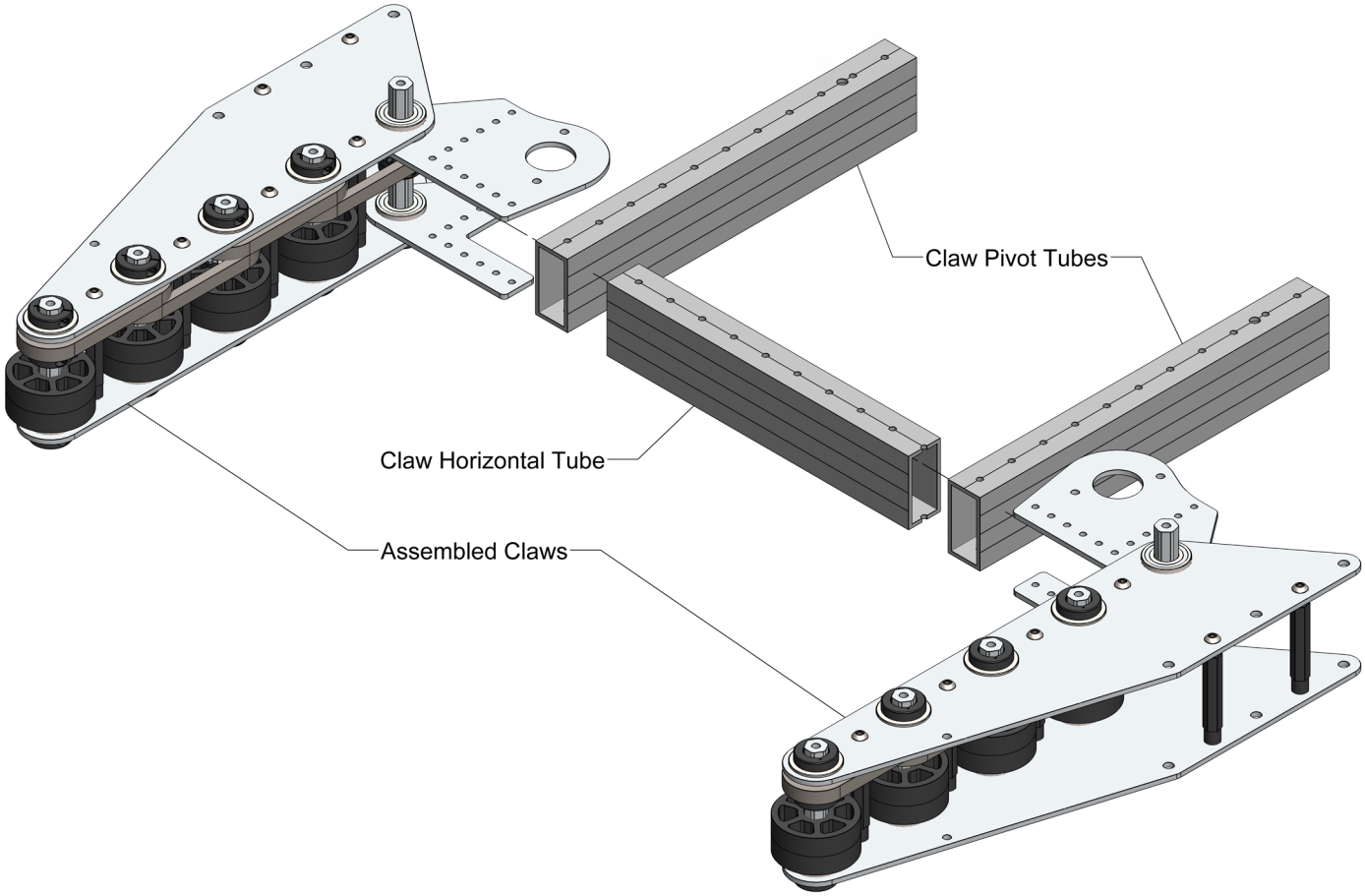
Note: Blue Loctite (McMaster P/N 1004A12) is recommended on all bolts that thread into a tapped hole.



Step 1

The hole patterns in the Claw Pivot Plates will be used to assemble the frame of the GreyT Roller Claw. Unless otherwise specified, the Roller Claw can be assembled using bolts or rivets as desired.

Note: If you wish to assemble the frame with rivets, it is recommended to also use the 2x1 Tube Plugs (WCP-0374) with the appropriately sized plastic sleeves to help strengthen the frame of the claw.

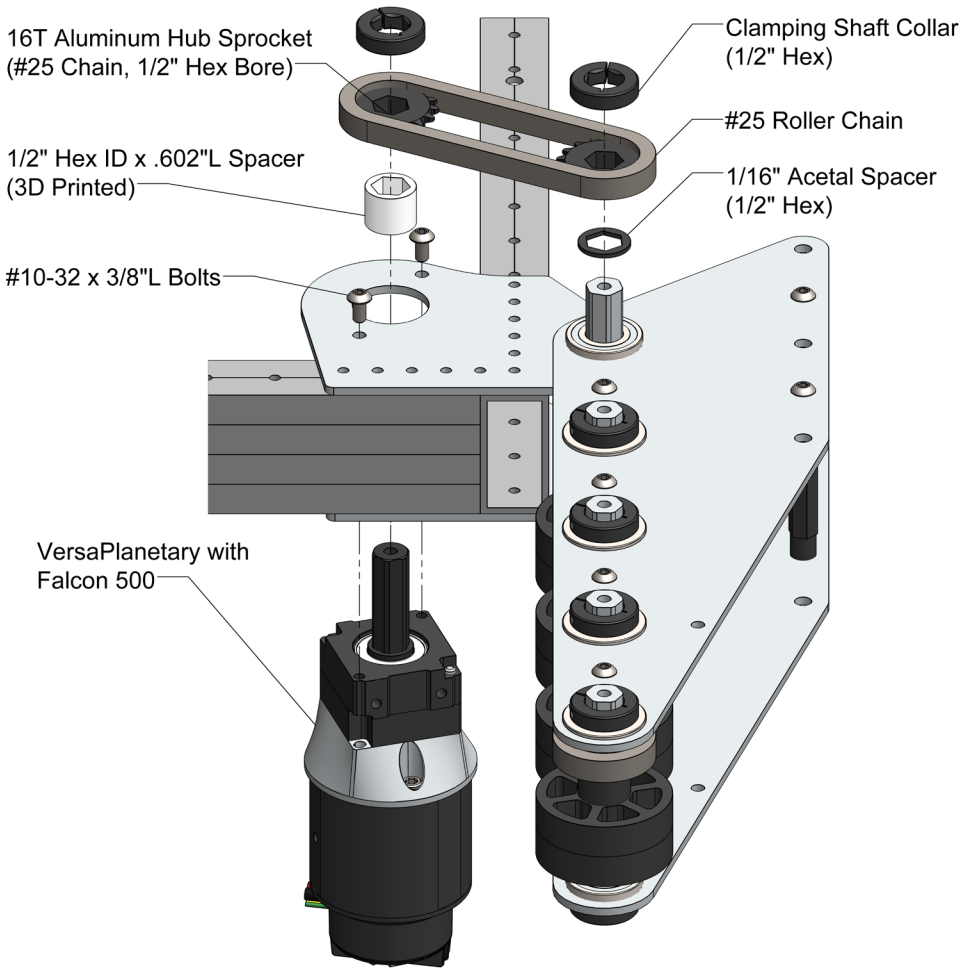


Step 2

Slide all components on to the shafts in the order shown in the image below.

Repeat this step for both claws.

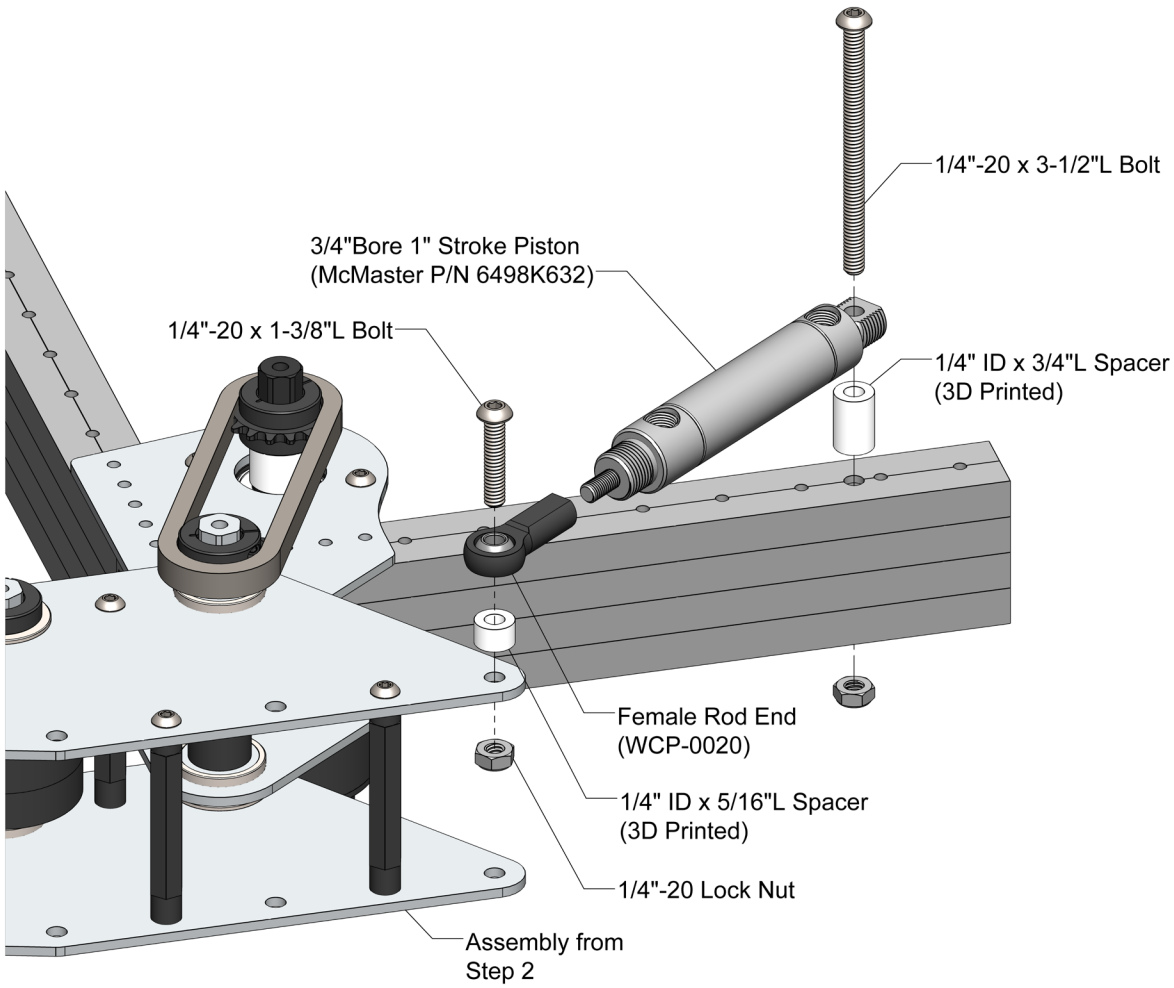
Note: If you assembled the claw with a Clamping Shaft Collar on the Pivot Shaft in Claw Arm Step 6, then remove it before doing this step.



Step 3

Bolt the 3/4” Bore 1” Stroke Piston with Rod End to the claw using the spacers shown in the image below. Do not overtighten either of the 1/4”-20 bolts used in this step, as this may cause the piston to bind when fired.

Note: If you plan on using a different piston from the one shown here, the 1/4” hole shown in the Tubing Cut Guide will have to be changed.



Available Kits

Kit Number	Name
KIT-0035	GreyT Roller Claw V2
KIT-0036	GreyT Roller Claw V2 Gearbox (Falcon, 5:1)

KIT-0035: GreyT Roller Claw V2

Part Number	Name	QTY
WCP-0224	GreyT Roller Claw V2	1
217-2642	16t Aluminum Hub Sprocket (#25 Chain, 1/2" Hex Bore)	8
217-2737	Clamping Shaft Collar - 1/2" Hex ID	22
217-2775	#25 Roller Chain (10 feet)	1
217-3257	1/16" Acetal Spacer - 1/2" Hex (10-pack)	1
217-3261	1/2" Acetal Spacer - 1/2" Hex (10-pack)	1
217-3263	1" Acetal Spacer - 1/2" Hex	2
217-3453	1" x 2" x 0.100" Pre-Drilled VersaFrame Aluminum Tube Stock (59")	1
217-4006	13.75mm (1/2" ThunderHex ID) x 1.125" OD x 0.313" WD (Flanged Bearing)	24
217-4017	1/2" Hex x 0.201" ID ThunderHex Stock (36")	2
WCP-0020	Aluminum Female Rod End (1/4"-28, .250" ID)	2
WCP-0087	16t Aluminum Hub Double Sprocket (#25 Chain, 1/2" Hex Bore)	6
WCP-0230	Aluminum Threaded Hex Standoffs (#10-32 ID x 3/8" OD x 2" WD) (5-Pack)	3
WCP-0308	Aluminum Spacers (.196" ID x 3/8" OD x 1/4" WD) (5-Pack)	3
WCP-0309	Aluminum Spacers (.196" ID x 3/8" OD x 3/8" WD) (5-Pack)	3

KIT-0036: GreyT Roller Claw V2 Gearbox (Falcon, 5:1)

Part Number	Name	QTY
217-6515	Falcon 500	2
217-4973	VersaPlanetary v2 Base Kit, 1:1, 1/2" Hex Output	2
217-4018	VersaPlanetary v2 CIM Adapter	2
217-2816	VersaPlanetary Ring Gear	2
217-2819	VersaPlanetary 5:1 Gear Kit	2

WCP-0224: GreyT Roller Claw V2

Part Number	Name	QTY
WCP-0224-001	Motor Mount	2
WCP-0224-002	Claw Plate	4
WCP-0224-005	Pivot Mount	2
217-2758	1/8" Acetal Spacer - 1/2" Hex	12
217-3259	1/4" Acetal Spacer - 1/2" Hex	2
WCP-0252	#10-32 x .375" L BHCS (Steel, Black Oxide)	4
WCP-0254	#10-32 x .750" L BHCS (Steel, Black Oxide)	24
~	1/4"-20 x 1.25" L BHCS (Steel, Black Oxide)	2
~	1/4"-20 x 3.5" L BHCS (Steel, Black Oxide)	2
WCP-0224-008	3D Printed Rod End Spacer	2
WCP-0224-009	3D Printed Piston Spacer	2
WCP-0224-012	3D Printed VersaPlanetary Spacer	2

Revision Table

Revision Date	Revision #	Description
1/7/2022	1.0	First revision created.