

PhantomX Reactor Arm Assembly Guide



Tools Needed

- 1.5 mm Hex Driver (Included)

- 2.5 mm Hex Driver (Included)
- Needle-Nose Pliers
- Small Flat Head Screw Driver

Parts List

Note: Some of the parts in some assemblies come packaged in separate smaller bags because they come with a bracket or other various part. Please review the entire parts list to ensure you have all necessary components. Some kits will have spare bolts, nuts, or screws included.

1 X

Bottom Base



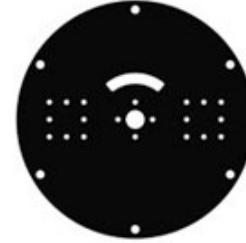
1 X

Middle Base



1 X

Pan Plate



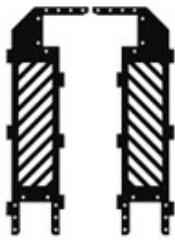
1 X

Pan Cover



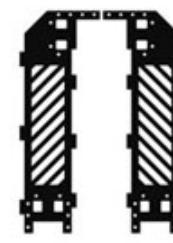
1 X

Outside Arm Covers



1 X

Inside Arm Covers



1 X

Top Arm Cover



1 X

Bottom Arm Cover



2 X

Forearm Cover



1 X

Side Forearm Plates



2 X

Thick Spacer



1 X

Bottom Forearm Bracket



1 X

Thin Spacer



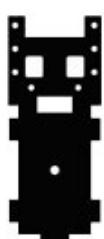
1 X

Top Locking Plate



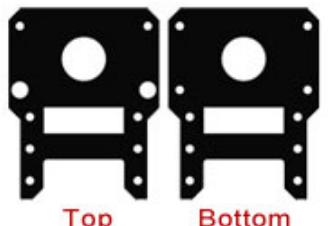
1 X

Back Locking Plate

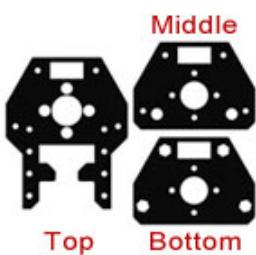


1 X

Reverse Brackets



Wrist Brackets



PhantomX Parallel Gripper



1 X

Slewing Ring



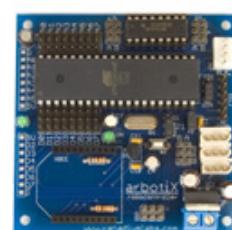
7 X

AX-12A



1 X

arbotiX



1 X

3 X

2 X



2 X



1 X



20 X



86 X



46 X



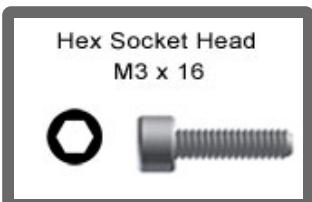
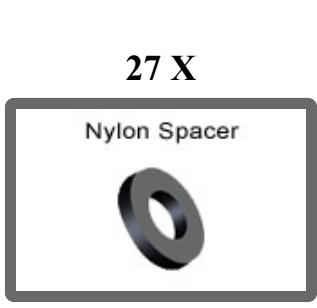
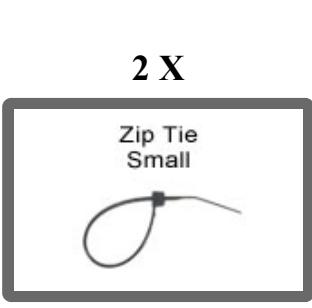
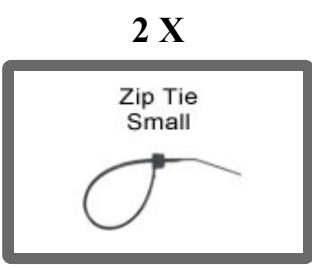
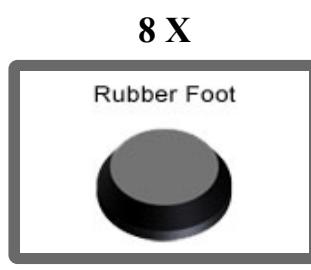
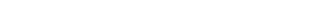
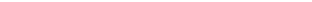
16 X



5 X

9 X

33 X

**6 X****6 X****12 X****6 X****21 X****9 X****150 X****5 X****5 X****1 X****2 X****27 X****5 X****8 X****1 X**

Rubber Foot

A box containing a single black rubber foot.

Female Pigtail Lead
2.1 - 5.5mm

A box containing a female pigtail lead for 2.1 - 5.5mm connectors.

ASSEMBLY TIPS: Using Turbo Lock



Your kit comes with Turbo Lock. The type provided is non-permanent and plastic safe. Turbo Lock is used to keep nuts and bolts in place on robots since they move and shake around a lot.

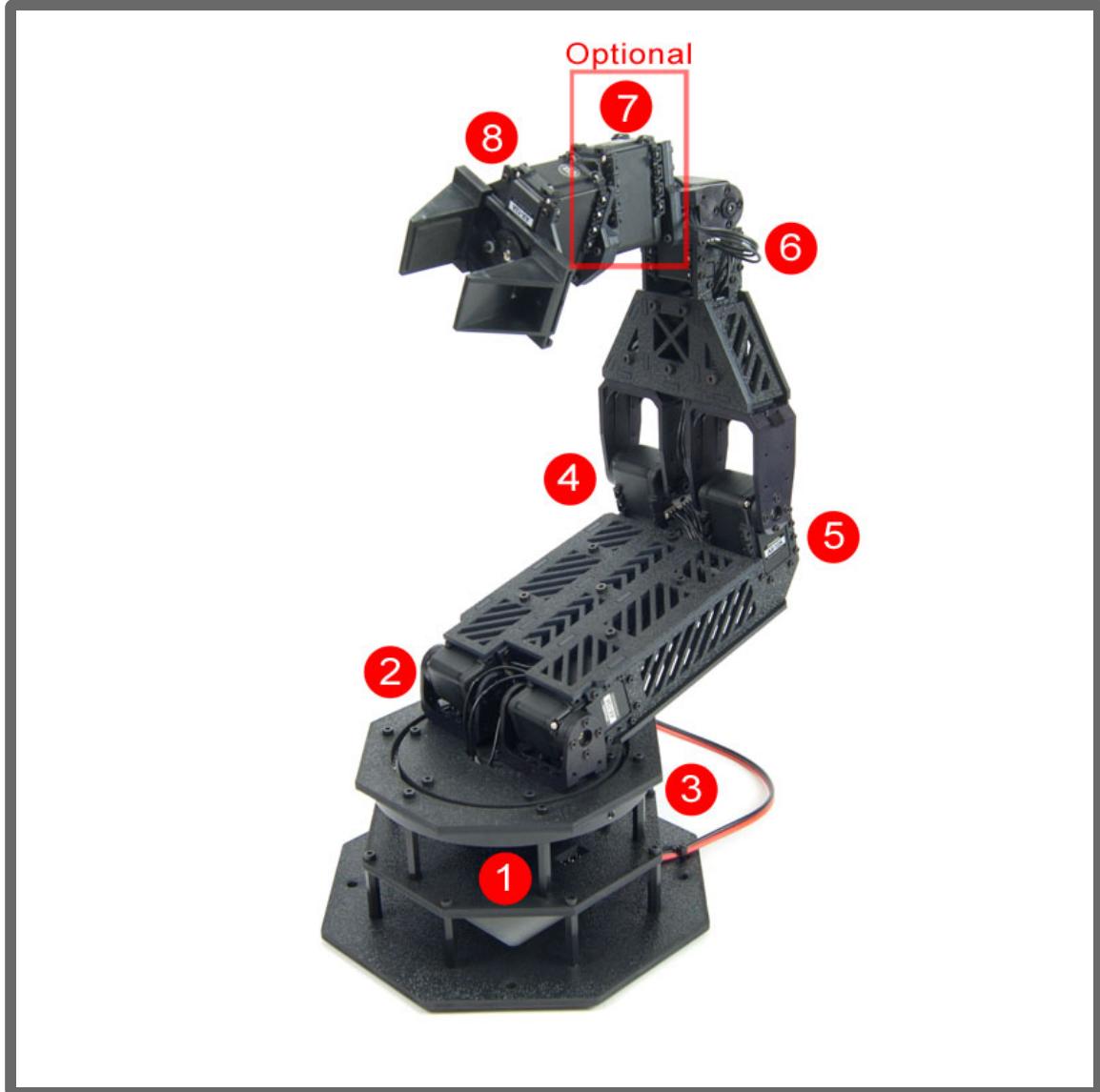
To use your Turbo Lock, squirt a small amount into a plastic spoon. As you build, before screwing a bolt into your robot, dip the tip of each bolt into the Turbo Lock and brush the excess off onto the side of the spoon.

ASSEMBLY TIPS: Seating the Nuts into the Nut Sockets



ASSEMBLY TIPS: Assemble in the Correct Order

Make note of the servo IDs and their positions. Each servo has a # written on the back of it. Be sure you assemble the servos in the correct order so that your arm will work!



ASSEMBLY TIPS: Check Horn Orientation

Each AX-12A servo should ship with the horn aligned to 'Center'. The horn is correctly centered when the single notch on the horn matches the single notch on the servo body. As you put together your arm, make sure that the servos are centered as you attach the brackets in the pictures. Incorrect servo orientation will cause problems with your robot.



Assemble the Middle Arm Section



First prep (2) F2 Brackets and (2) F4 Brackets with M2 Nuts as shown.

32x



Mount an F2 Bracket to Servos #2 and #3 each.

2x



2x



8x



Mount the F4 Brackets to Servos #4 and #5.

*Note the orientation of the brackets as shown.

2x



2x



8x

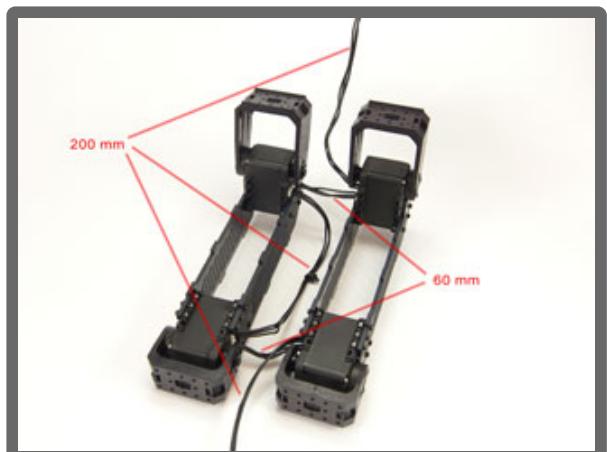


Assemble the runners of each side by mounting the Inside Arm Covers and Outside Arm Covers connecting Servos #2 to #4, #3 to #5.

*Note servos will need to be prepped with M2 Nuts in respective positions for mounting.

60x

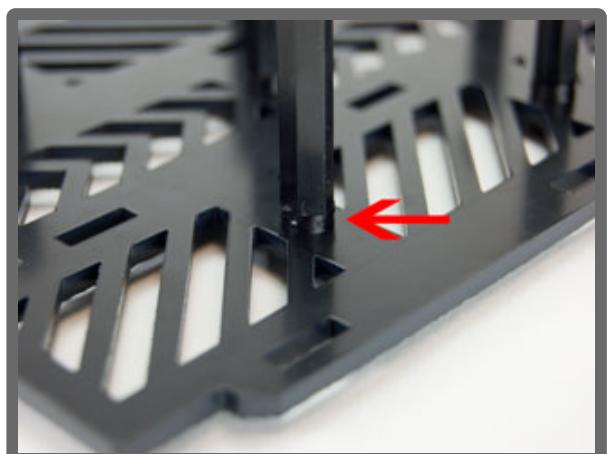
60x



Take time to run the cables for the servos as shown.

3x

2x



Mount a 30mm F-F Standoff with (3) Spacers to the Bottom Arm Cover.



Complete for all mounting holes (6x) on Bottom Arm Cover.

6x



18x



6x



Assemble the Bottom Arm Cover slots along with the Top Arm Cover slots onto the runner tabs as shown and mount.

6x



Assemble the Base

Mount the Pan Plate to the inside mounting holes of the Slewing Ring.

6x



6x



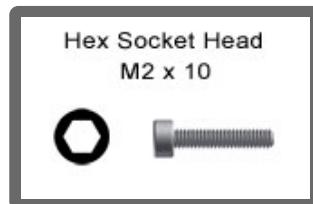


Prep the slots on the bottom side of Servo #1 with Nuts for later mounting.

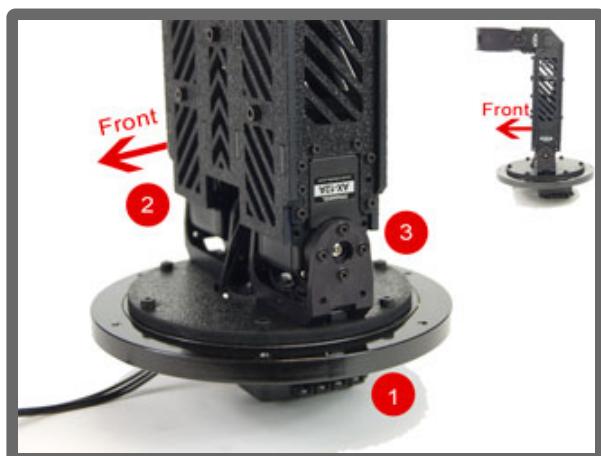
Mount the horn of Servo #1, with the Thin Spacer to the bottom of the Pan Plate as shown.

*Note the orientation of the servo to the front of the assembly toward the wire pass-through.

4x



10x



Next attach the Middle Arm Section to the Base as shown.

16x



(Bottom View)

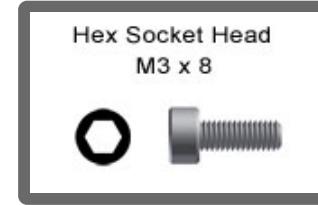


On the Middle Base, mount 10mm F-F Standoffs to the bottom side.

4x



4x

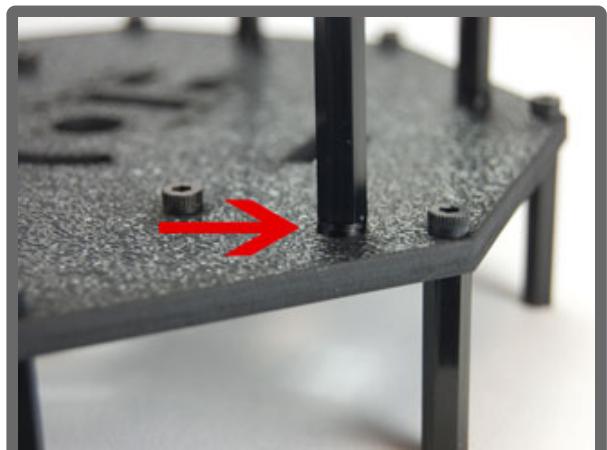


Also mount 30mm F-F Standoffs to the bottom.

8x



8x



Next, mount a 30mm F-F Standoff plate with (1) Spacer to the top of the Middle Base.

Complete for each of the (6) mounting holes.

6x



6x



6x





(Top View)

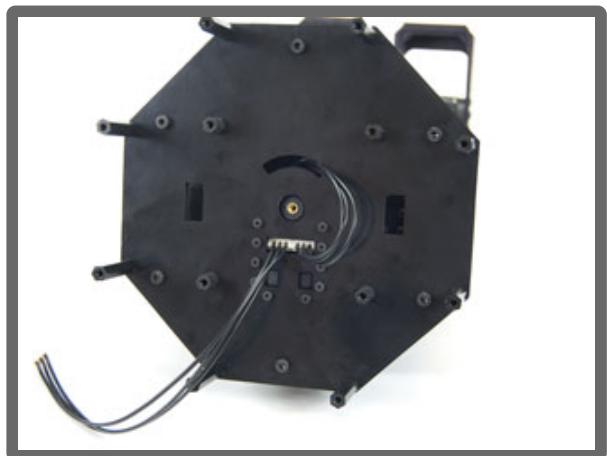


Now mount the Middle Base to the bottom of Servo #1.

10x



10x



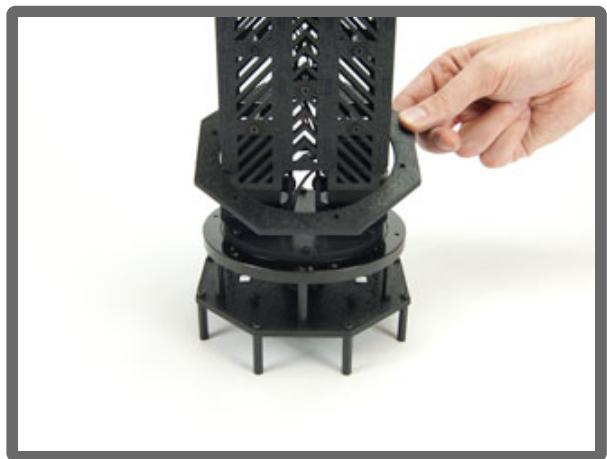
Run your cable from the Middle Arm Section through the crescent shaped slot in the Pan Plate and the crescent shaped slot in the Middle Base to Servo #1 while also adding one more cable to Servo #1 as shown.

1x



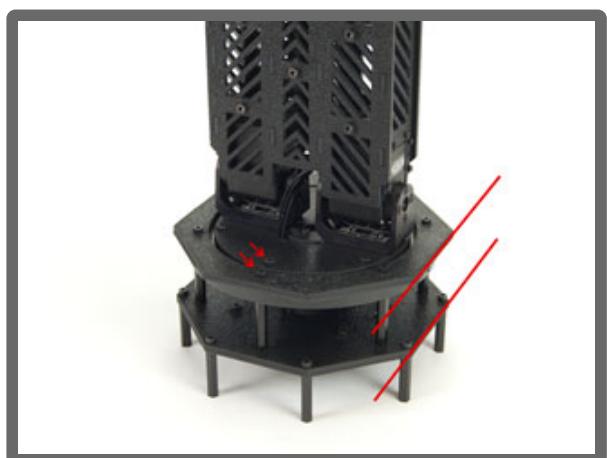


(Side View)

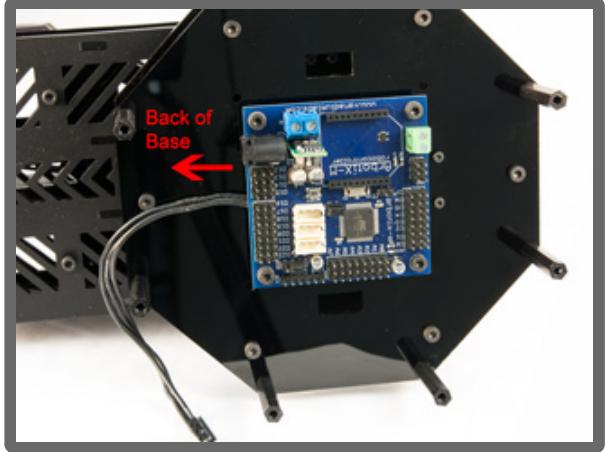


Next, carefully bring the Pan Cover down over the Middle Arm section, and mount through the outside holes of the Slewing Ring to the standoffs coming from the Middle Base.

6x



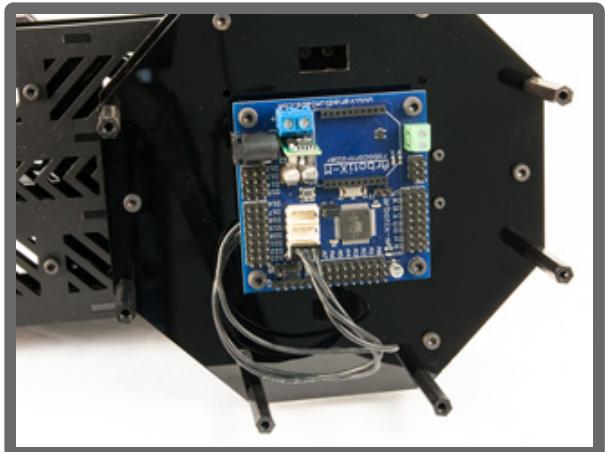
*Note the orientation of the Pan Cover with the Pan Plate, the 2 bolts that are centered on a side should match, as well as all the edges of the Middle base with the Pan Cover when mounting.



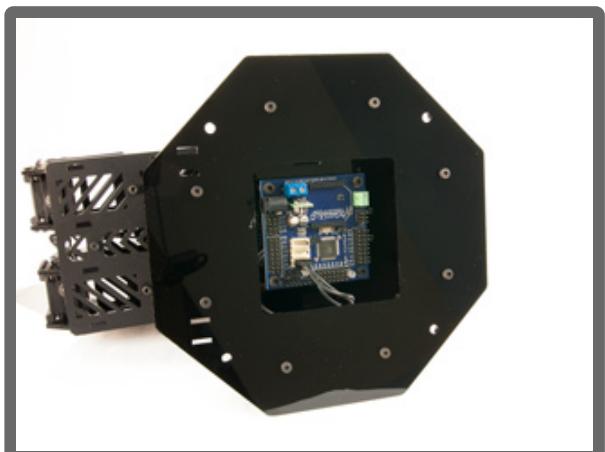
Mount your ArbotiX board to the underneath of the Middle Base.

*Note the orientation of the ArbotiX when mounting. Make sure the power jack is facing the back.

4x



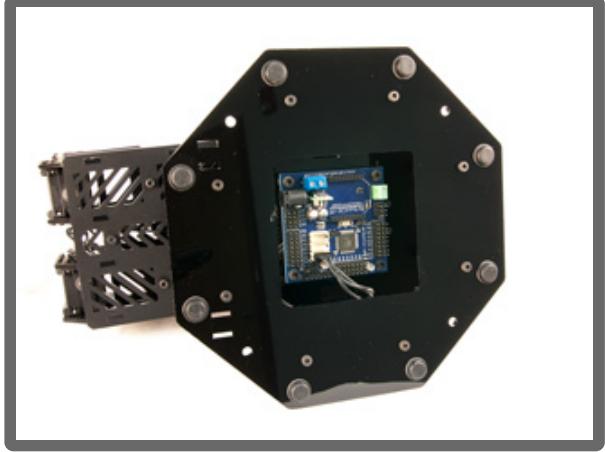
Run the cable from Servo #1 to the ArbotixM as shown.



Now you can mount the Bottom Base to the standoffs of the underside of the Middle Base.

8x





Apply the Rubber Feet to the corners of the Bottom Base.

8x



Assemble the Upper Arm Section



Mount the Thick Spacers and the Bottom Forearm Bracket to the F4 Brackets on the top of the Middle Arm Section as shown.

16x



Next, mount both the Front and Back Locking Plates to Servo #6. Also making sure to mount the 30mm F-F Standoff and 3 Spacers between them.

*Note servos will need to be prepped with M2 Nuts in respective positions for mounting.

16x



1x

16x



3x

F/F Hex Standoff
M3 x 30mm

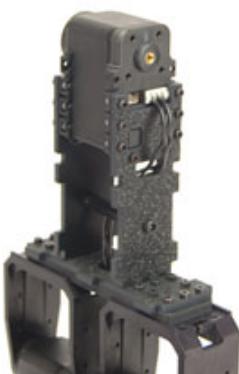


Nylon Spacer



2x

Hex Socket Head
M3 x 10



Sit the Locking Plate tabs into the slots of the Bottom Forearm Bracket and make sure to run the cable from the Middle Arm Section through the hole and slot up to Servo #6.



Mount (5) sets of 10mm F-F and 15mm M-F standoffs to the Forearm Cover Bracket.

*Note the orientation of the standoffs in picture.

5x

F/F Hex Standoff
M3 x 10mm



5x

M/F Hex Standoff
M3 x 15mm



5x

Hex Socket Head
M3 x 8





Insert the tabs of the Locking Plates along with the (2) Side Forearm Plates and Forearm Bottom Bracket into the slots of the Forearm Cover from the back.

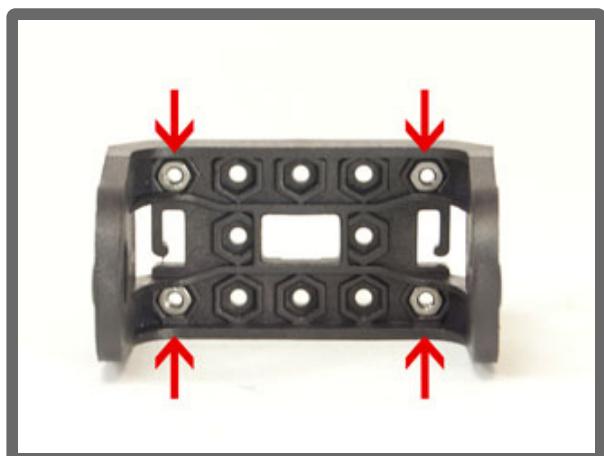


Attach the second Forearm Cover from the front as shown.

5x



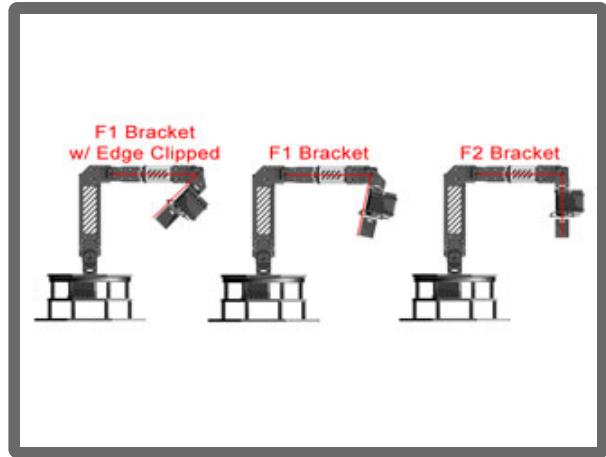
Assemble the Wrist Section and Gripper



Prep your F2 Bracket with M2 Nuts as shown.

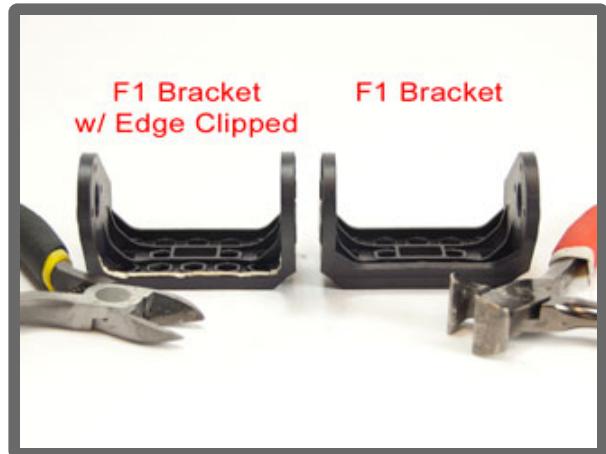
4x





For increased wrist range, an F1 Bracket has been included in the kit that can be substituted in for the F2 Bracket in the step above.

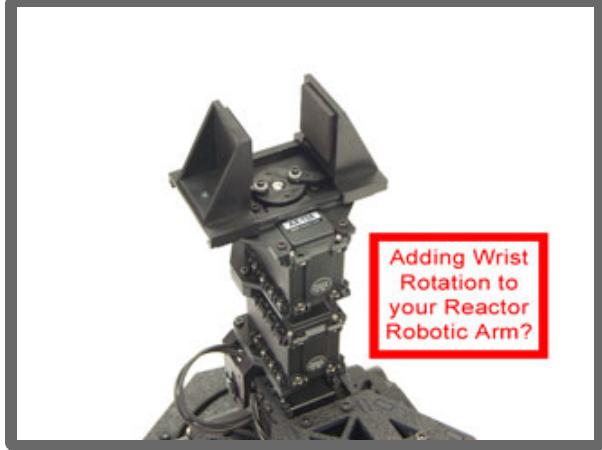
For even more range, using a pair of flat and angled nippers, the inside edge of the F1 can be removed.



Mount the bottom TWO holes only, of the Bottom Back Bracket to the F2 Bracket.

2x





If you chose **TO ADD** the Wrist Rotation Servo in your Arm Assembly, follow the link to continue your assembly.

[Wrist Rotation Servo Assembly](#)

If not, proceed with the Assmbley Guide below and ignore Servo #7.



Next mount the Top and Bottom Back Brackets to the back of Servo #8.

*Note servos will need to be prepped with M2 Nuts in respective positions for mounting.

6x



6x



Finish mounting the top (2) holes of the Bottom Back Bracket to the F2 Bracket.

2x





Time to jump over to the gripper assembly guide. Assemble your gripper to the servo #8.

[PhantomX Parallel Gripper Assembly Guide](#)

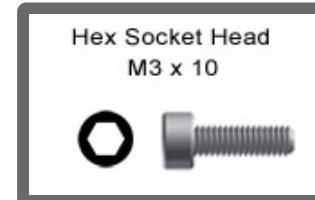


Mount the F2 Bracket to Servo #6 of the Upper Arm Section.

1x



1x



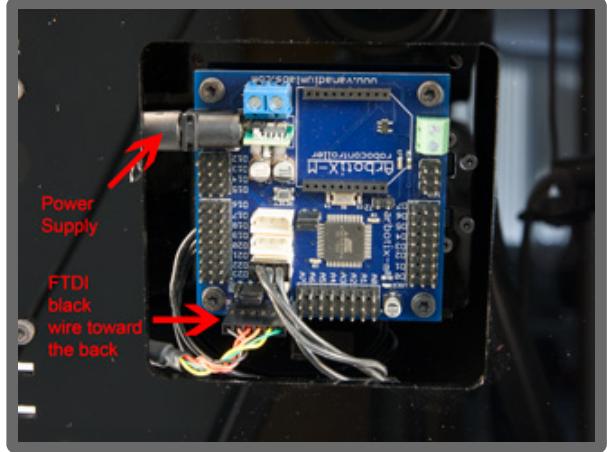
4x



Put in the final cable through the slot in the F2 Bracket from Servos #6 to #8.

1x





Connect your Powersupply and FTDI to the ArbotiX.

*Note the polarity of the FTDI, black wire goes toward the back.

Fin



With Wrist Rotation Servo



Next mount the Top and Bottom Back Brackets to the back of Servo #7.

*Note servos will need to be prepped with M2 Nuts in respective positions for mounting.

6x



6x



Finish Mounting the top (2) holes of the Bottom Back Bracket to the F2 Bracket.

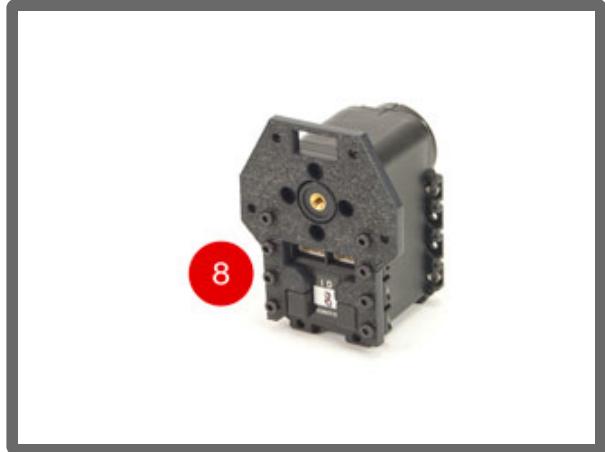
2x



Next mount the Bottom and Middle Wrist Brackets to the horn of Servo #7 as shown.

4x





Mount the Top Wrist Bracket to the back of Servo #8.

*Note servos will need to be prepped with M2 Nuts in respective positions for mounting.

8x



8x



Seat M2 Nuts in the Bottom Wrist Bracket.

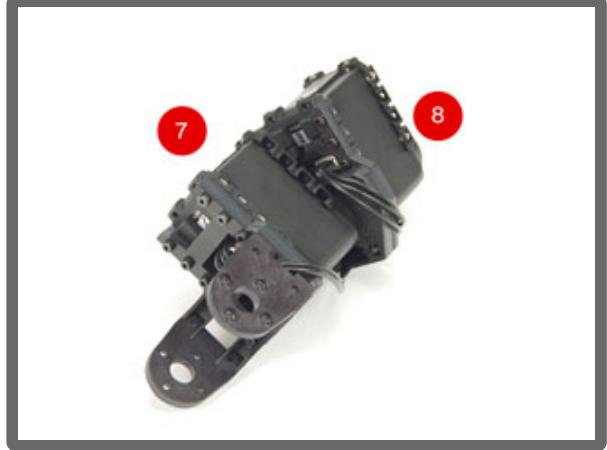
4x



Then mount all the Wrist Bracket Parts together as shown.

4x





Wire Servos #7 and #8 together going through the slot in the F2 Bracket and through the slots made by the 3 Wrist Brackets as shown.

1x



Time to jump over to the gripper assembly guide. Assemble your gripper to the servo #8.

[PhantomX Parallel Gripper Assembly Guide](#)

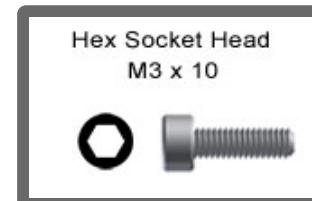


Mount the F2 Bracket to Servo #6 of the Upper Arm Section.

1x



1x



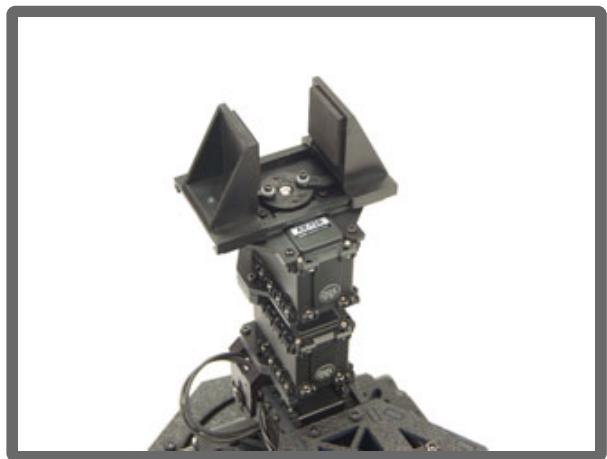
4x





Put in the final cable through the slot in the F2 Bracket from Servos #6 to #7.

1x



Now go back to the Arm Assembly continuing with connecting the electronics.

[Back to your Assembly to Finish.](#)