HEBI ROBOTICS

X-Series Hexapod

Assembly Instructions

General Warnings and Cautions

Danger (May cause serious injury or death)

- Keep water, flammables, solvents and other liquids clear from actuator.
- Never place fingers, arms, toes and other body parts near actuator during operation.
- Cut power if actuator emits strange odors or smoke.
- Keep actuator out of reach of children.

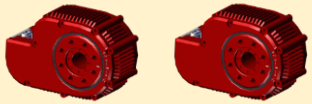
Warning (May cause injury or damage to actuator)

- Before operating, read all applicable instructions and notices found here:
  http://docs.hebi.us/#quickstart-guide-x-series-actuator
- Comply with the operating temperature (-10℃ to 50℃)
- Turn off power source before connecting or disconnecting actuator power.
- Do not expose the actuator to permanent and strong magnetic fields.
- The actuator must not be exposed to dusty or wet environments.
- If actuator is under load, abruptly removing the power connection can cause permanent damage.
- Do not force screws into the bottom of the actuator.
  - **X5:** 5mm tap depth
  - **X8:** 7mm tap depth
- Use provided hardware with accessories and hand tighten as needed.
- Do not attempt to disassemble actuator, this will void the warranty and can cause permanent damage.

For more information please visit: ***docs.hebi.us***

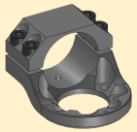
Bill of Materials - Mechanical*

Default Configuration



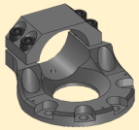
12 x
X8-9

6 x
X8-16



12 x
A-2038-02

12 x
A-2090-01



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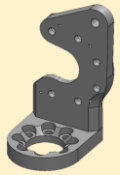
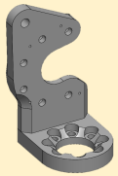
A-2039-02

12 x
A-2091-01



3 x
A-2070-01R



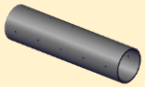
3 x
A-2070-01L

1 x
A-2095-01

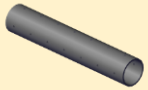
1 x
A-2095-01

3 x
A-2094-01R

3 x
A-2094-01L



2 x
PP-2200-125
125mm Tube

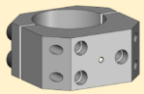


4 x
PP-2200-175
175mm Tube

12 x
PP-2200-02
300mm Tube

6 x
PP-2057-01

6 x
A-2127-60-20
(Gas Spring – 20lbs.)

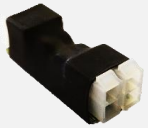


6 x
A-2188-01

1 x
A-2173-01
Wireless Chassis Assembly

fasteners included, not shown

Bill of Materials - Electrical



14 x
A-2128-01
Power Distribution Board

6 x
PP-2058-01
Ethernet Coupler

2 x
A-2046-06
Power Cable, 6" Length

24 x
A-2046-12
Power Cable, 12" Length

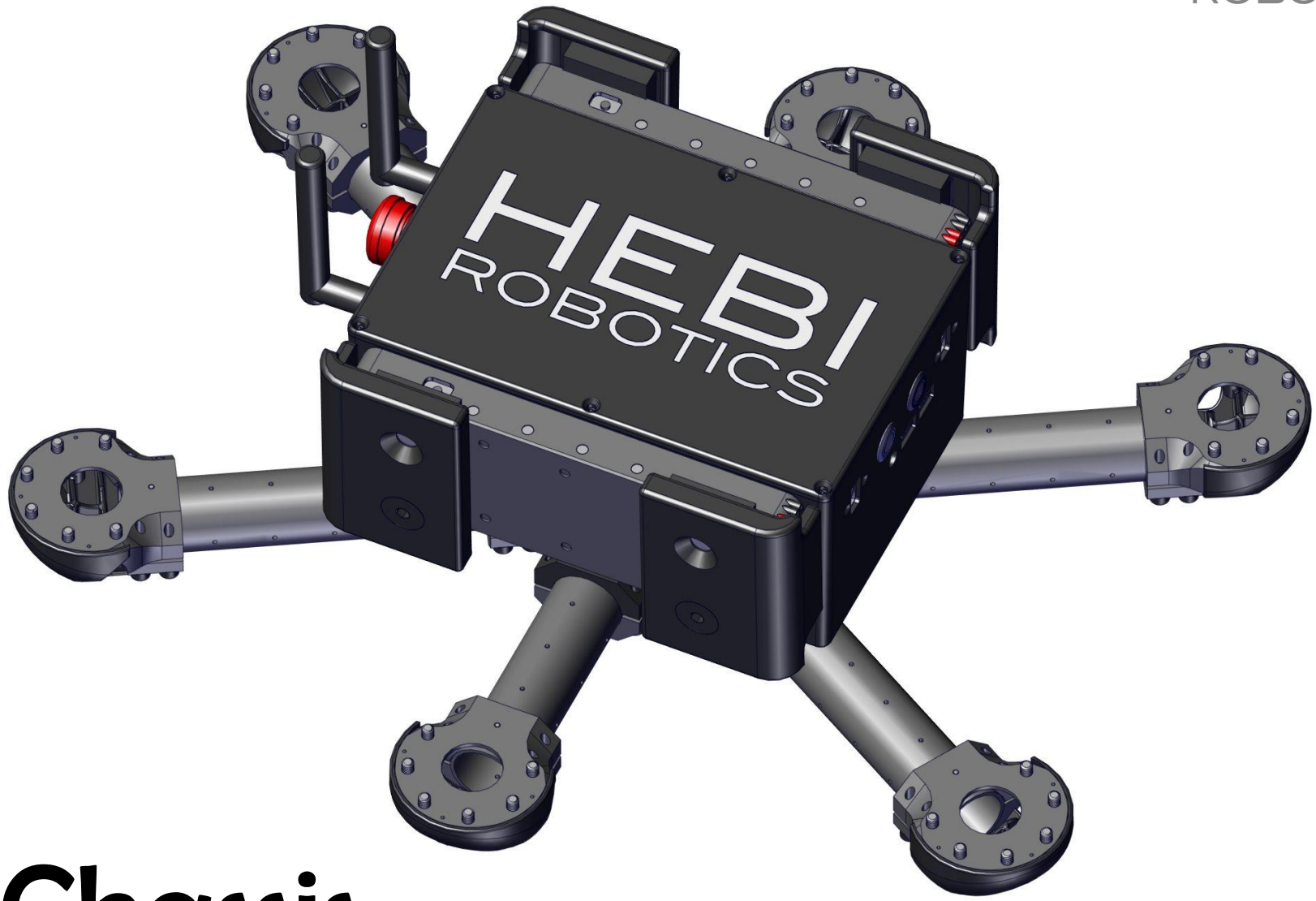
6 x
A-2046-24
Power Cable, 24" Length

9 x
PP-2059-01
Ethernet Cable, 1' Length

8 x
PP-2060-01
Ethernet Cable, 2' Length

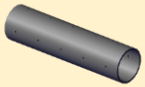
6 x
PP-2061-01
Ethernet Cable, 3' Length

Table of Contents



Chassis

2 x



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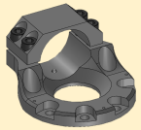
PP-2200-125
125mm Tube



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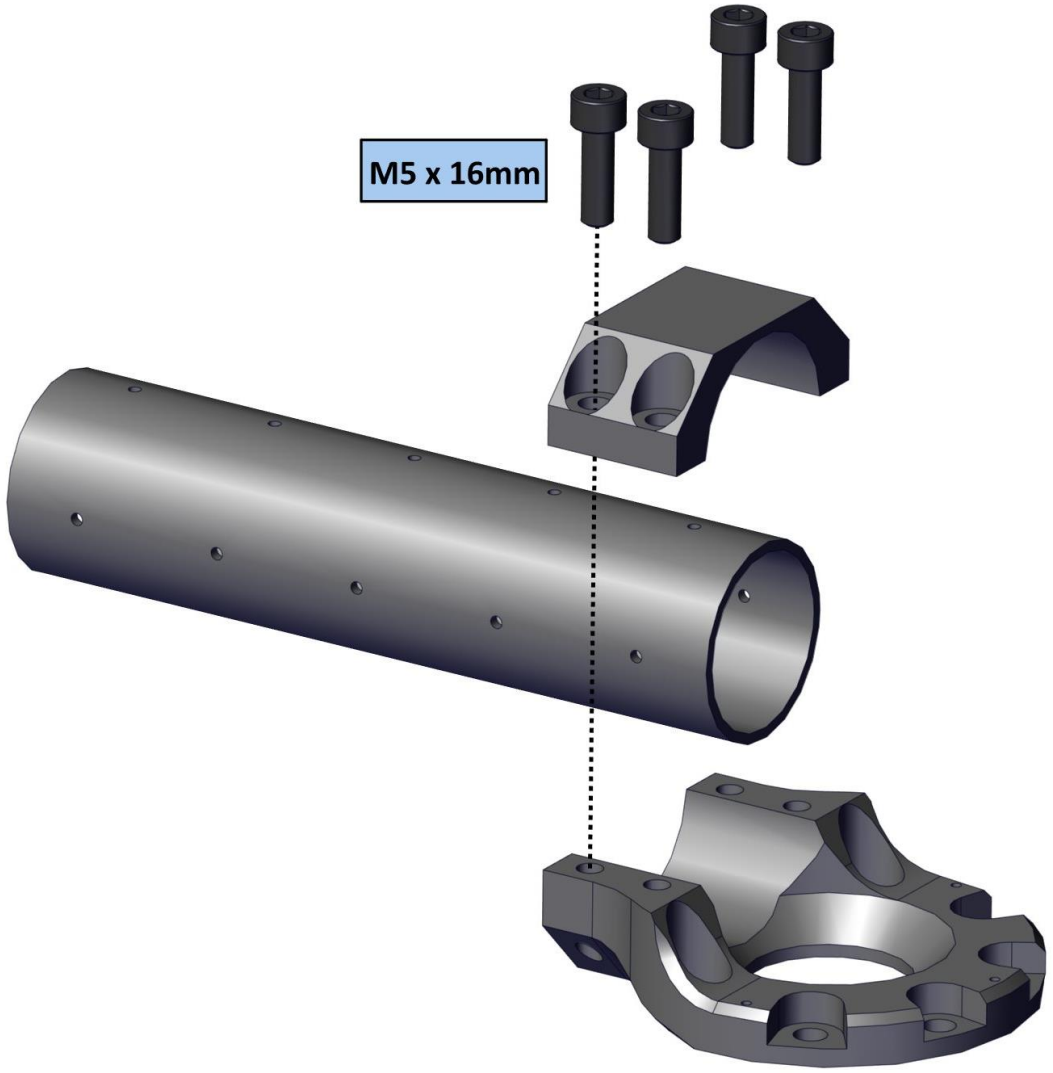

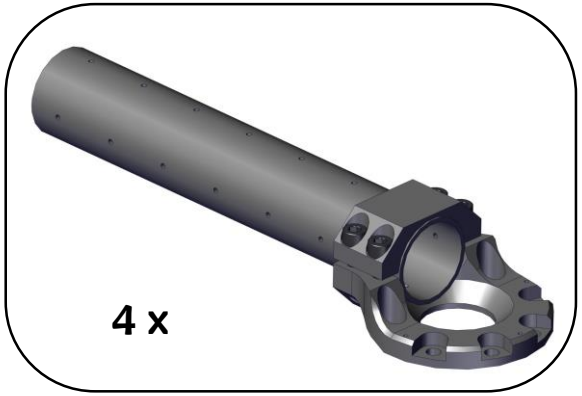
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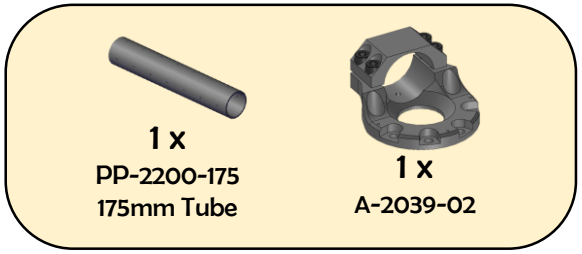
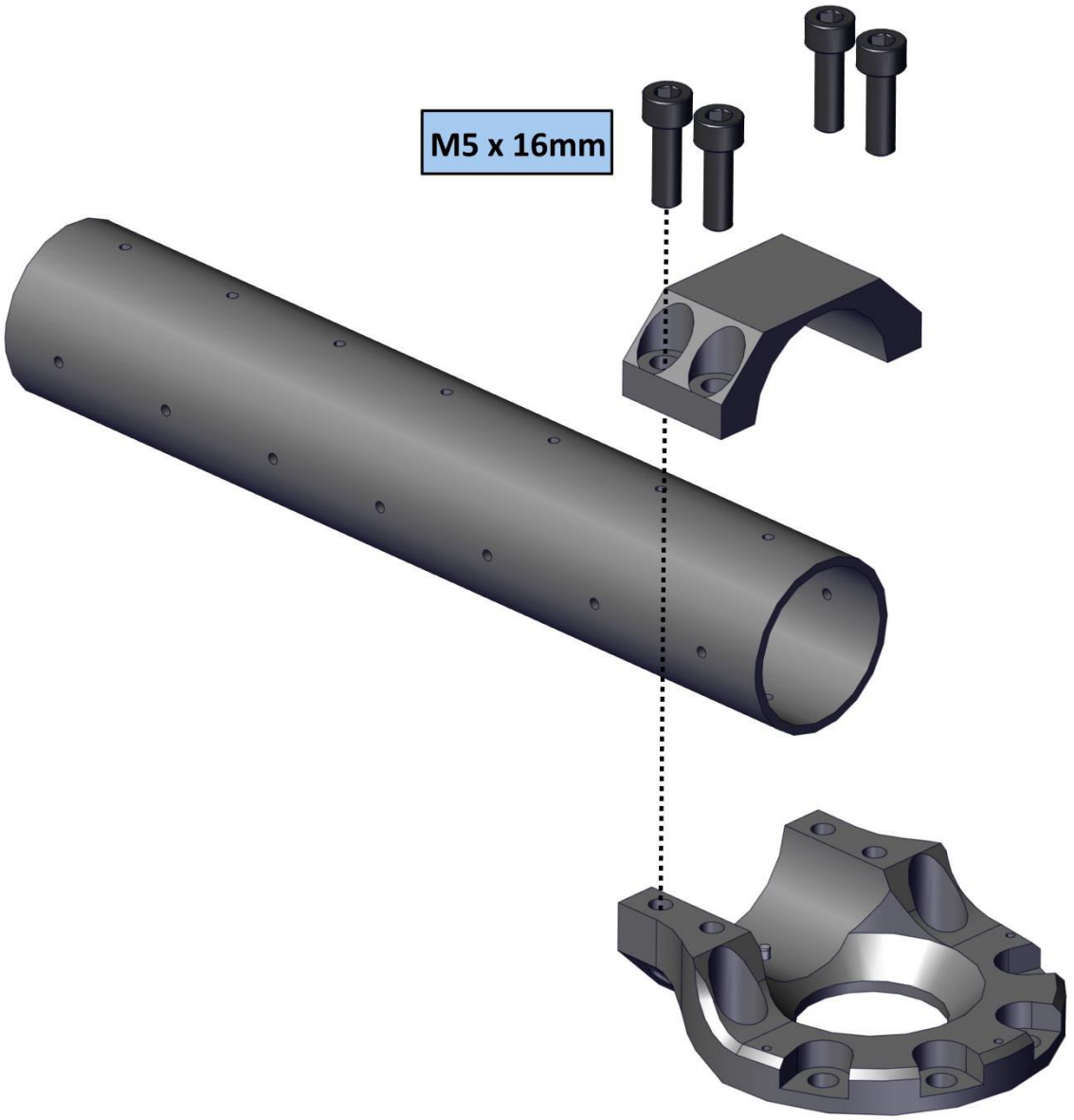
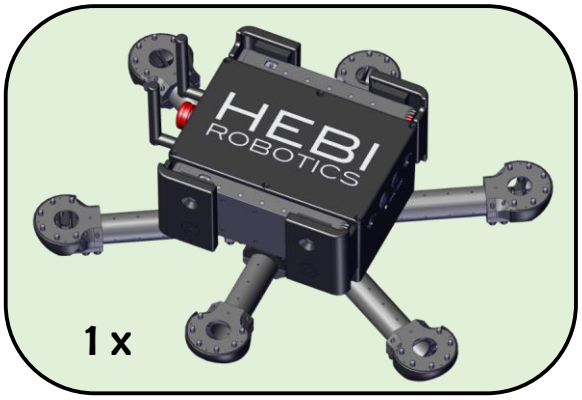

1 x
PP-2200-175
175mm Tube
1 x
A-2039-02


M5 x 16mm



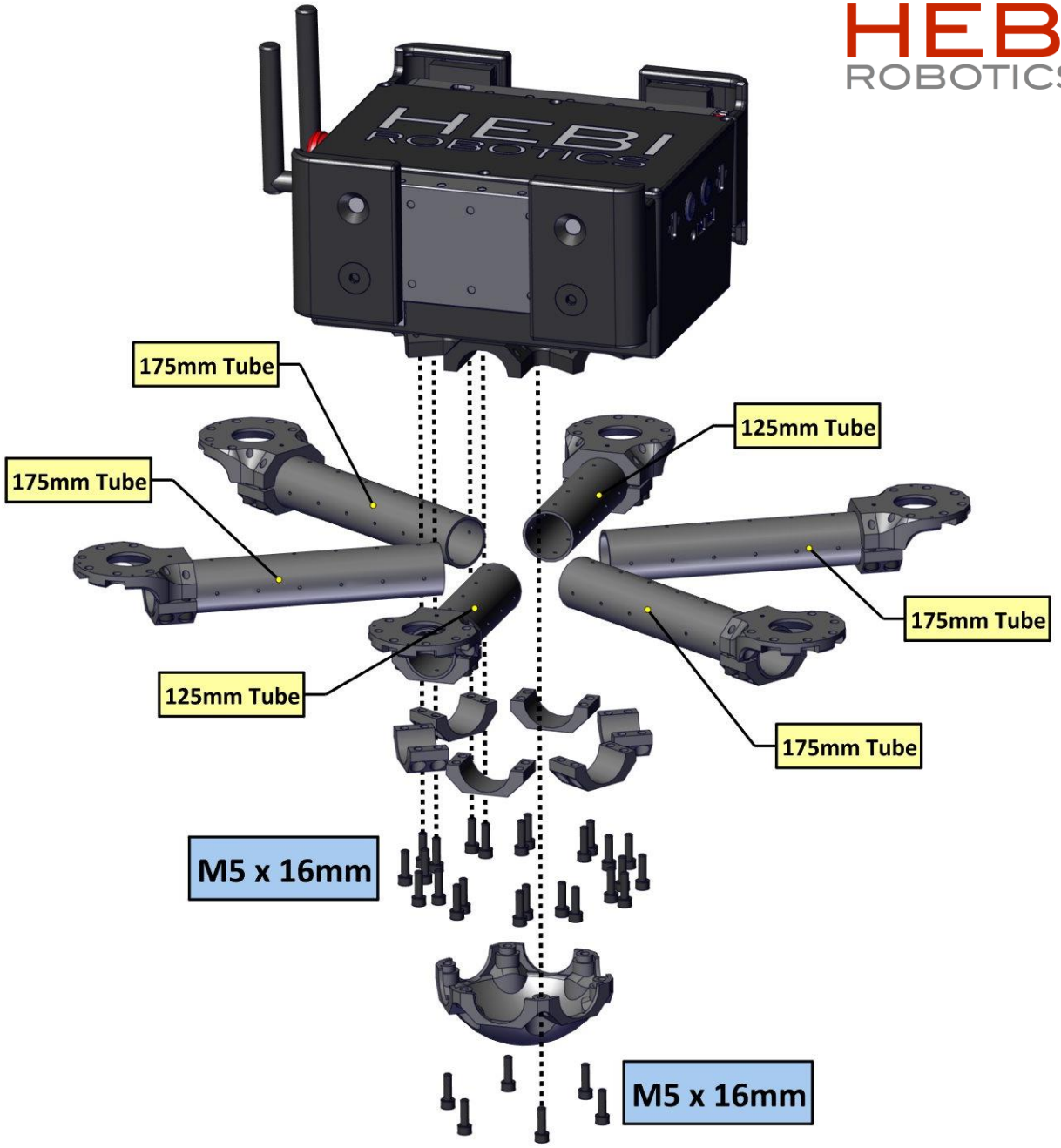

2 x
125mm


4 x
175mm

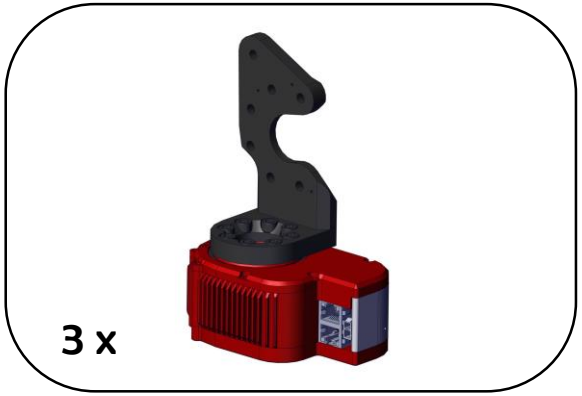

1 x
A-2095-01


1 x
A-2096-01

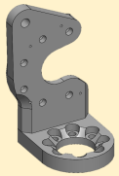
1 x
A-2173-01
Wireless Chassis Assembly



Left Legs

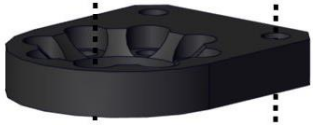


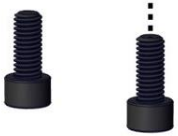

1 x
X8-9


1 x
A-2070-01L

M5 x 12mm

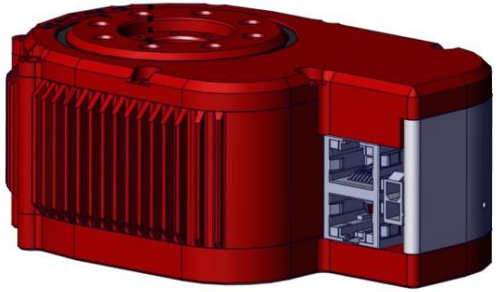
Step 2 of 2



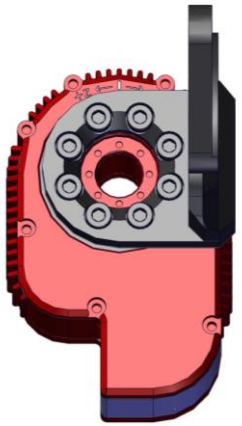


M6 x 12mm

Step 1 of 2



Base (X8-9)



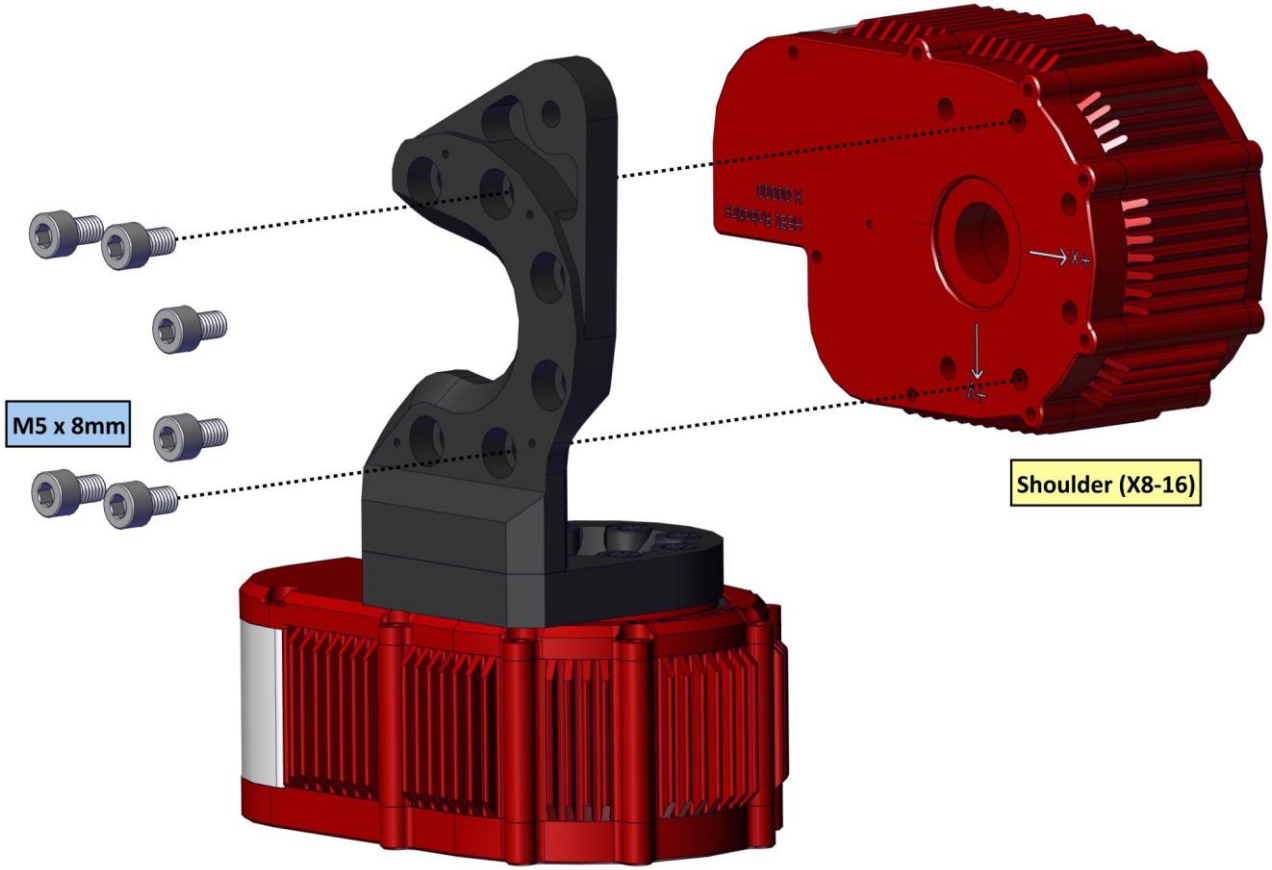
Align with actuator output hub tick mark

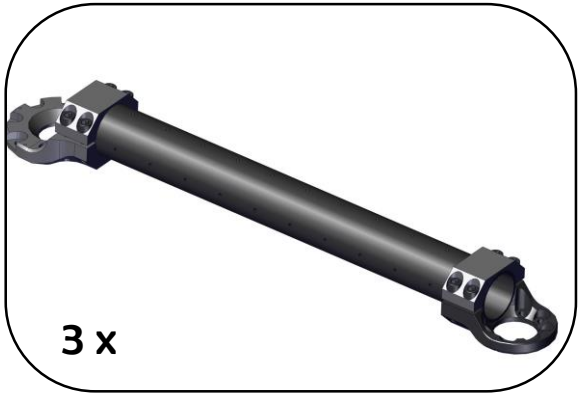
(inside face parallel with tick mark and spring mounting hole going forward)

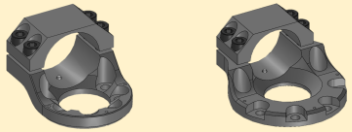
3 x

1 x

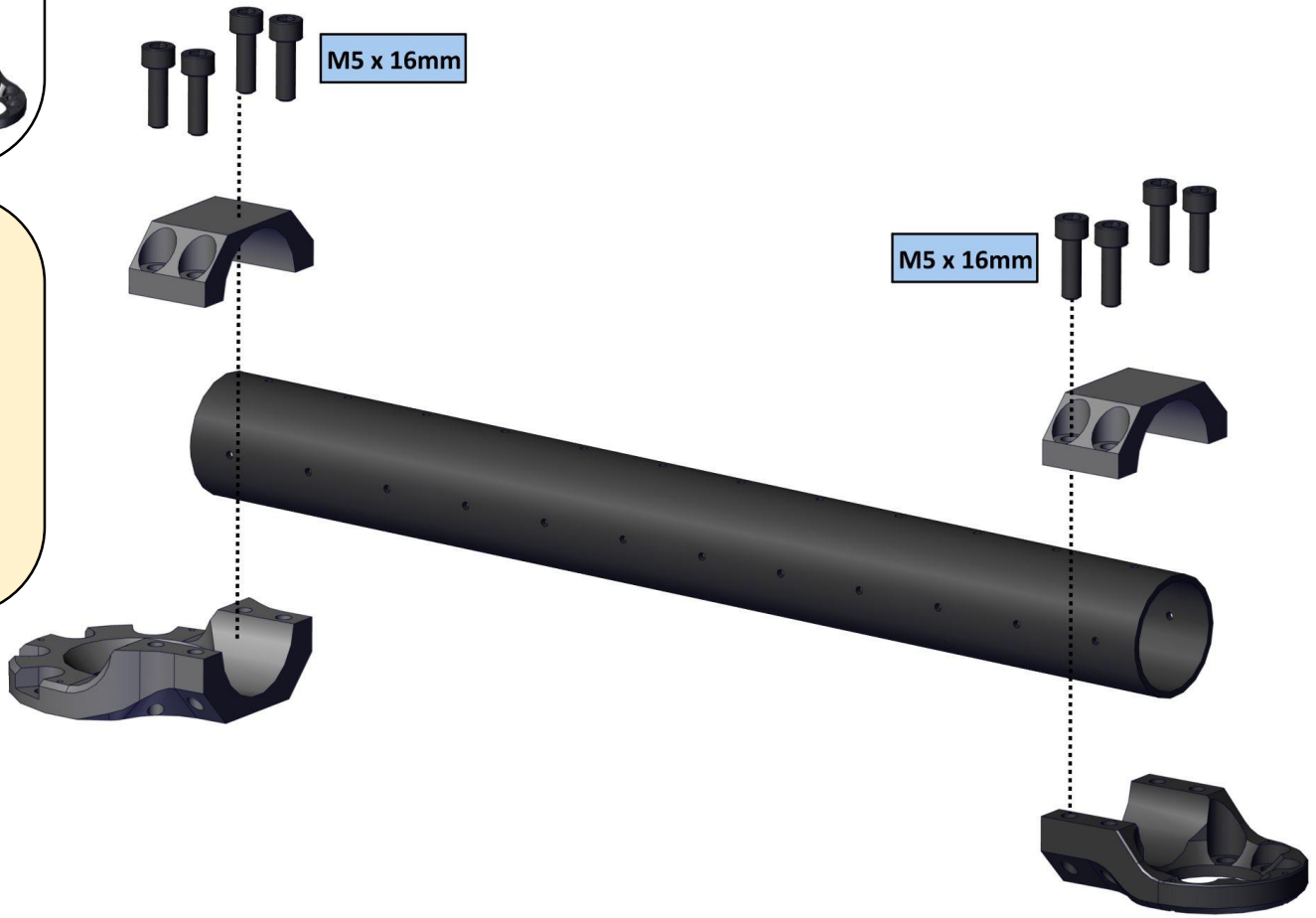
X8-16

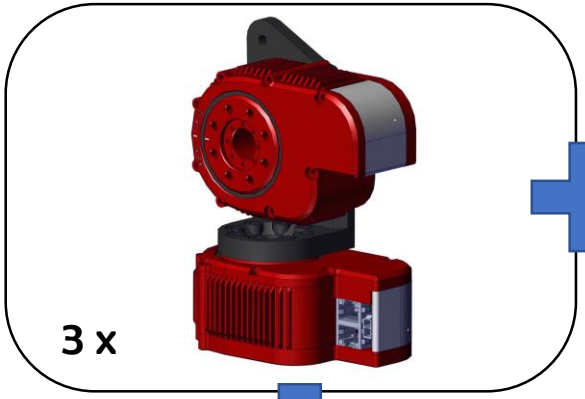


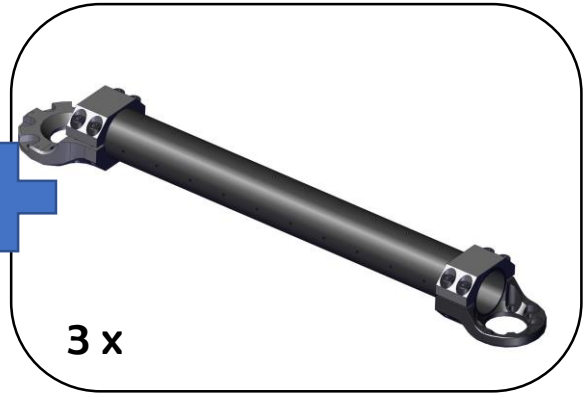

3 x

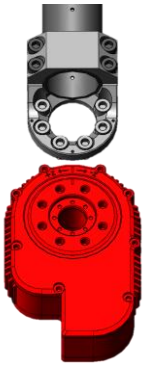

1 x
A-2038-02
1 x
A-2039-02

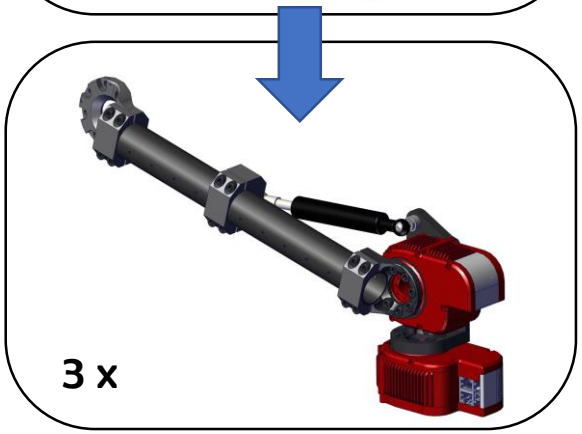

1 x
PP-2200-02
300mm Tube


M5 x 16mm
M5 x 16mm







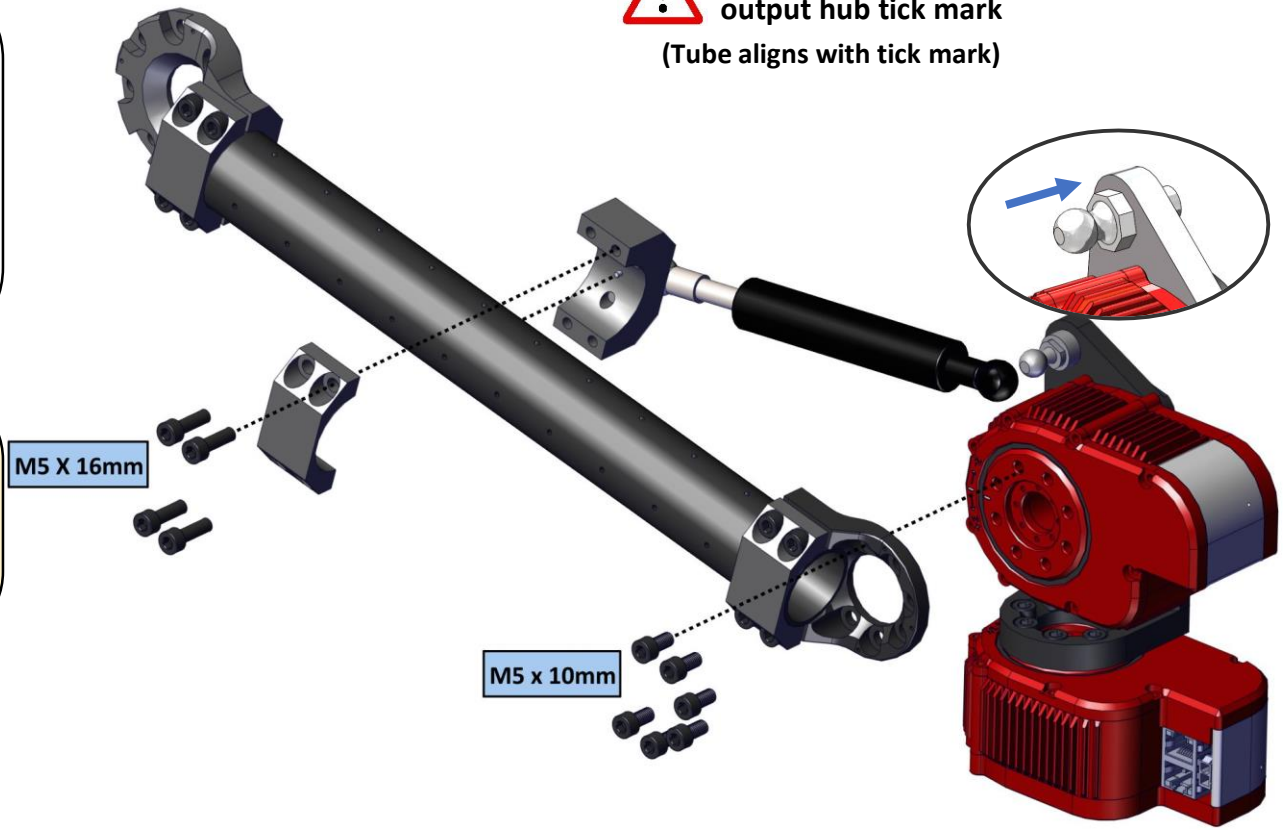


Align with actuator output hub tick mark

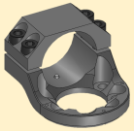
(Tube aligns with tick mark)

1 x
A-2088-60-20
(Gas Spring – 20lbs.)

1 x
A-2188-01



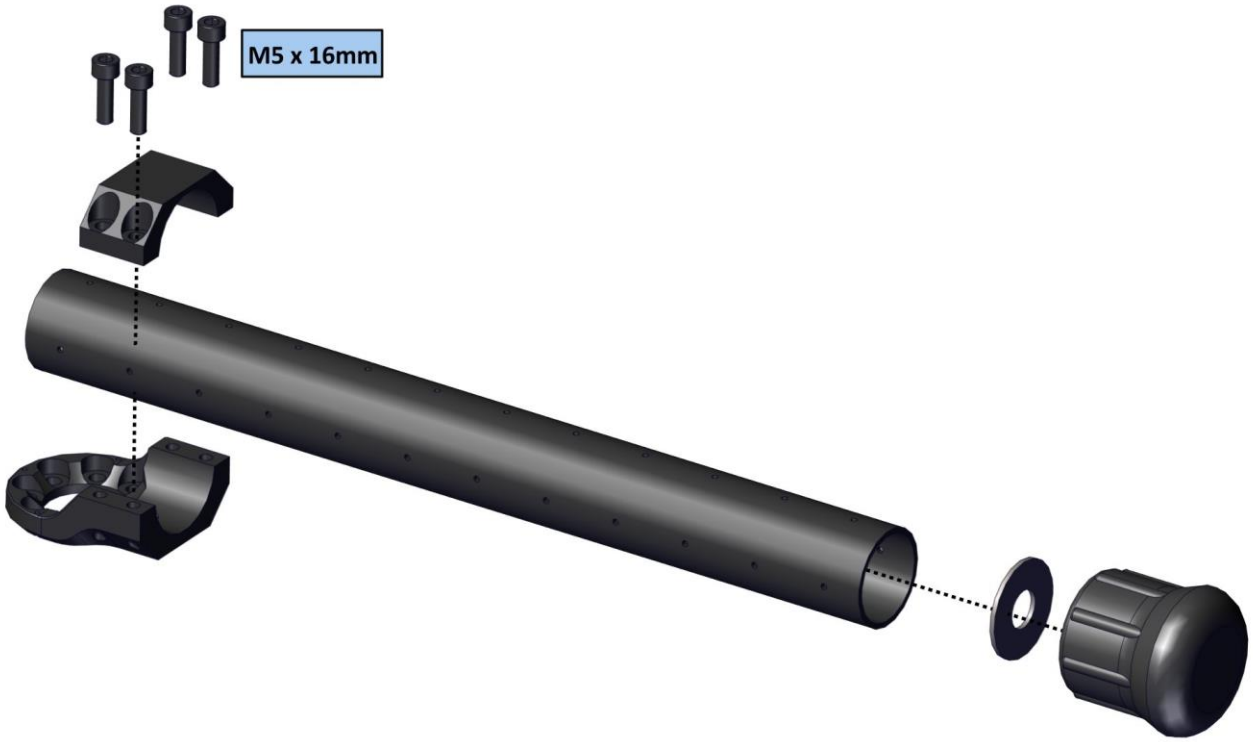
3 x

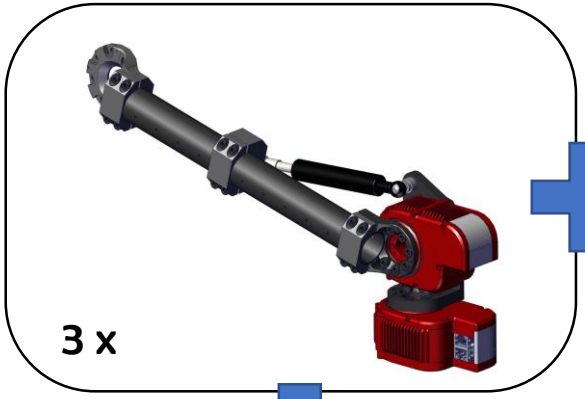


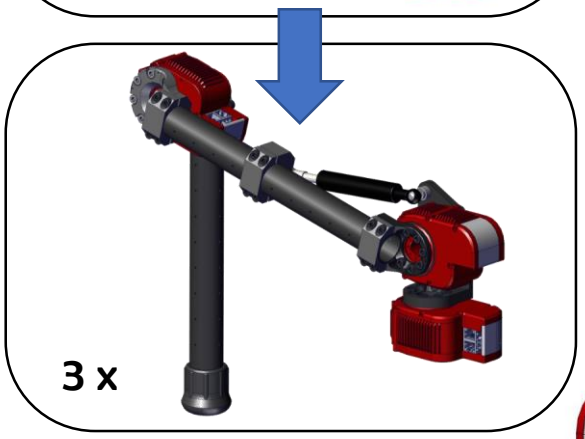
1 x
A-2038-02

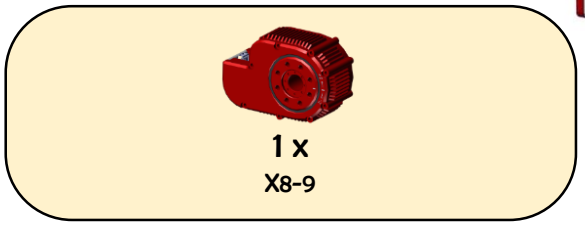
1 x
PP-2057-01

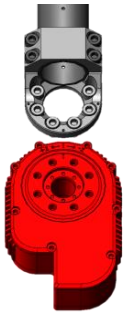
1 x
PP-2200-02
300mm Tube





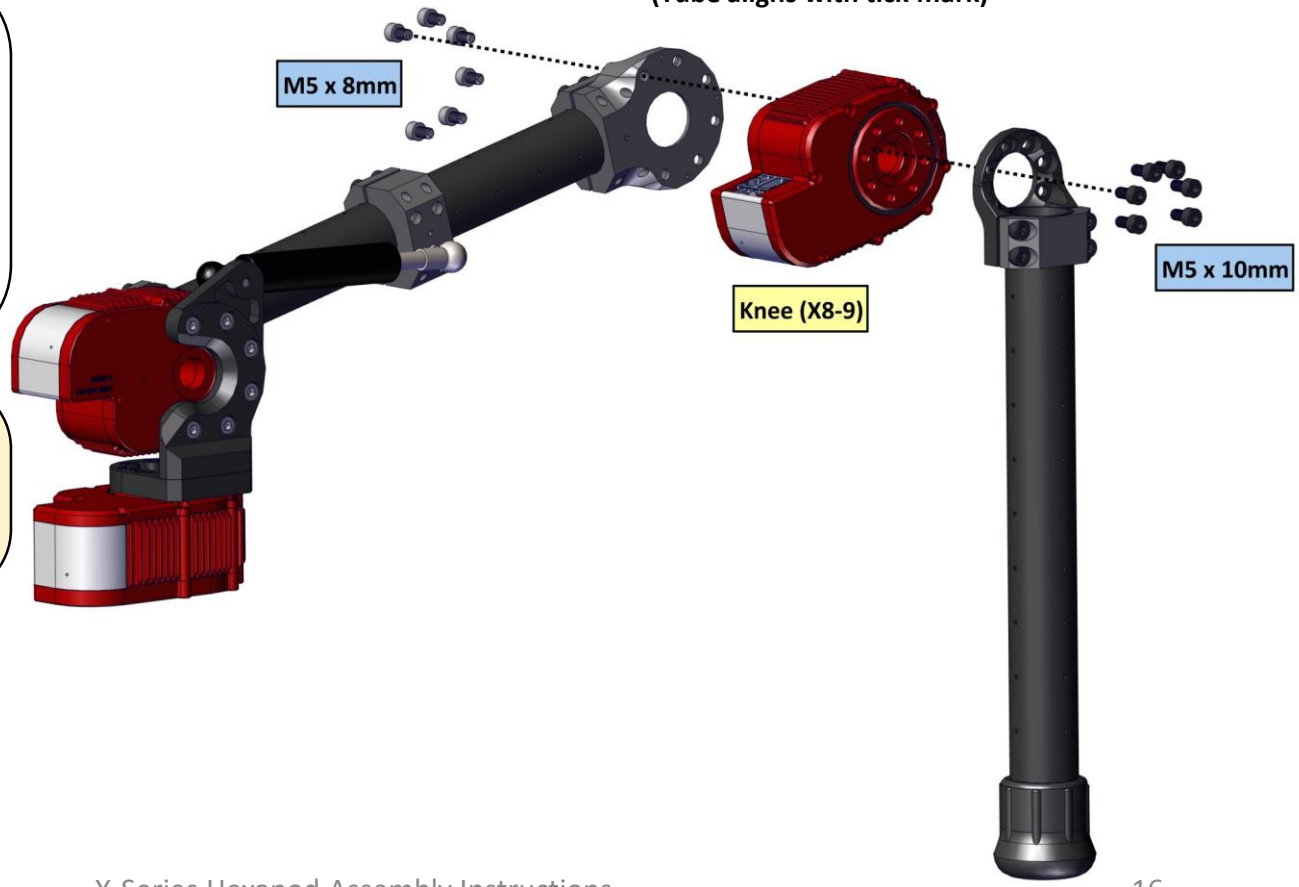


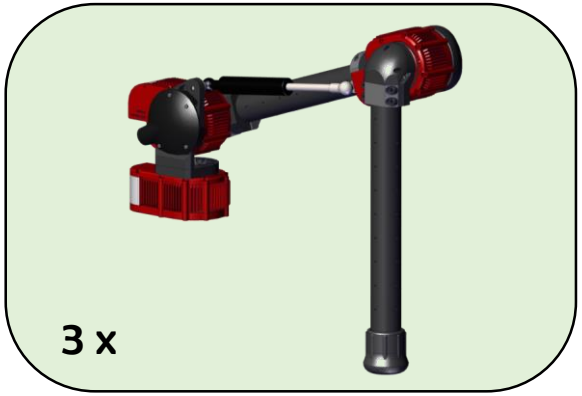


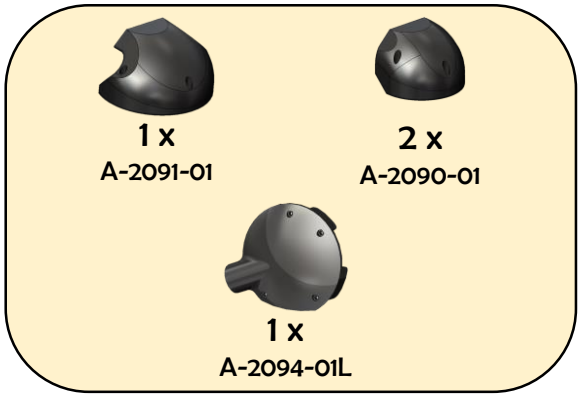


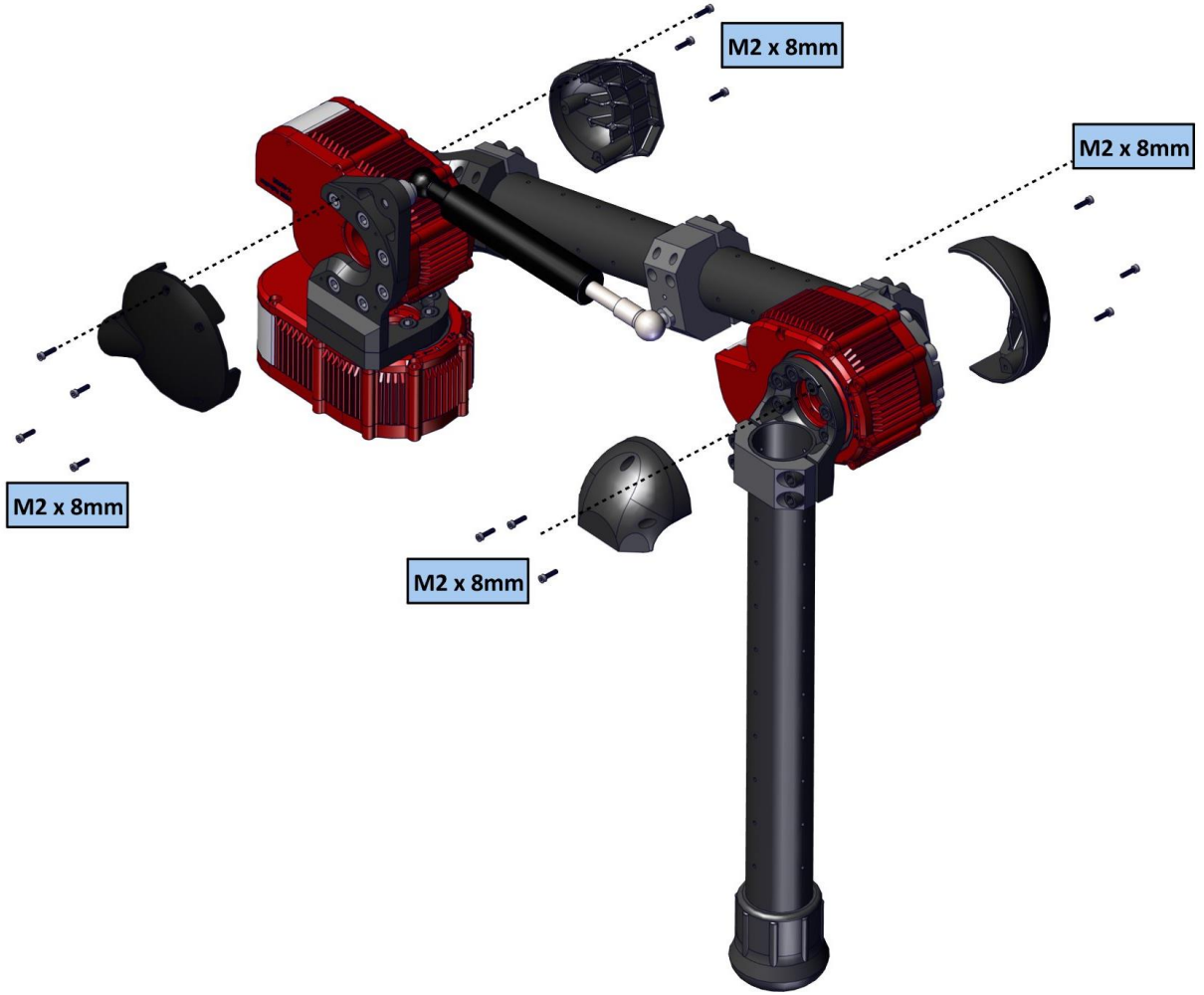
Align with actuator output hub tick mark

(Tube aligns with tick mark)

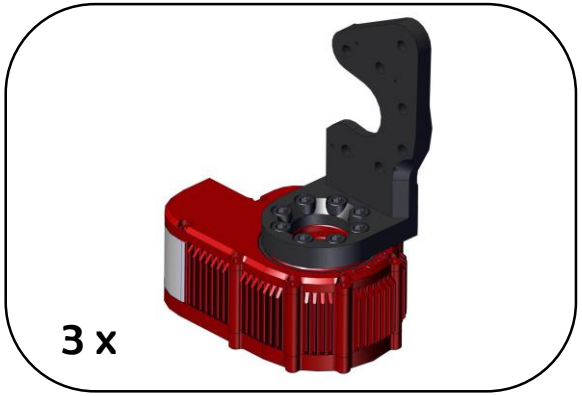



3 x

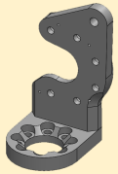

1 x
A-2091-01
2 x
A-2090-01
1 x
A-2094-01L


M2 x 8mm
M2 x 8mm
M2 x 8mm
M2 x 8mm

Right Legs




1 x
X8-9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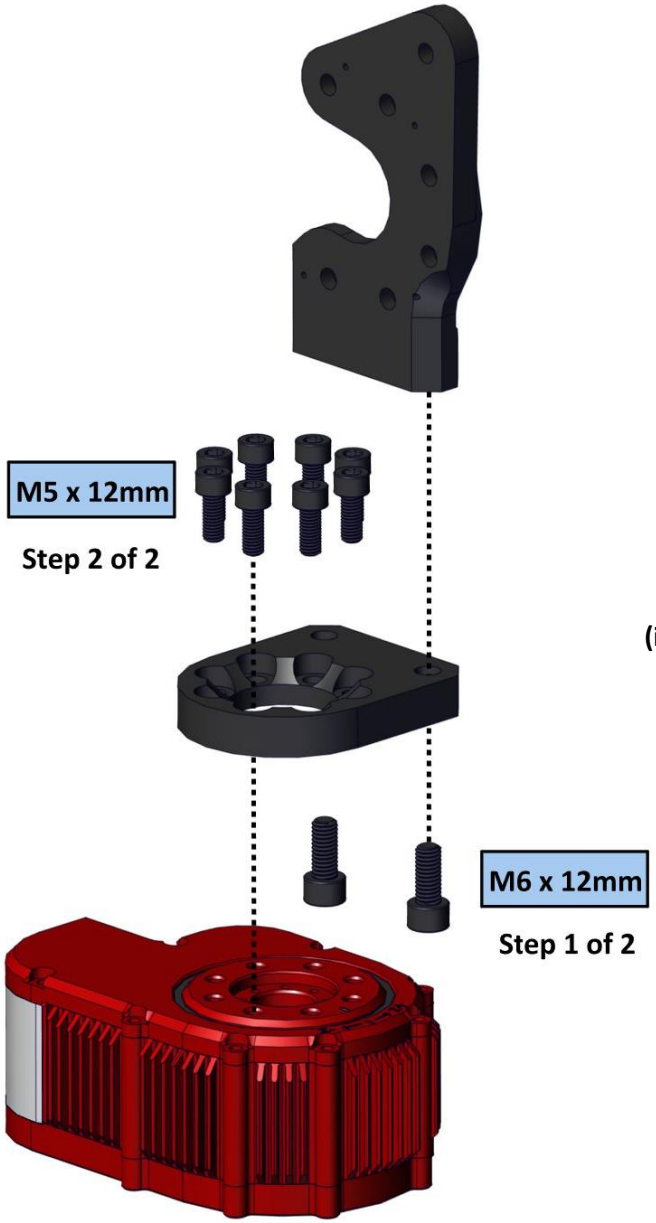
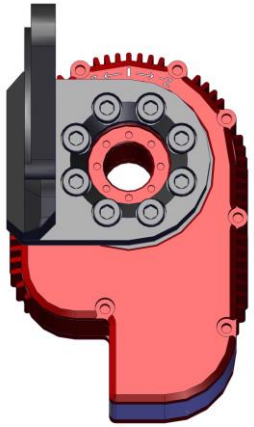
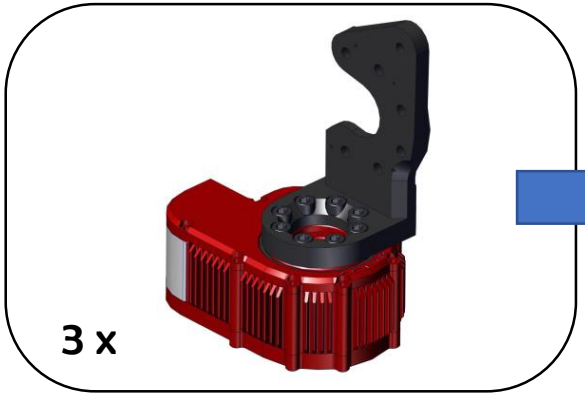
A-2070-01R





Align with actuator output hub tick mark
(inside face parallel with tick mark and spring mounting hole going forward)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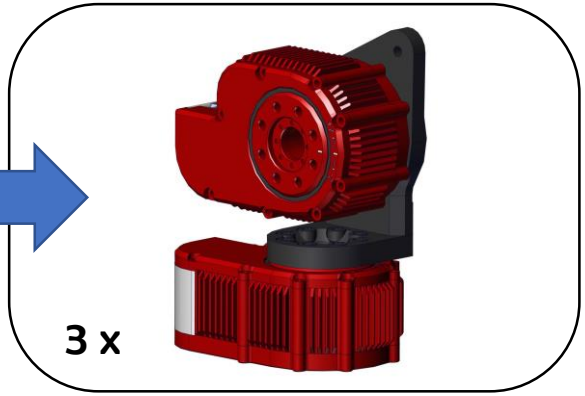
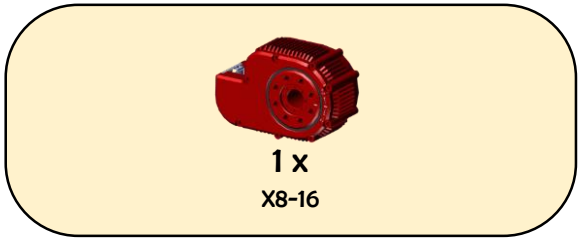
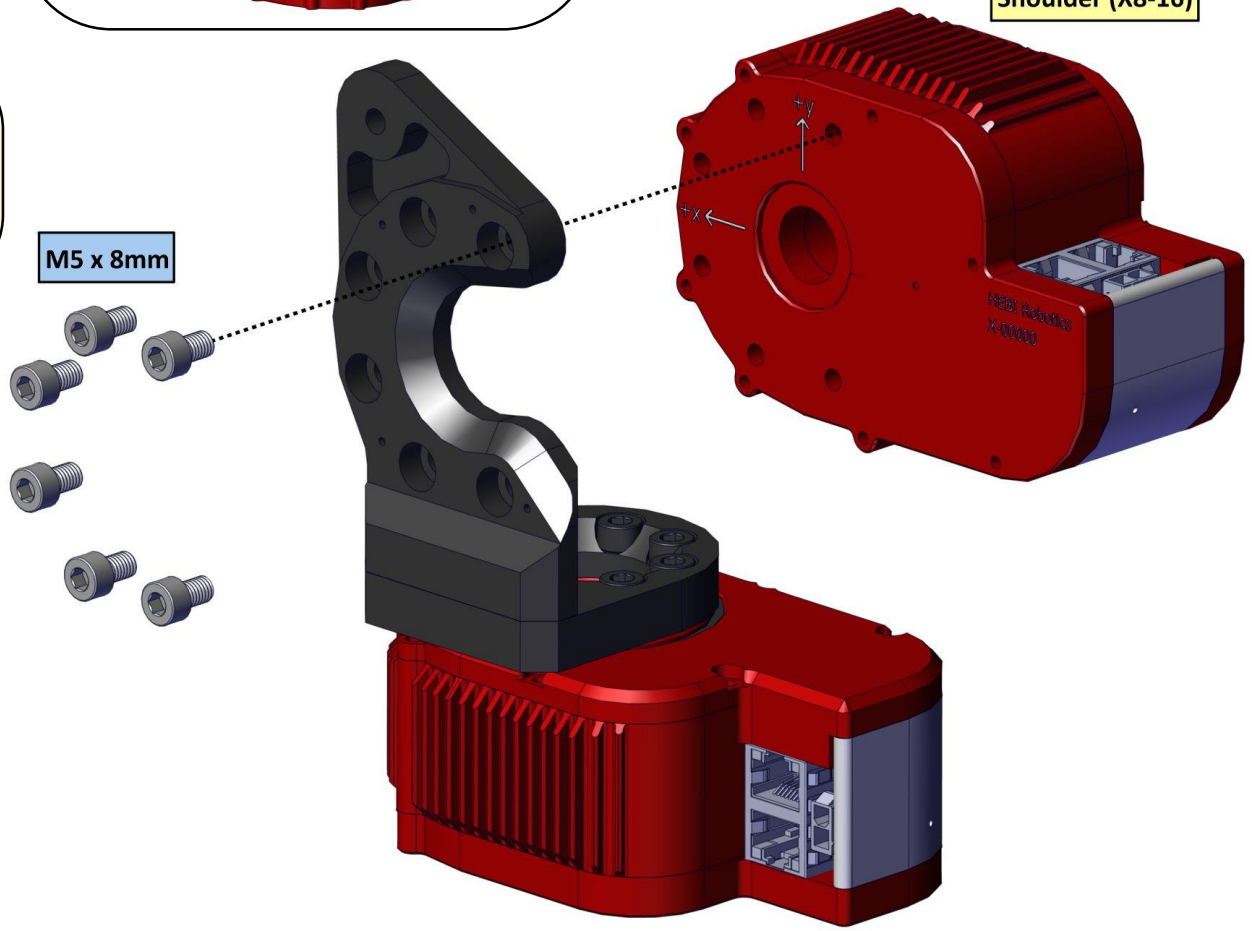
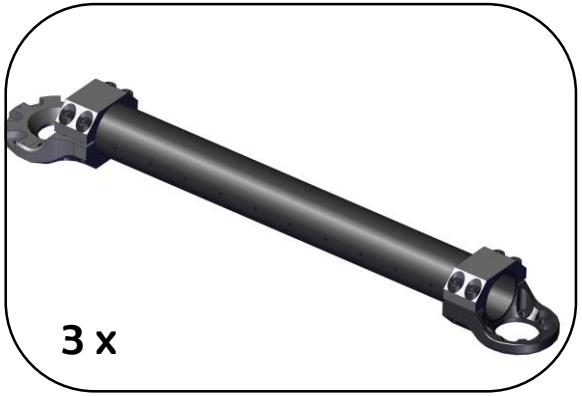

3 x


1 x
X8-16


Shoulder (X8-16)
M5 x 8mm
+y
+x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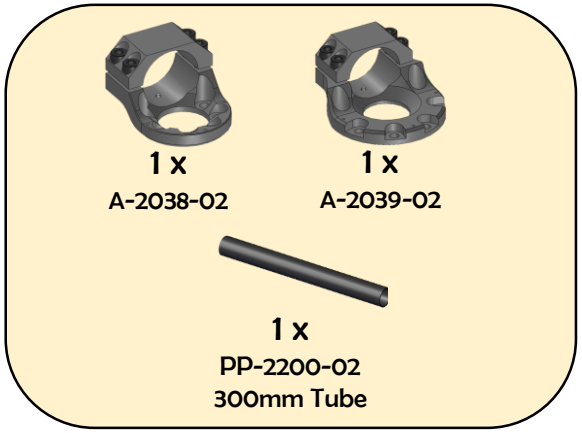
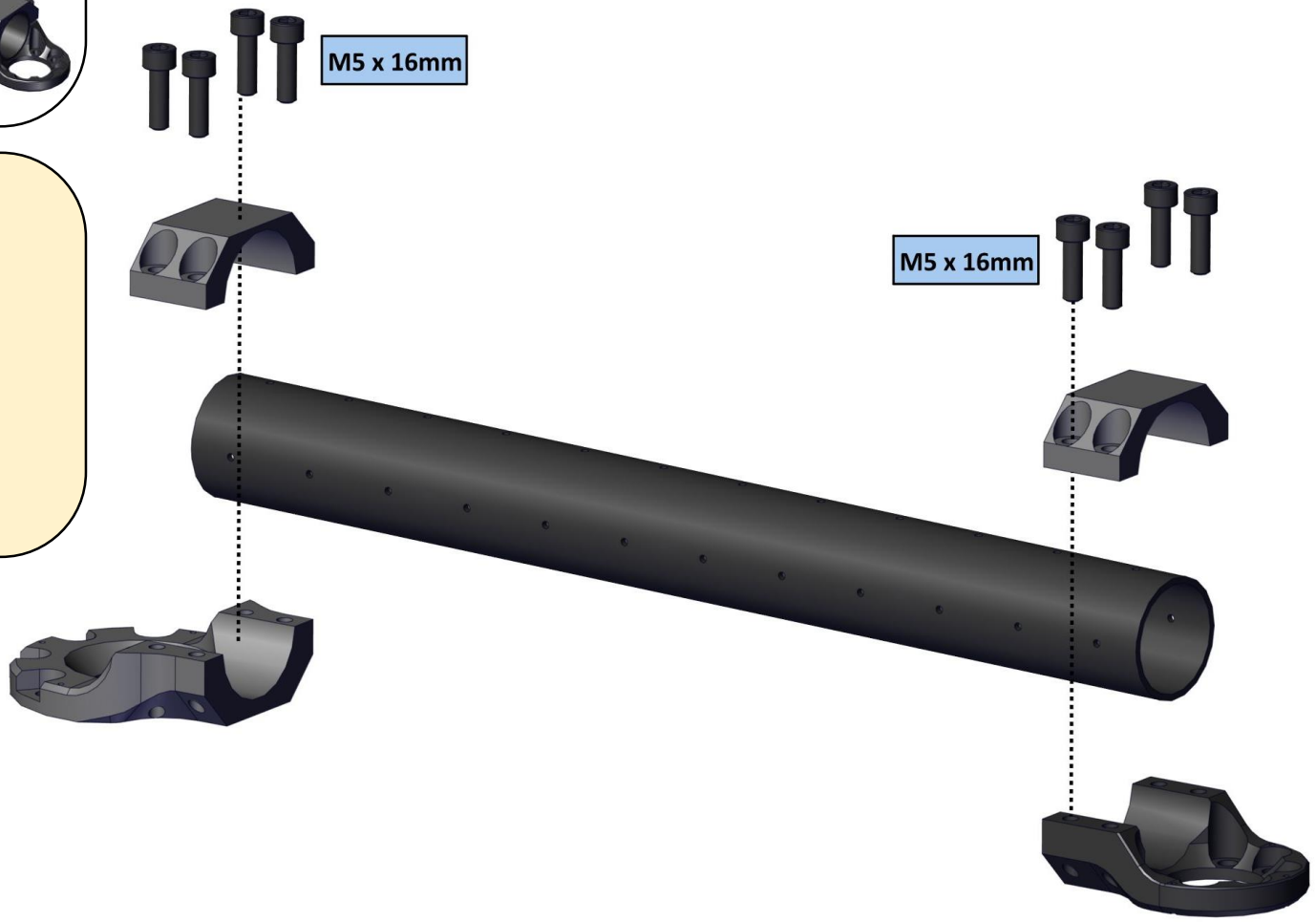
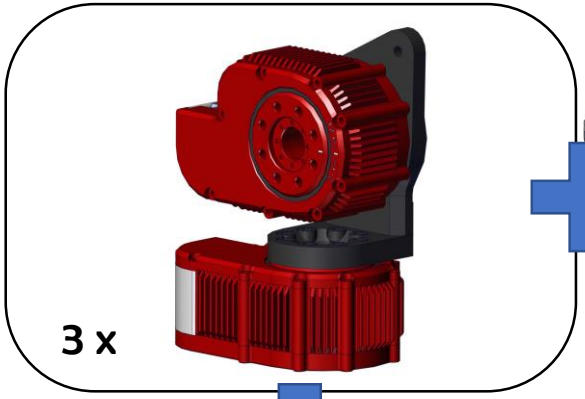
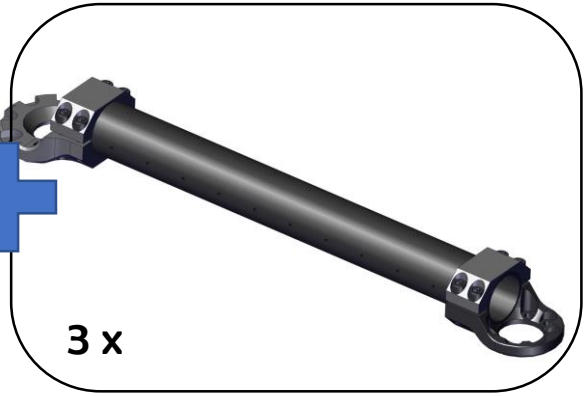
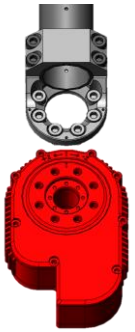

1 x
A-2038-02
1 x
A-2039-02
1 x
PP-2200-02
300mm Tube


M5 x 16mm
M5 x 16mm

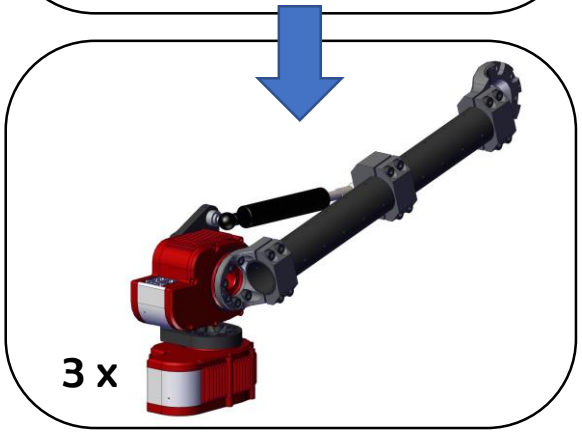


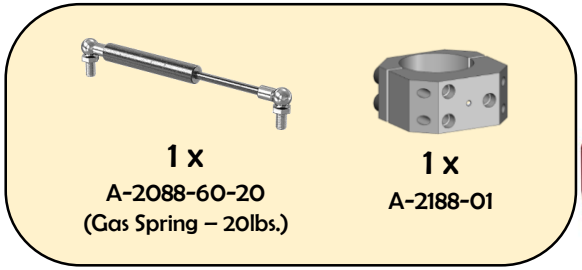




Align with actuator output hub tick mark

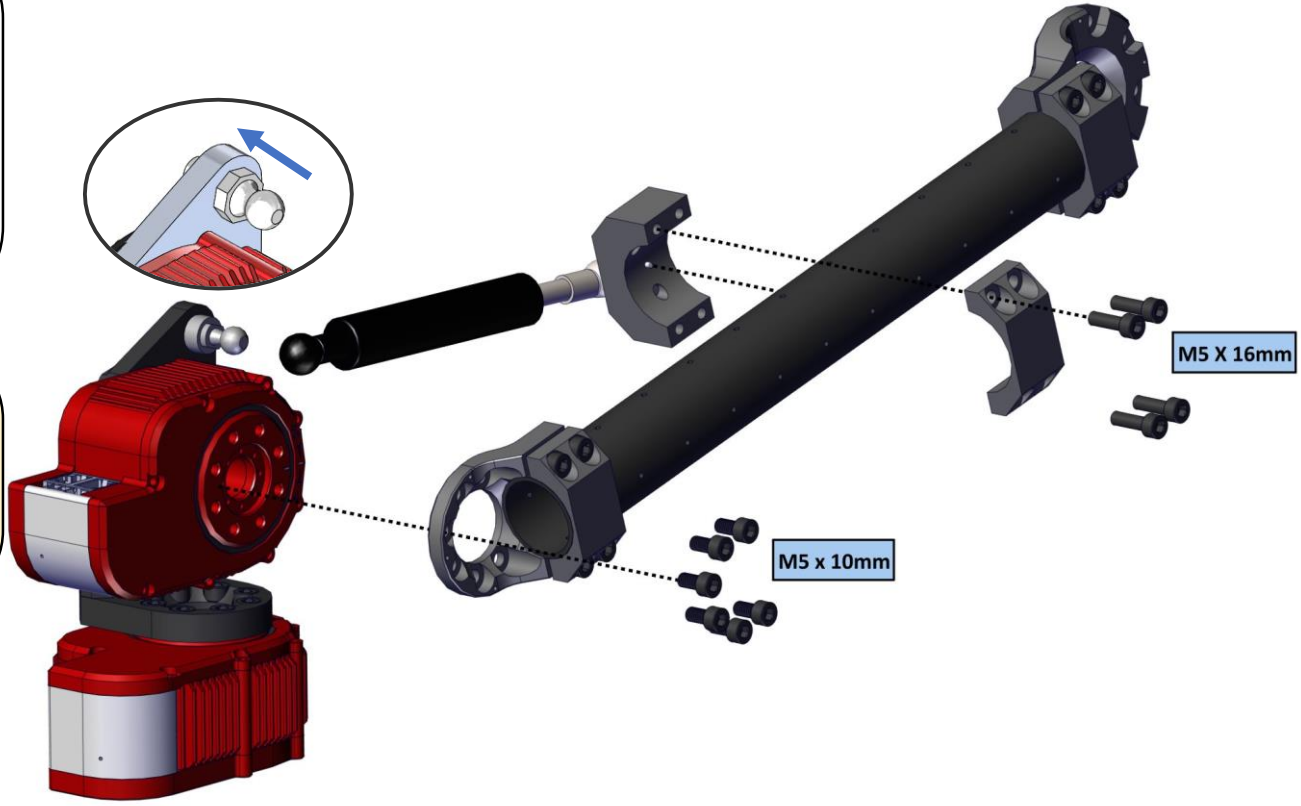
(Tube aligns with tick mark)



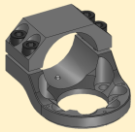


1 x
A-2088-60-20
(Gas Spring – 20lbs.)

1 x
A-2188-01



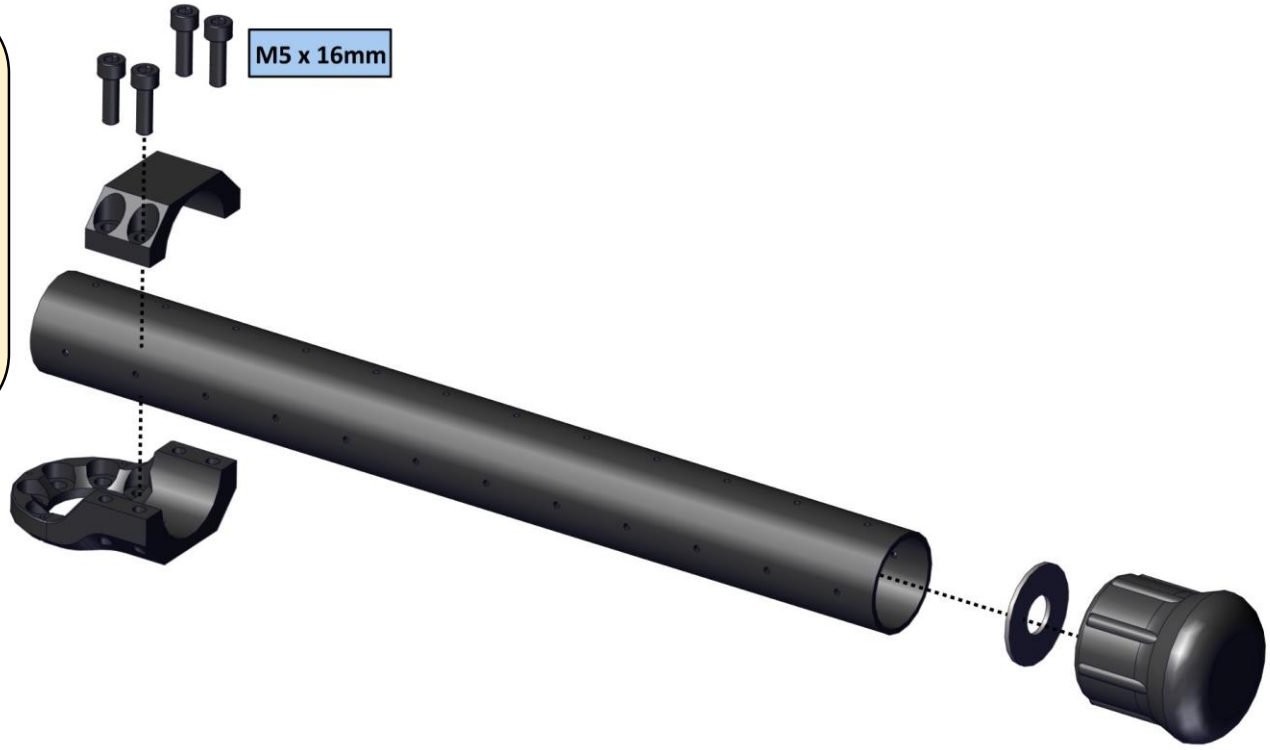
3 x

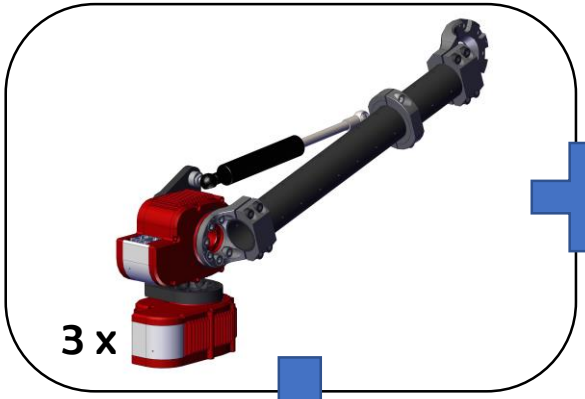


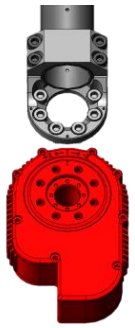
1 x
A-2038-02

1 x
PP-2057-01

1 x
PP-2200-02
300mm Tube

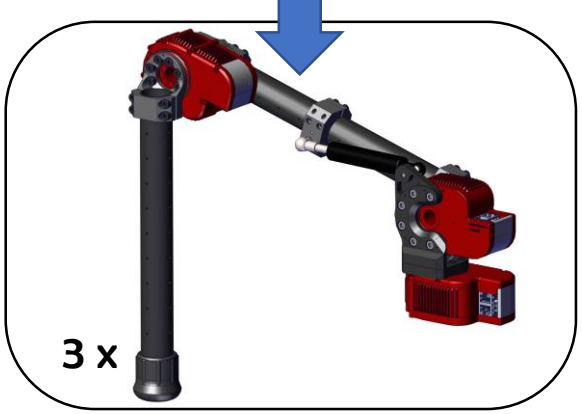


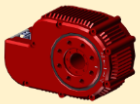




Align with actuator output hub tick mark

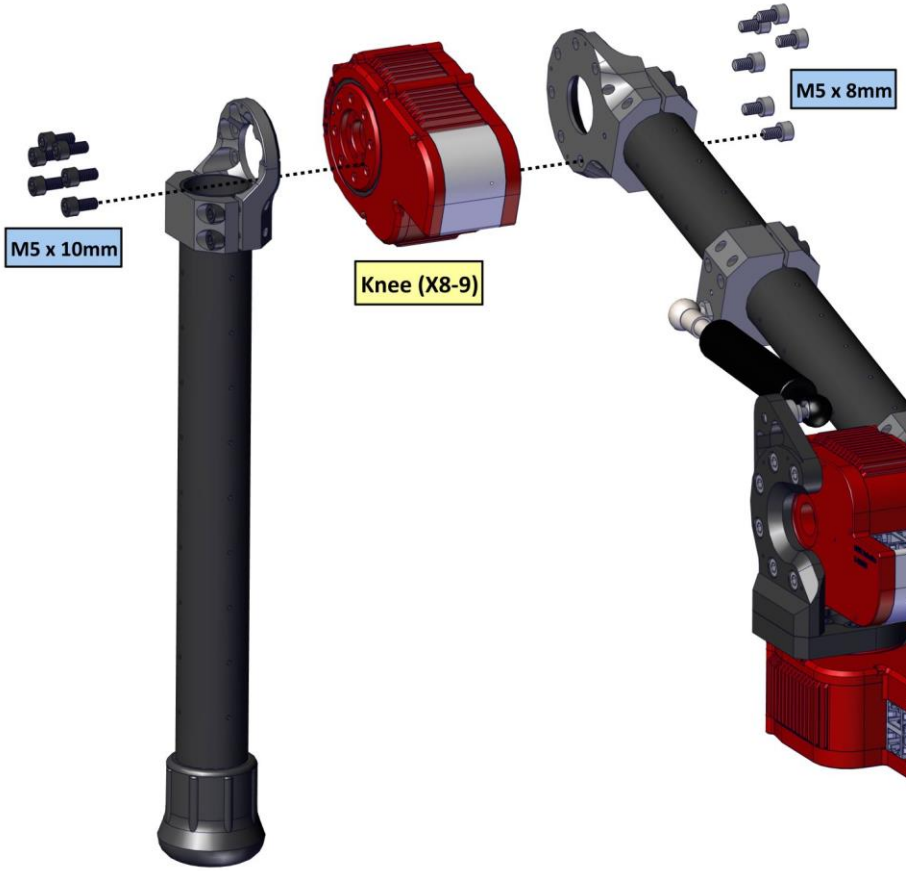
(Tube aligns with tick mark)

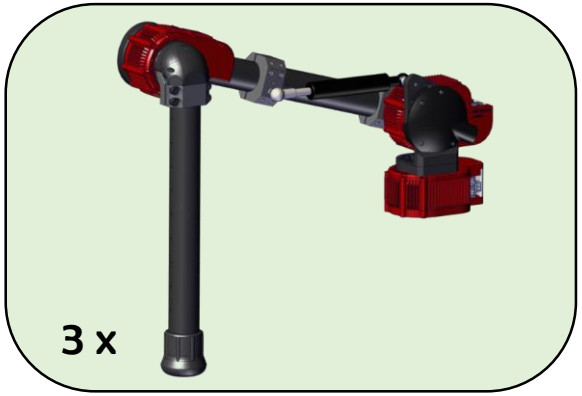


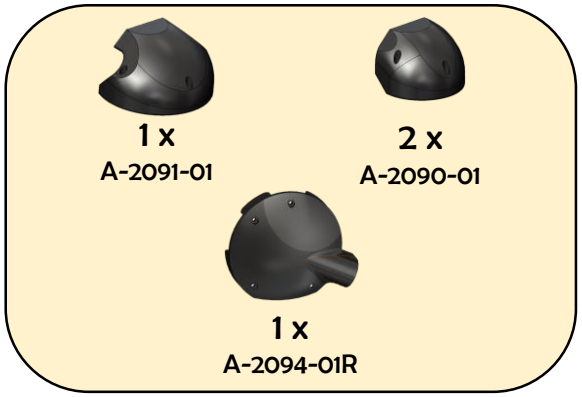


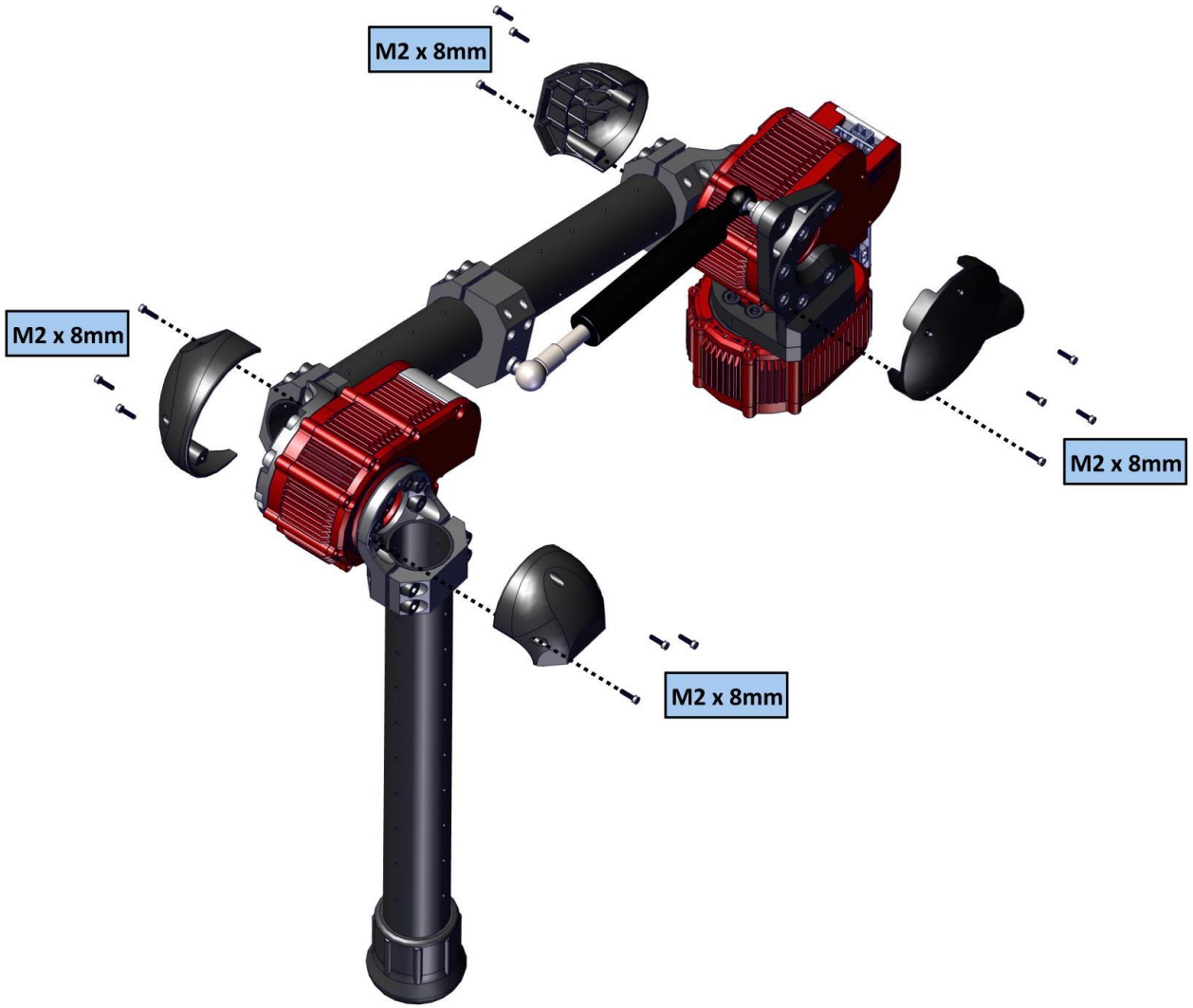
1 x

X8-9

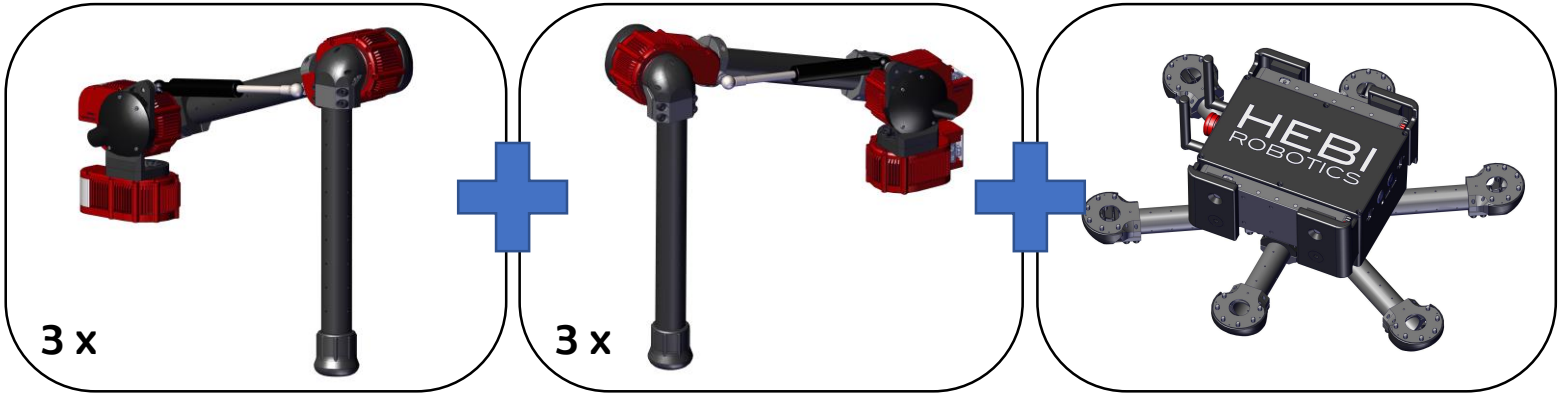


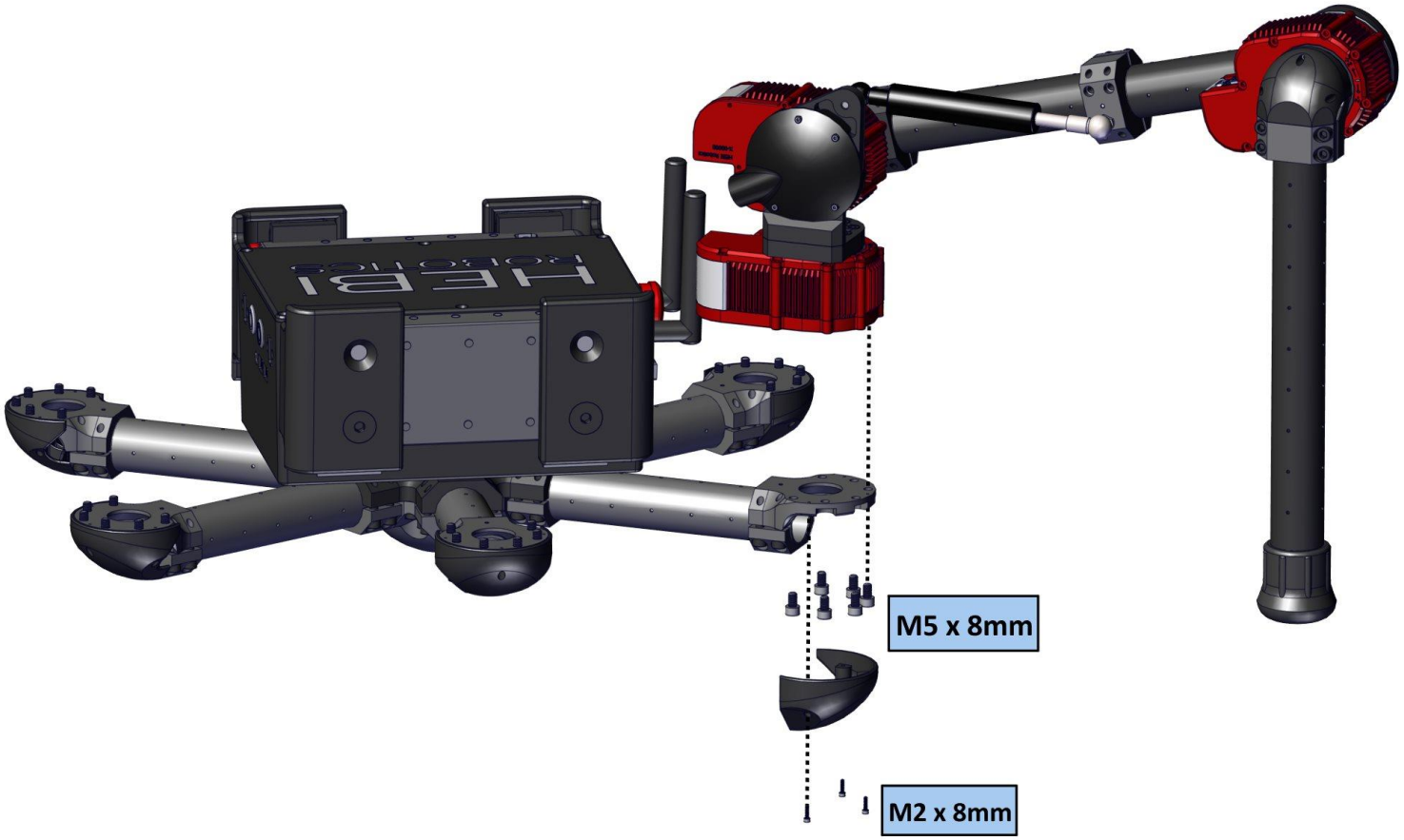

3 x


1 x
A-2091-01
2 x
A-2090-01
1 x
A-2094-01R


M2 x 8mm
M2 x 8mm
M2 x 8mm
M2 x 8mm

Final Assembly


3 x
3 x
HEBI
ROBOTICS


M5 x 8mm
M2 x 8mm

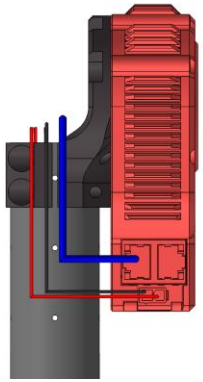
Wiring Notes

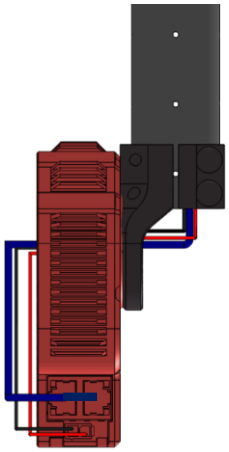
[Spiral sleeving]

- It is best to wire each limb before moving onto the Final Assembly.
  - See the next page for a full robot wiring diagram.
- Keeping wires organized will help prevent tangling and add a nice aesthetic.
  - Spiral sleeving is a good accessory for organizing loose wires
- HEBI X-Series actuators have a thru bore specifically designed to fit ethernet and power connectors.
  - Please pass connectors thru bore hole 1 at a time.

For more information visit: ***docs.hebi.us***

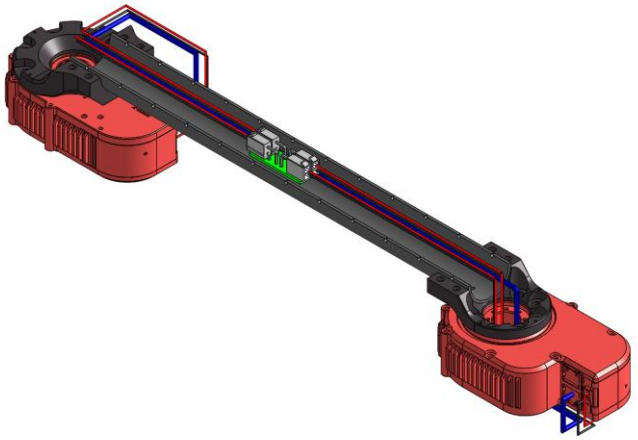
Wires that come from the previous joint should be inserted directly to actuator ports.





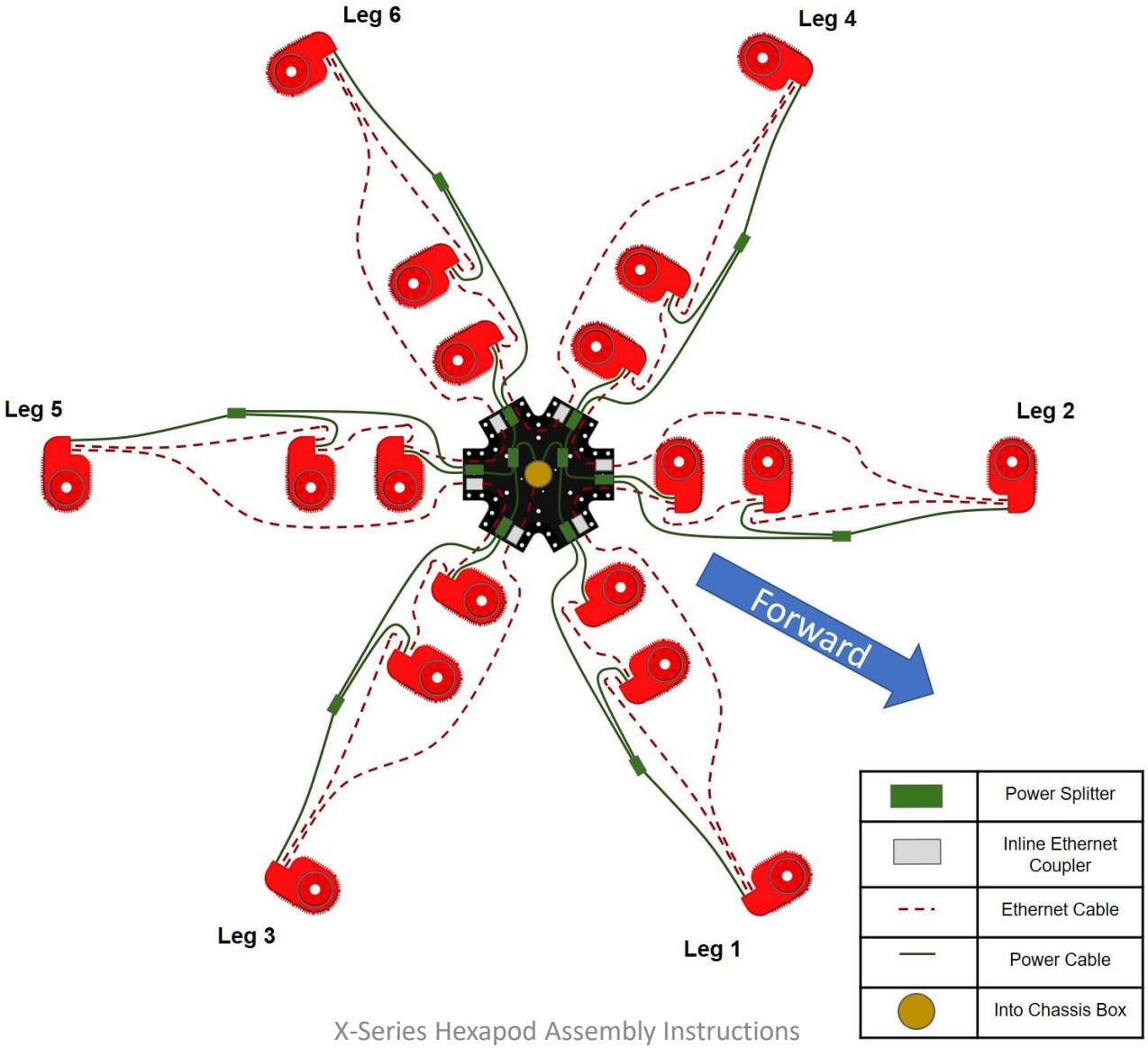
Wires that connect to the next joint should be threaded through the actuator's bore hole.

Power distribution boards are included to help daisy-chain power connections.
These fit well within the tubes between actuators.



Wiring Diagram

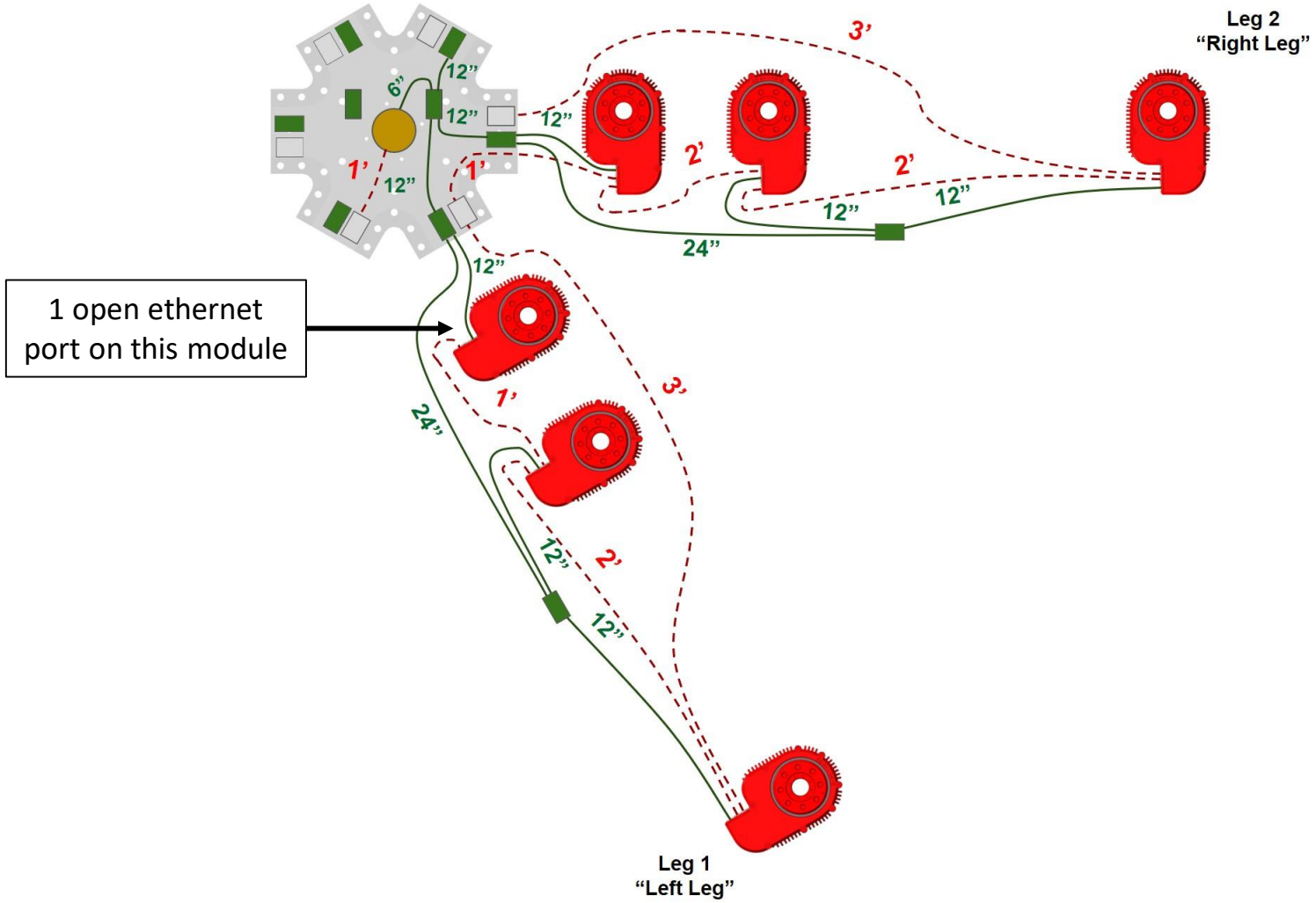
⚠ View from Bottom of Robot



Wiring Lengths

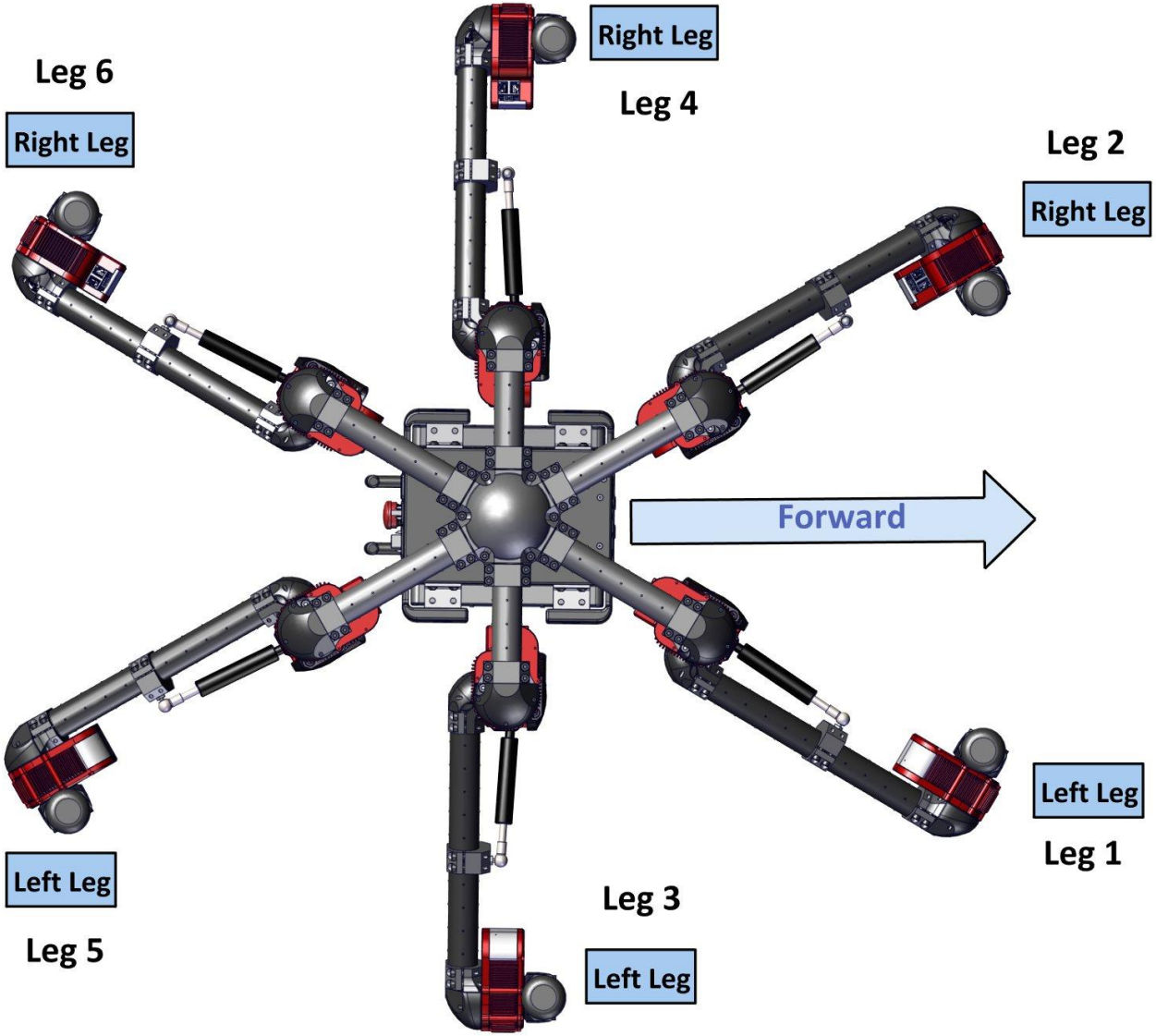
⚠ View from Bottom of Robot

Lengths are common across type of Leg* (Left vs Right)



Leg Layout

⚠ View from Bottom of Robot



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