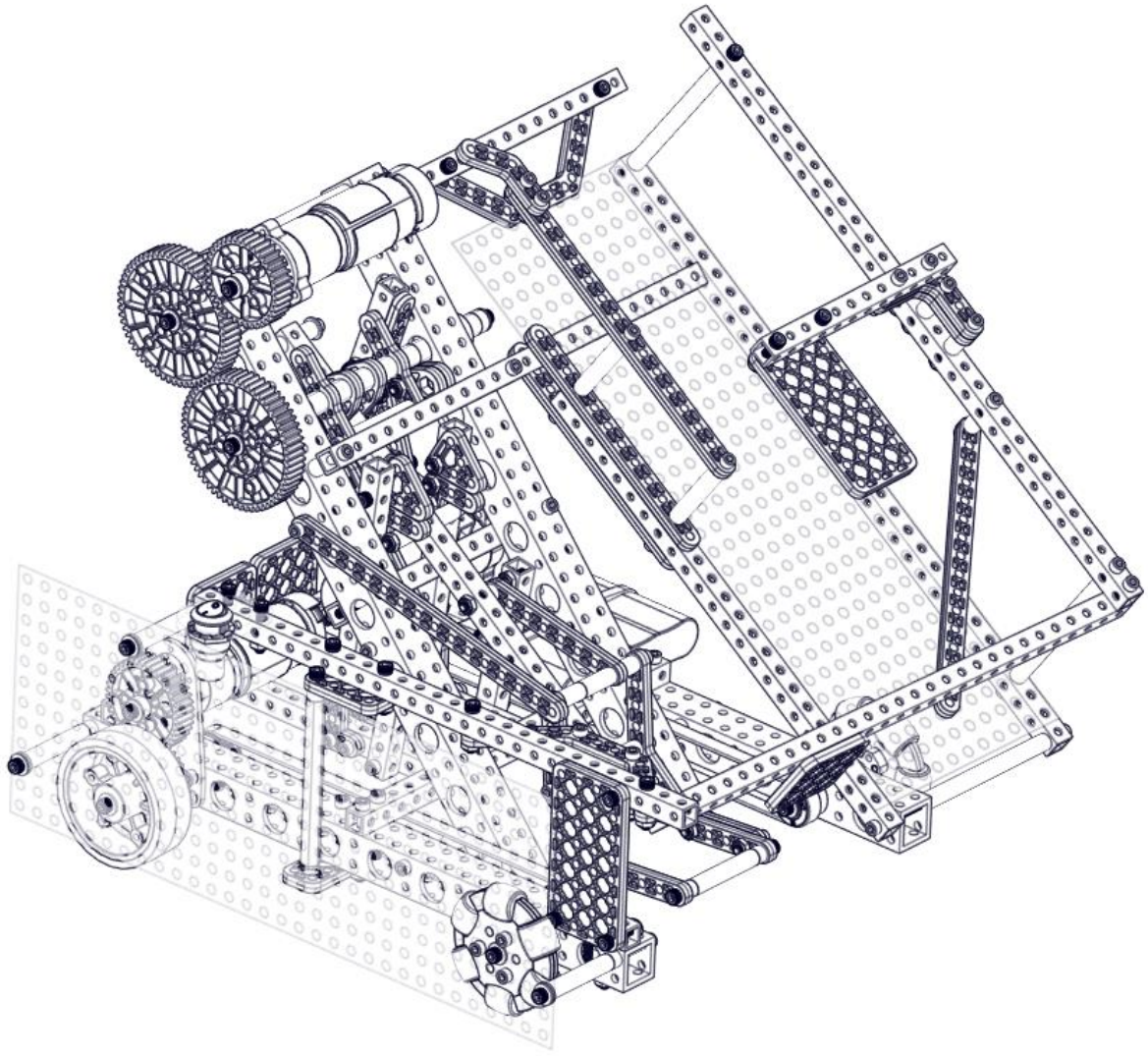
AndyMark®

ROBITS | DECODE ROBOT

Assembly Guide



Revision #	Date	Author	Purpose
0	8/29/2025	E. Scime	Original Document

P. Yeung	9/2/2025
Reviewer Name	Date Reviewed

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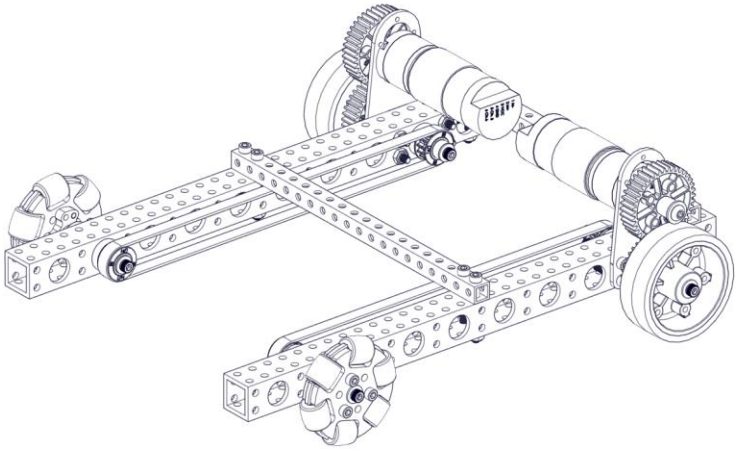
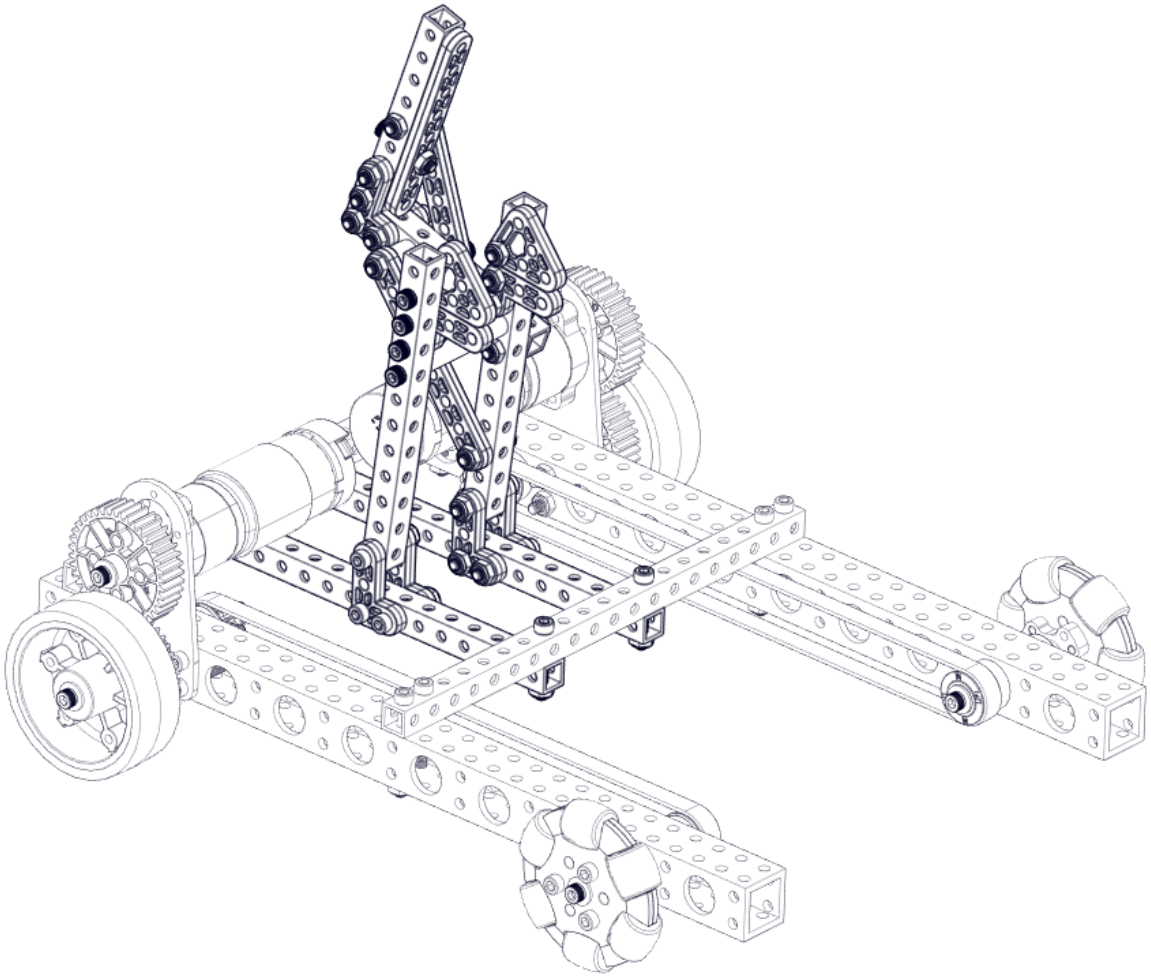
To begin, complete the ROBITS Starter Chassis by following the assembly guide.

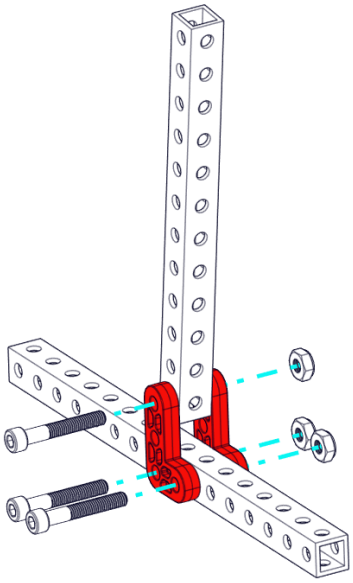


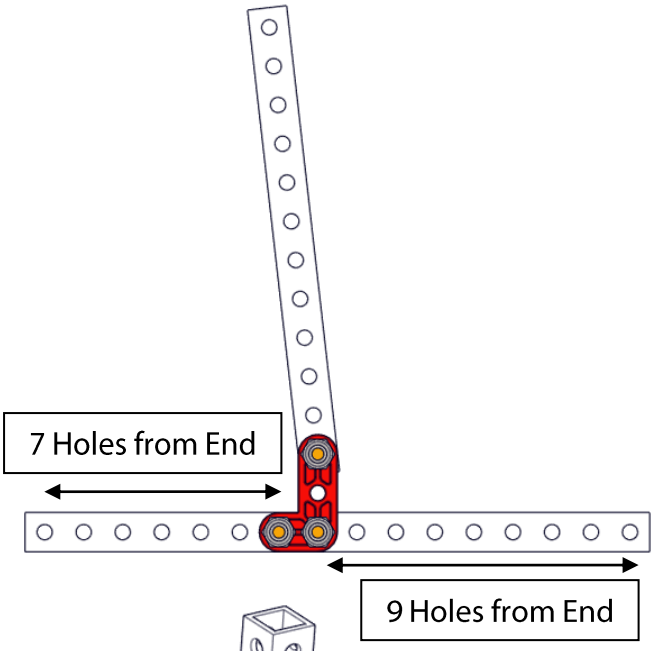
Latch Assembly

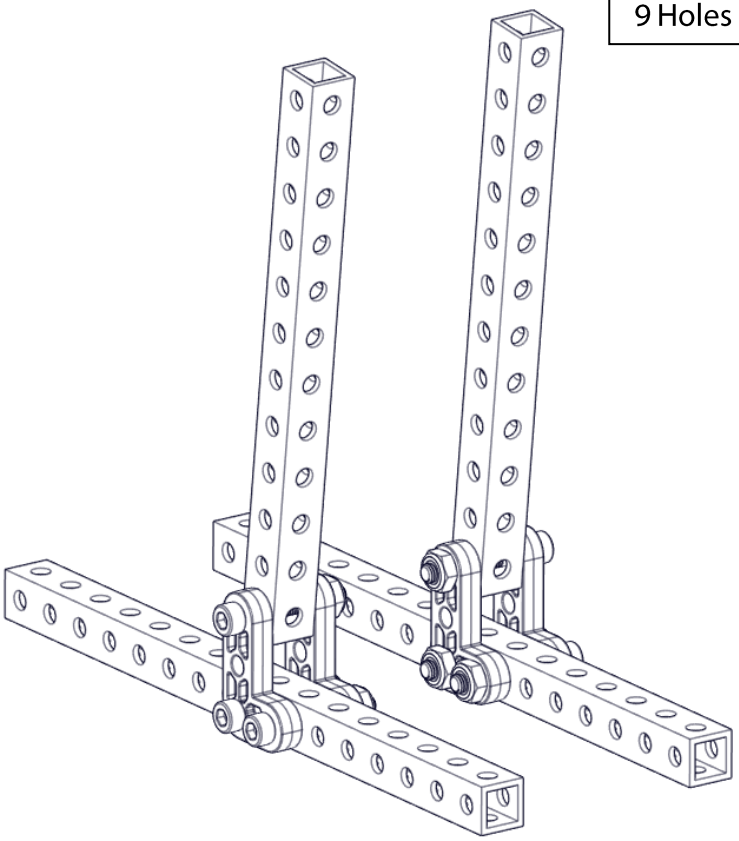


Step 1

Using [1] 8" ROBITS tube (am-5001-0800) as a base, affix [1] 6" ROBITS tube (am-5001-0600) via [2] ROBITS 2x3 L gussets (am-5004_2x3) and [3] 1.25" screws (am-1041) and [3] nuts (am-1063) such that it freely rotates around the top hole of the brackets as shown. Perform this step twice.



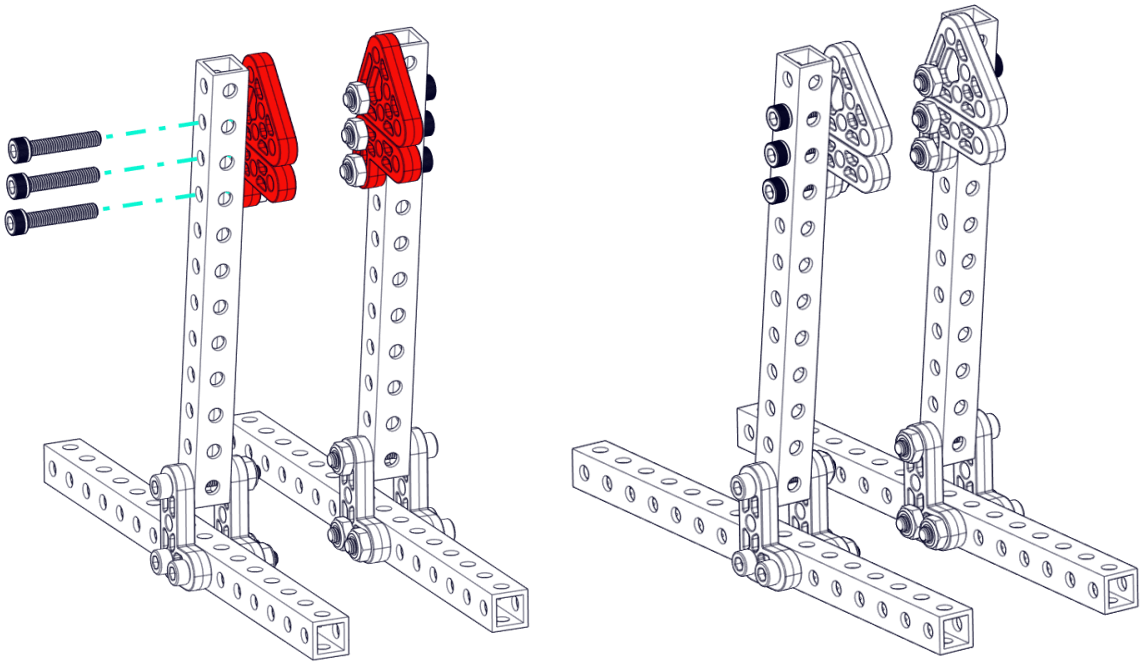




2X

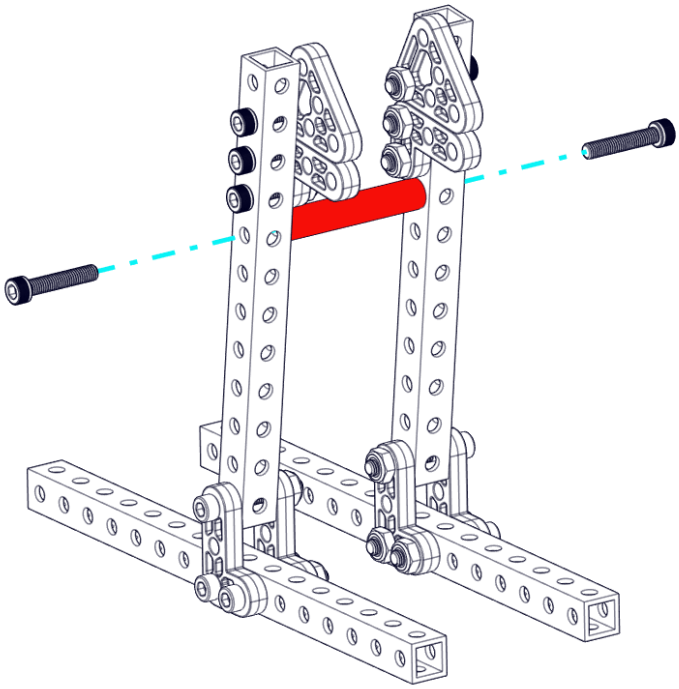
Step 2

Attach [1] 45° angle gusset (am-5010_045) and [1] 2x3 L gusset (am-5004_2x3) to each of the assemblies from Step 1 as shown using [6] 1" screws (am-1056) and [6] nuts (am-1063). Make sure the 45° gusset is flat against the 2x3 gusset.



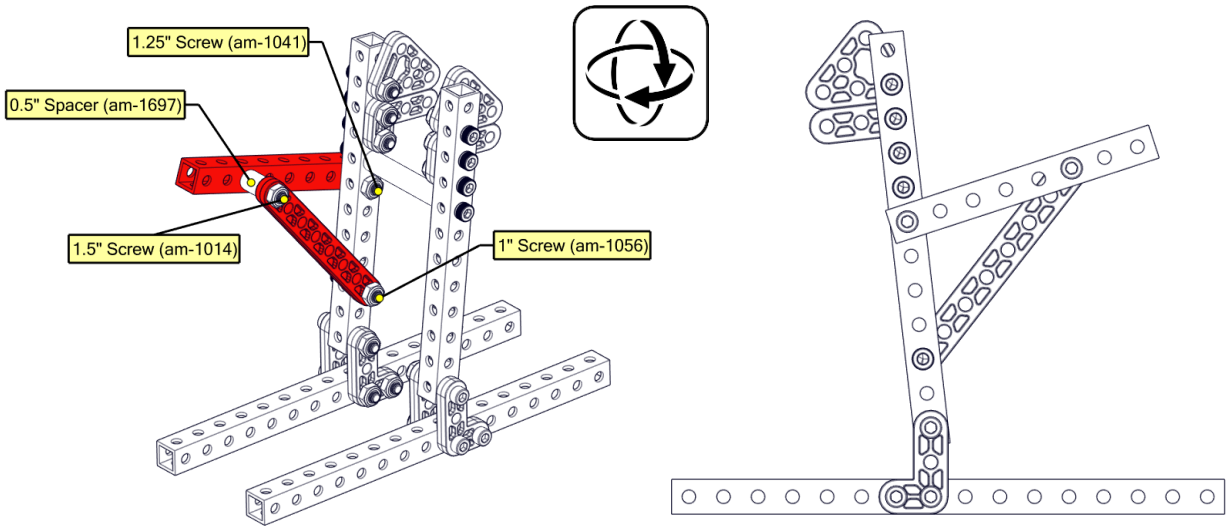
Step 3

Connect the two assemblies together using [1] 2" standoff (am-1702) and [2] 1" screws (am-1056).



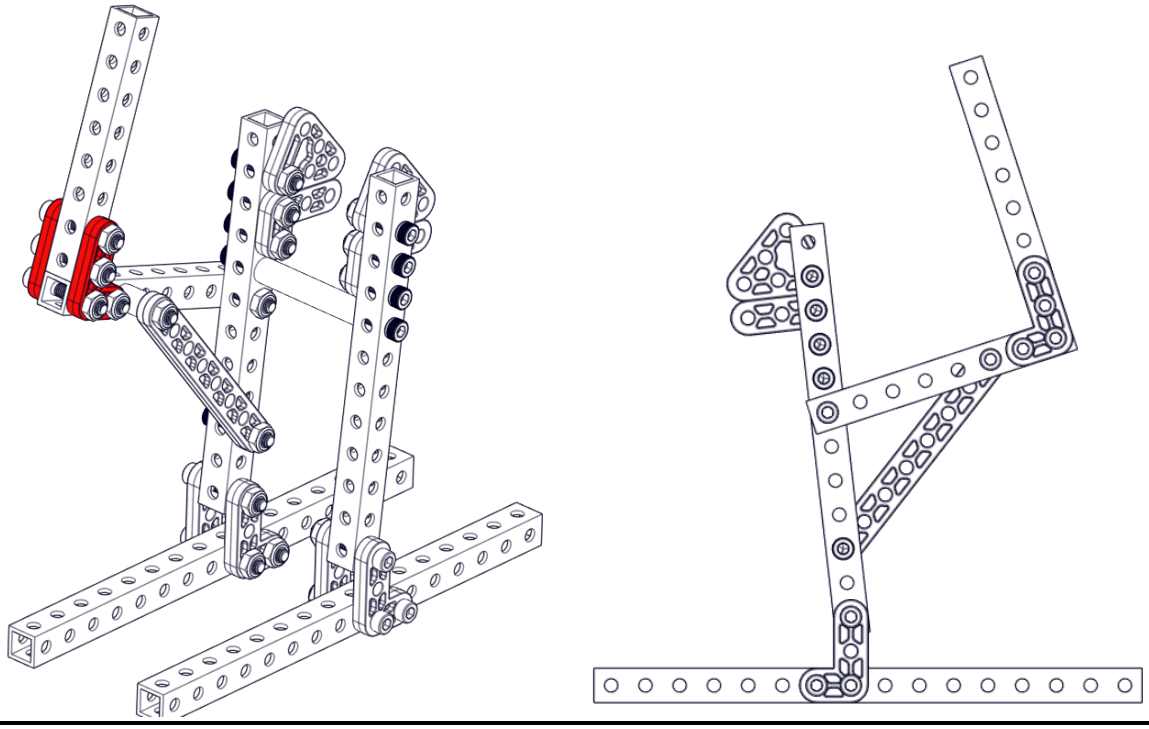
Step 4

Affix [1] 1x8 beam (am-5011_1x8) and [1] 4″ tube (am-5001-0400) to the assembly using [1] 1.25″ screw (am-1041), [1] 1.5″ screw (am-1014), [1] 1″ screw (am-1056), [3] nuts (am-1063), and [1] 0.5″ spacer (am-1697) as shown.



Step 5

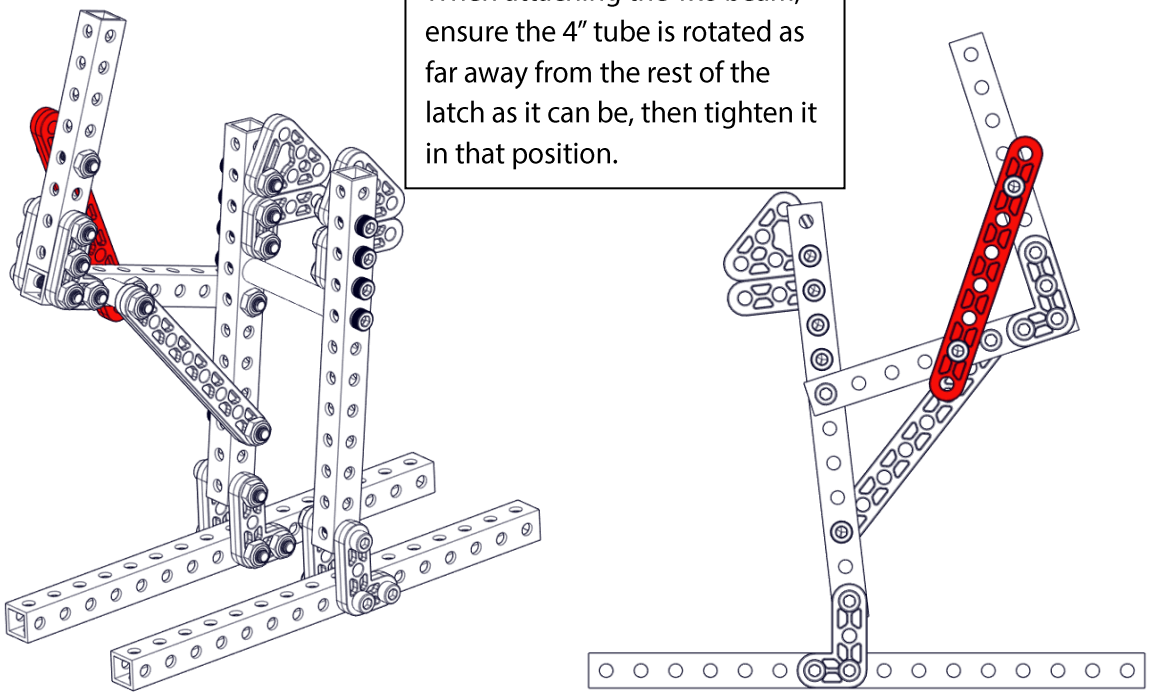
At the end of the 4″ tube, attach [1] 4″ tube (am-5001-0400) using [2] 2x3 L gussets (am-5004_2x3) and [4] 1.25″ screws (am-1041) and [4] nuts (am-1063).



Step 6

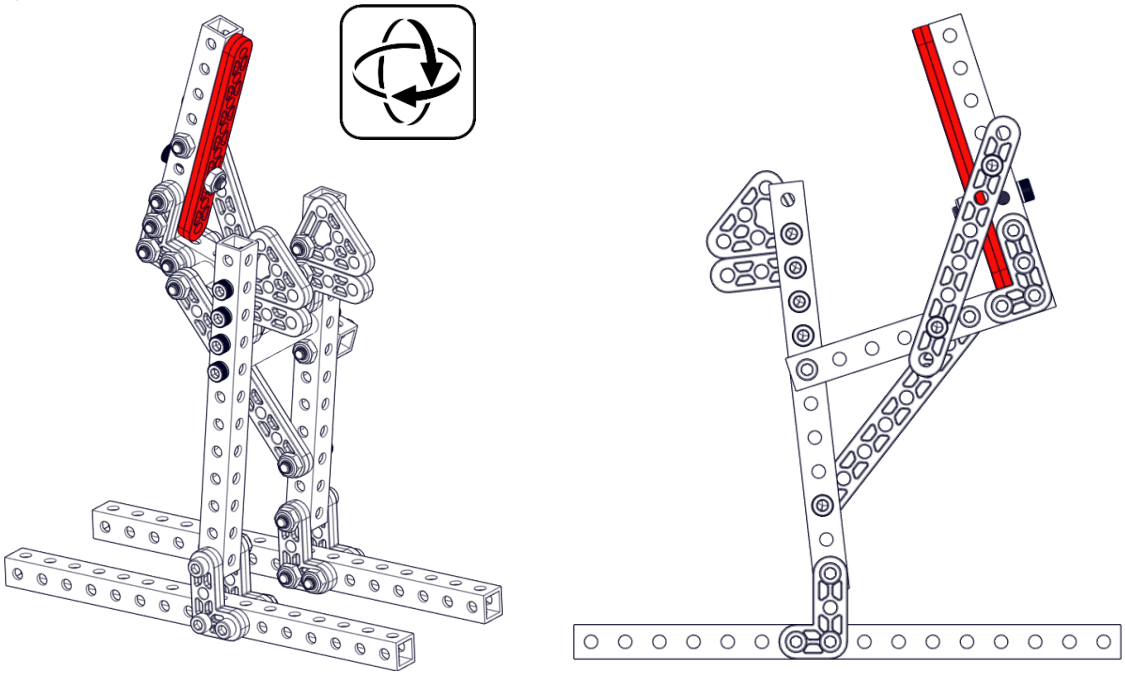
Attach [1] 1x8 beam (am-5011_1x8) to the 4″ tubes as shown using [2] 1″ screws (am-1056) and [2] nuts (am-1063).

When attaching the 1x8 beam, ensure the 4″ tube is rotated as far away from the rest of the latch as it can be, then tighten it in that position.



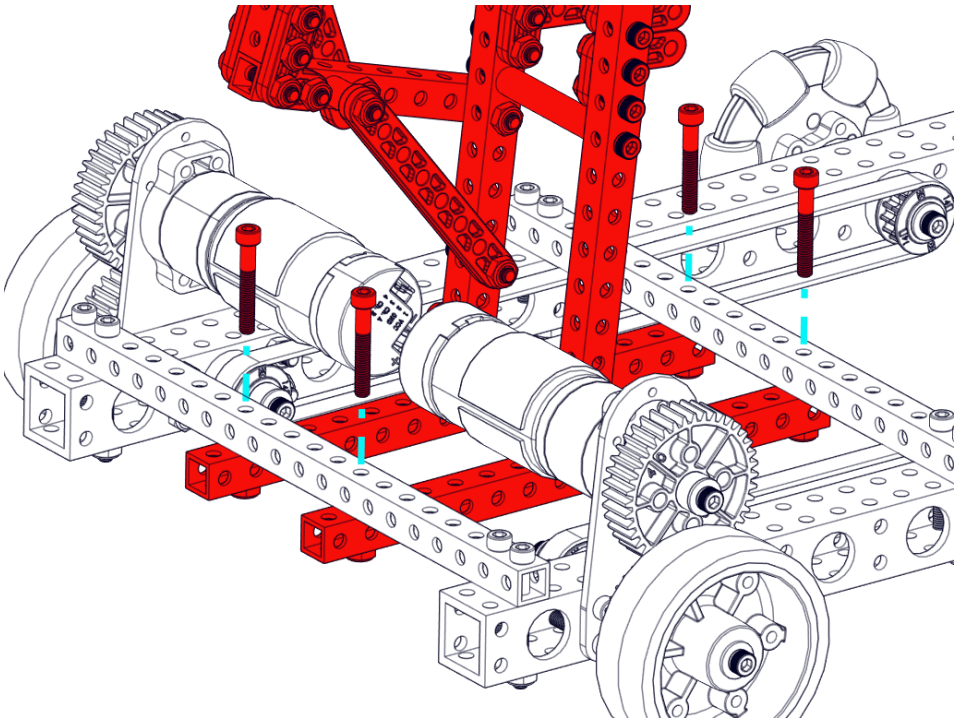
Step 7

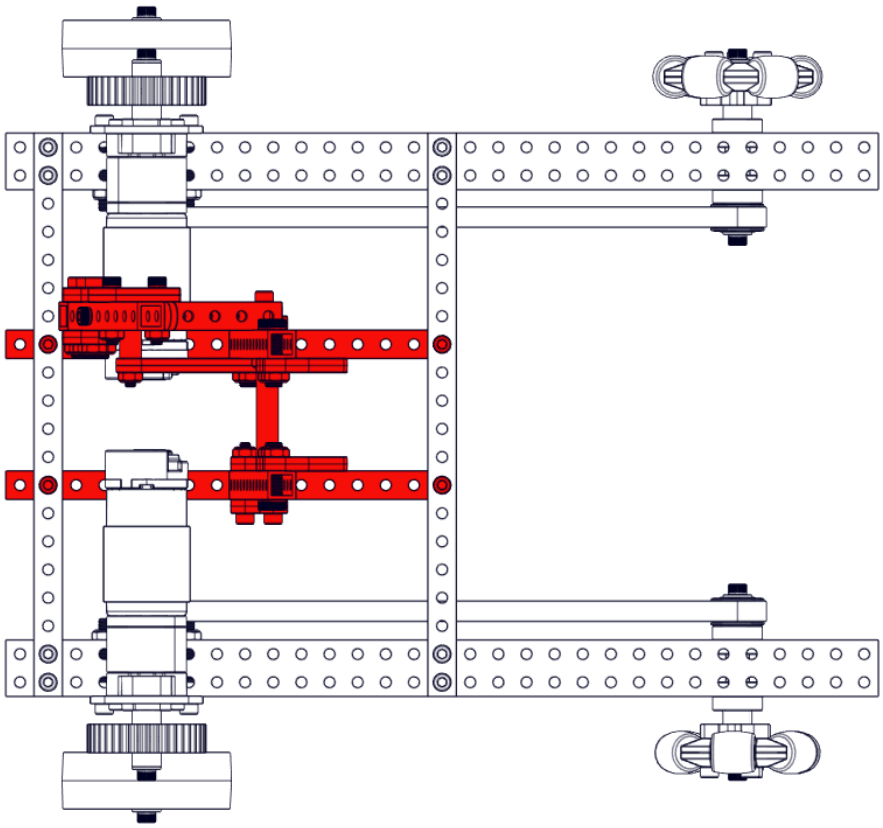
Attach [1] 1x8 beam to the topmost 4″ tube with just [1] 1″ screw (am-1056) and [1] nut (am-1063).



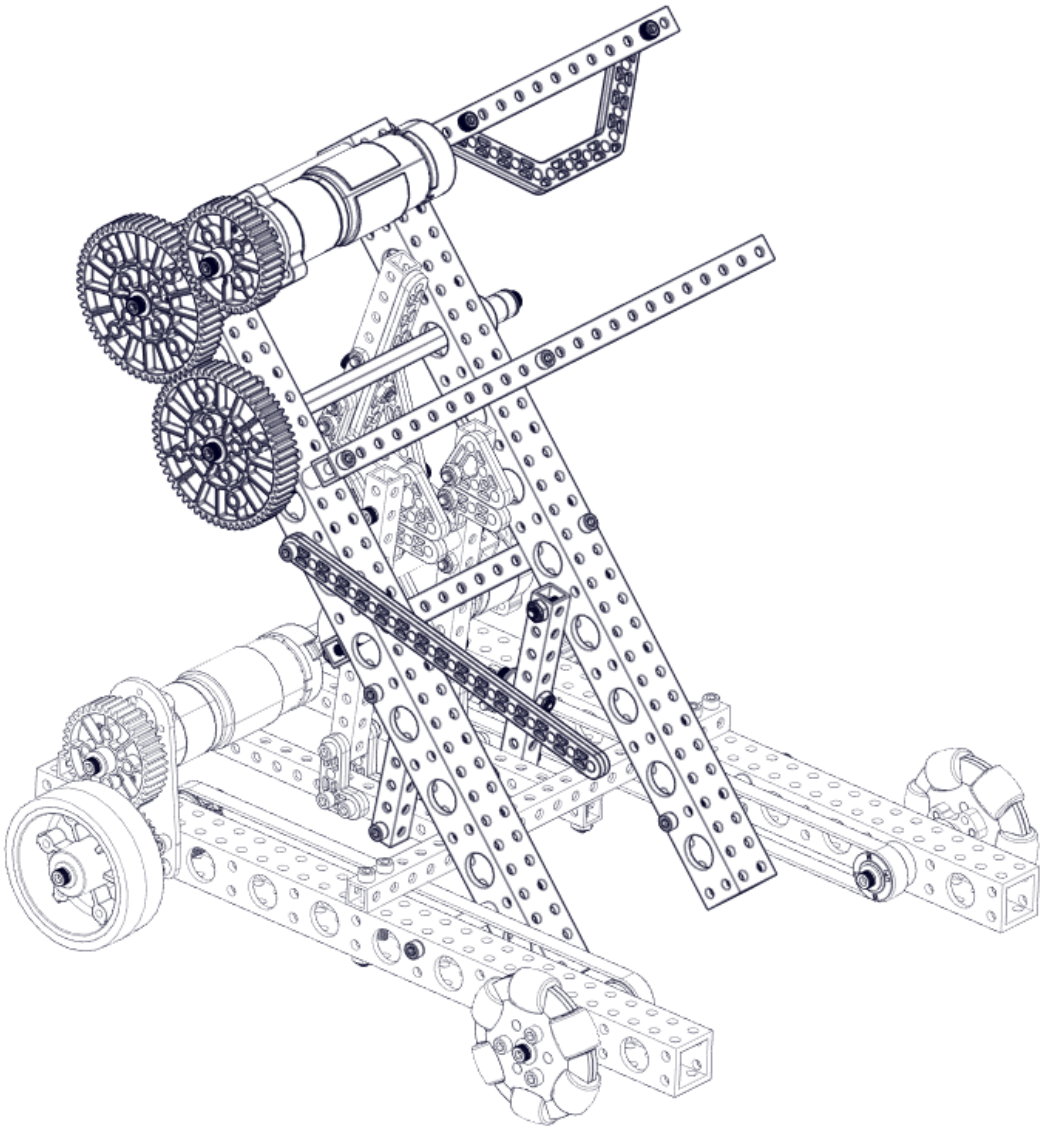
Step 8

Connect the latch assembly to the chassis by attaching it, centered, to the two cross-tubes as shown using [4] 1.25" screws (am-1041) and [4] nuts (am-1063). Insert the assembly from the top of the chassis.



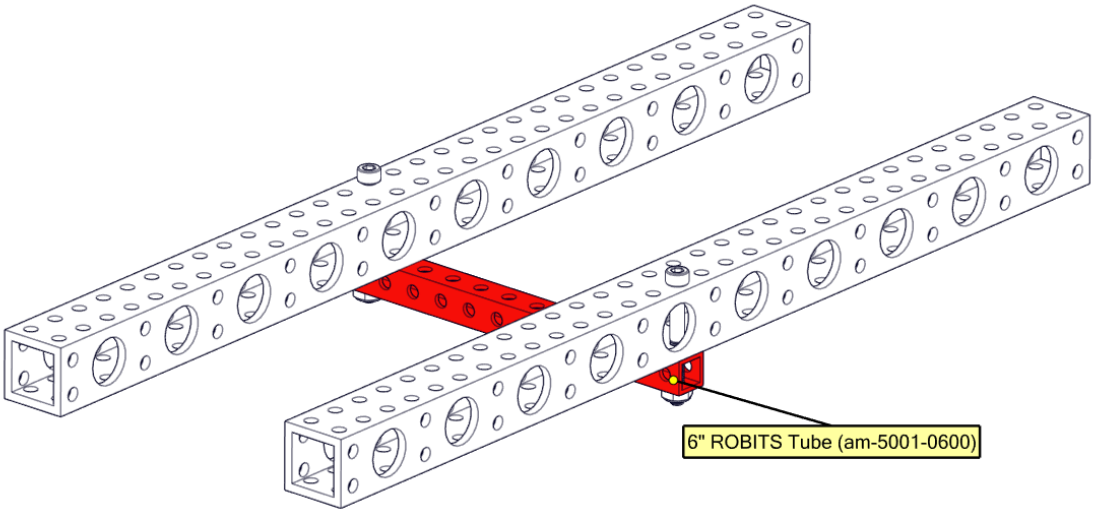


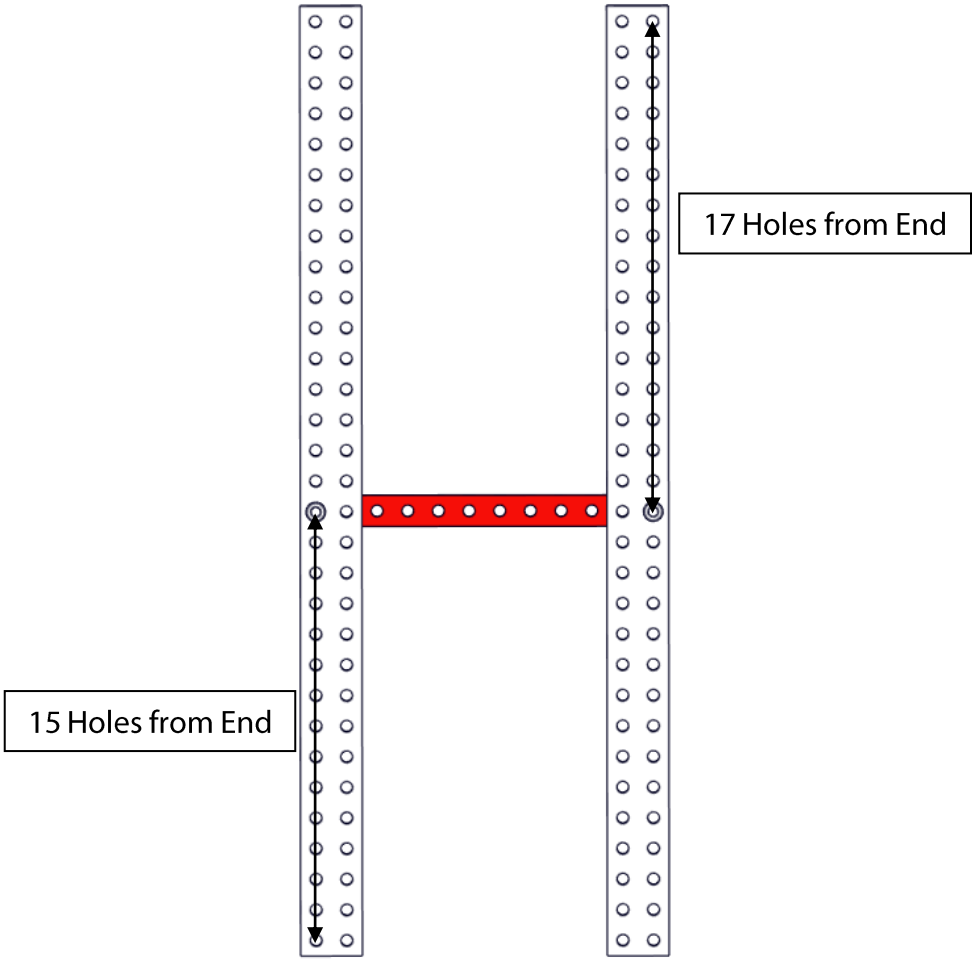
Tower Assembly



Step 1

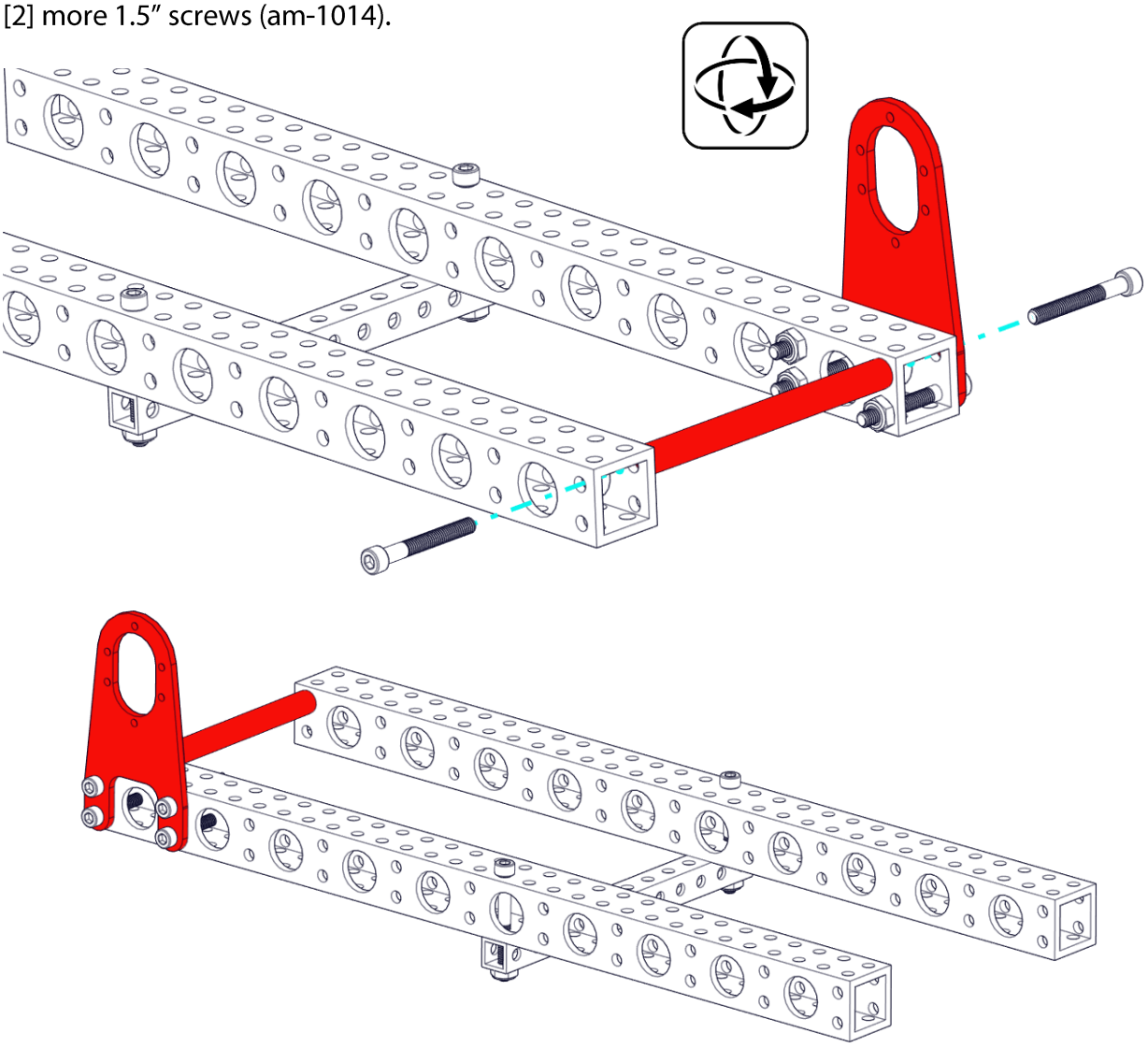
Connect [2] 15.5" ROBITS 1x1 tubes (am-5002-1550) together using [1] 6" ROBITS tube (am-5001-0600), [2] 1.75" screws (am-1048), and [2] nuts (am-1063).





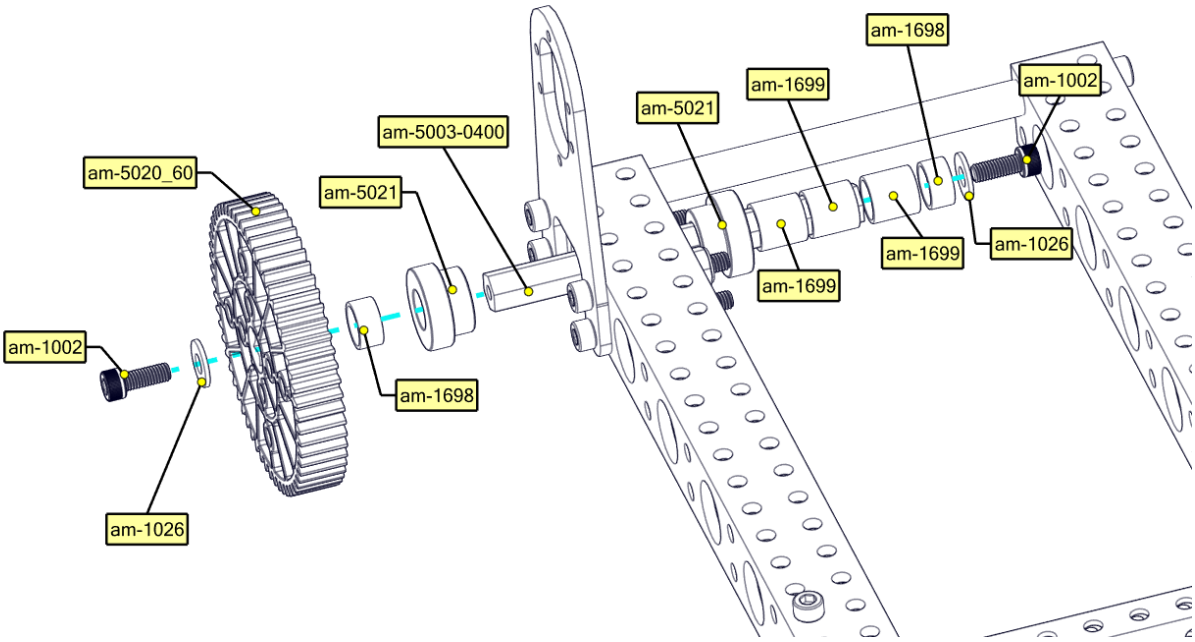
Step 2

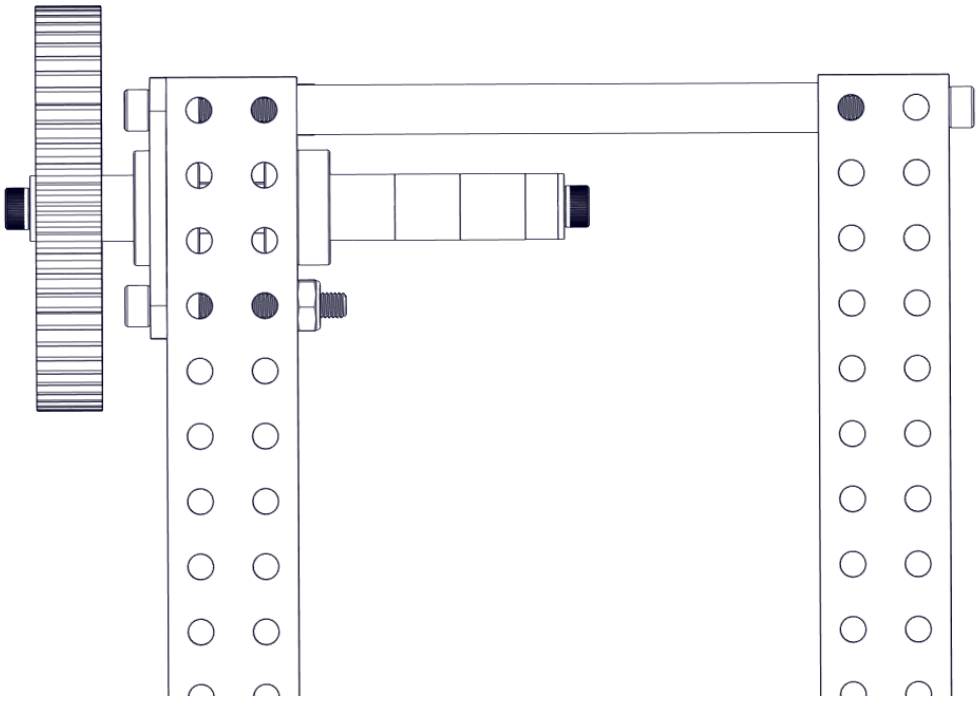
Attach [1] 80T or 100T motor mount (am-5017) to the assembly using [3] 1.5" screws (am-1014) and [3] nuts (am-1063). With the remaining hole, attach a 4" standoff (am-1704) using [2] more 1.5" screws (am-1014).



Step 3

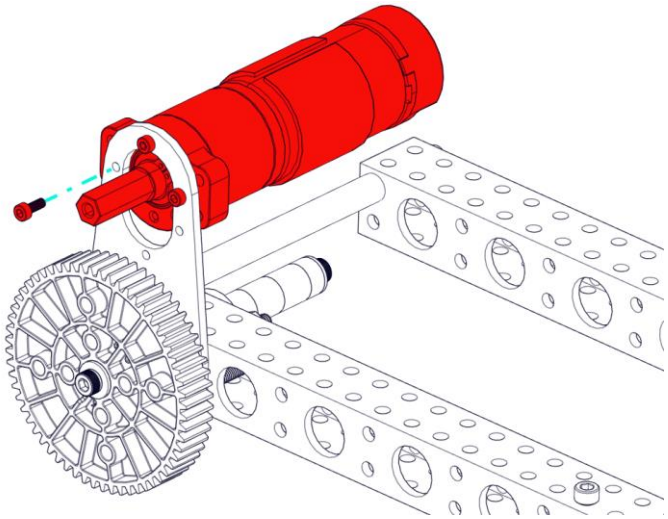
Using a 4" hex shaft (am-5003-0400) as a base, create an assembly using [2] 0.5" screws (am-1002), [2] washers (am-1026), [1] 60 tooth gear (am-5020_60), [2] 0.25" shaft spacers (am-1698), [2] bushings (am-5021), and [3] 0.5" shaft spacers (am-1699).





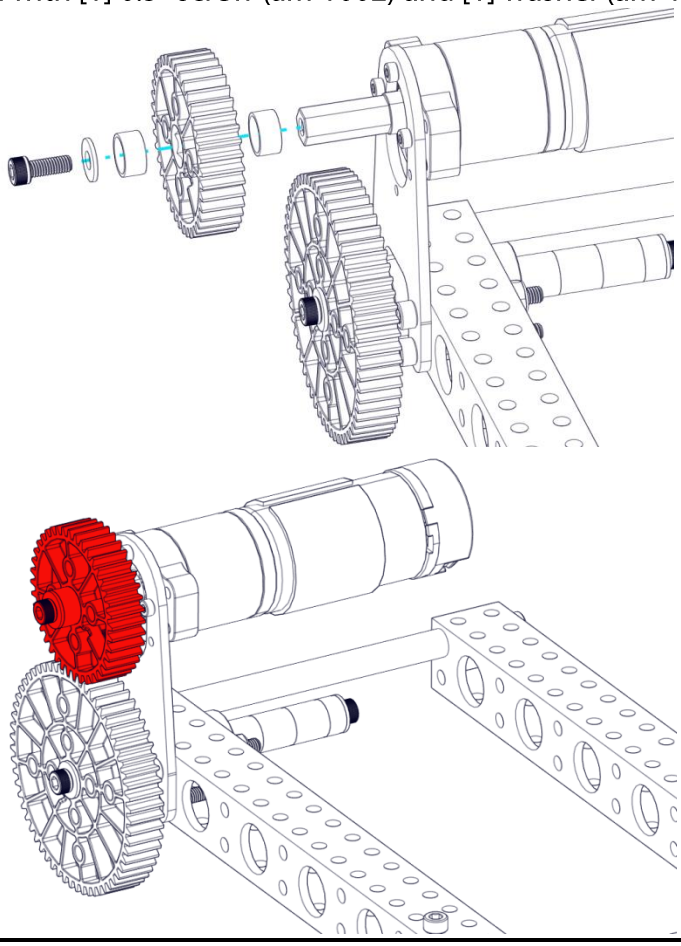
Step 4

Attach the 51:1 NeveRest Hex (am-5443) to the motor mount using [3] 8mm screws (am-1500).



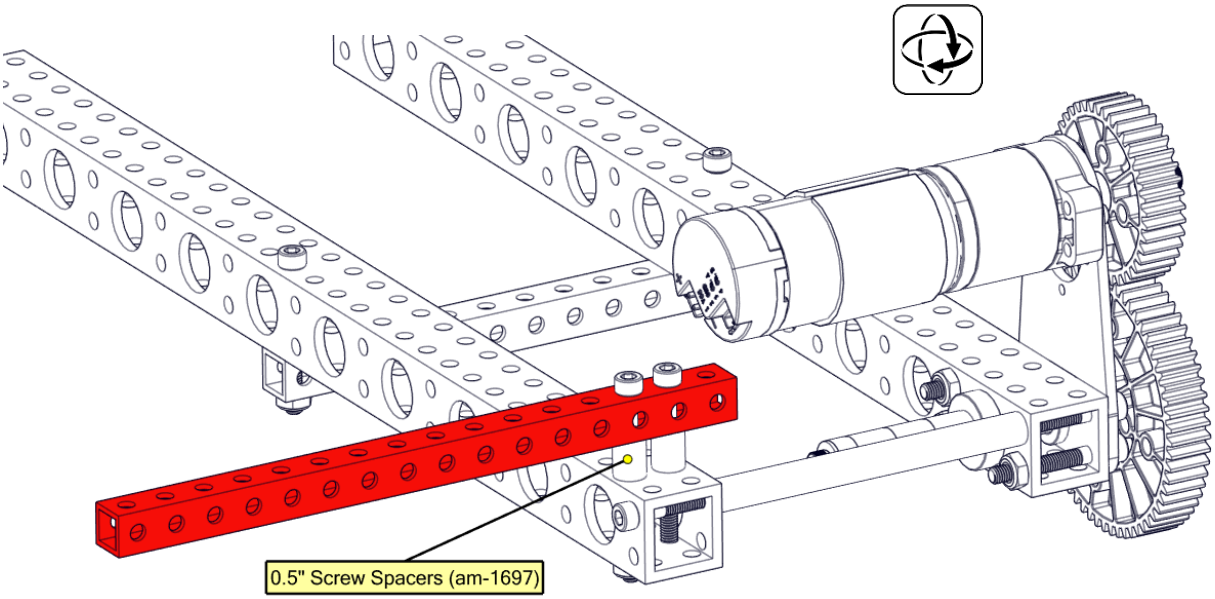
Step 5

Attach a 40T gear (am-5020_40) to the motor sandwiched between [2] 0.25" shaft spacers (am-1698) and held on with [1] 0.5" screw (am-1002) and [1] washer (am-1026).



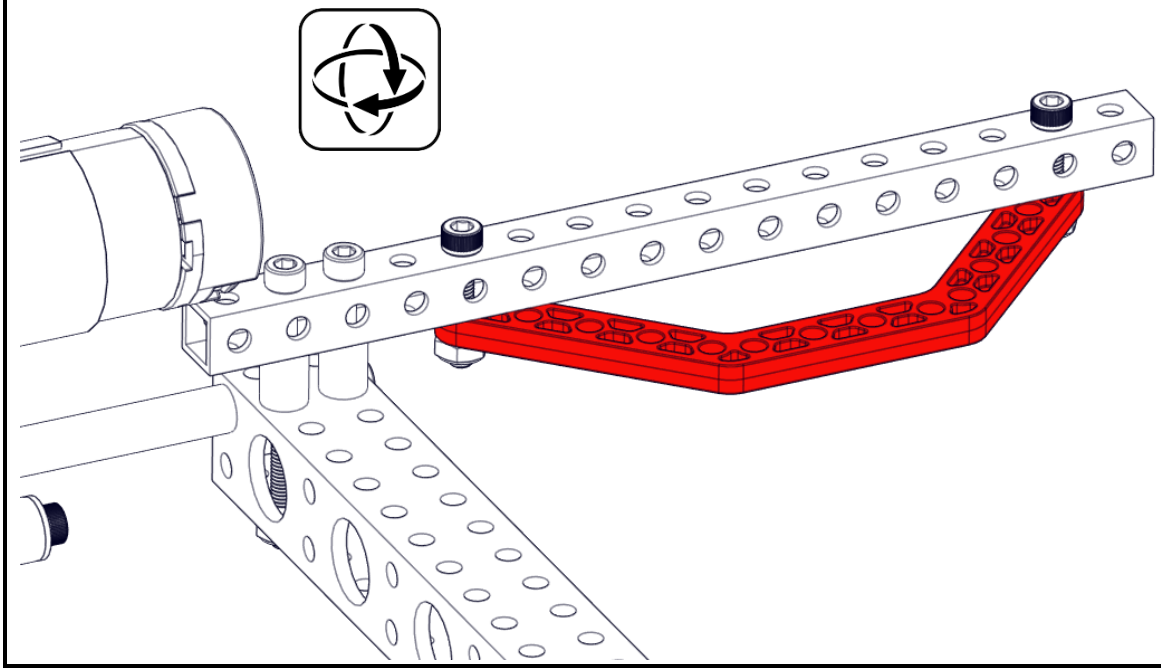
Step 6

Attach [1] 8″ tube (am-5001-0800) to the assembly opposite the motor, offset by [2] 0.5″ screw spacers (am-1697) using [2] 2.25″ screws (am-1156) and [2] nuts (am-1063).



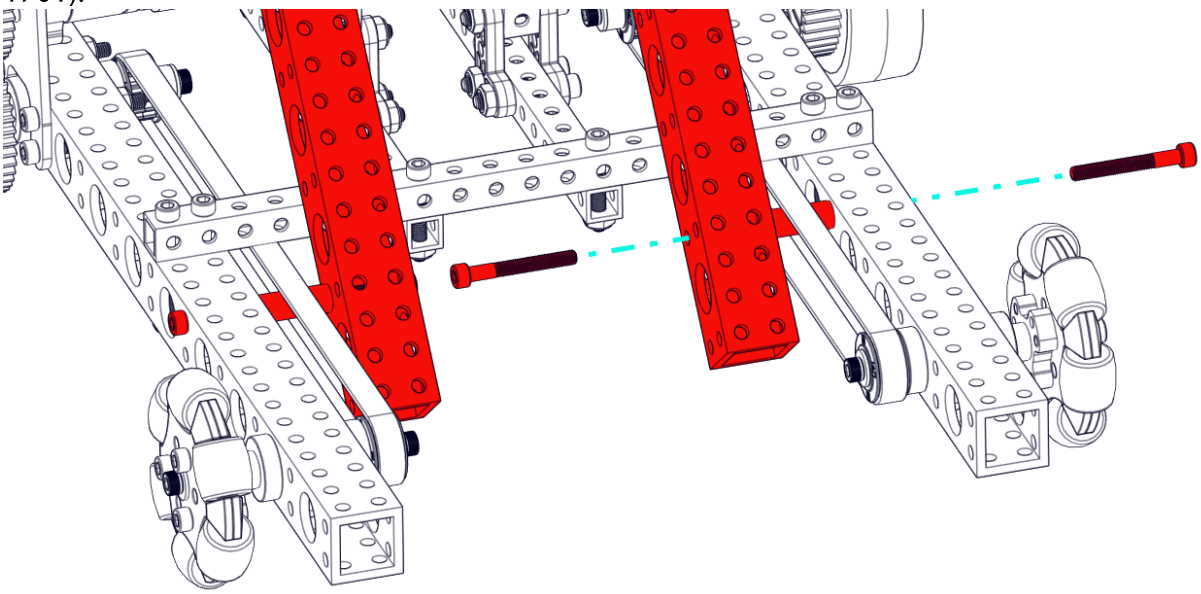
Step 7

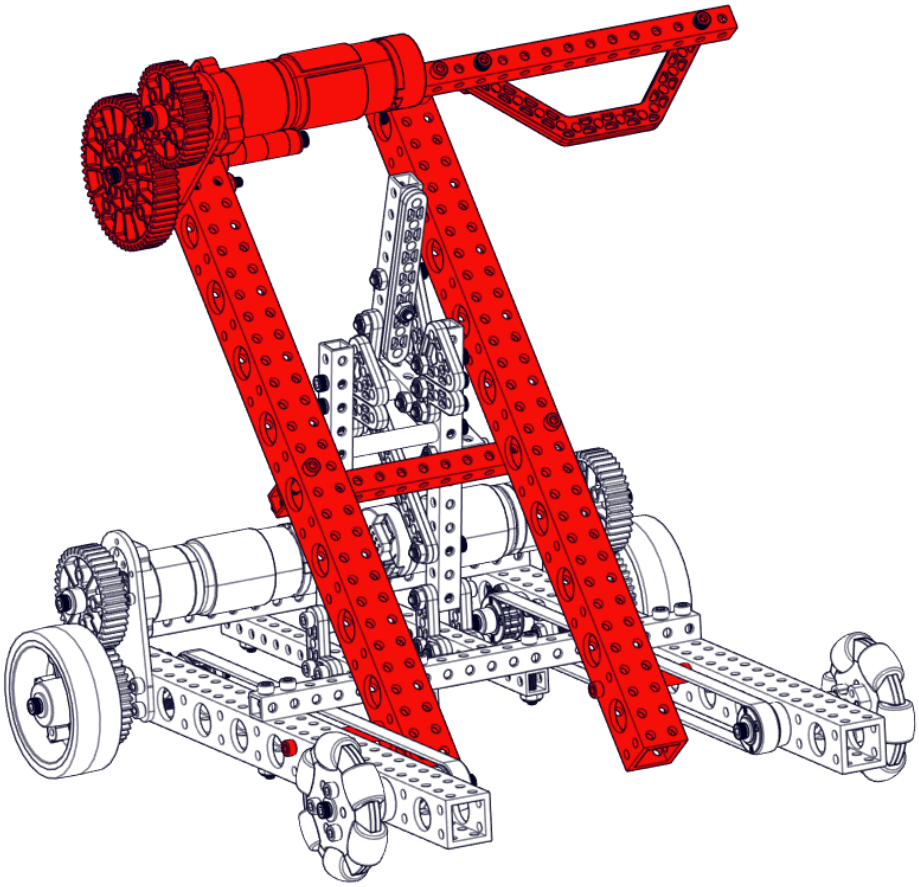
Attach [1] 5x5 corner gusset (am-5005_5x5) using [2] 1″ screws (am-1056) and [2] nuts (am-1063).



Step 8

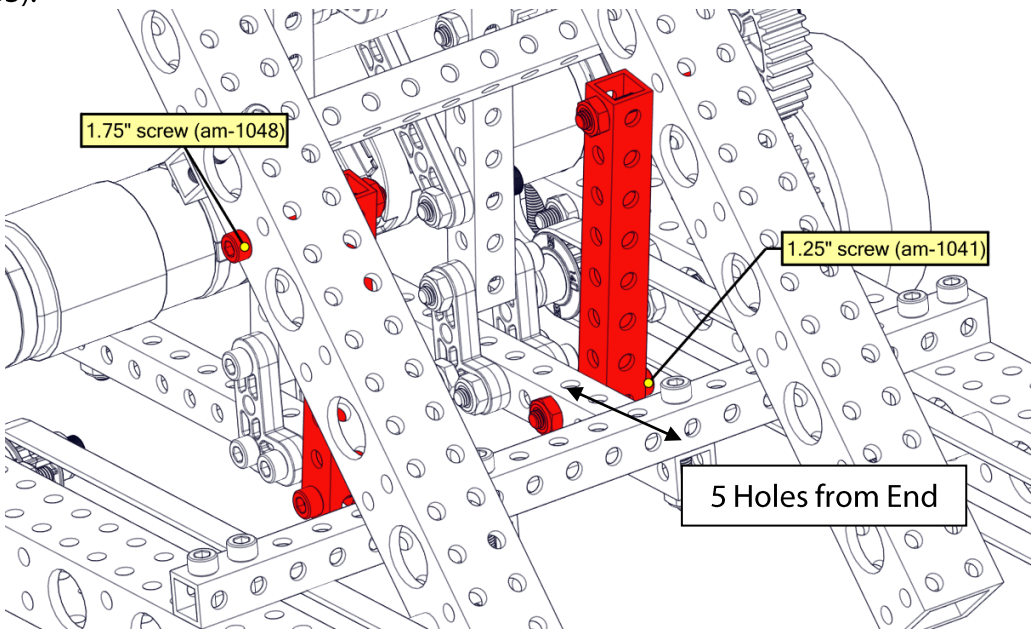
Attach the assembly to the chassis using [4] 1.5″ screws (am-1014) and [2] 1″ standoffs (am-1701).

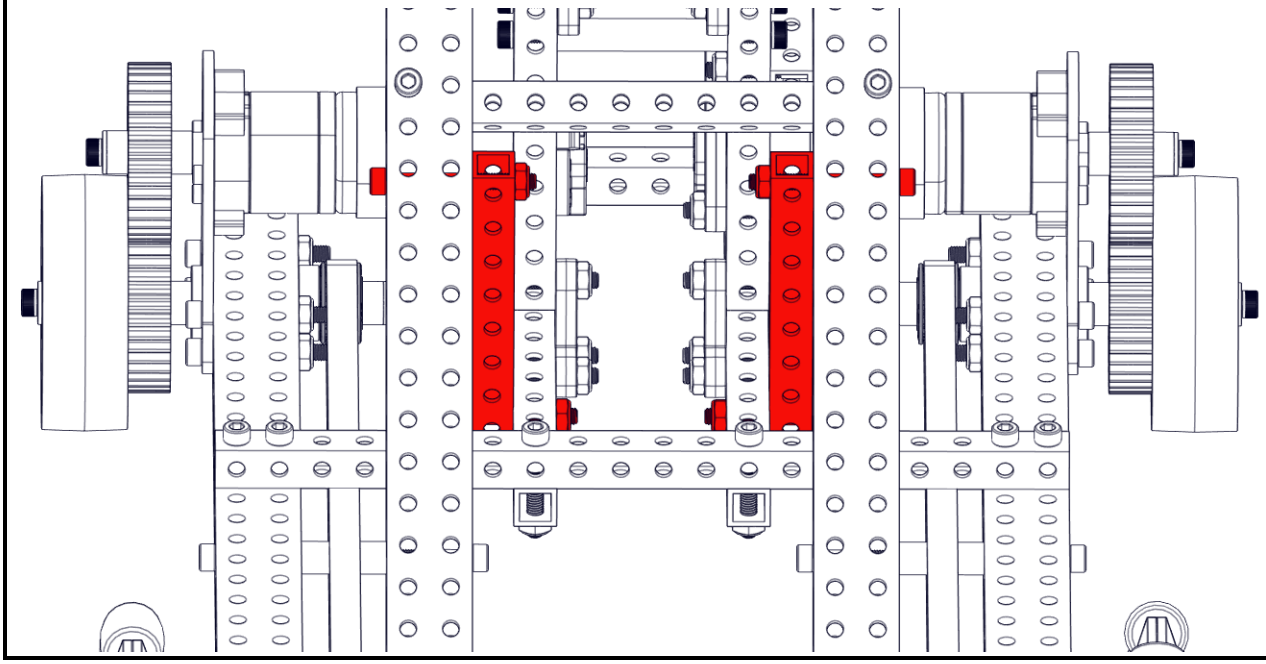




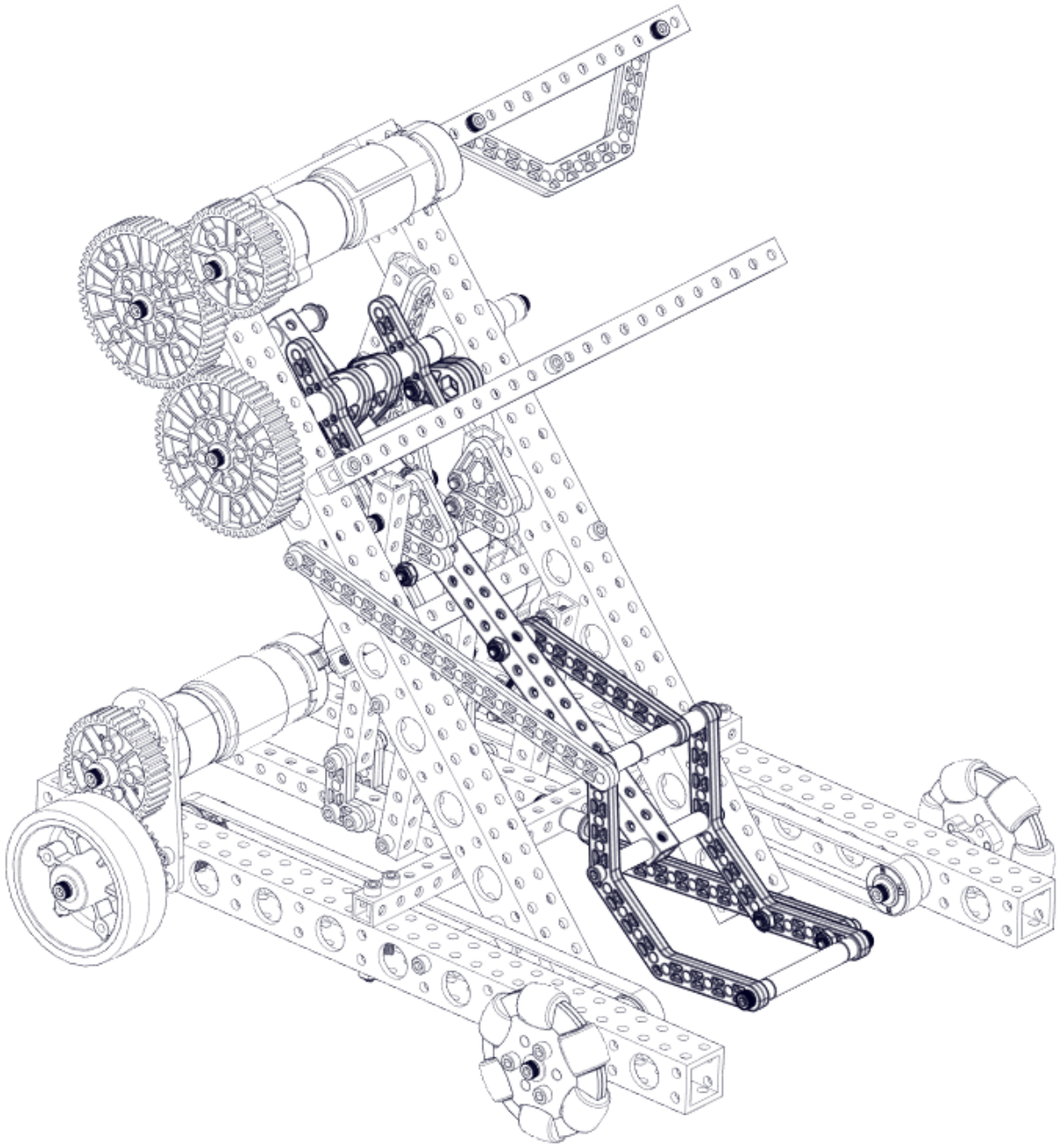
Step 9

Use [2] 4″ tubes (am-5001-0400) to create additional supports for the tower by connecting the tower to the latch with [2] 1.25″ screws (am-1041), [2] 1.75″ screws (am-1048), and [4] nuts (am-1063).



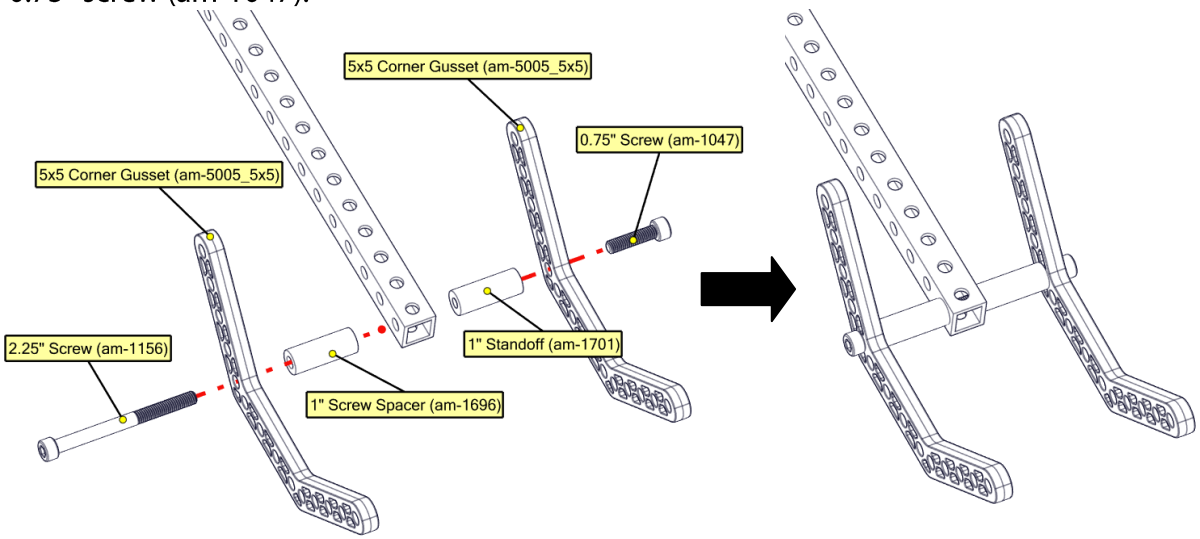


Catapult Assembly



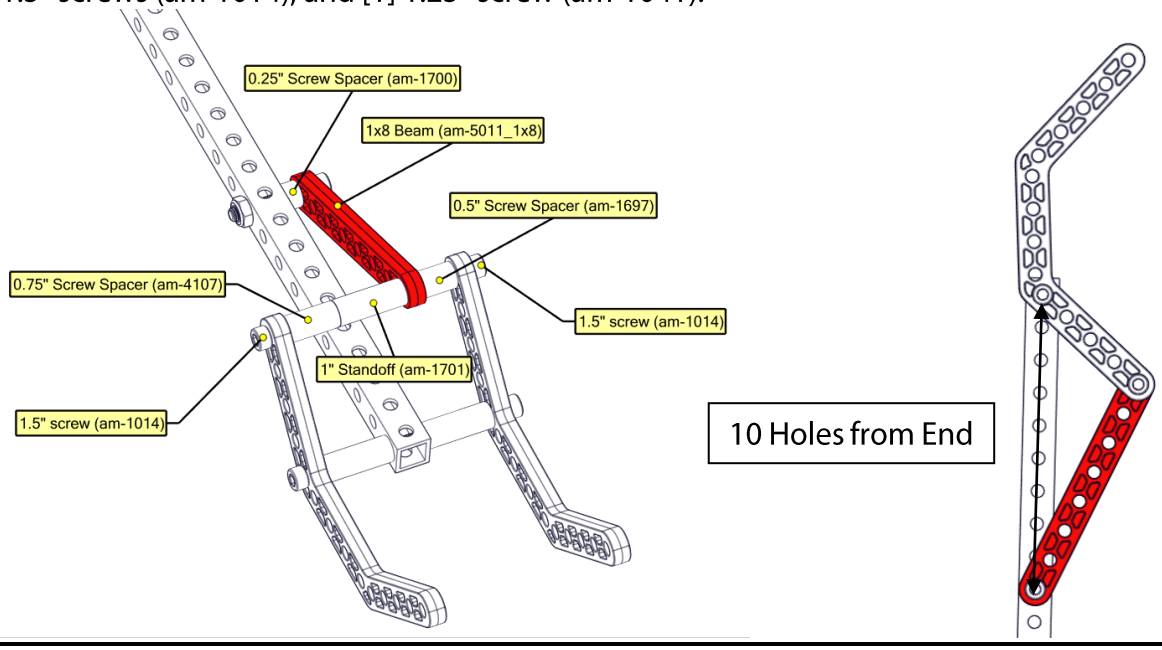
Step 1

Using [1] 12″ tube (am-5001-1200) as a base, attach [2] 5x5 corner gussets (am-5005_5x5) using [1] 2.25″ screw (am-1156), [1] 1″ screw spacer (am-1696), [1] 1″ standoff (am-1701), and [1] 0.75″ screw (am-1047).



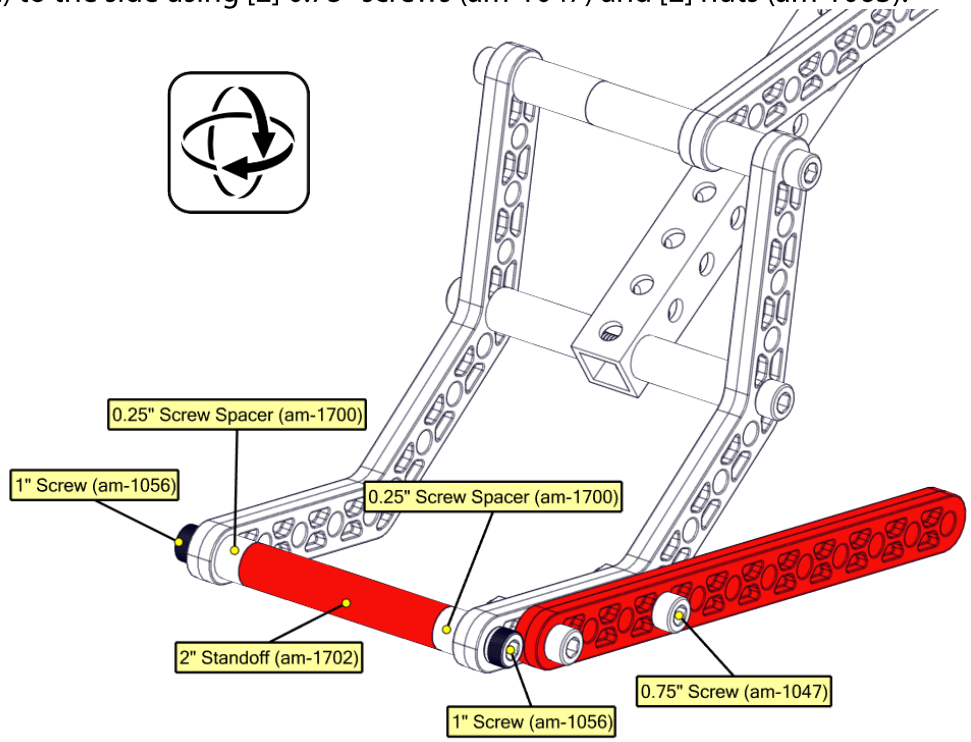
Step 2

Lock the claw in place by attaching a 1x8 beam (am-5011_1x8) using [1] 0.25″ screw spacer (am-1700), [1] 0.5″ screw spacer (am-1697), [1] 0.75″ screw spacer (am-4107), [1] 1″ standoff, [2] 1.5″ screws (am-1014), and [1] 1.25″ screw (am-1041).



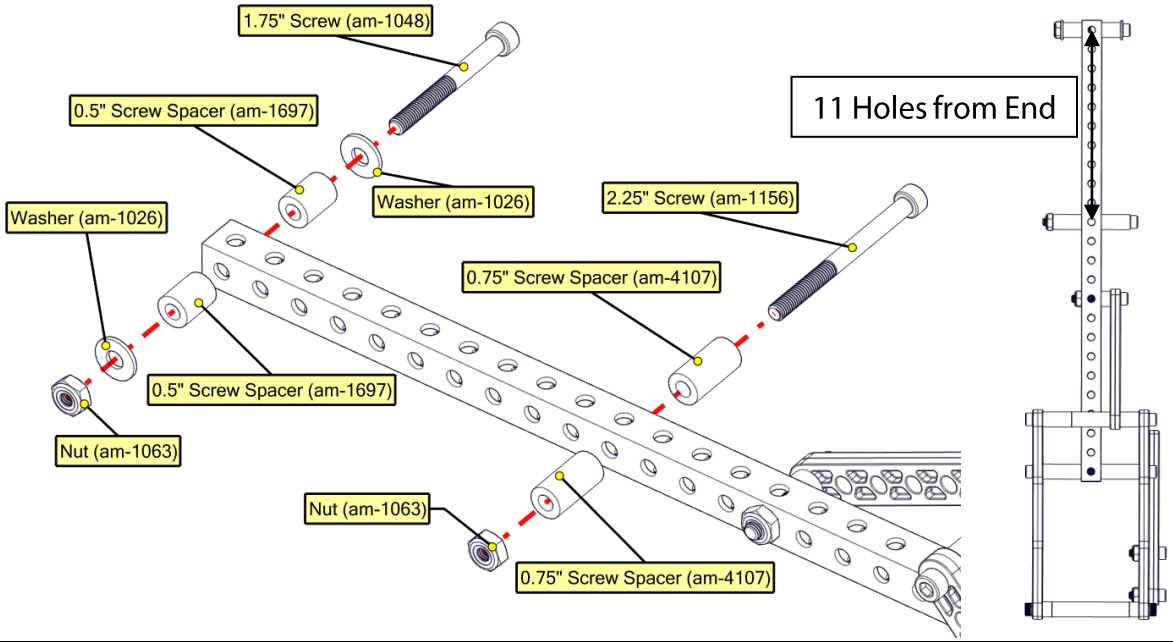
Step 3

Finish the cradle by connecting the tips with [1] 2" standoff (am-1702), [2] 1" screws (am-1056), and [2] 0.25" screw spacers (am-1700). Additionally, attach a 1x12 beam (am-5011_1x12) to the side using [2] 0.75" screws (am-1047) and [2] nuts (am-1063).



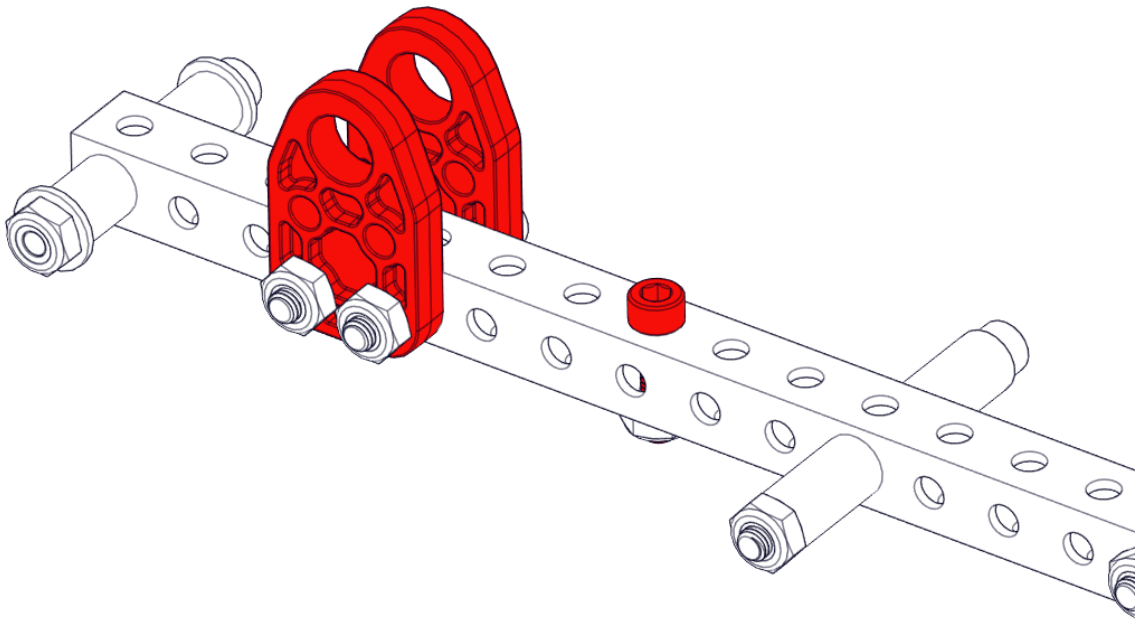
Step 4

Create key fixture points on the catapult by attaching [1] 1.75" screw (am-1048) with [2] washers (am-1026), [2] 0.5" screw spacers (am-1697), and [1] nut (am-1063) as well as [1] 2.25" screw with [2] 0.75" screw spacers (am-4107) and [1] nut (am-1063).



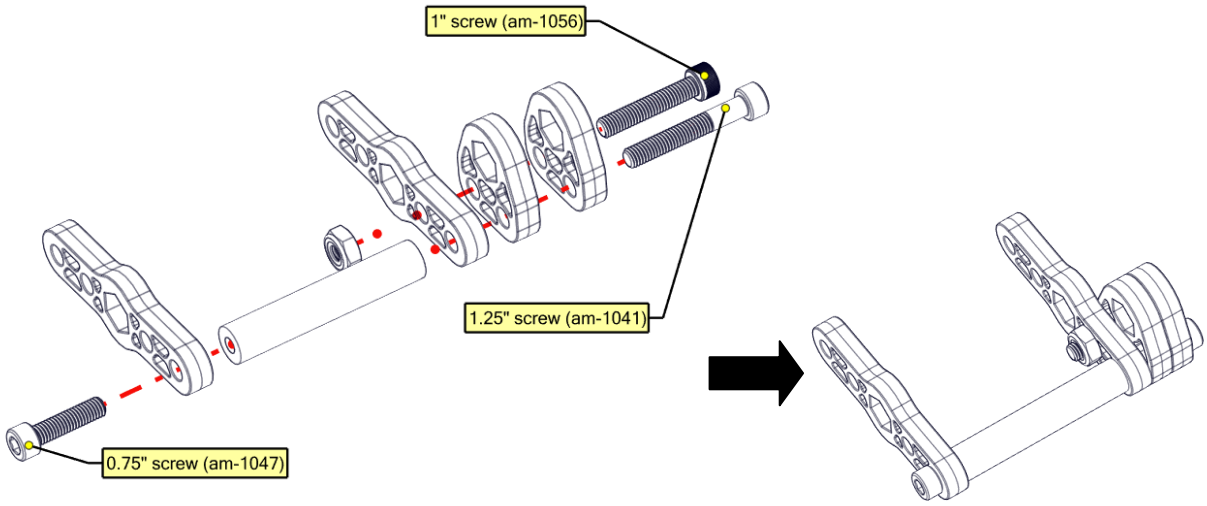
Step 5

Mount [2] side bushing carriers (am-5013) to the catapult using [2] 1.25" screws (am-1041) and [2] nuts (am-1063). Also, affix [1] 0.75" screw (am-1047) with [1] nut (am-1063) where shown. A hex shaft can be used here to temporarily align the bushing carriers for installation.



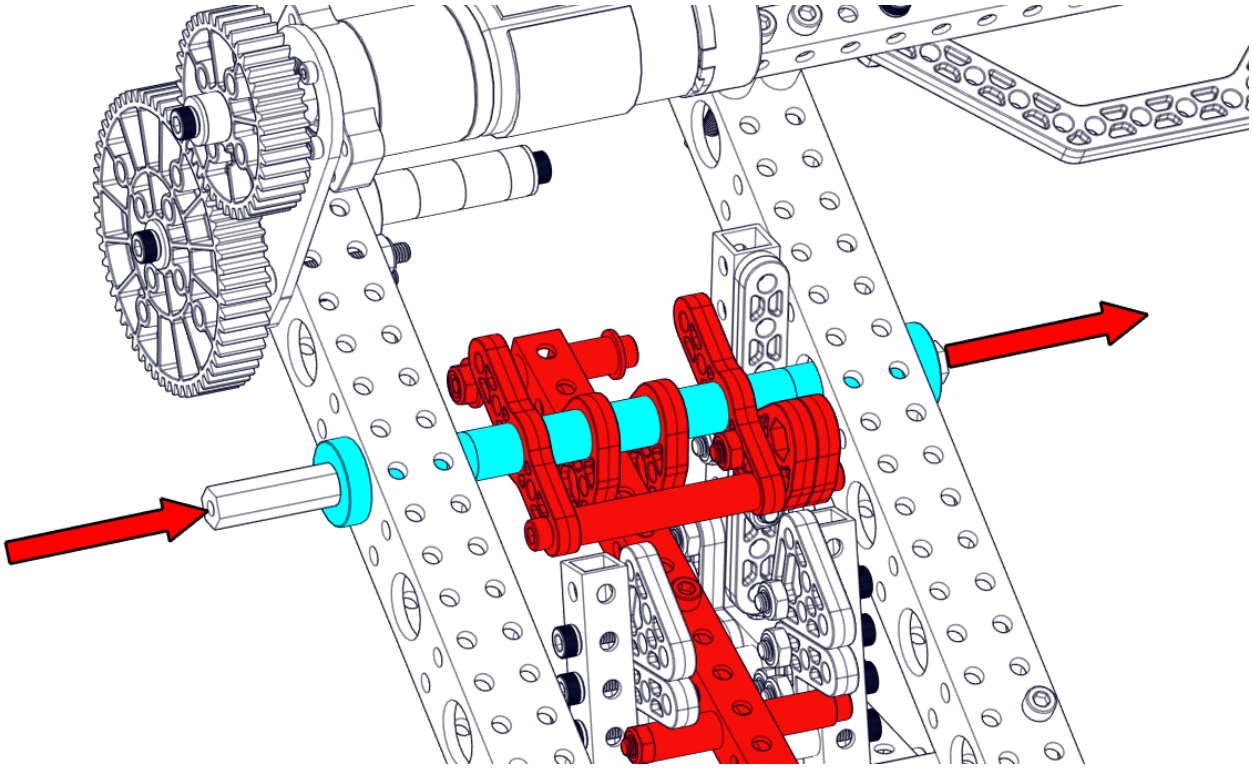
Step 6

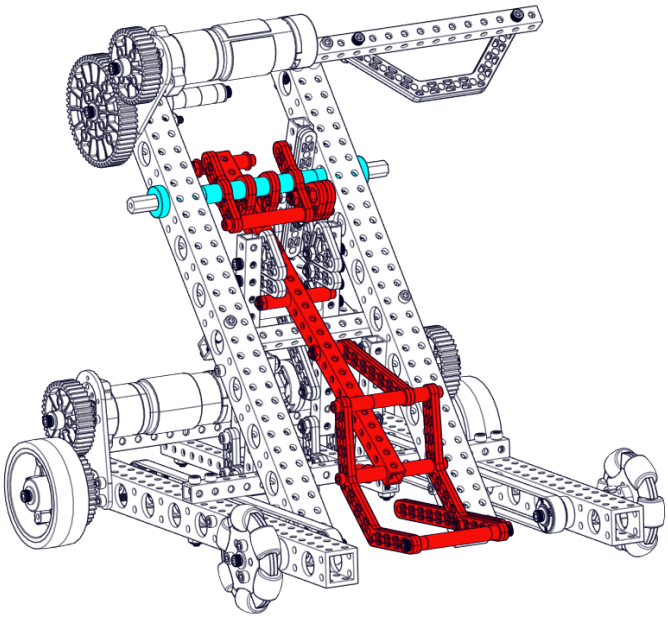
Create a separate assembly using [2] double end shaft carriers (am-5016), [2] side shaft carriers (am-5015), [1] 2" standoff (am-1702), [1] 0.75" screw (am-1047), [1] 1" screw (am-1056), [1] 1.25" screw (am-1041), and [1] nut (am-1063).

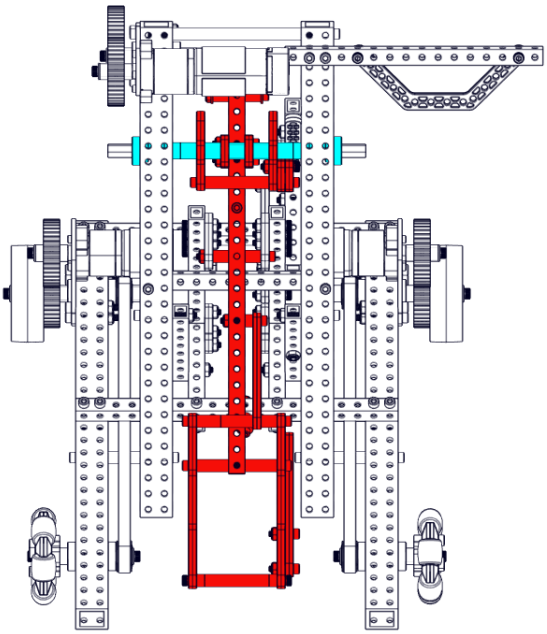


Step 7

Mount the catapult to the tower assembly as shown using an 8" hex shaft (am-5003-0800) through [2] bushings (am-5021) and [9] 0.5" shaft spacers (am-1699) in the configuration shown.

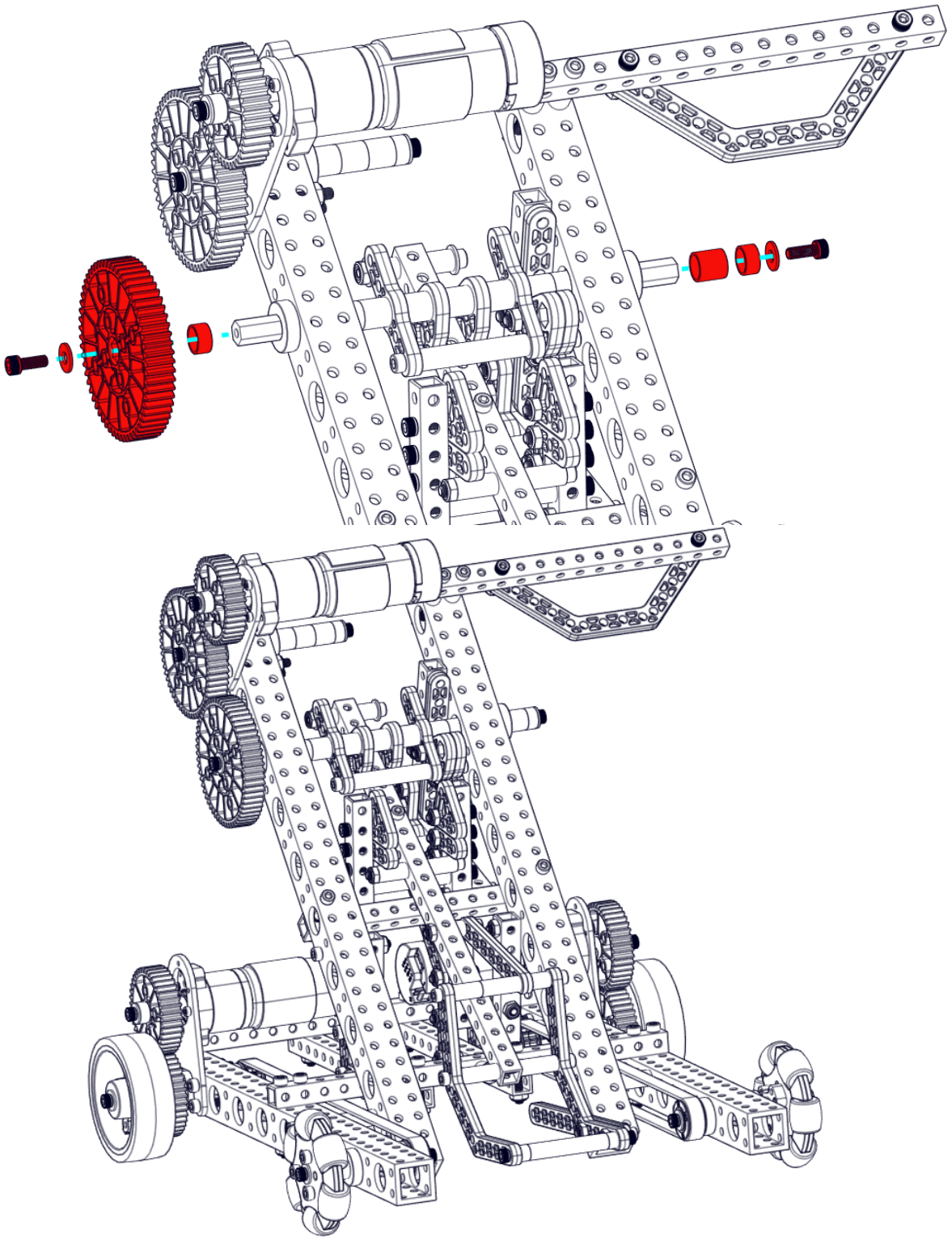






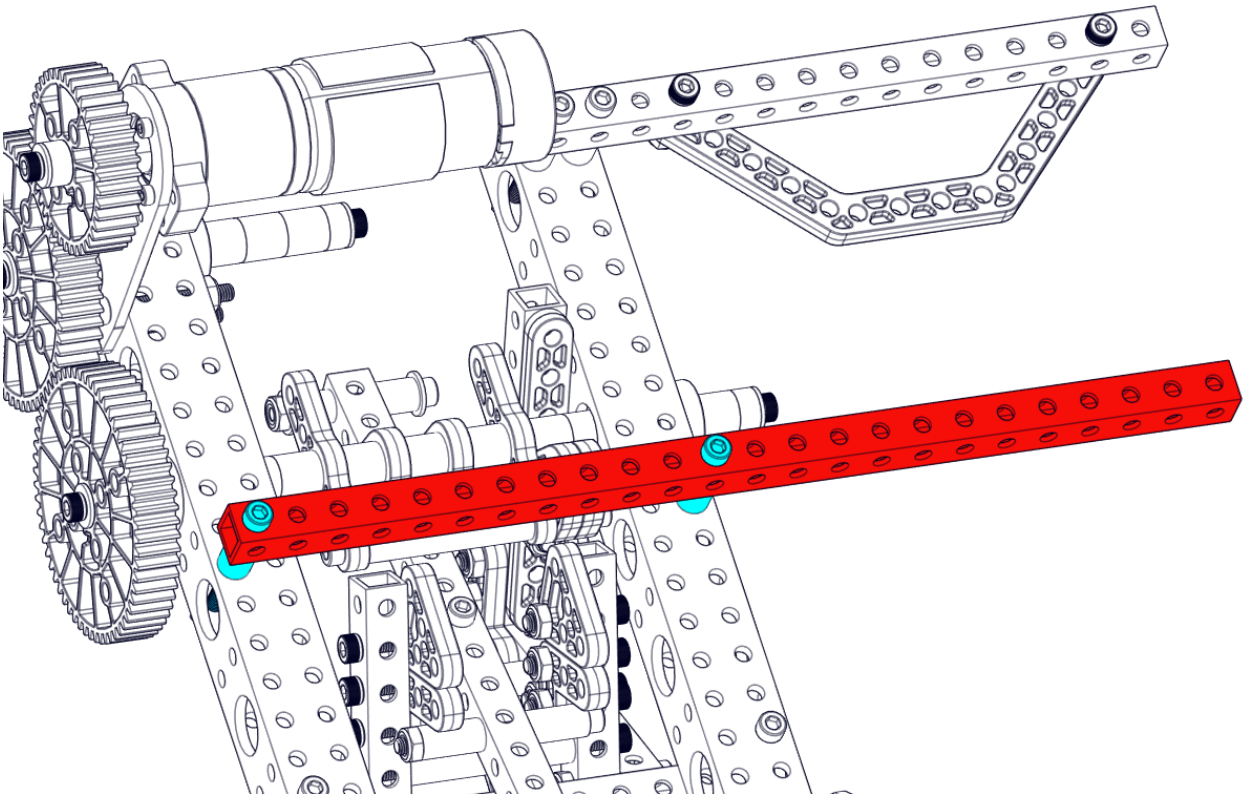
Step 8

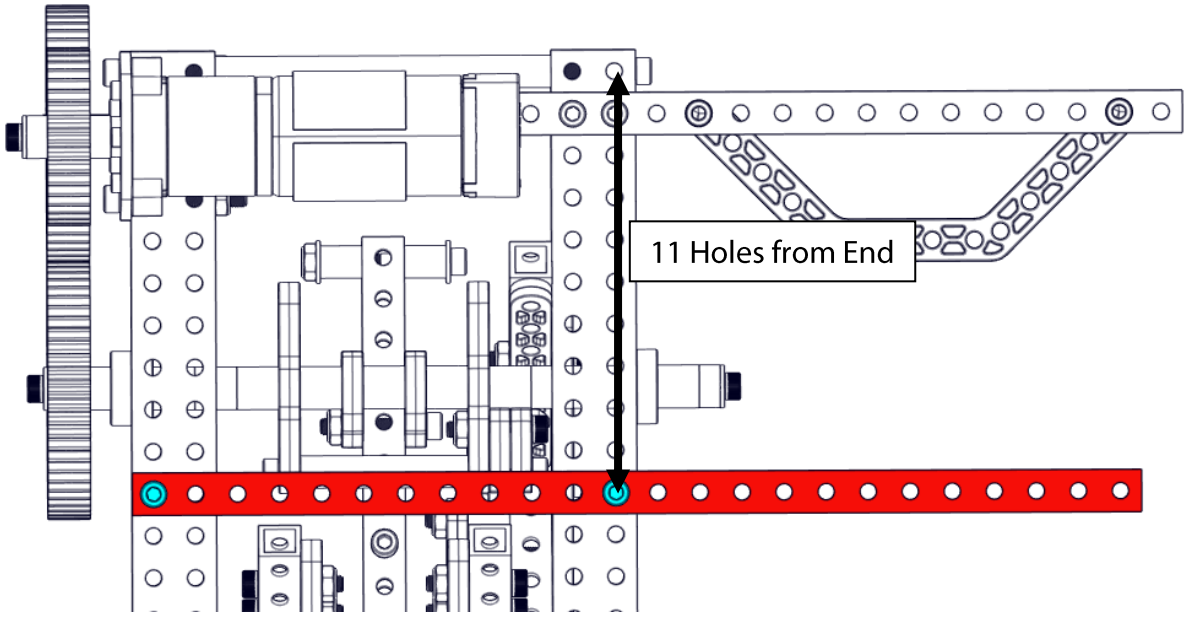
Secure the 8″ shaft from Step 7 using [2] 0.250″ shaft spacers (am-1698), [1] 0.5″ shaft spacer (am-1699), [1] 60 tooth gear (am-5020_60), [2] washers (am-1026) and [2] 0.5″ screws (am-1002).



Step 9

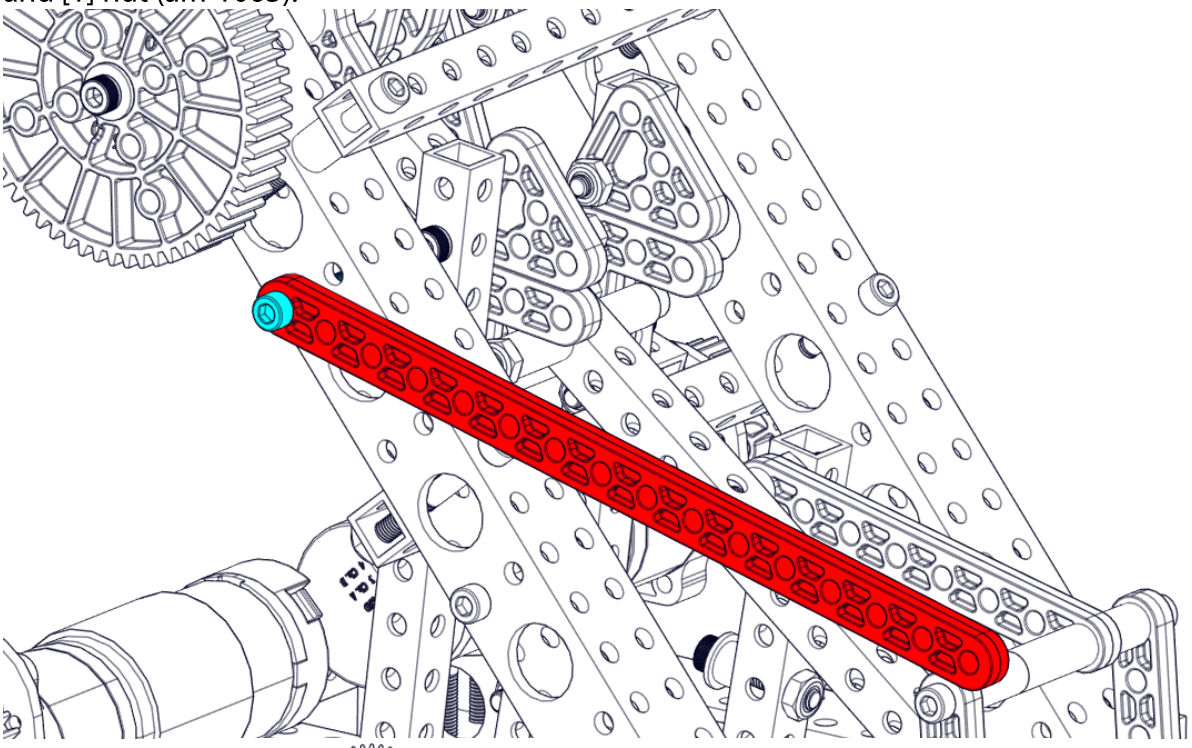
Attach [1] 12" tube (am-5001-1200) using [2] 2.25" screws (am-1156), [2] nuts (am-1063), and [2] 0.5" screw spacers (am-1697) to act as a hard stop for the catapult.

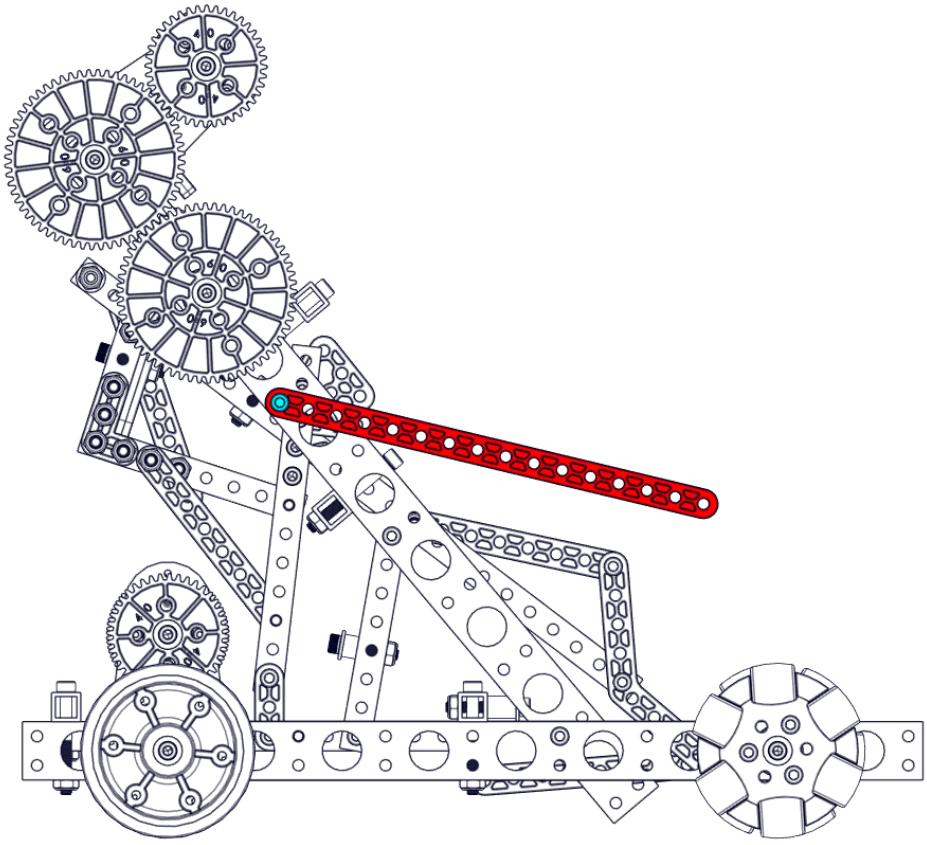




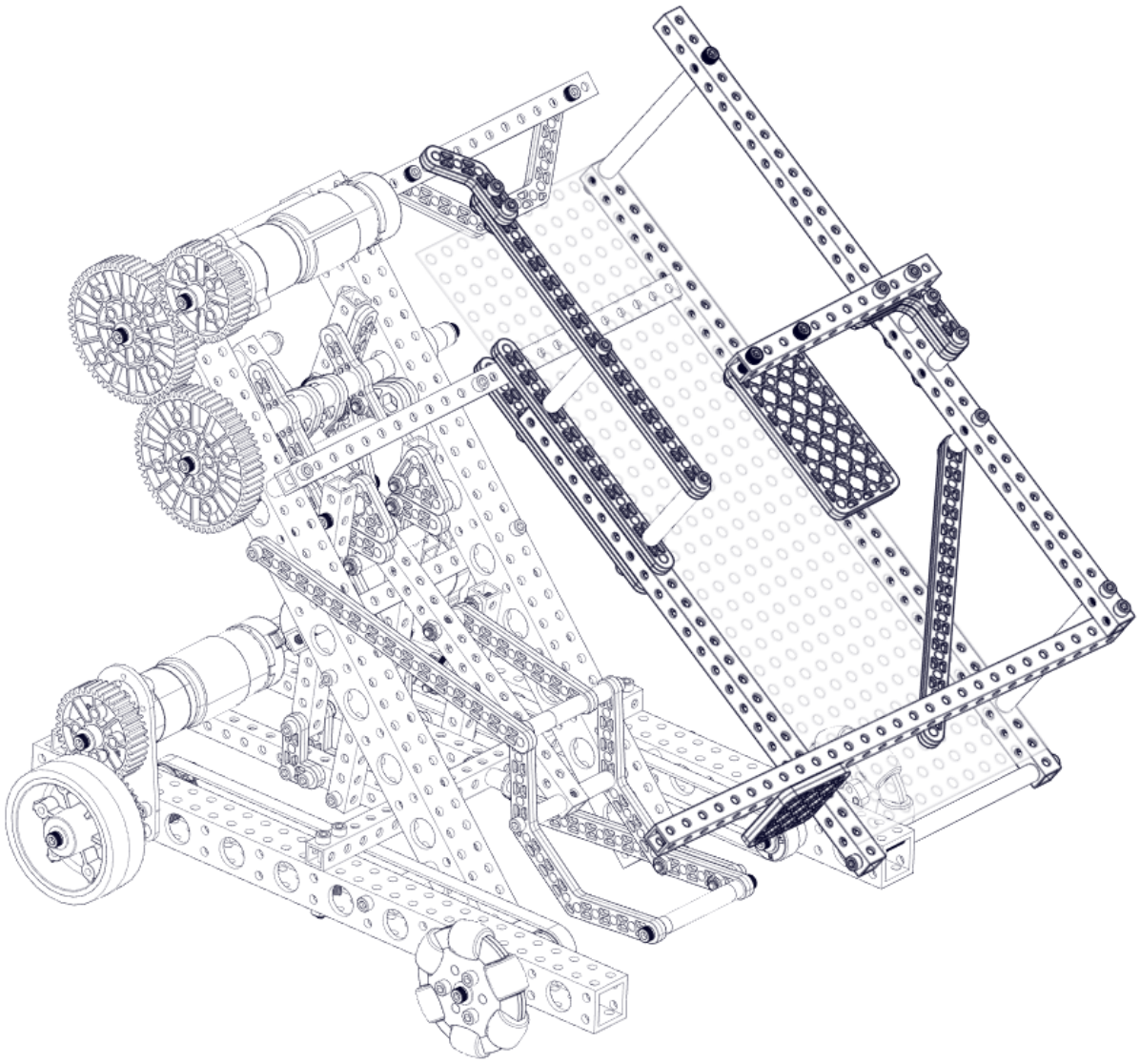
Step 10

Attach a 1x16 beam (am-5011_1x16) to the side of the tower with [1] 1.5″ screw (am-1014) and [1] nut (am-1063).



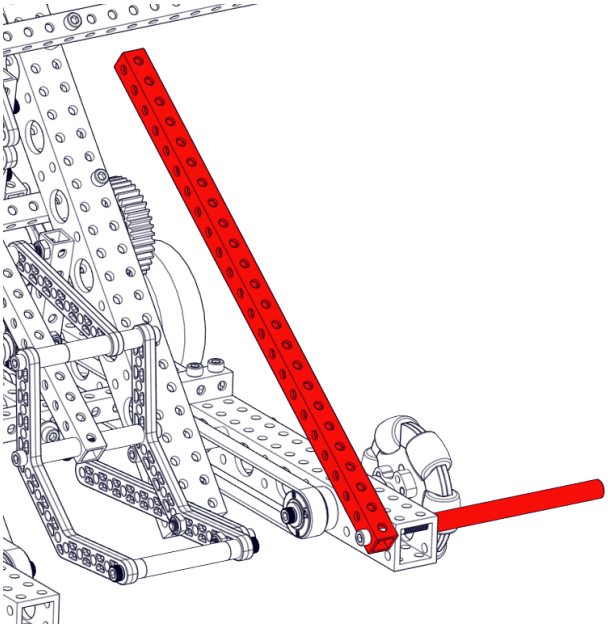


Hopper Assembly



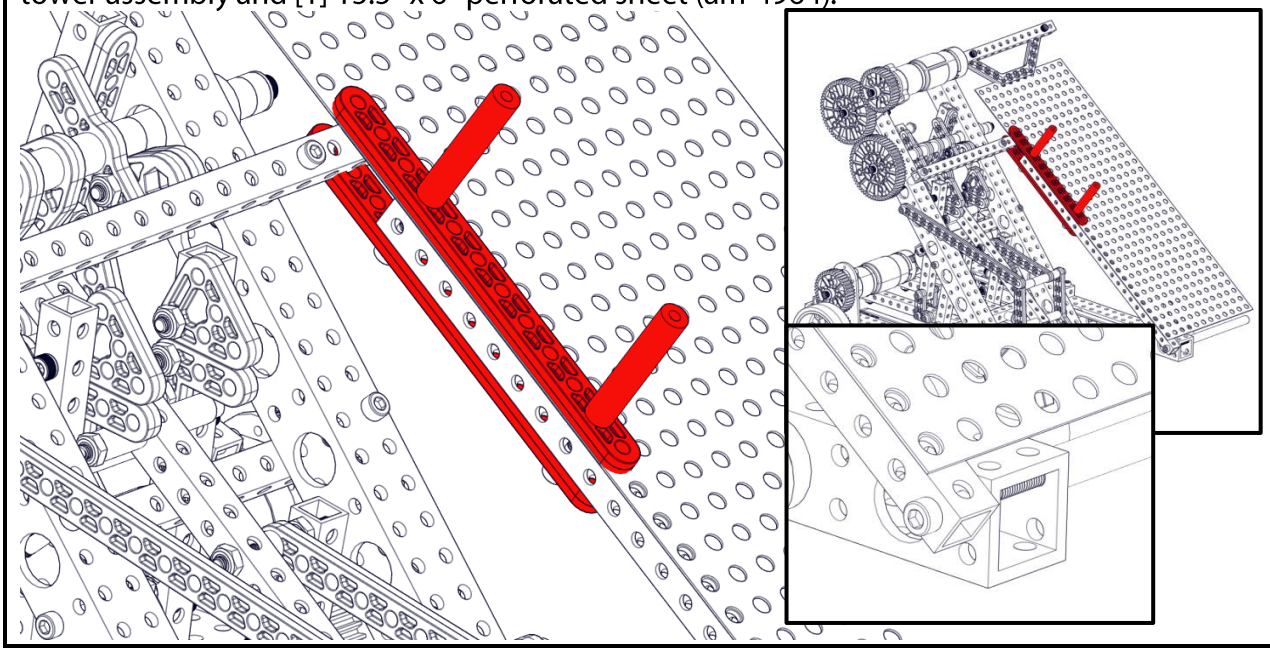
Step 1

Attach [1] 12″ tube (am-5001-1200) to the chassis using [1] 2″ screw (am-1049) and [1] 4″ standoff (am-1704).



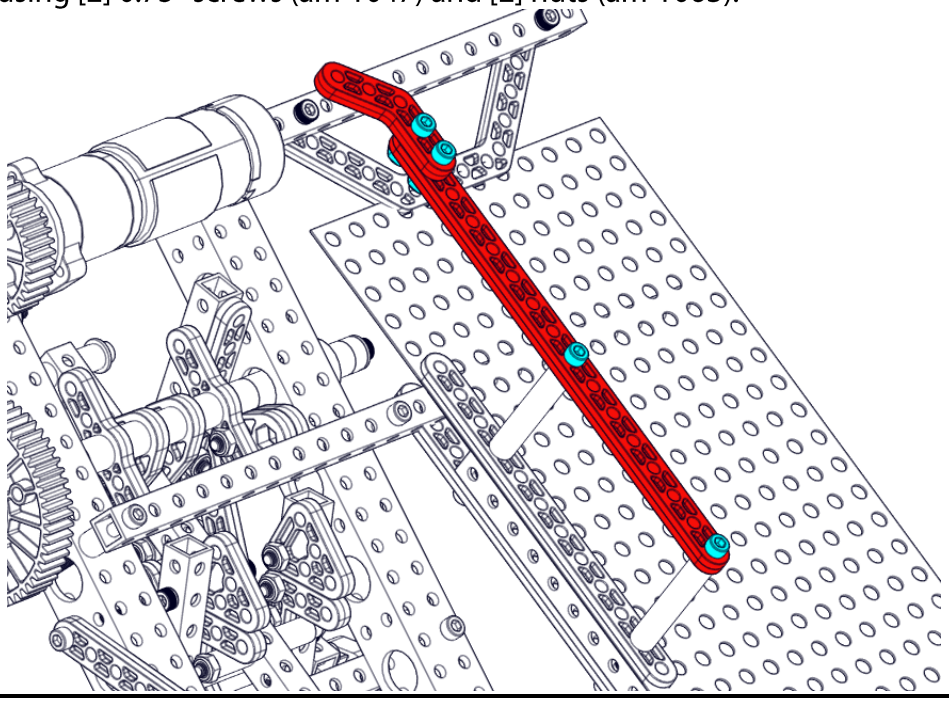
Step 2

At the end of the 12″ tube, attach [2] 1x12 beams (am-5011_1x12) using [2] 1.5″ screws (am-1014) and [2] 2″ standoffs (am-1702). The beams will “sandwich” the 12″ tube mounted to the tower assembly and [1] 15.5″ x 6″ perforated sheet (am-4964).



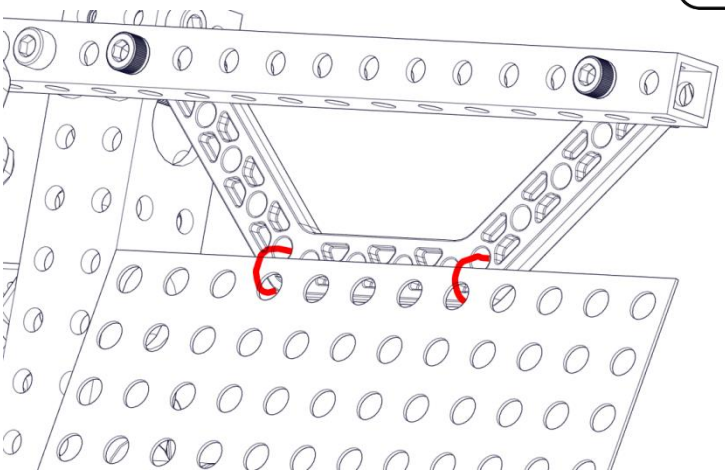
Step 3

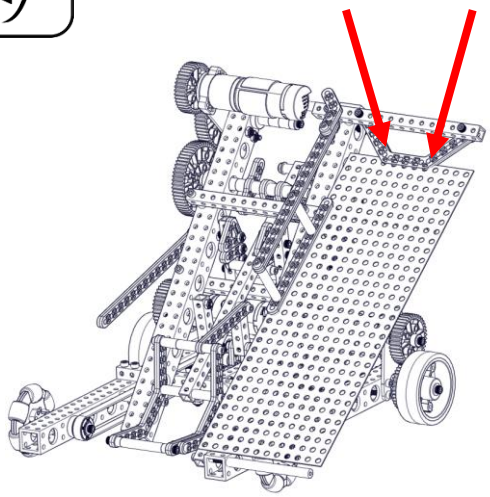
To the other end of the two standoffs placed in Step 2, attach [1] 1x16 beam (am-5011_1x16) using [2] 0.75" screws (am-1047). At the end of *that* beam, attach [1] 135° angle gusset (am-5010_135) using [2] 0.75" screws (am-1047) and [2] nuts (am-1063).



Step 4

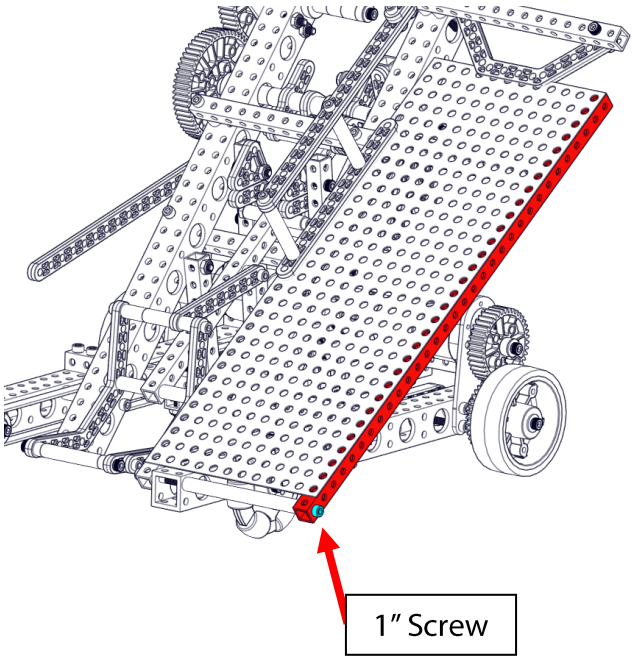
Tie [2] cable ties around the top of the perforated sheet and the 5x5 gusset to secure it in place.

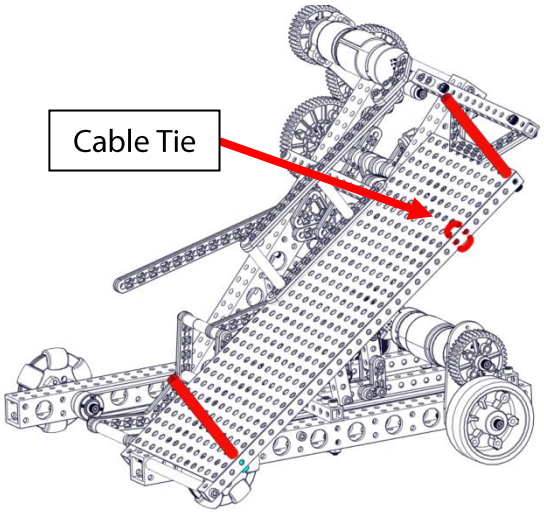




Step 5

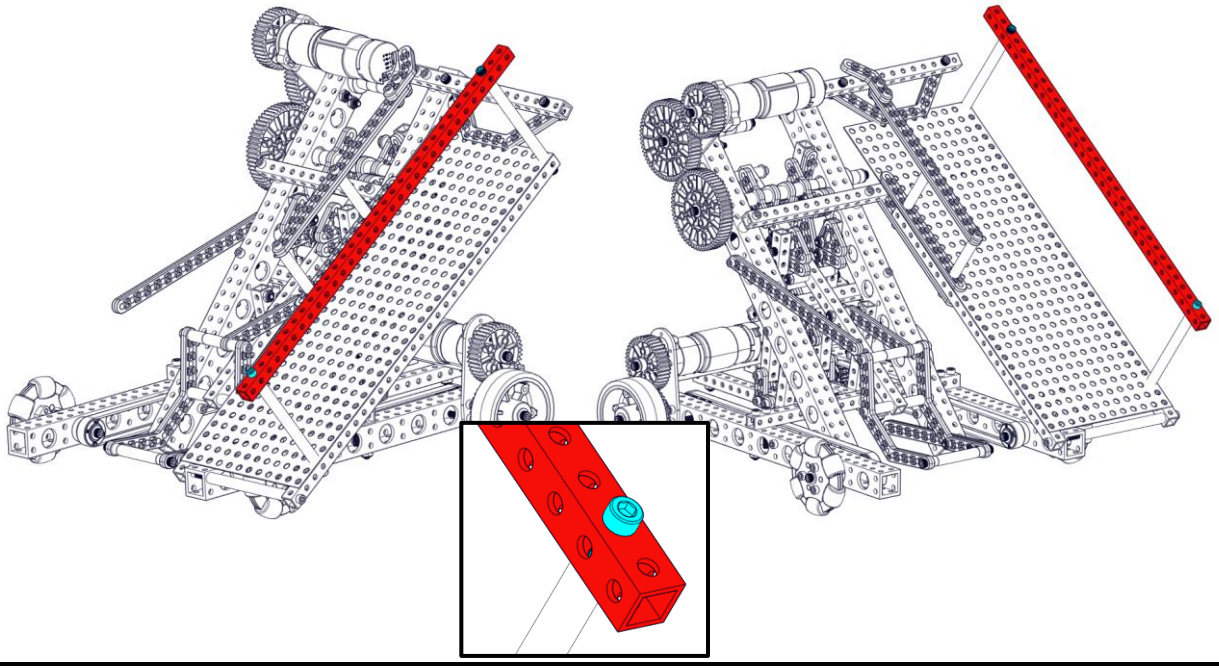
Connect [1] 16″ tube (am-5001-1600) to the robot using [1] 1″ screw (am-1056) at the bottom on the unused end of the 4″ standoff. Then, secure it in place with [2] 1″ screws (am-1056) and [2] 4″ standoffs (am-1704). Use [1] cable tie to further secure the vertical tube.





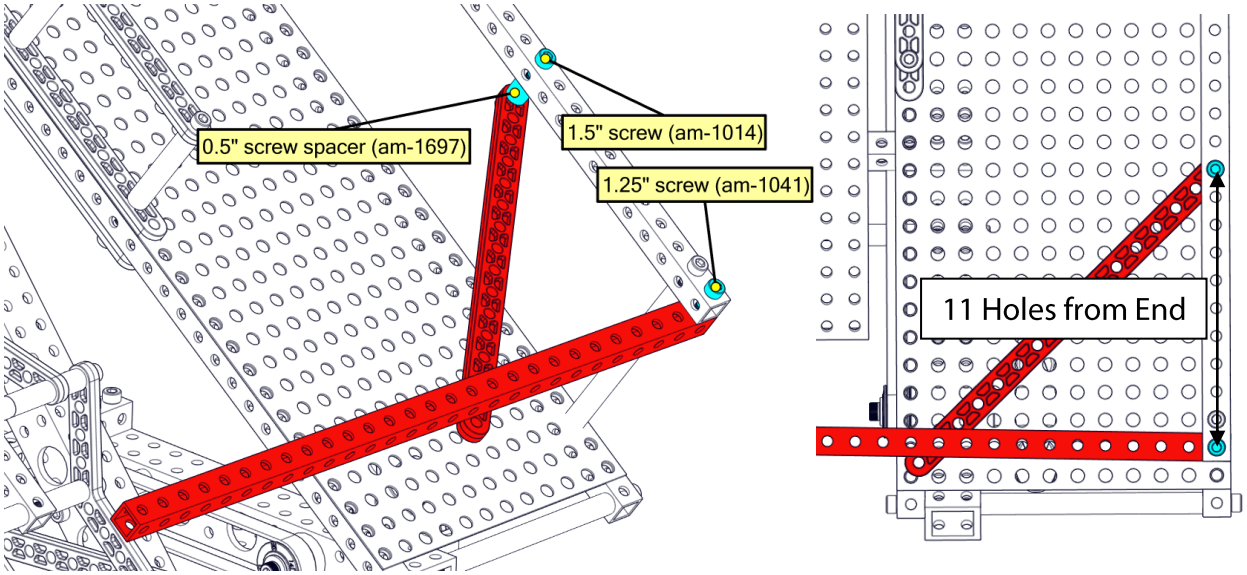
Step 6

Attach [1] 16″ tube (am-5001-1600) to the standoffs using [2] 1″ screws (am-1056).



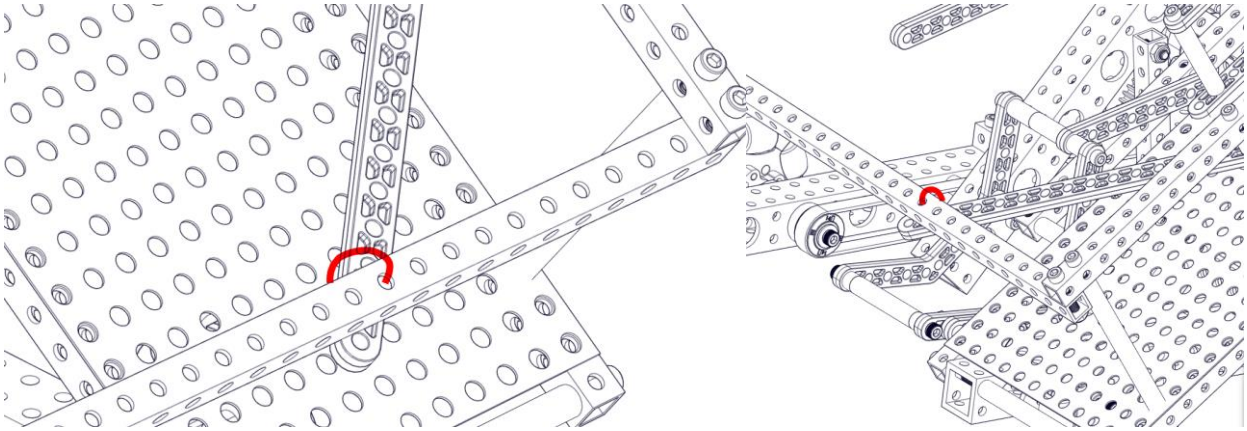
Step 7

At the bottom of the hopper, attach [1] 14" tube (am-5001-1400) using [1] 1.25" screw (am-1041) and [1] nut (am-1063). Additionally, attach [1] 1x16 beam (am-5011_1x16) using a 1.5" screw (am-1014), a 0.5" screw spacer (am-1697), and [1] nut (am-1063).



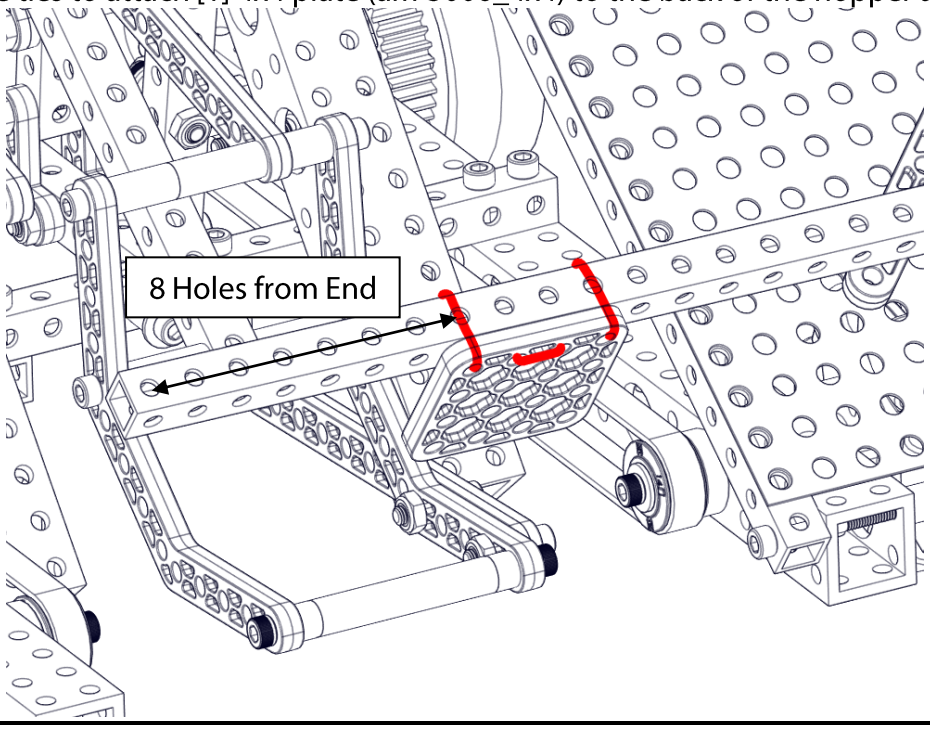
Step 8

Tie [1] cable tie between the tube and the beam you placed in Step 7 to hold them together.



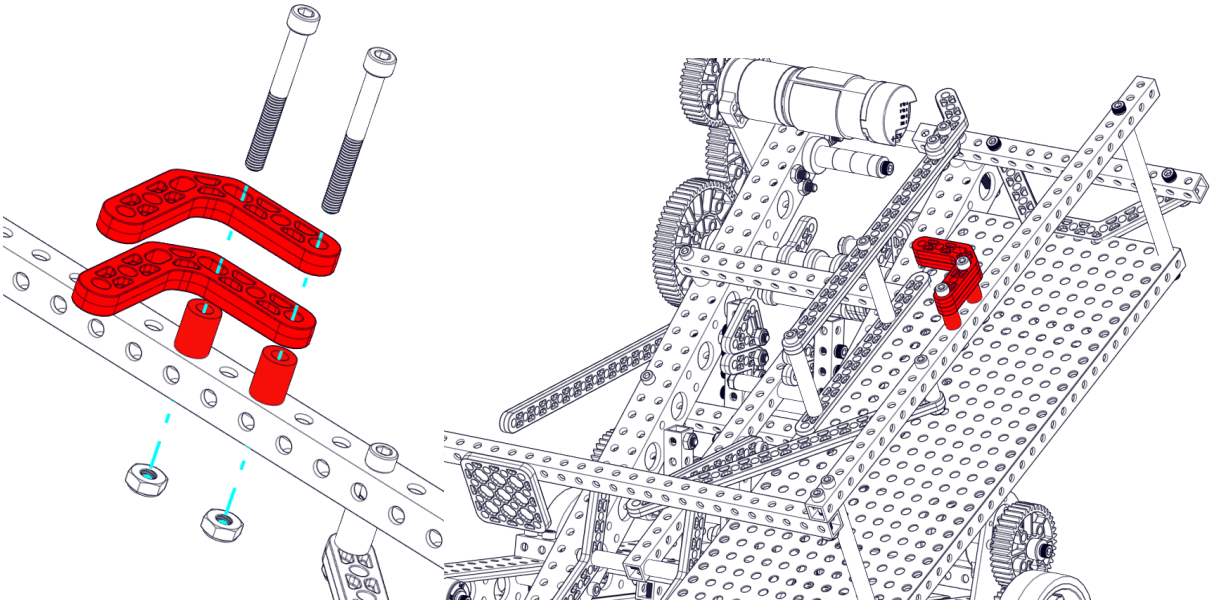
Step 9

Use [3] cable ties to attach [1] 4x4 plate (am-5006_4x4) to the back of the hopper as shown.



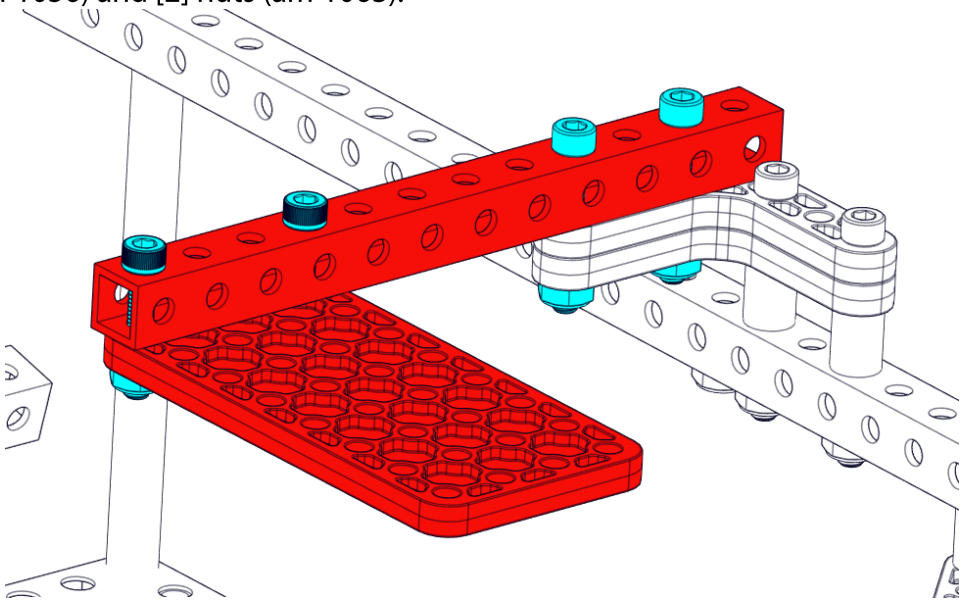
Step 10

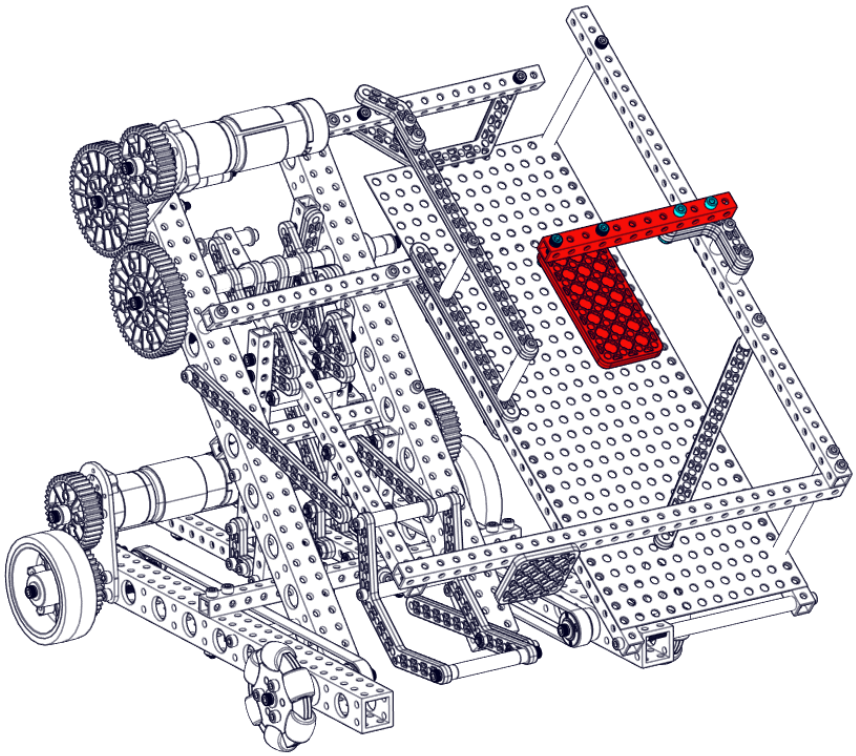
Affix [2] 3x3 brackets (am-5005_3x3) to the hopper using [2] 1.75" screws (am-1048), [2] 0.5" screw spacers (am-1697), and [2] nuts (am-1063).



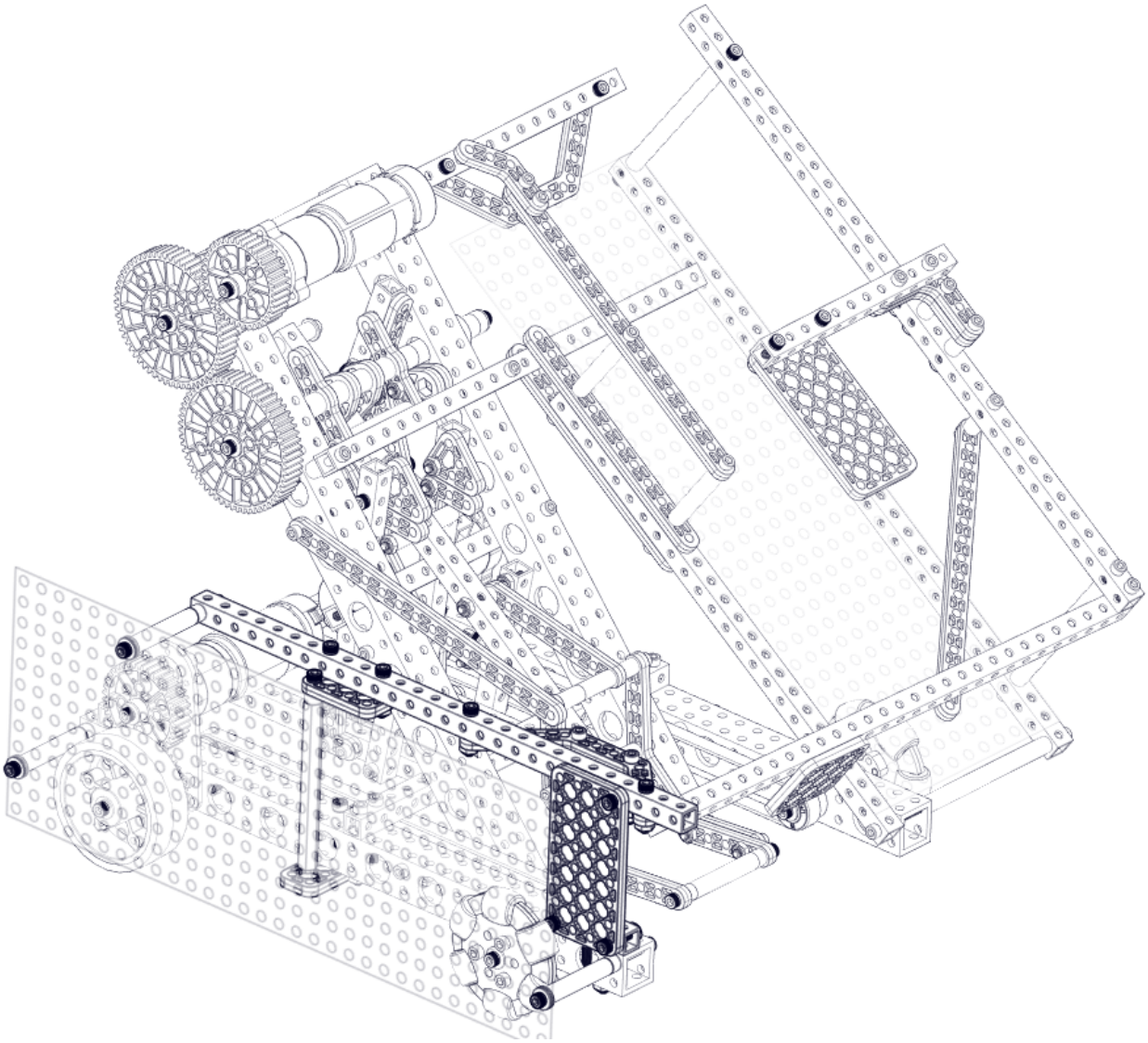
Step 11

Attach [1] 6″ tube (am-5001-0600) to the 3x3 brackets using [2] 1.25″ screws (am-1041) and [2] nuts (am-1063). Then connect [1] 4x8 plate (am-5006_4x8) to the end of the tube using [2] 1″ screws (am-1056) and [2] nuts (am-1063).



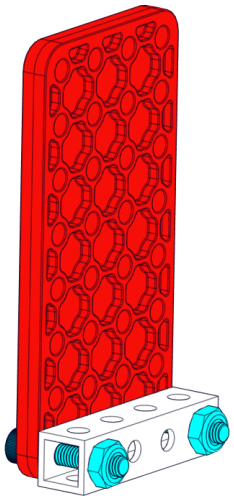


Panel Assembly



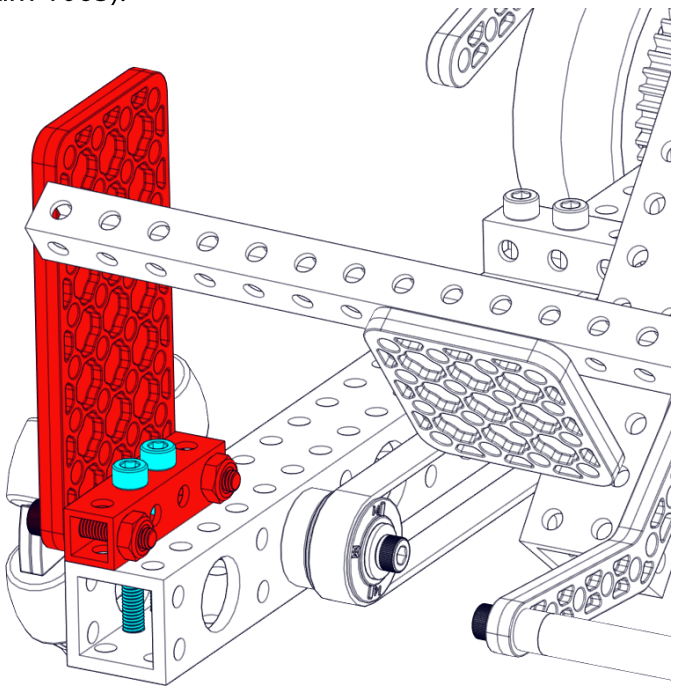
Step 1

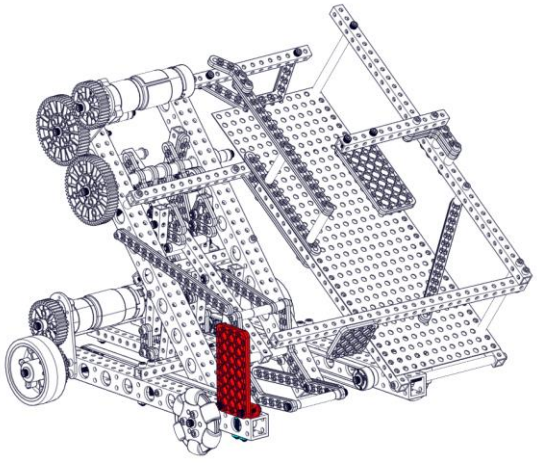
Attach [1] 4x8 plate (am-5006_4x8) to [1] 2" tube (am-5001-0200) using [2] 1" screws and [2] nuts (am-1063).



Step 2

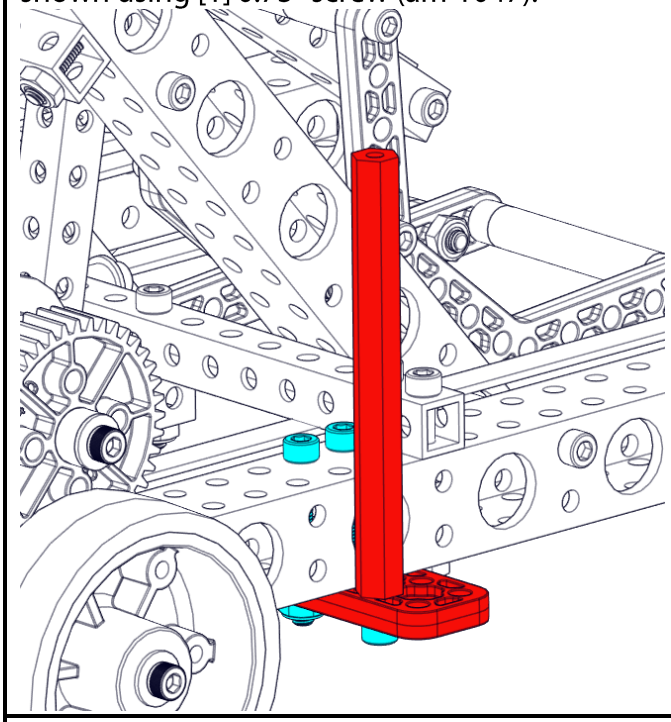
Attach the assembly from Step 1 to the robot using [2] 1.75" screws (am-1048) and [2] nuts (am-1063).

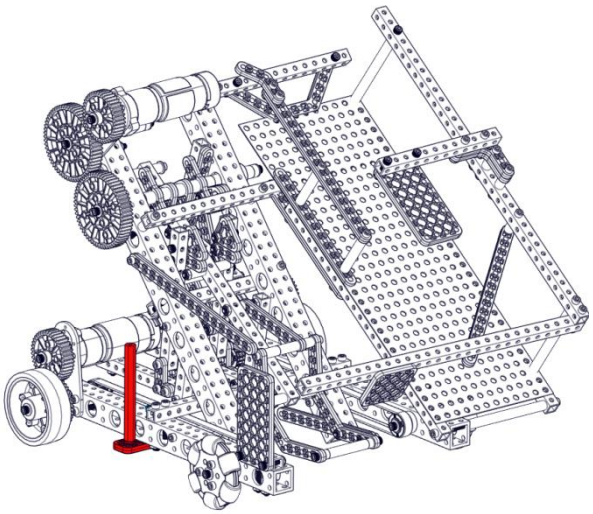




Step 3

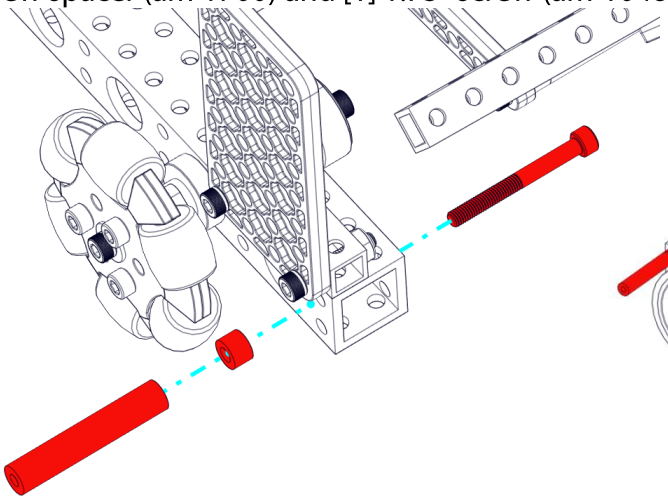
Attach [1] 2x4 plate (am-5006_2x4) to the underside of the robot using [2] 1.5″ screws (am-1014) and [2] nuts (am-1063). Then attach a 4″ hex shaft (am-5003-0400) to the plate as shown using [1] 0.75″ screw (am-1047).

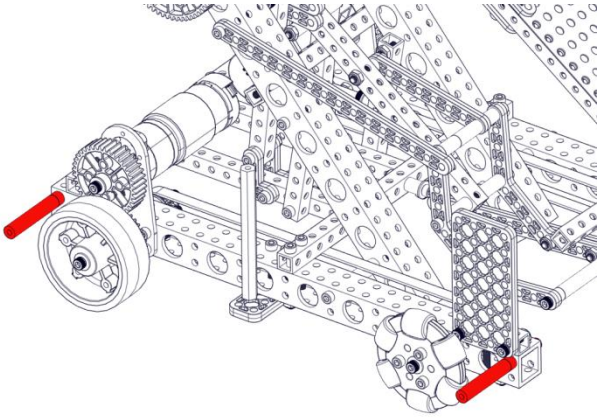




Step 4

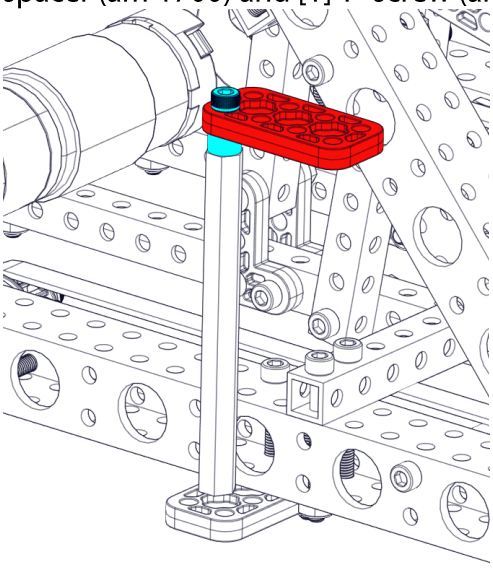
At **both** the front and back of the chassis, attach [1] 2″ standoff (am-1702) using [1] 0.25″ screw spacer (am-1700) and [1] 1.75″ screw (am-1048).

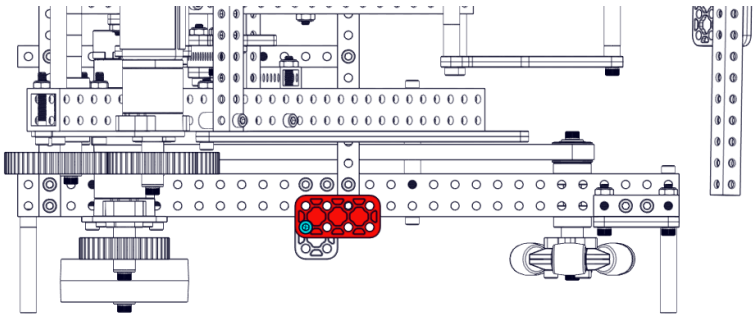




Step 5

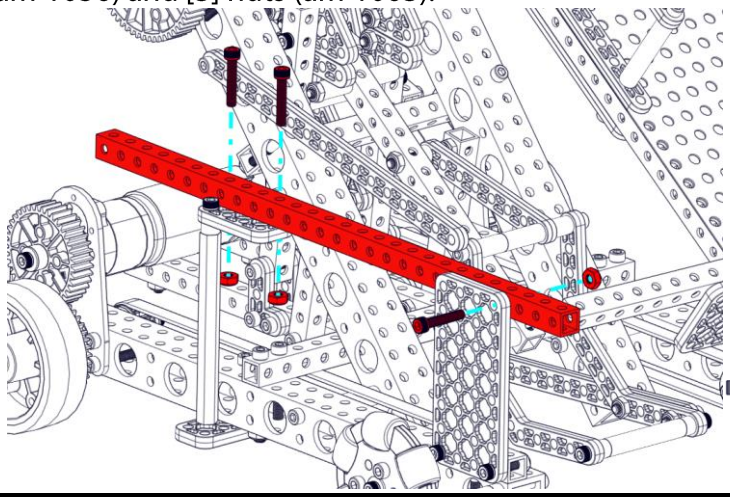
On the hex shaft attached in Step 3, connect [1] 2x4 plate (am-5006_2x4) via [1] 0.25" screw spacer (am-1700) and [1] 1" screw (am-1056).

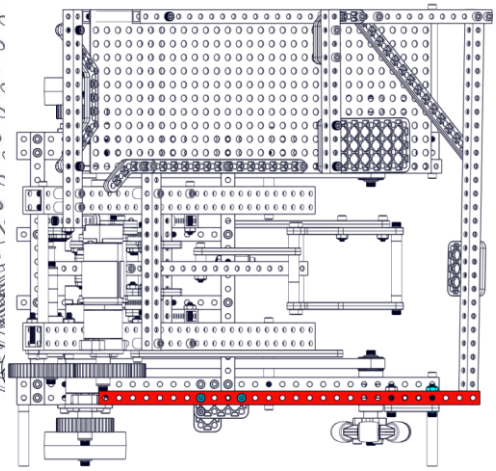




Step 6

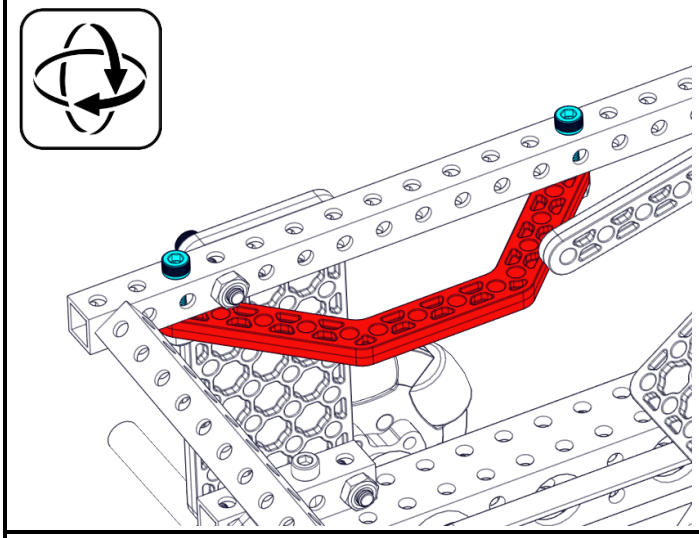
Attach [1] 14" tube (am-5001-1400) to the two plates installed on the side using [3] 1" screws (am-1056) and [3] nuts (am-1063).

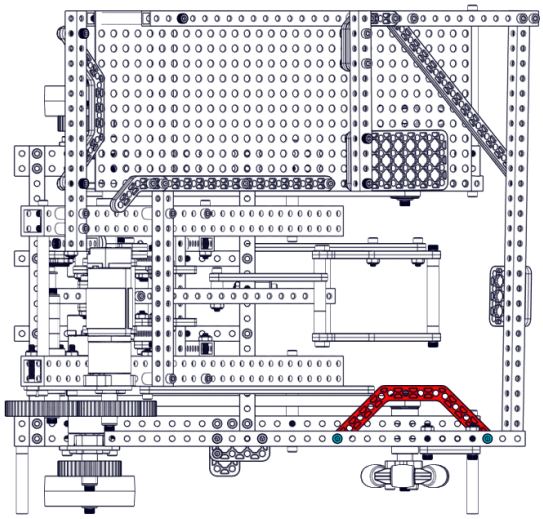




Step 7

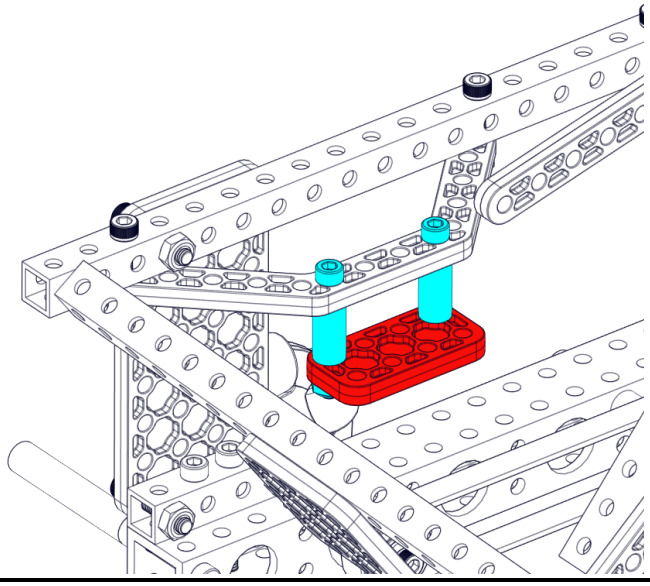
Attach [1] 5x5 corner gusset (am-5005_5x5) to the 14" tube using [2] 1" screws (am-1056) and [2] nuts (am-1063).

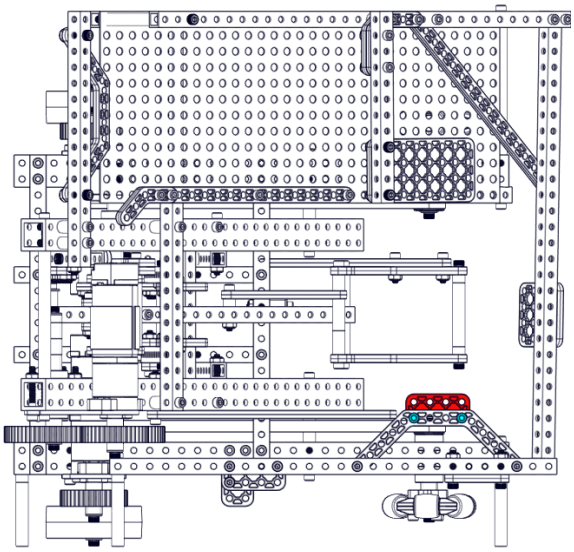




Step 8

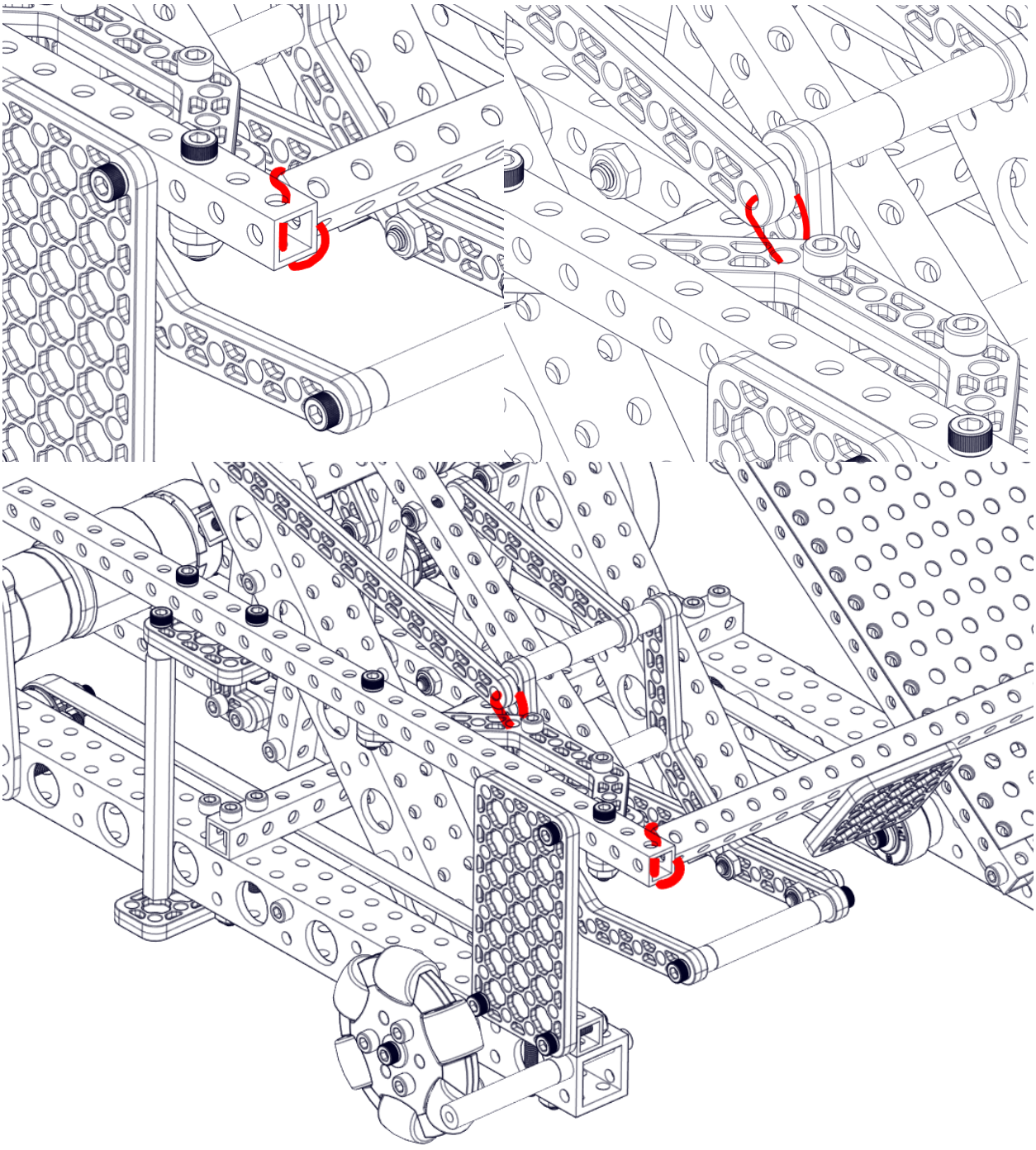
Connect [1] 2x4 plate (am-5006_2x4) to the corner gusset with [2] 1.5" screws (am-1014), [2] 0.75" screw spacers (am-4107), and [2] nuts (am-1063).





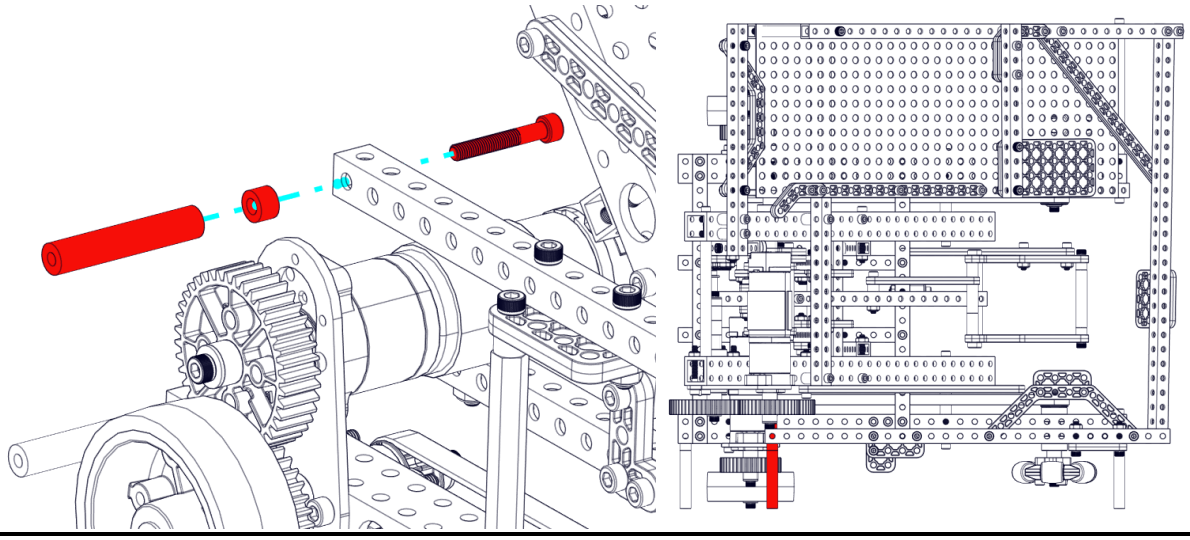
Step 9

Tie [2] cable ties between the panel assembly and the rest of the robot to ensure a secure hold.



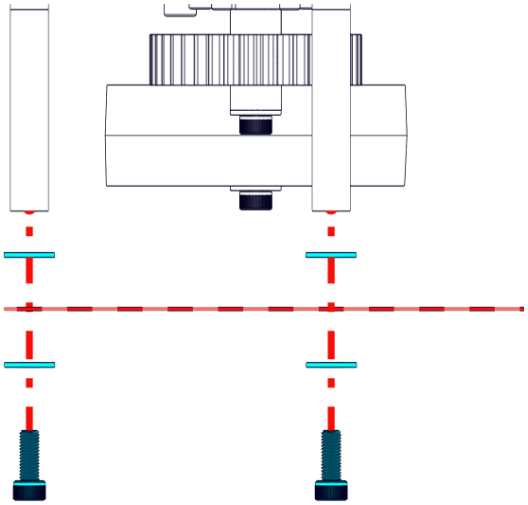
Step 10

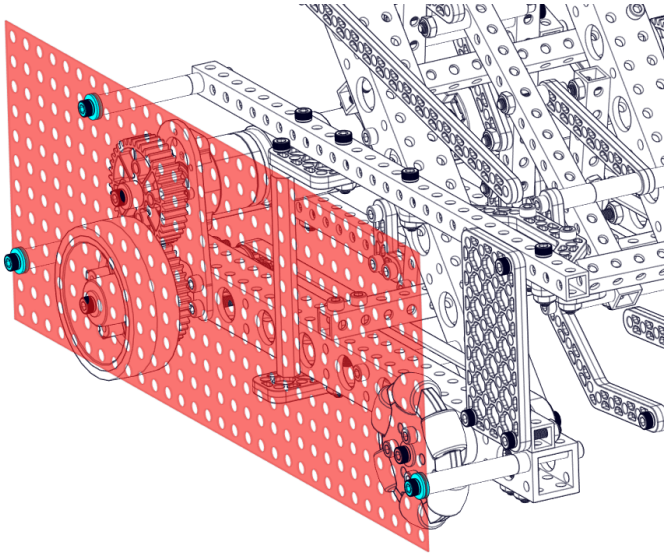
At the end of the 14" tube, attach another 2" standoff (am-1702) with [1] 0.25" screw spacer (am-1700) and [1] 1.25" screw (am-1041).



Step 11

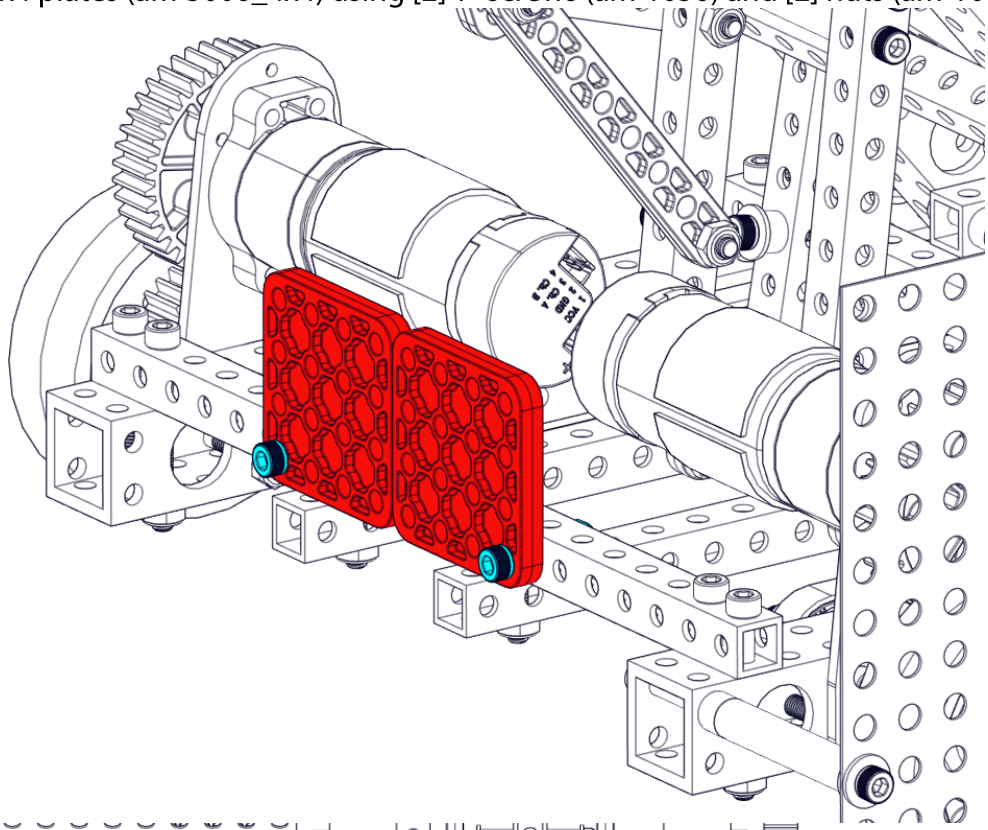
Affix a 15.5" by 6" perforated panel (am-4964) to the robot by sandwiching it between [2] washers (am-1026) at each of the [3] standoff locations and inserting [3] 0.5" screws (am-1002) into each standoff.

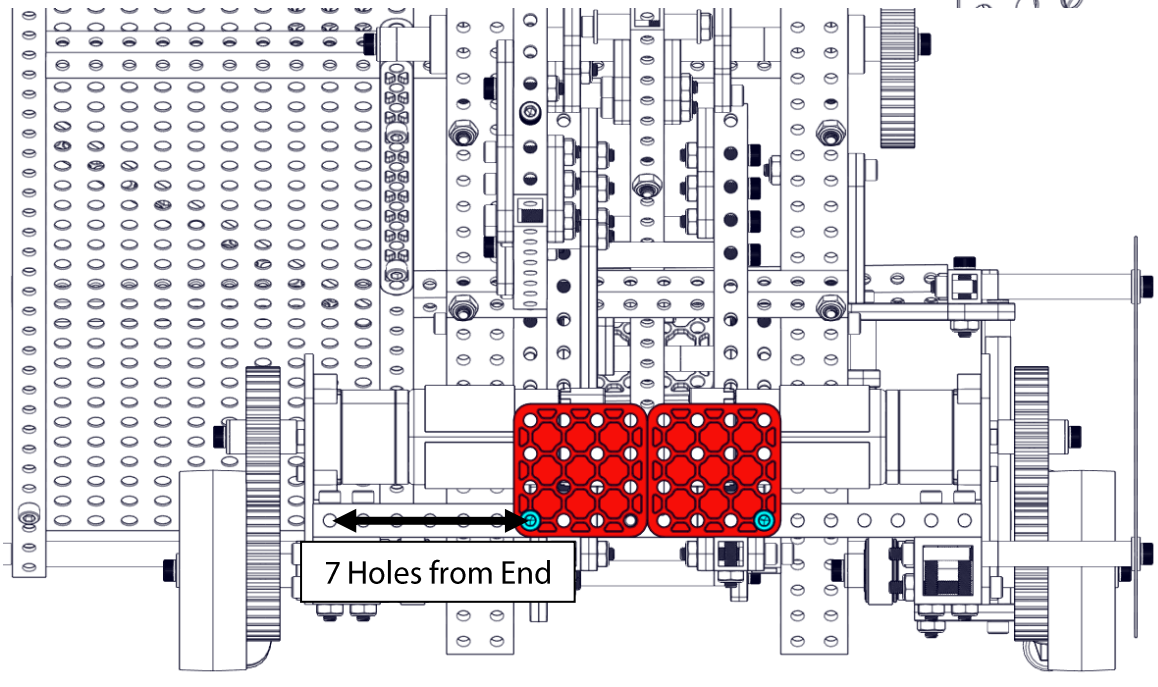




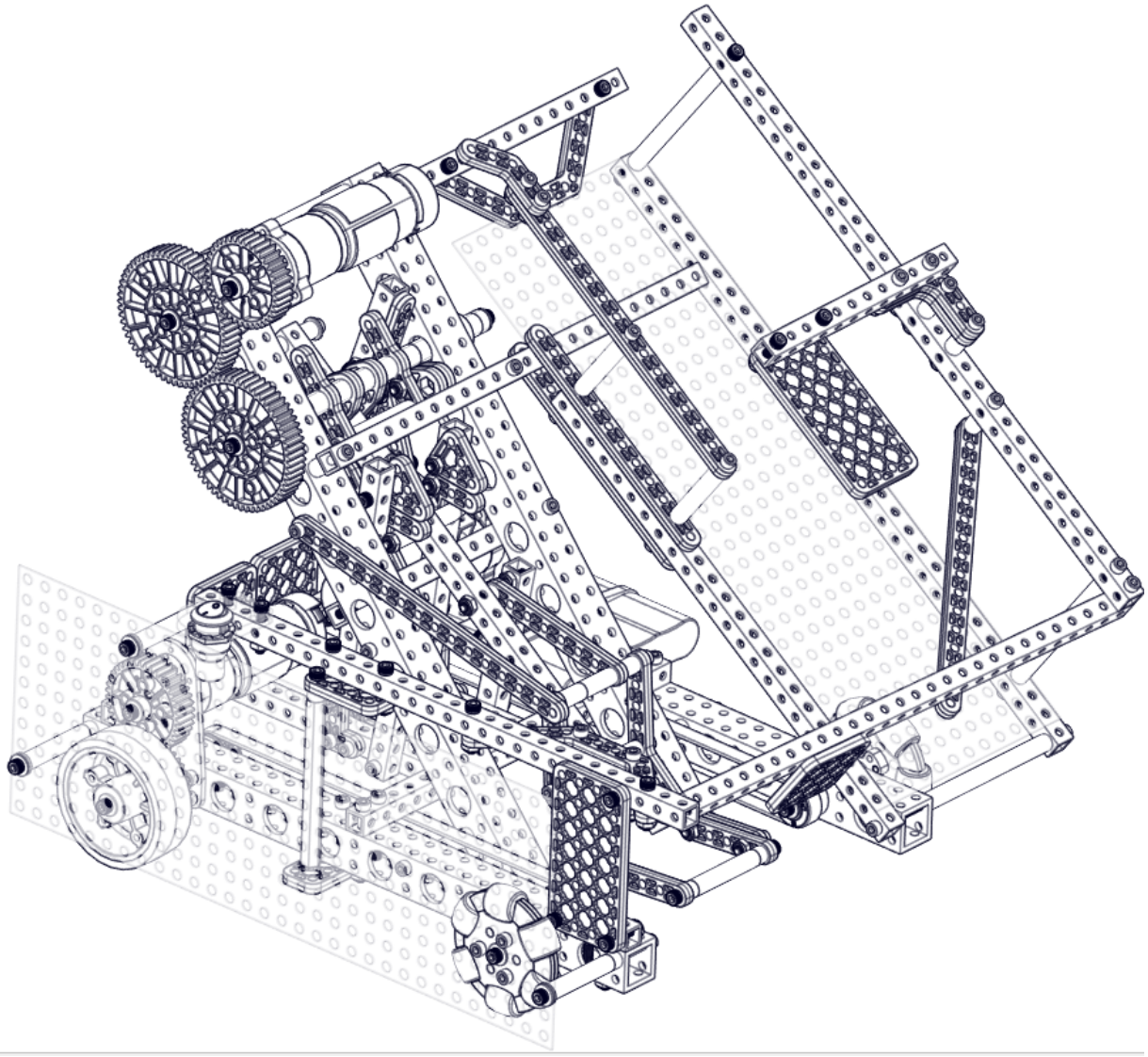
Step 12

Attach [2] 4x4 plates (am-5006_4x4) using [2] 1" screws (am-1056) and [2] nuts (am-1063).



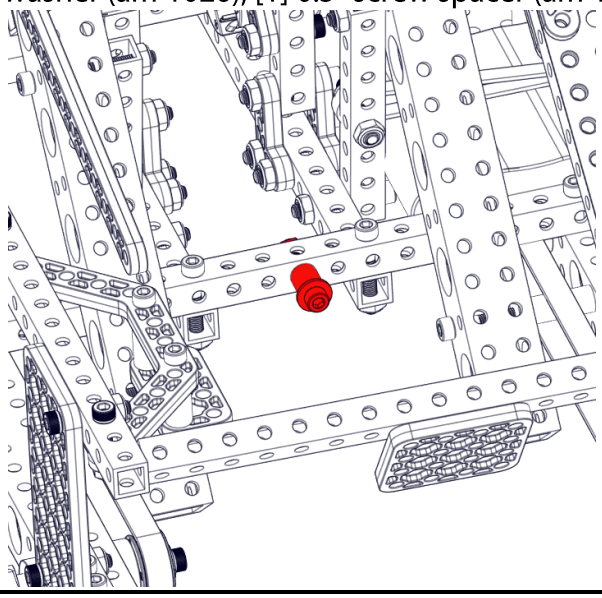


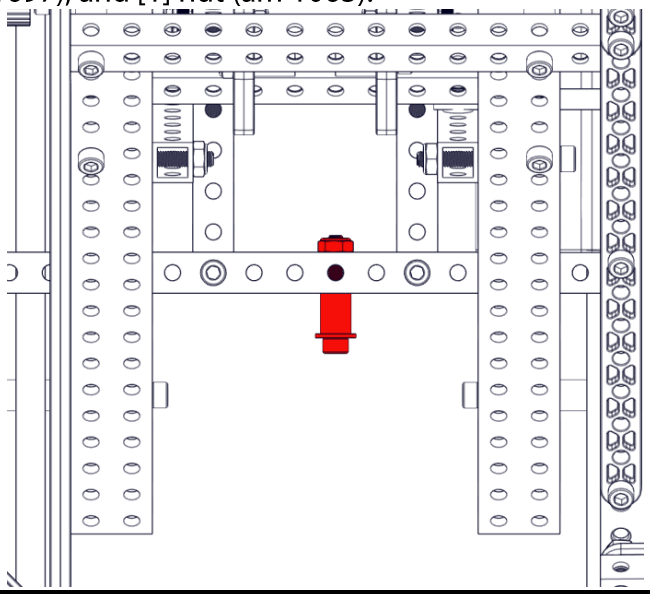
Final Assembly



Step 1

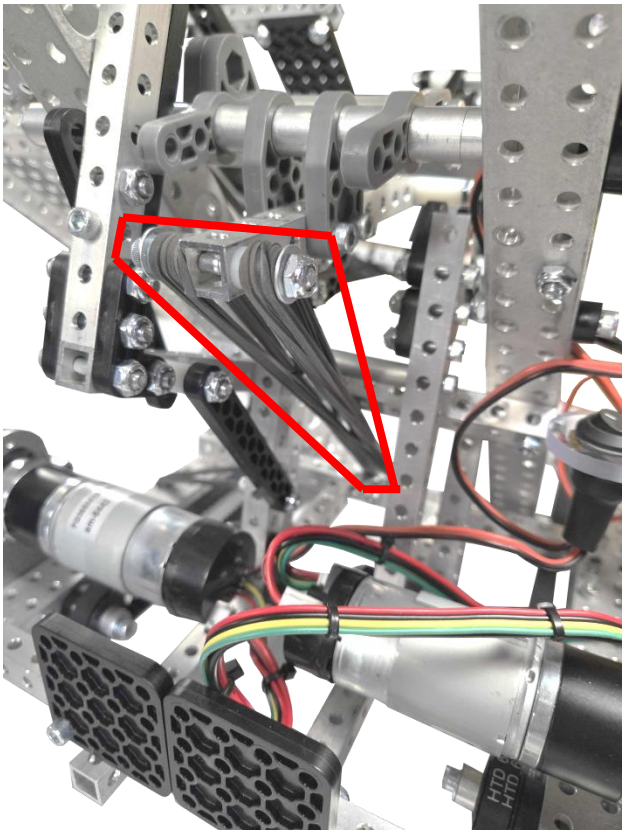
Create an attachment point for the catapult rubber bands using [1] 1.25" screw (am-1041), [1] washer (am-1026), [1] 0.5" screw spacer (am-1697), and [1] nut (am-1063).

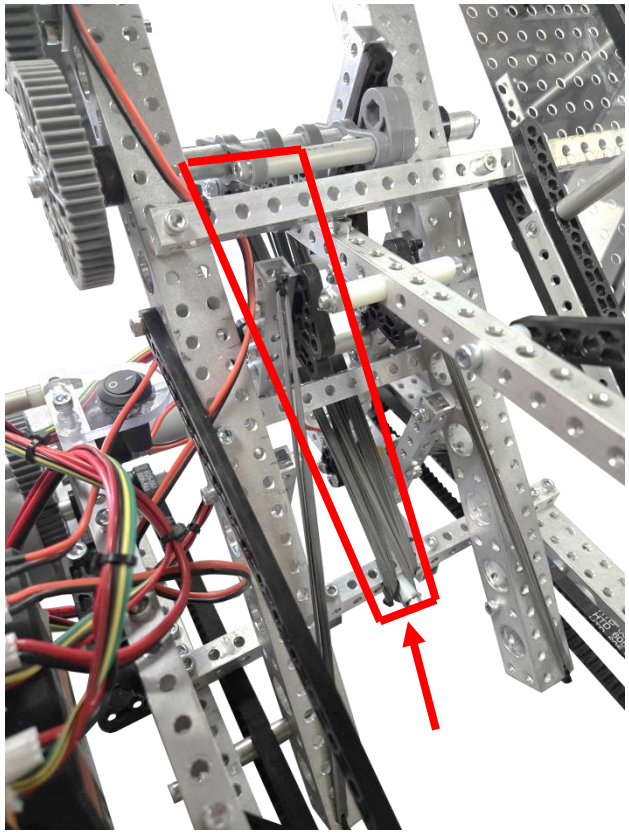




Step 2

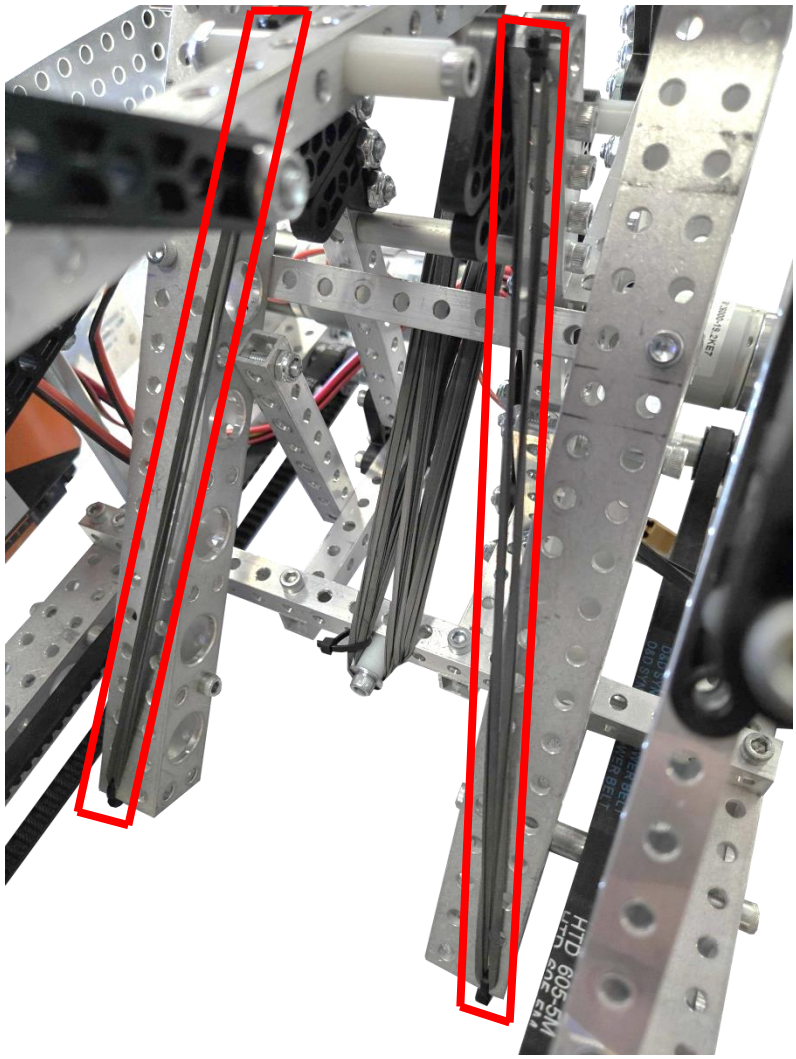
Arm the catapult by placing [10] rubber bands on each side of the catapult and at the designated screw at the base of the chassis.





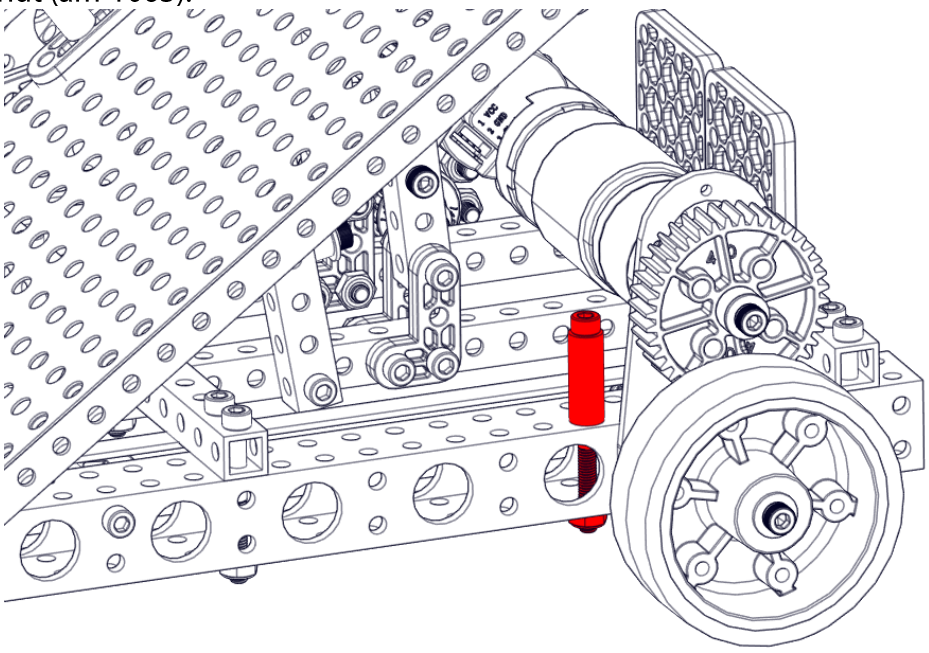
Step 3

Using [4] cable ties and [2-4] rubber bands, load the latch assembly against the base of the robot as shown so it returns to the same position after the catapult is used.



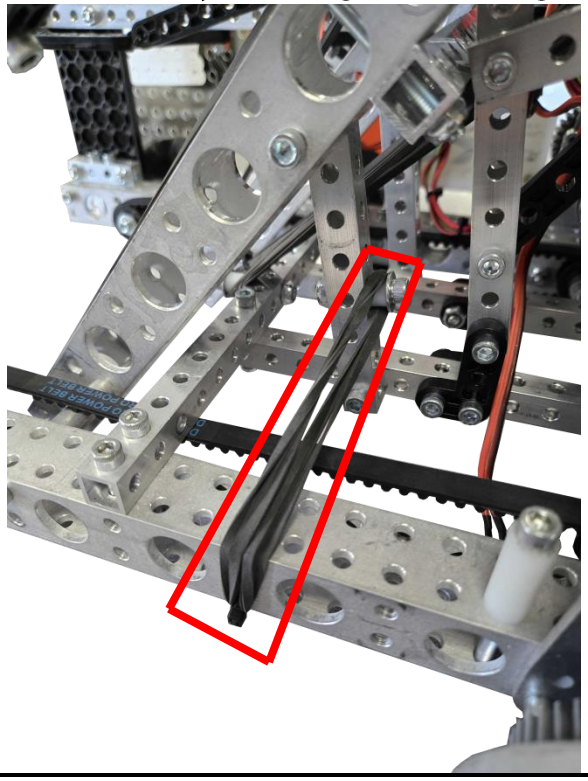
Step 4 (Optional)

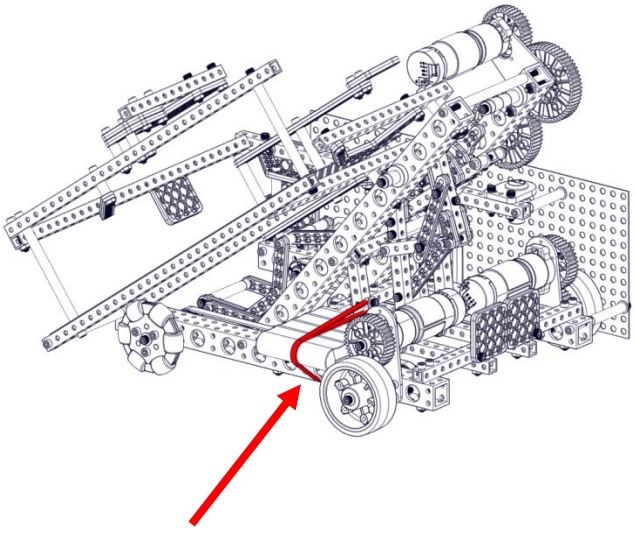
Create a guide for the battery using [1] 2.25″ screw (am-1156), [1] 1″ screw spacer (am-1696), and [1] nut (am-1063).



Step 5 (Optional)

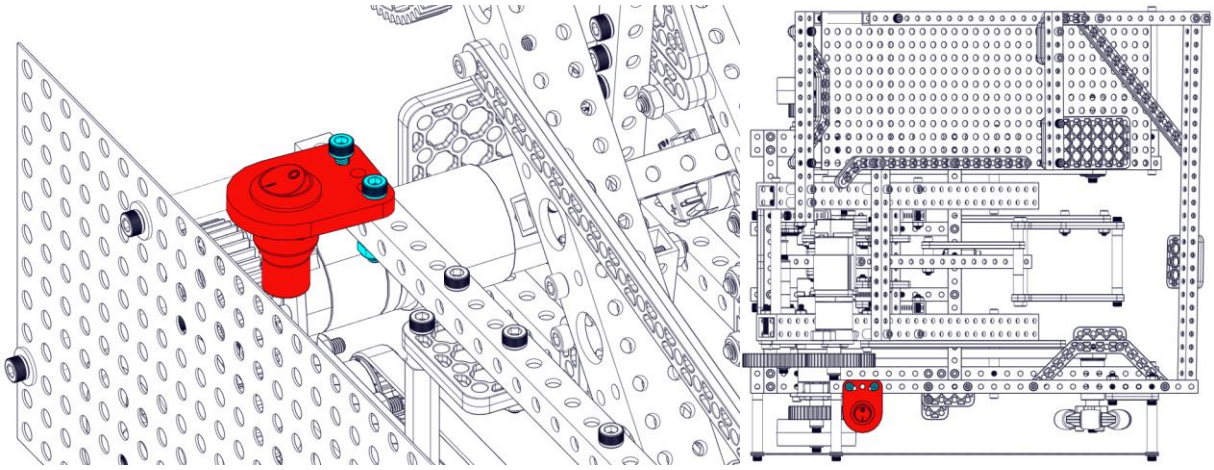
Create a battery mounting location using [1] cable tie and [2-3] rubber bands as shown.





Step 6 (Optional)

Attach the power switch (am-4969) to the panel assembly using [2] 1" screws (am-1056) and [2] nuts (am-1063).



The robot is now complete! For software resources, return to the starterbot page at AndyMark.com.