



Edward

Mobile Manipulator on Omni-Directional Base
Assembly Instructions

General Warnings and Cautions

Danger (May cause serious injury or death)

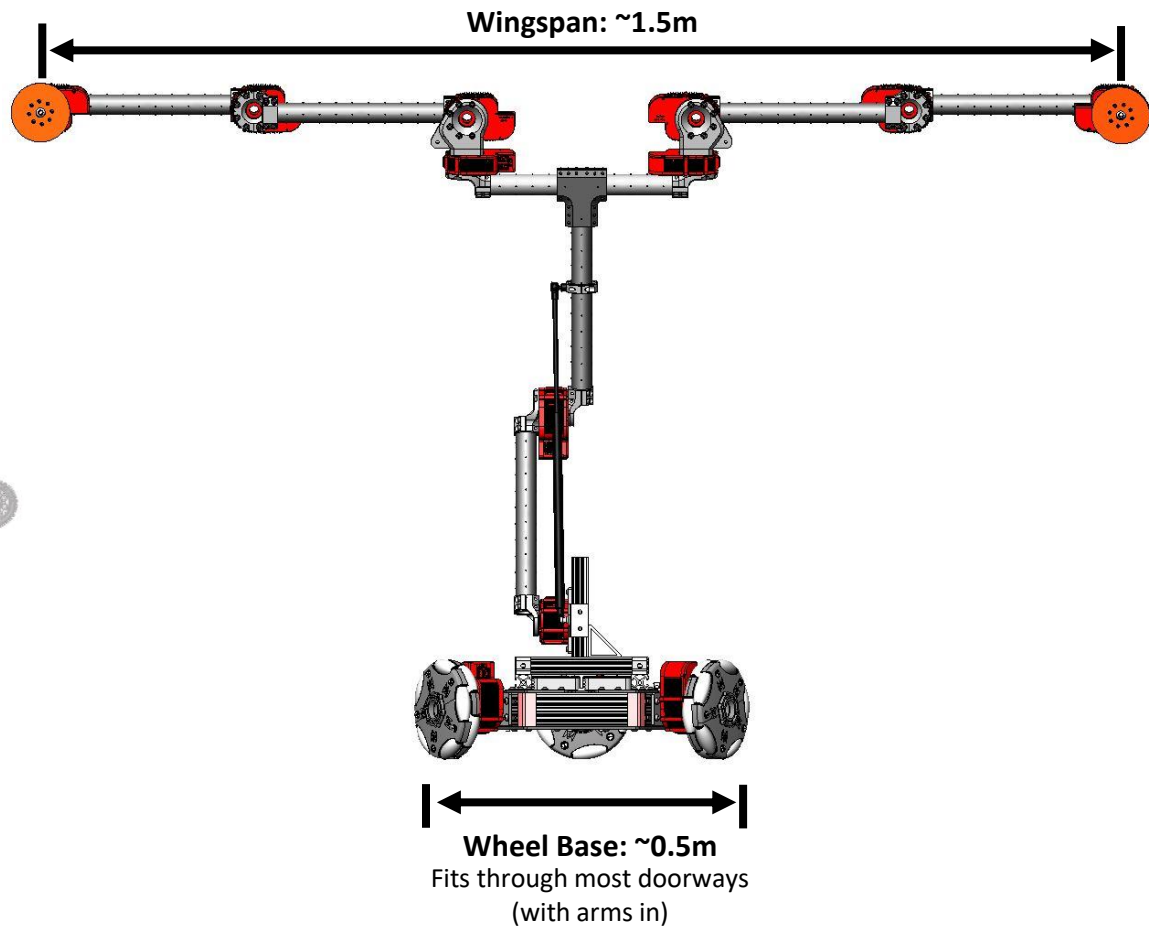
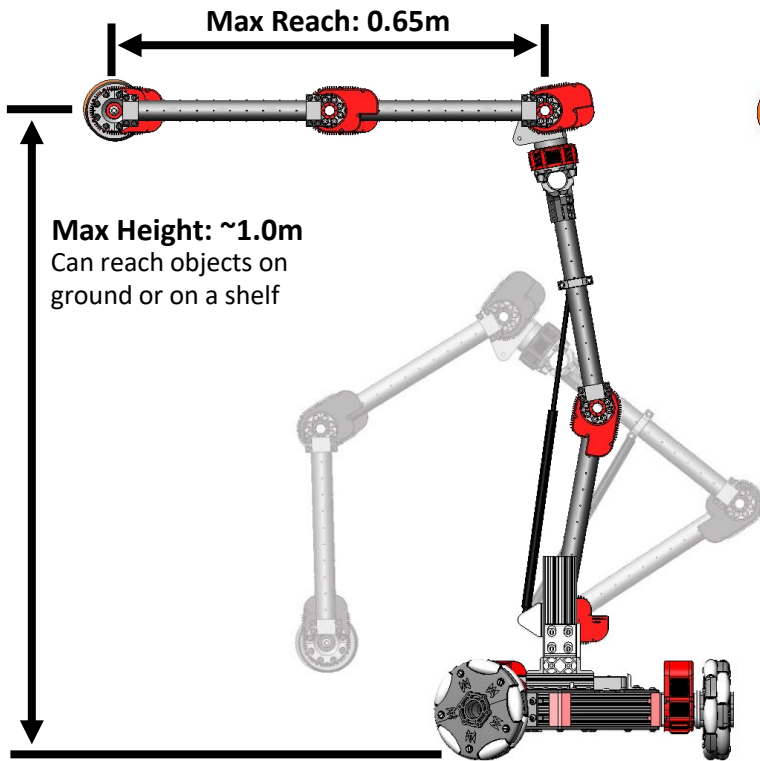
- Keep water, flammables, solvents and other liquids clear from actuator.
- Never place fingers, arms, toes and other body parts near actuator during operation.
- Cut power if actuator emits strange odors or smoke.
- Keep actuator out of reach of children.

Warning (May cause injury or damage to actuator)

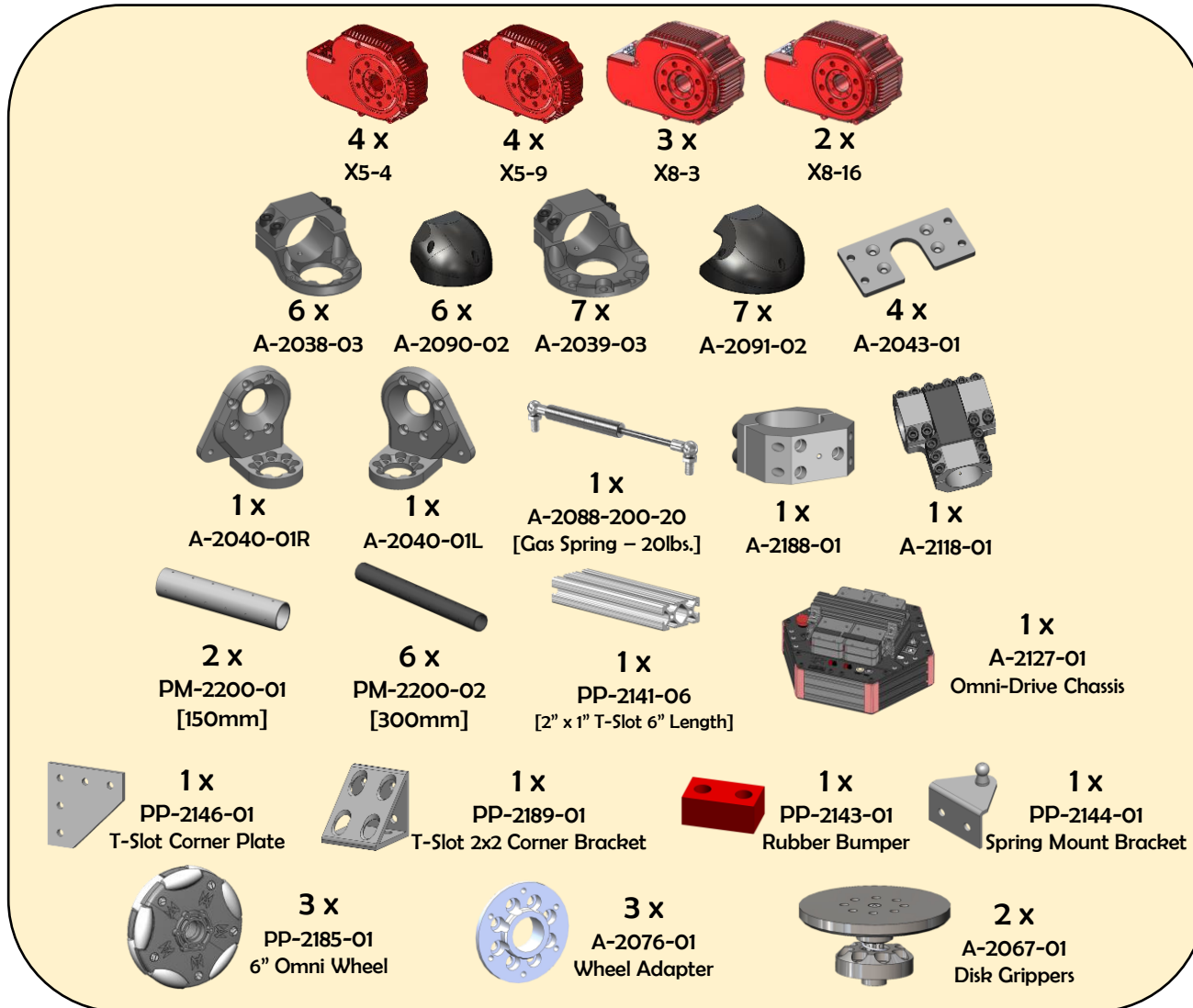
- Before operating, read all applicable instructions and notices found here:
<http://docs.hebi.us/#quickstart-guide-x-series-actuator>
- Comply with the operating temperature (-10°C to 50°C)
- Turn off power source before connecting or disconnecting actuator power.
- Do not expose the actuator to permanent 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***

Robot Workspace



Bill of Materials - Mechanical*



fasteners included, not shown

Bill of Materials - Electrical



6 x
A-2128-01
Power Distribution Board



3 x
PP-2058-01
Ethernet Coupler



up to 4 x
PP-2084-01
LiGo Battery



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



7 x
A-2046-18
Power Cable, 18" Length



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



5 x
PP-2059-01
Ethernet Cable, 12" Length



6 x
PP-2060-01
Ethernet Cable, 24" Length



2 x
PP-2061-01
Ethernet Cable, 36" Length

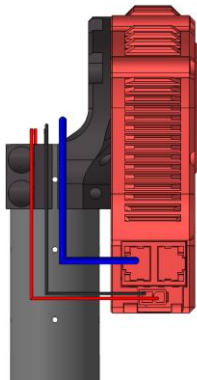
Wiring Notes

- It is best to wire each limb before moving onto the Final Assembly.
- 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 one at a time.

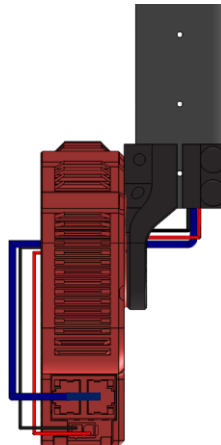


For more information visit: docs.hebi.us

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.

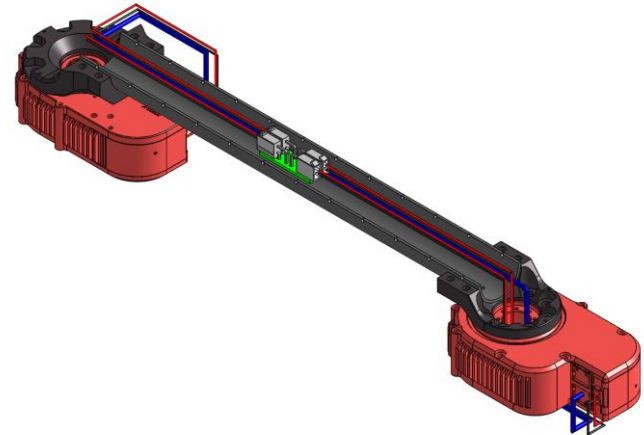
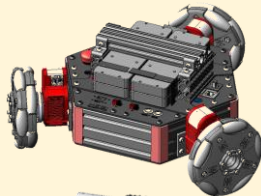
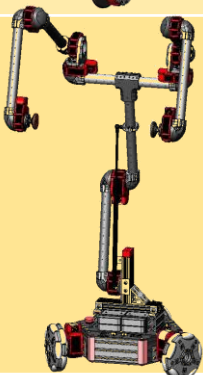
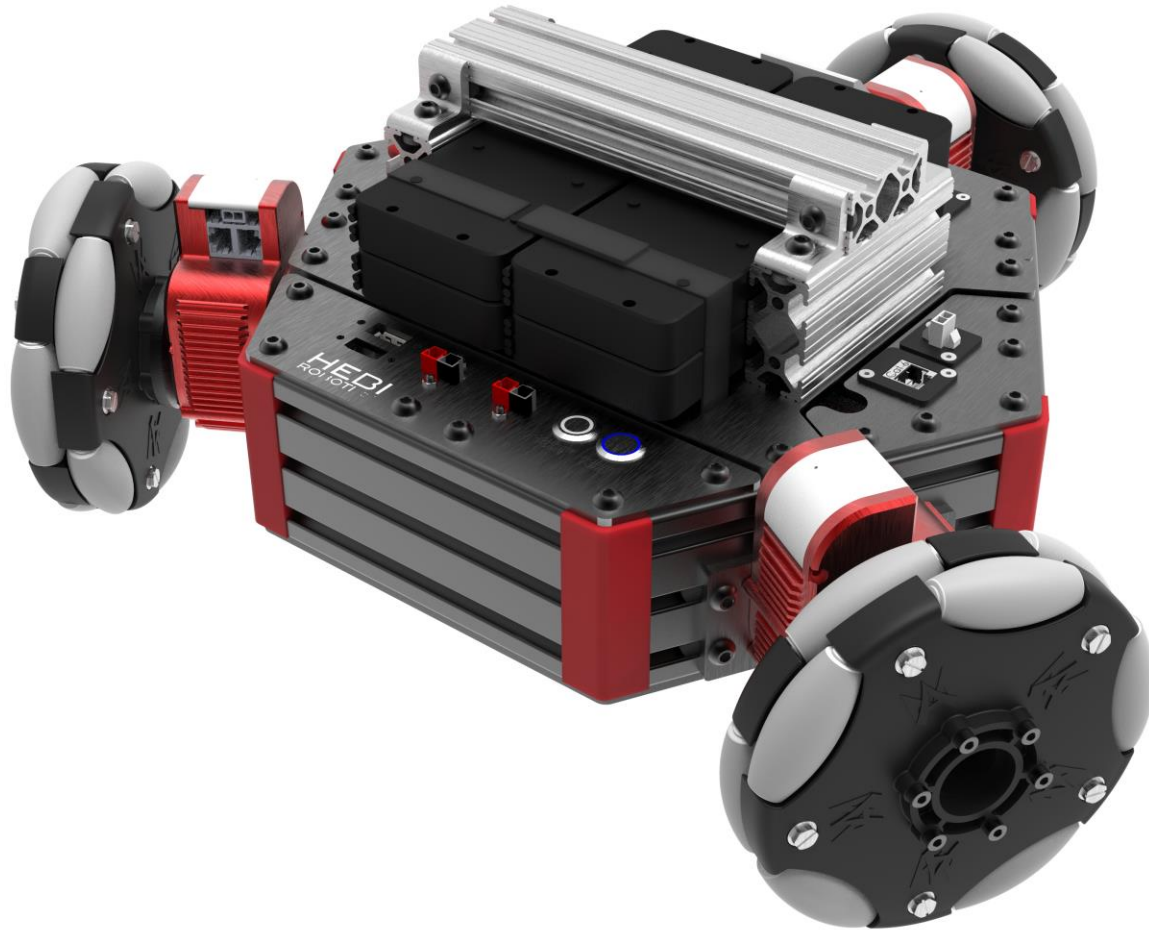
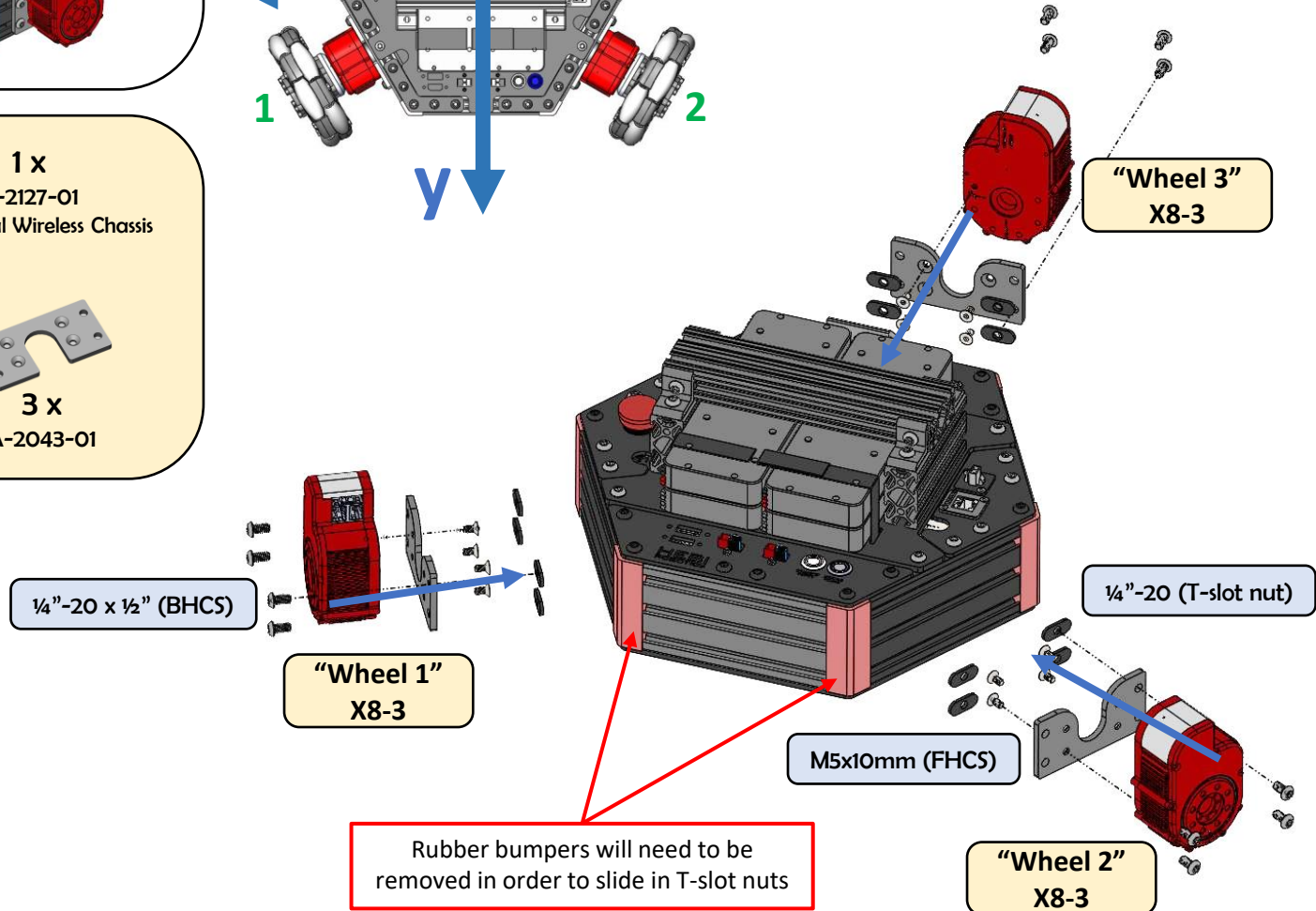
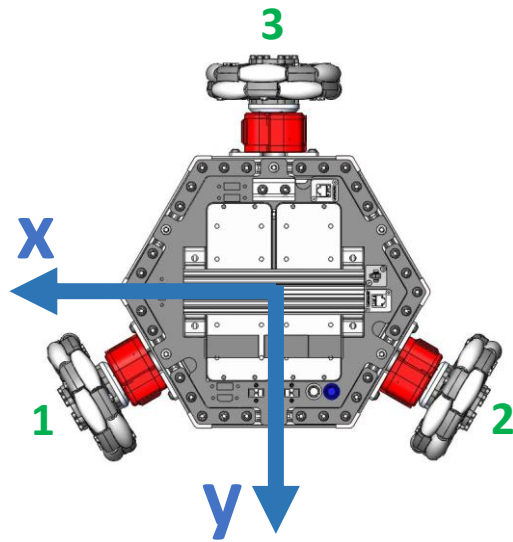
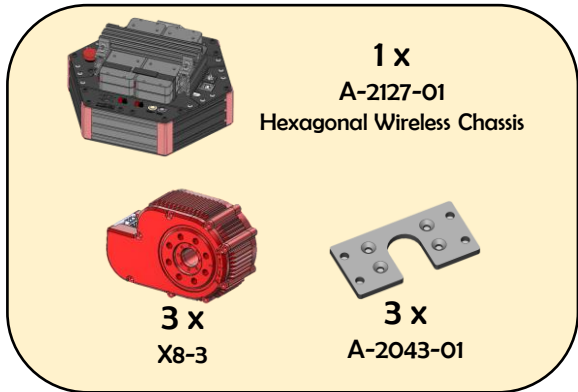
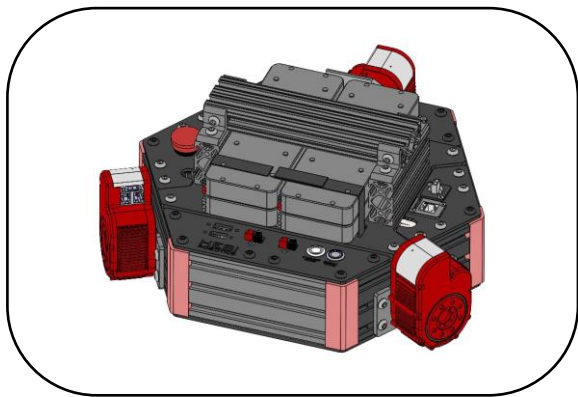


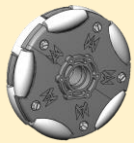
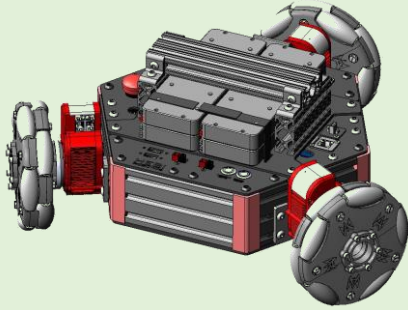
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Spine	1x		[13-22]
Arms	1x Left 1x Right		[23-31]
Final	1x		[32-37]



Chassis



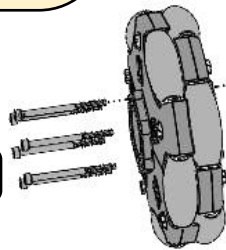


3 x
PP-2185-01
6" Omni Wheel

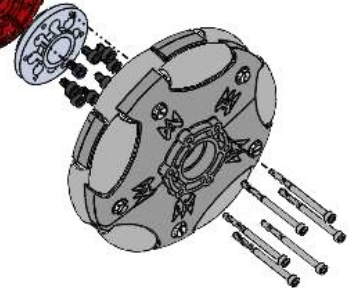
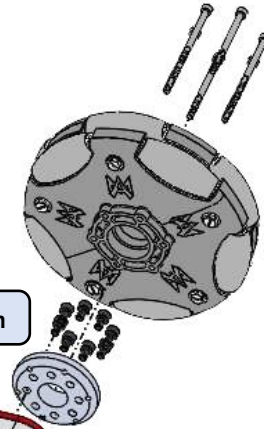


3 x
A-2076-01
Wheel Adapter

M4x55mm

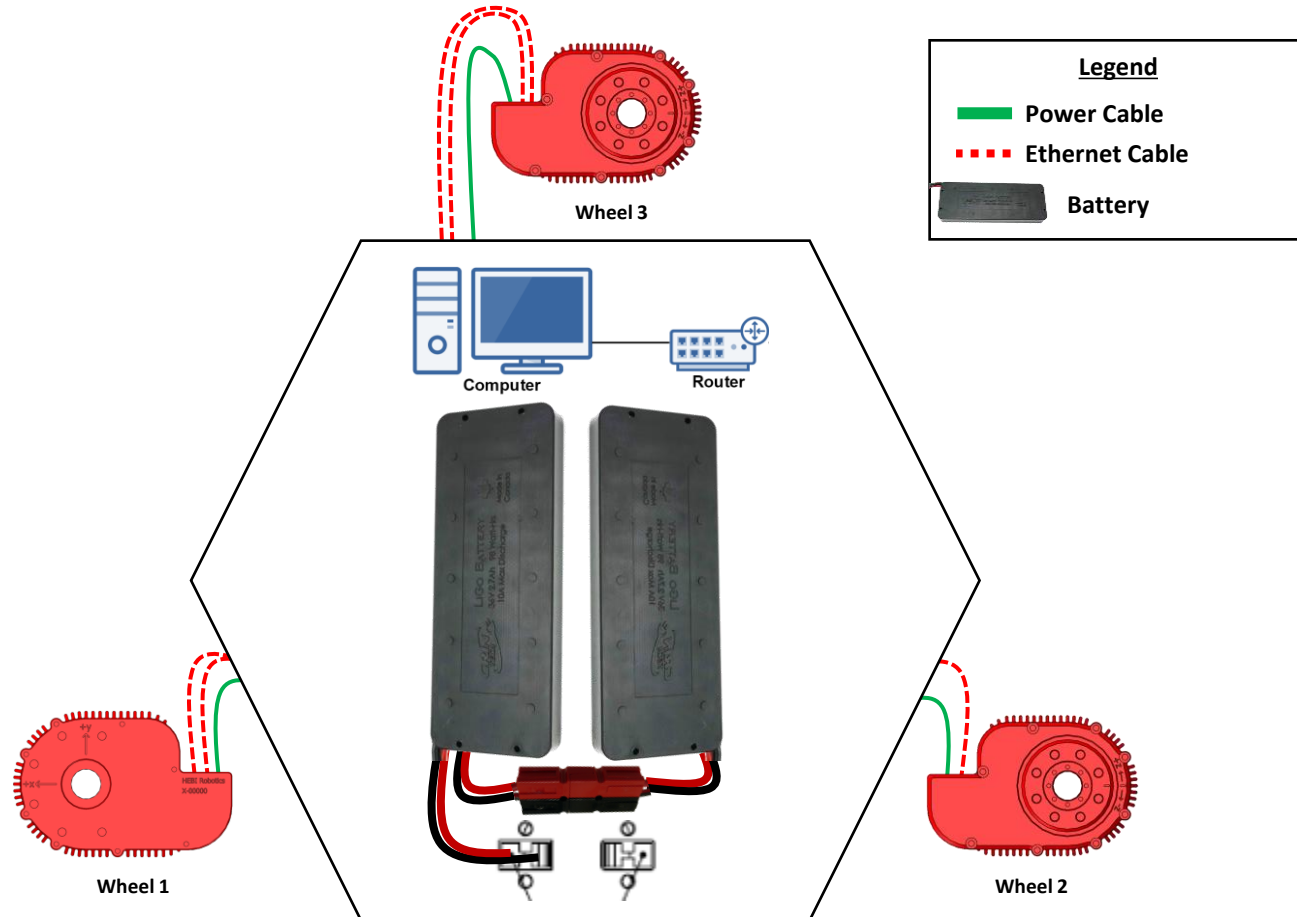


M5x8mm

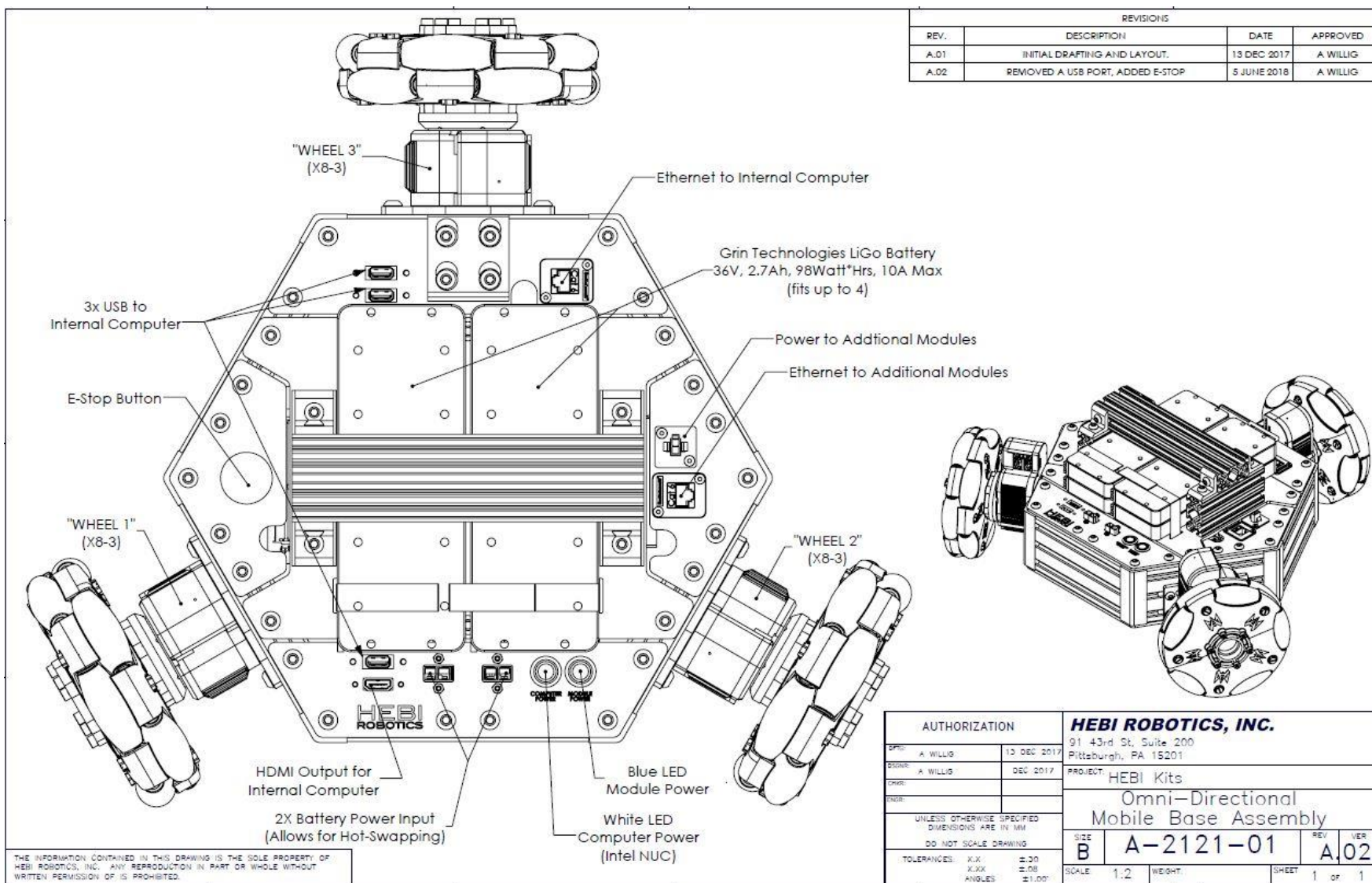


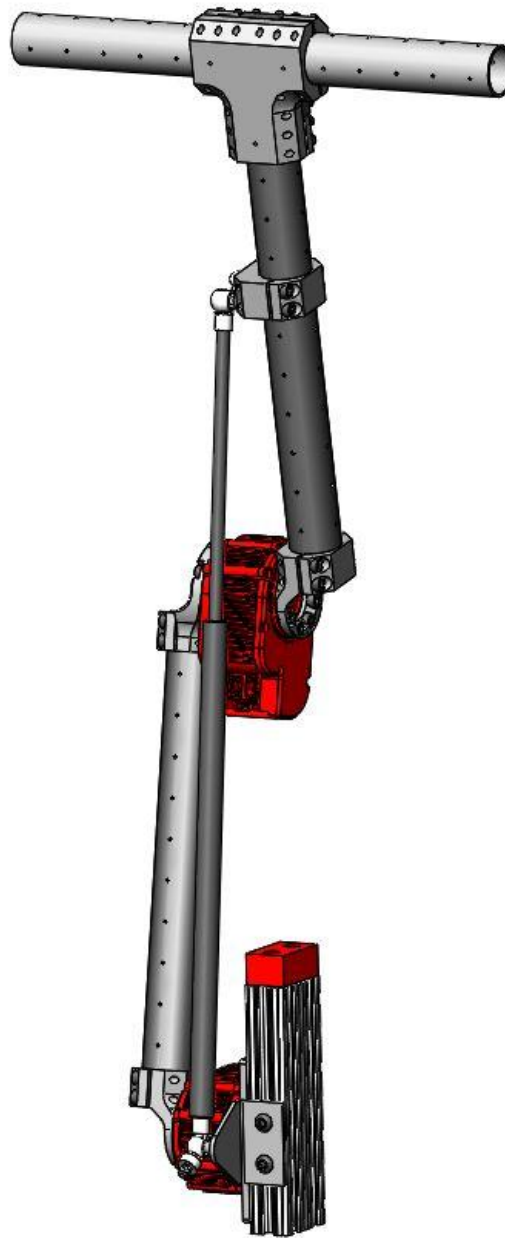
Chassis Wiring

*Cabling will be provided with assembled chassis

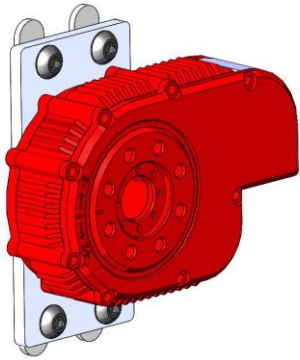


Chassis Bulkhead Layout





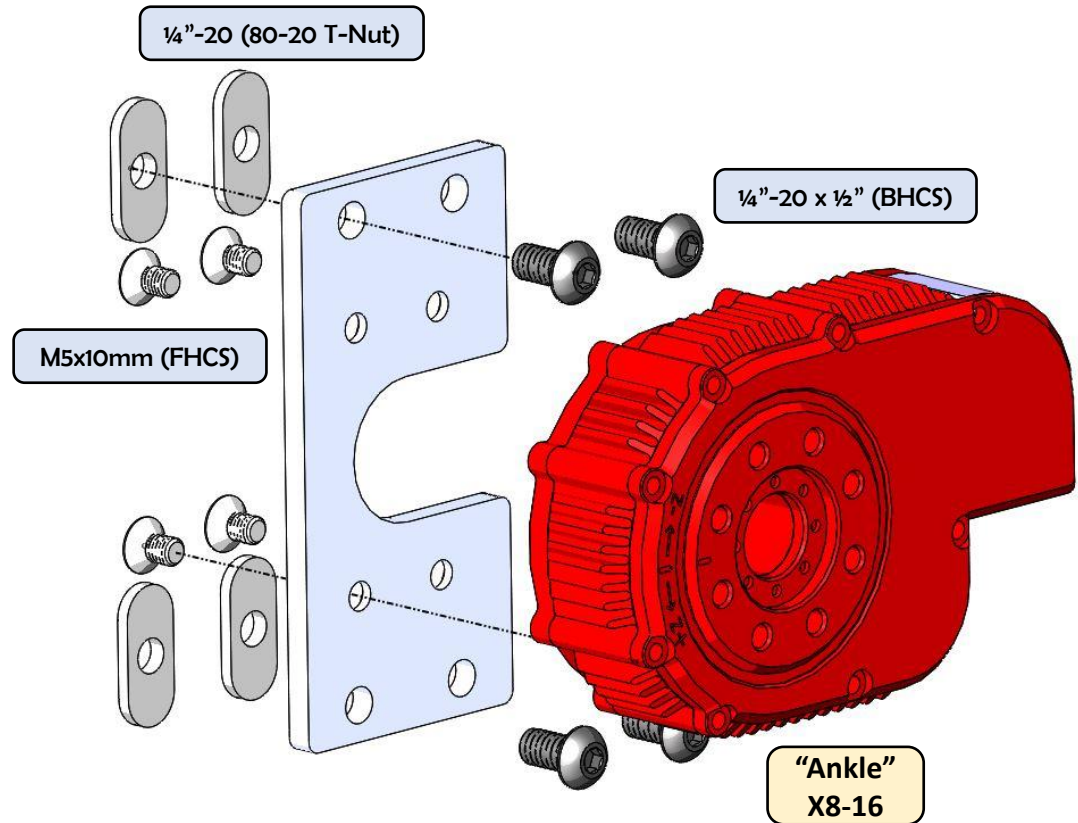
Spine

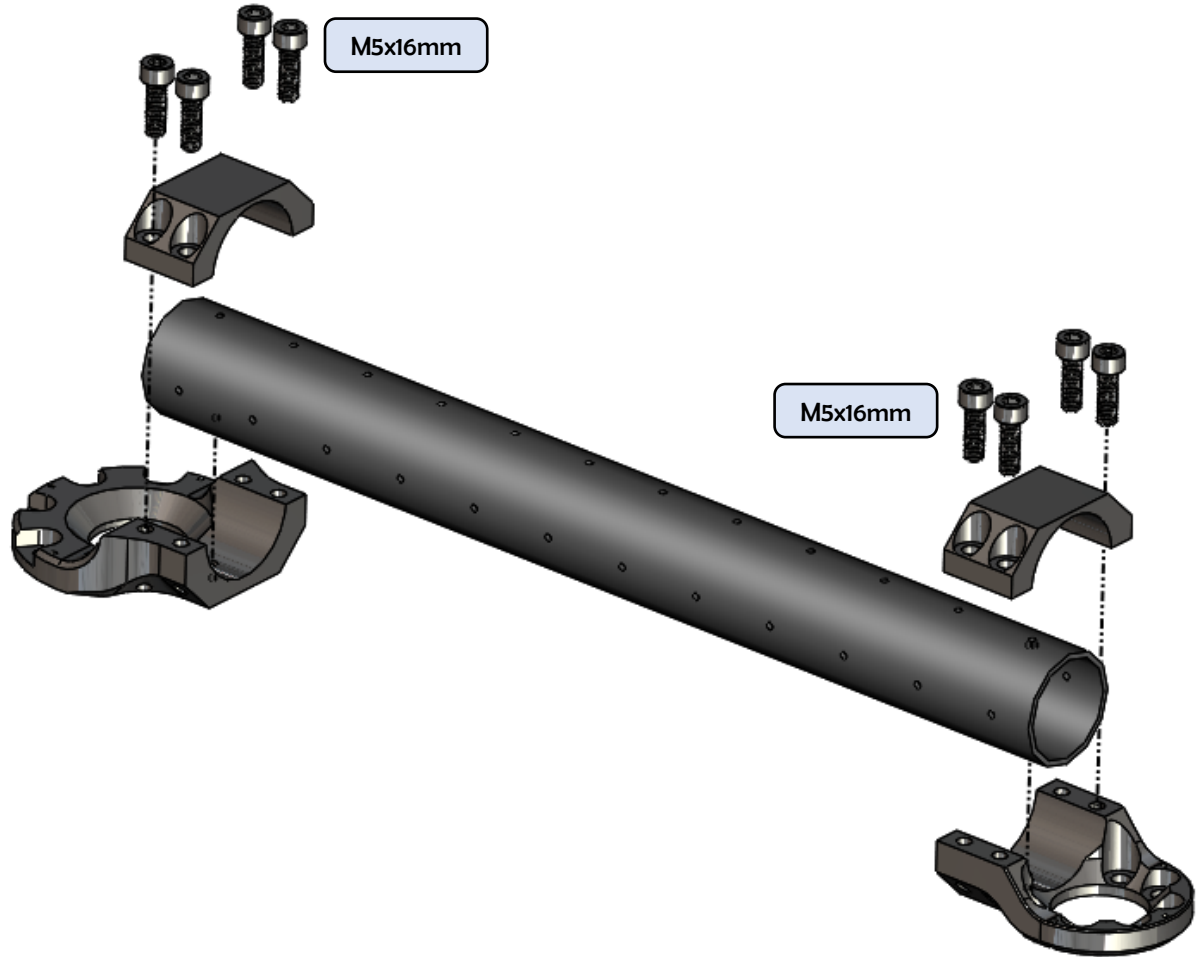
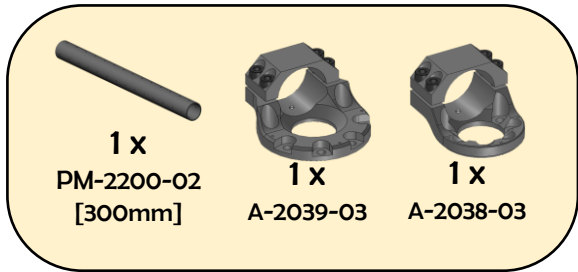
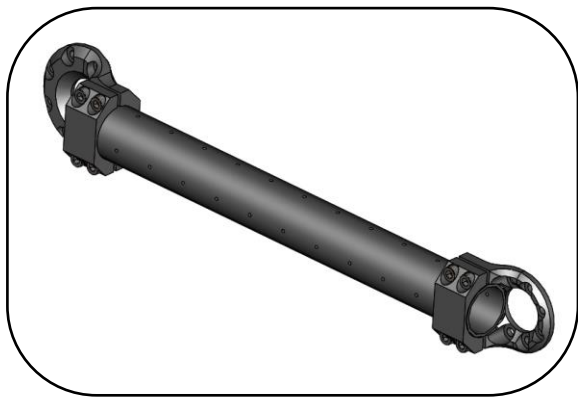


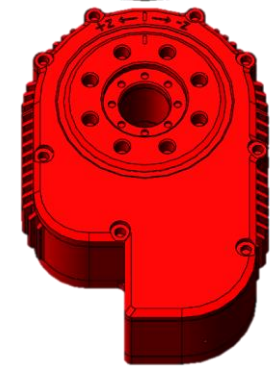
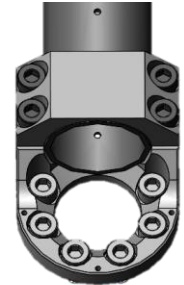
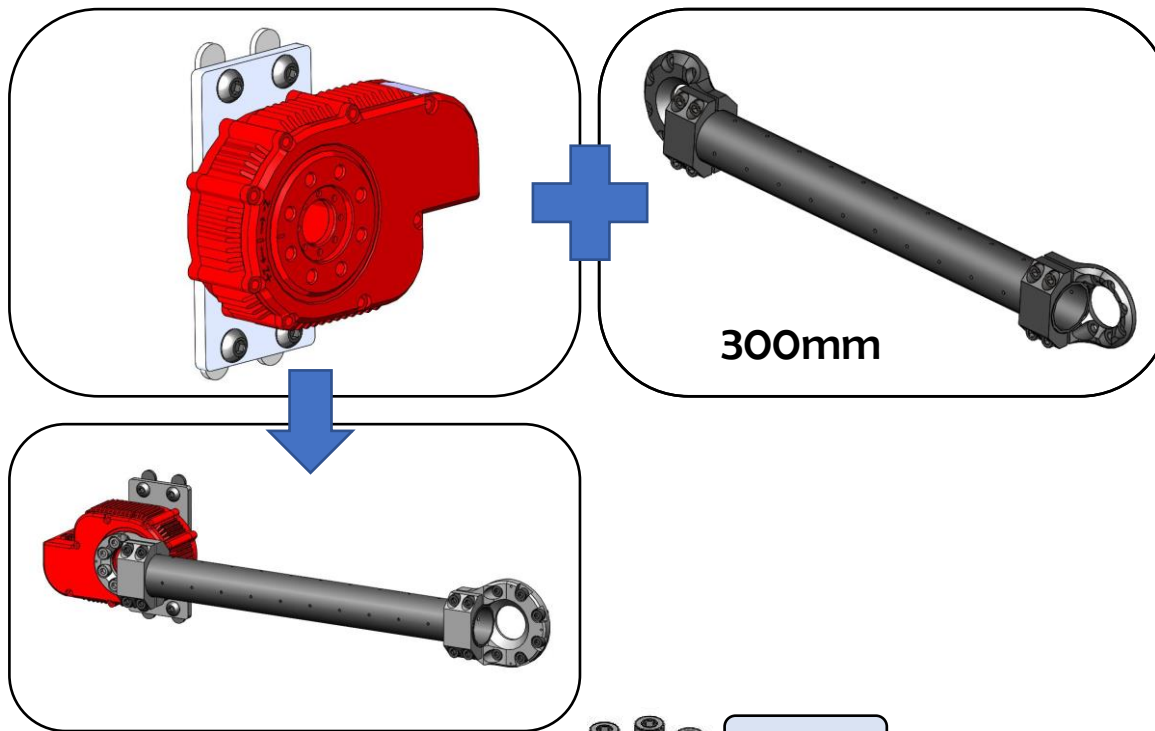
1 x
X8-16



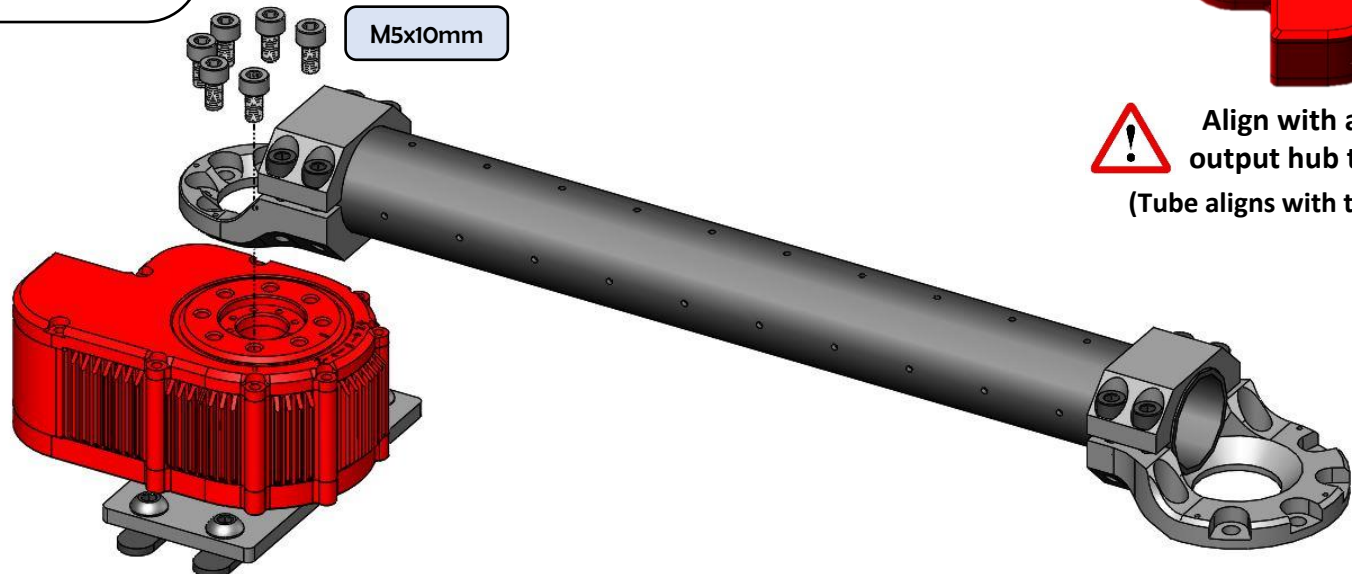
1 x
A-2043-01

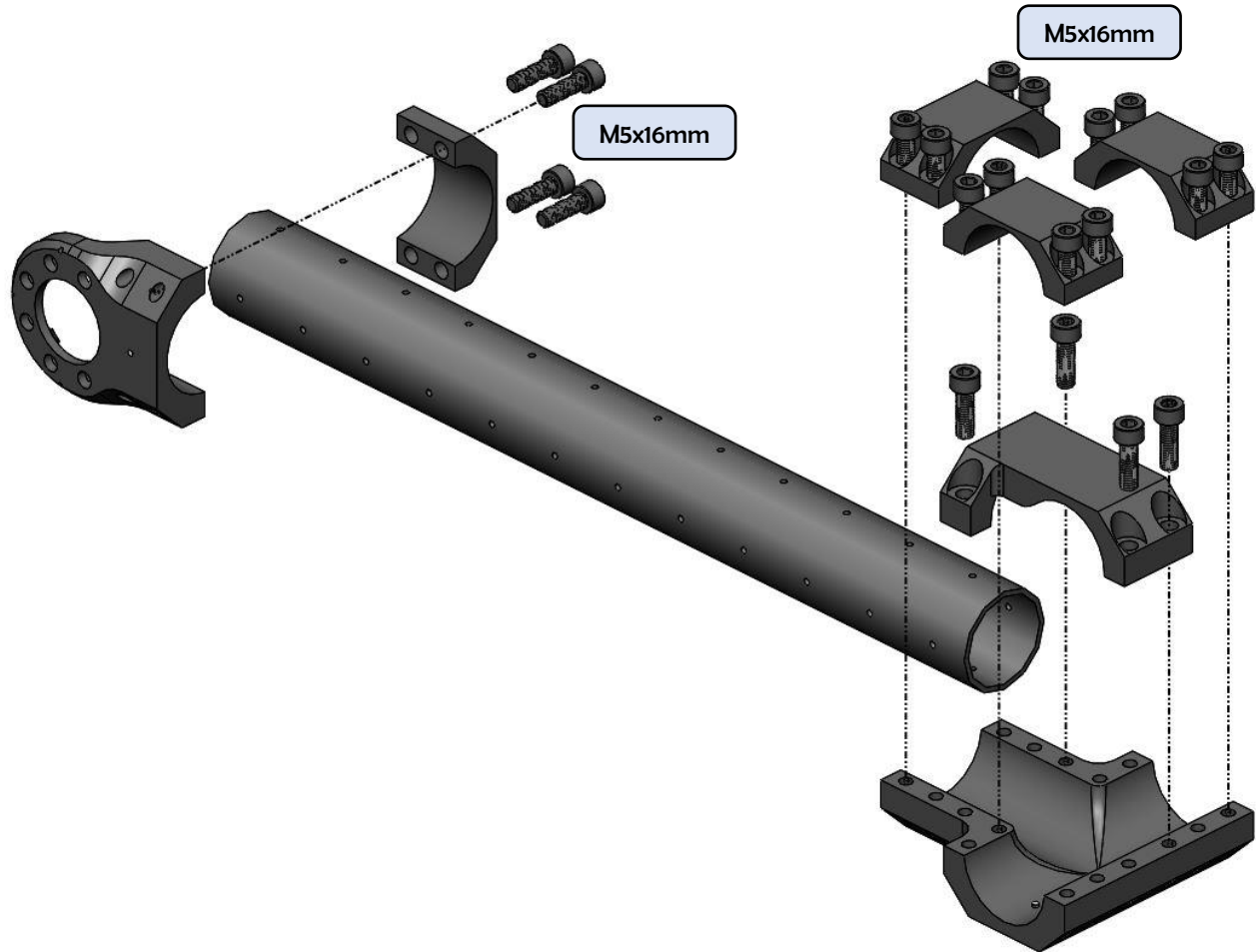
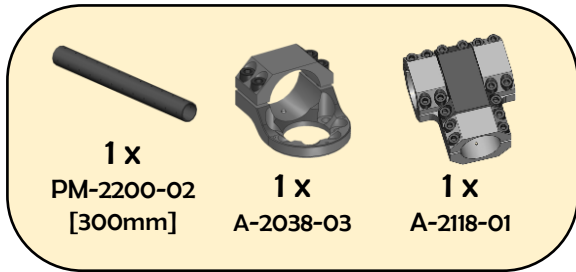
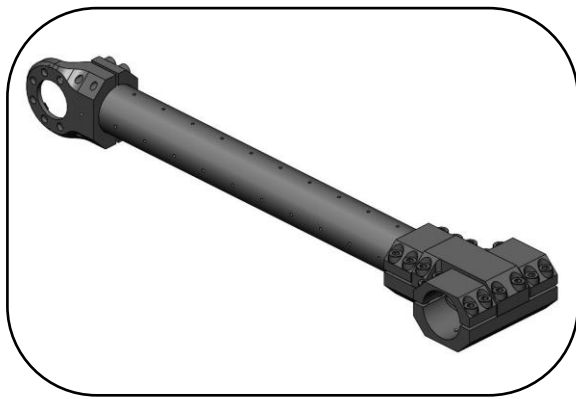


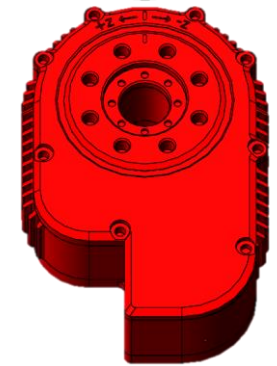
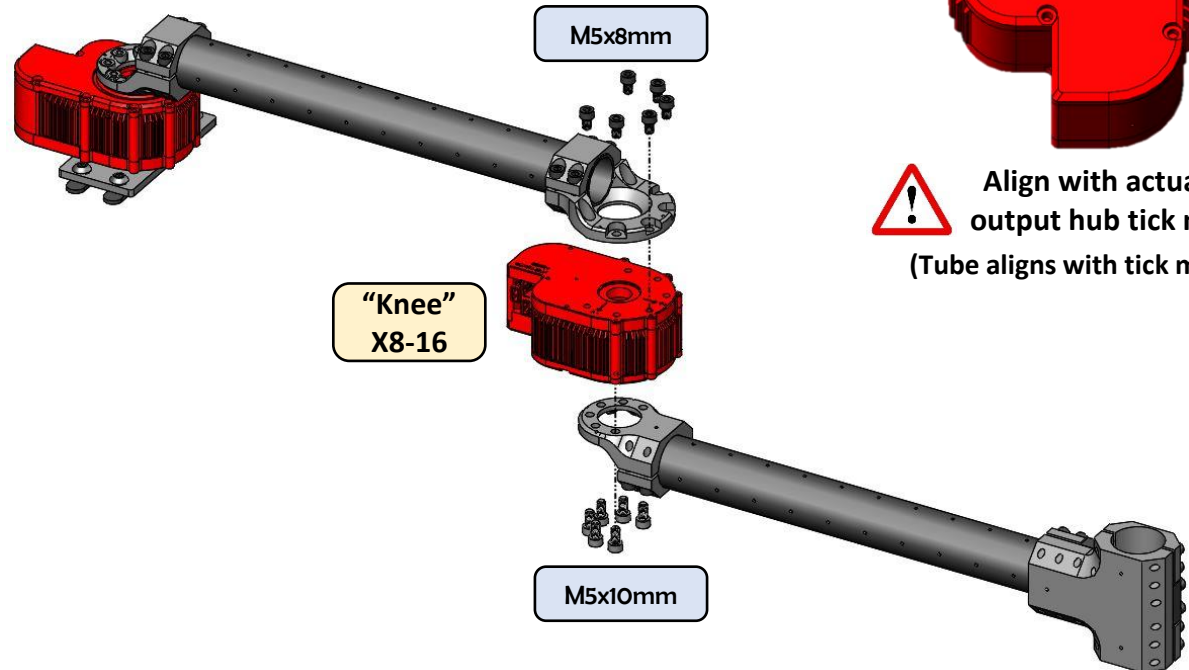
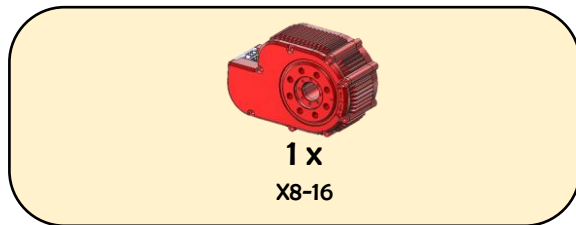
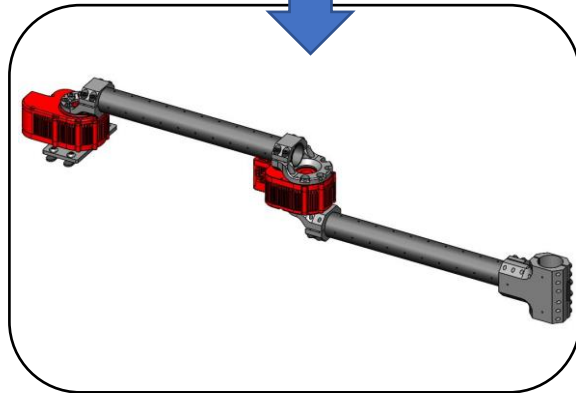
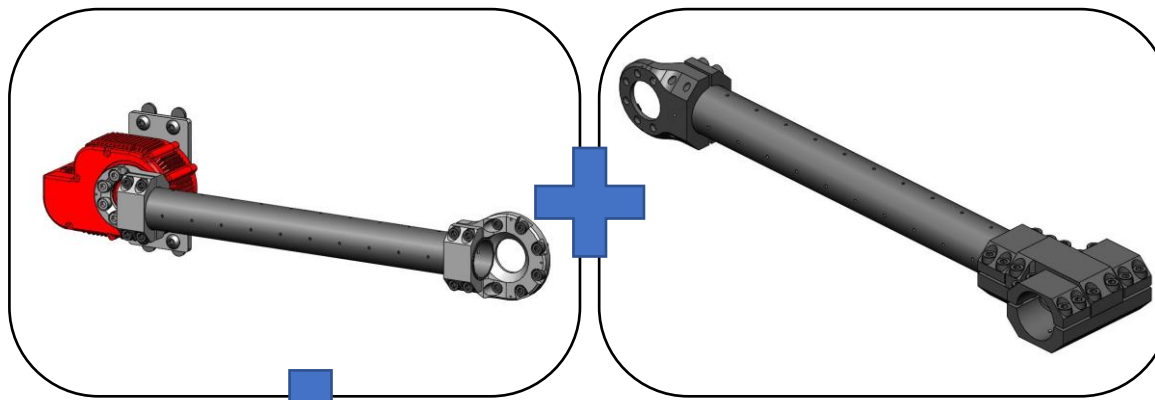




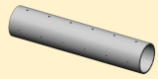
 **Align with actuator
output hub tick mark**
(Tube aligns with tick mark)



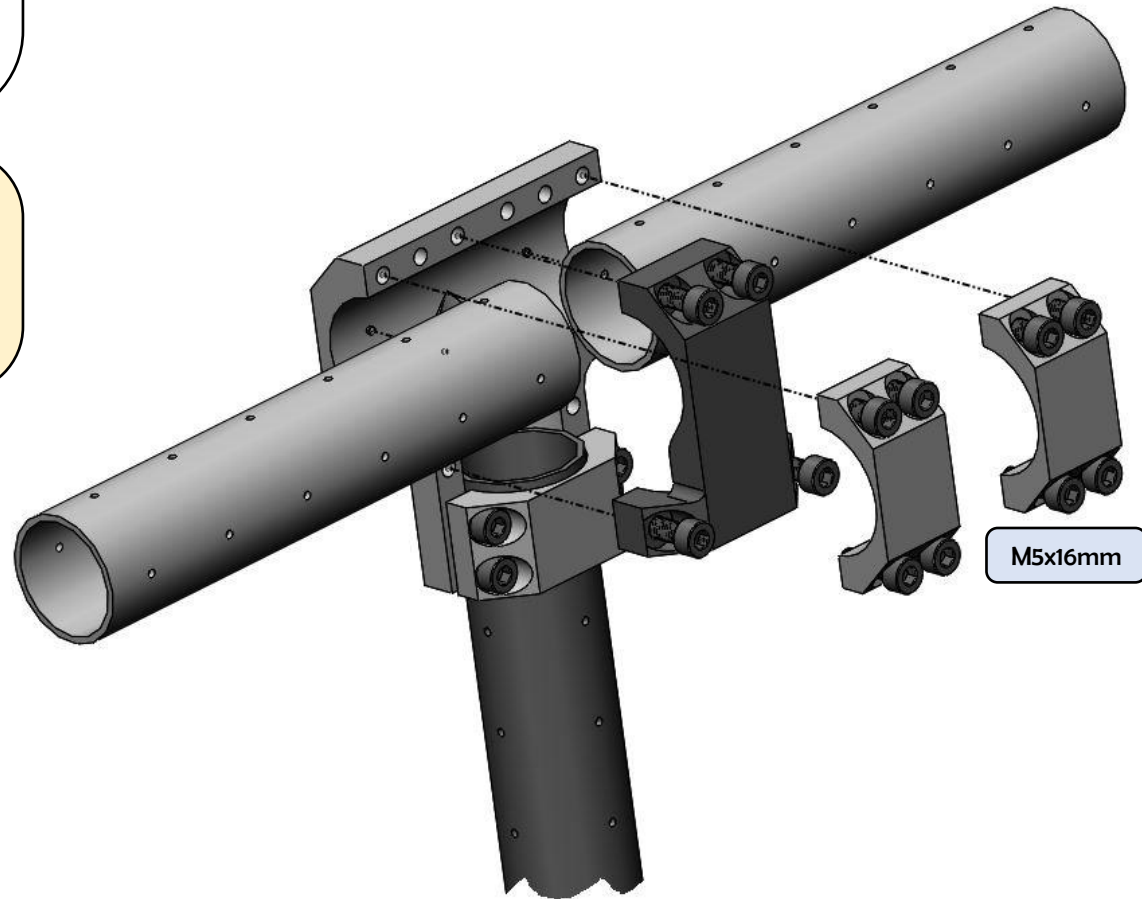


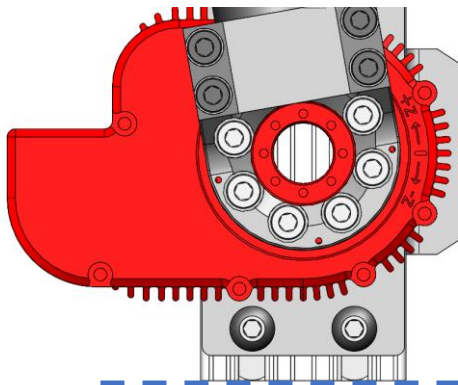
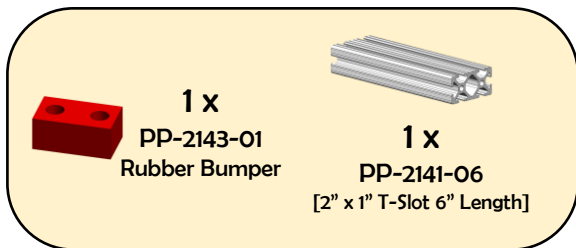
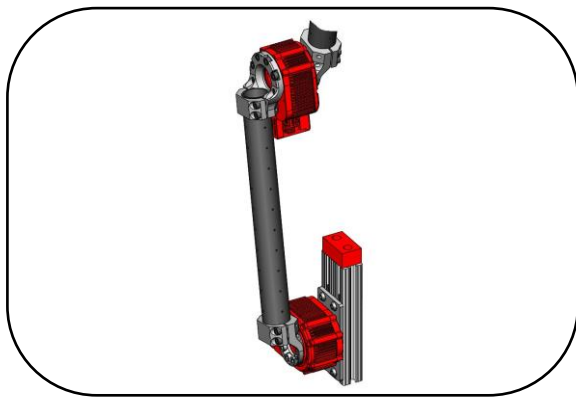


 Align with actuator
output hub tick mark
(Tube aligns with tick mark)

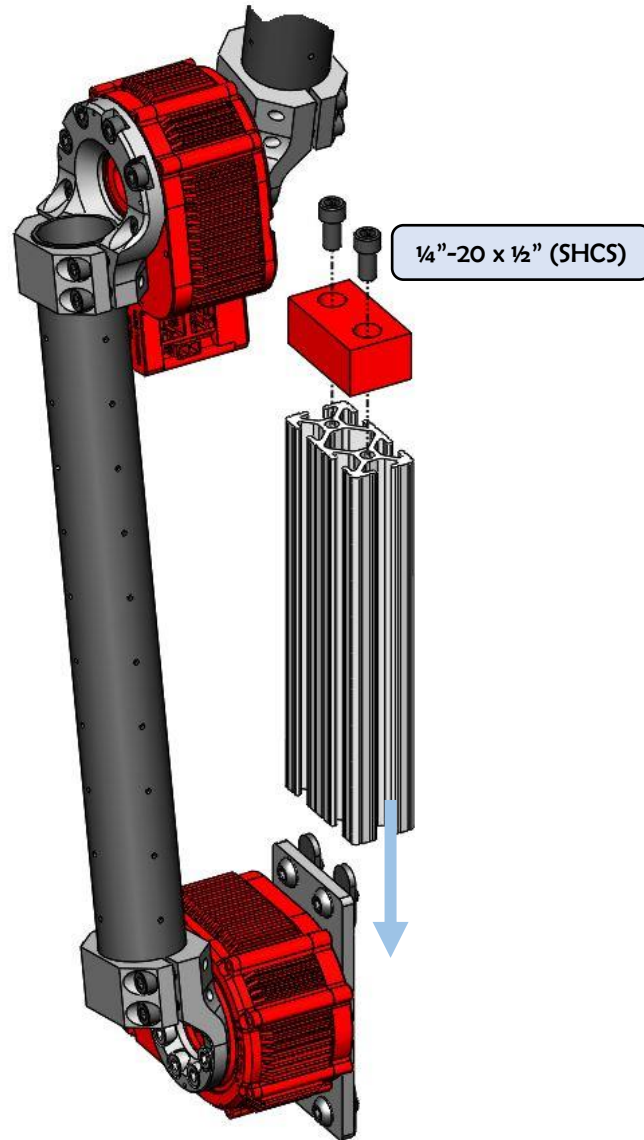


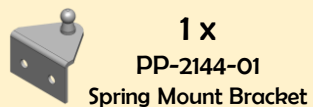
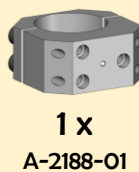
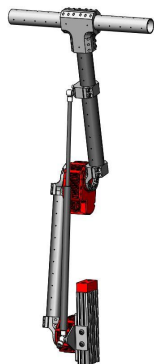
2 x
PM-2200-01
[150mm]



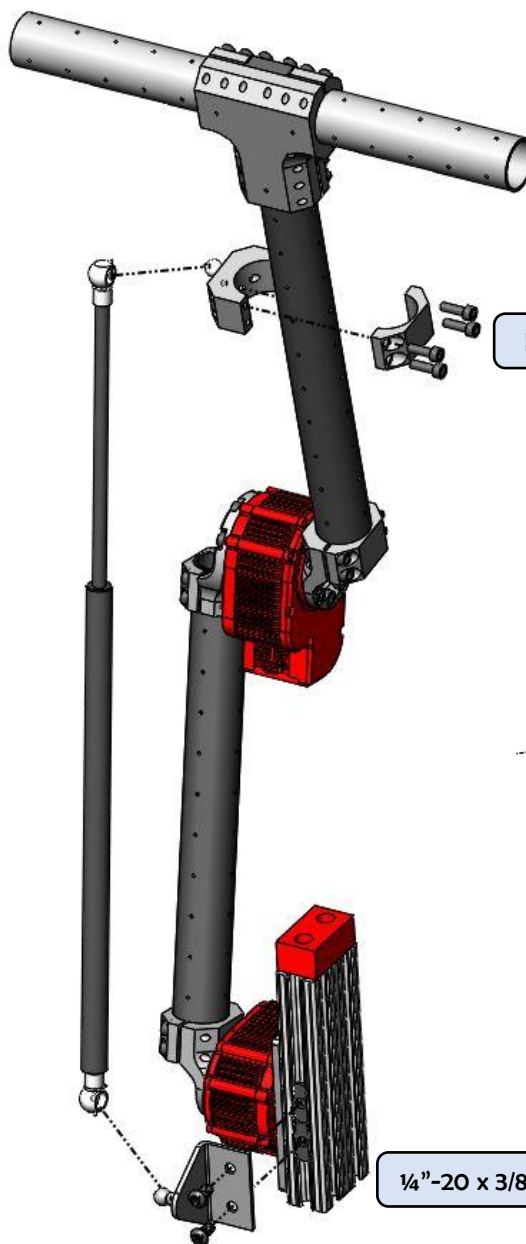


Align such that T-slot nuts are tangent
to bottom of T-slot extrusion.

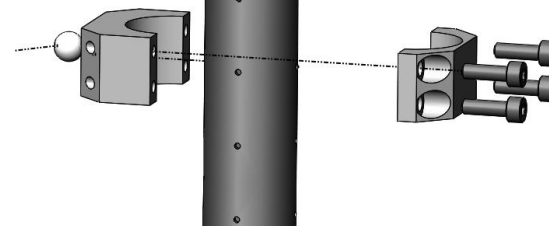




Remove safety clips when installing spring on ball end studs.



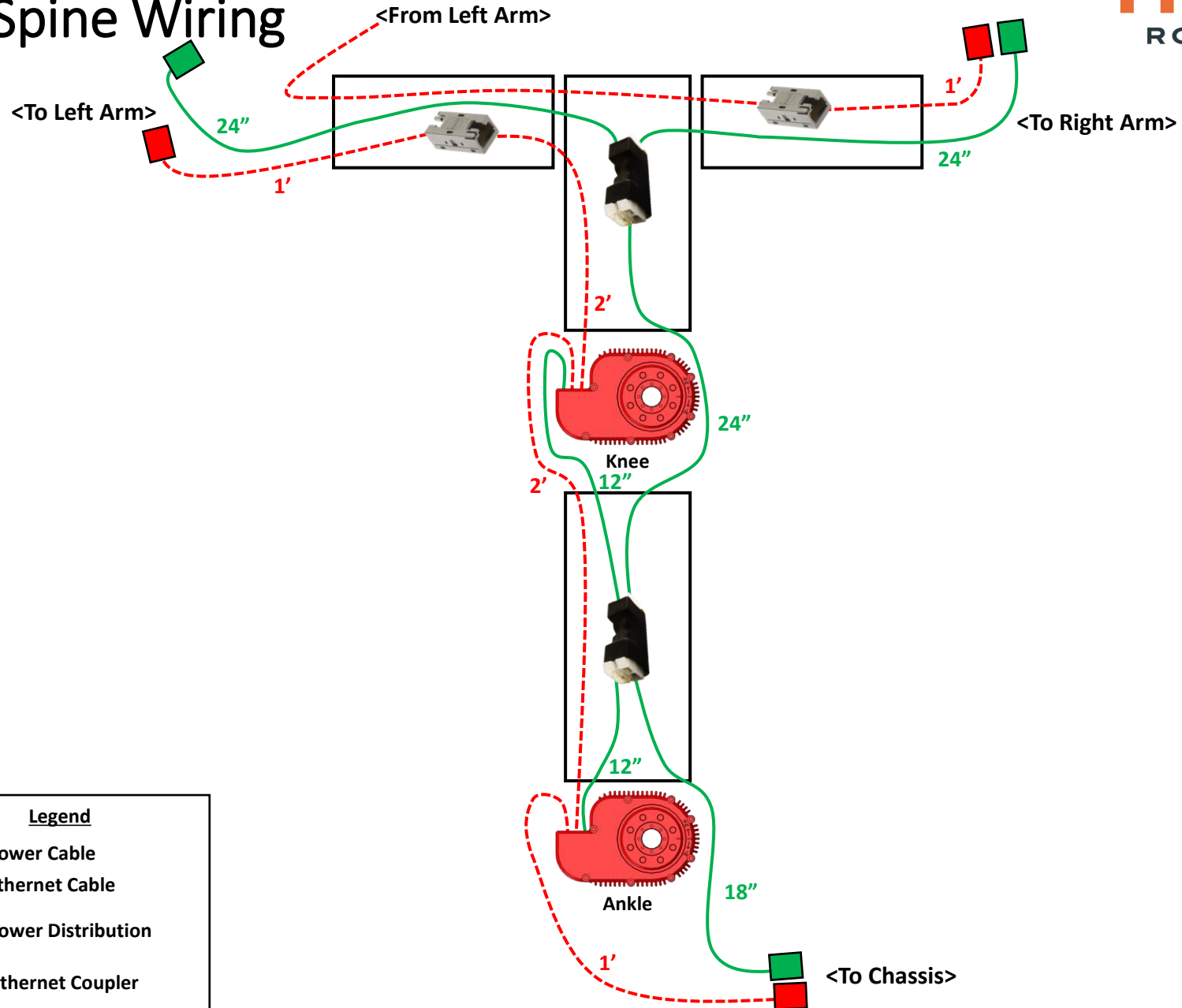
M5 x 16mm

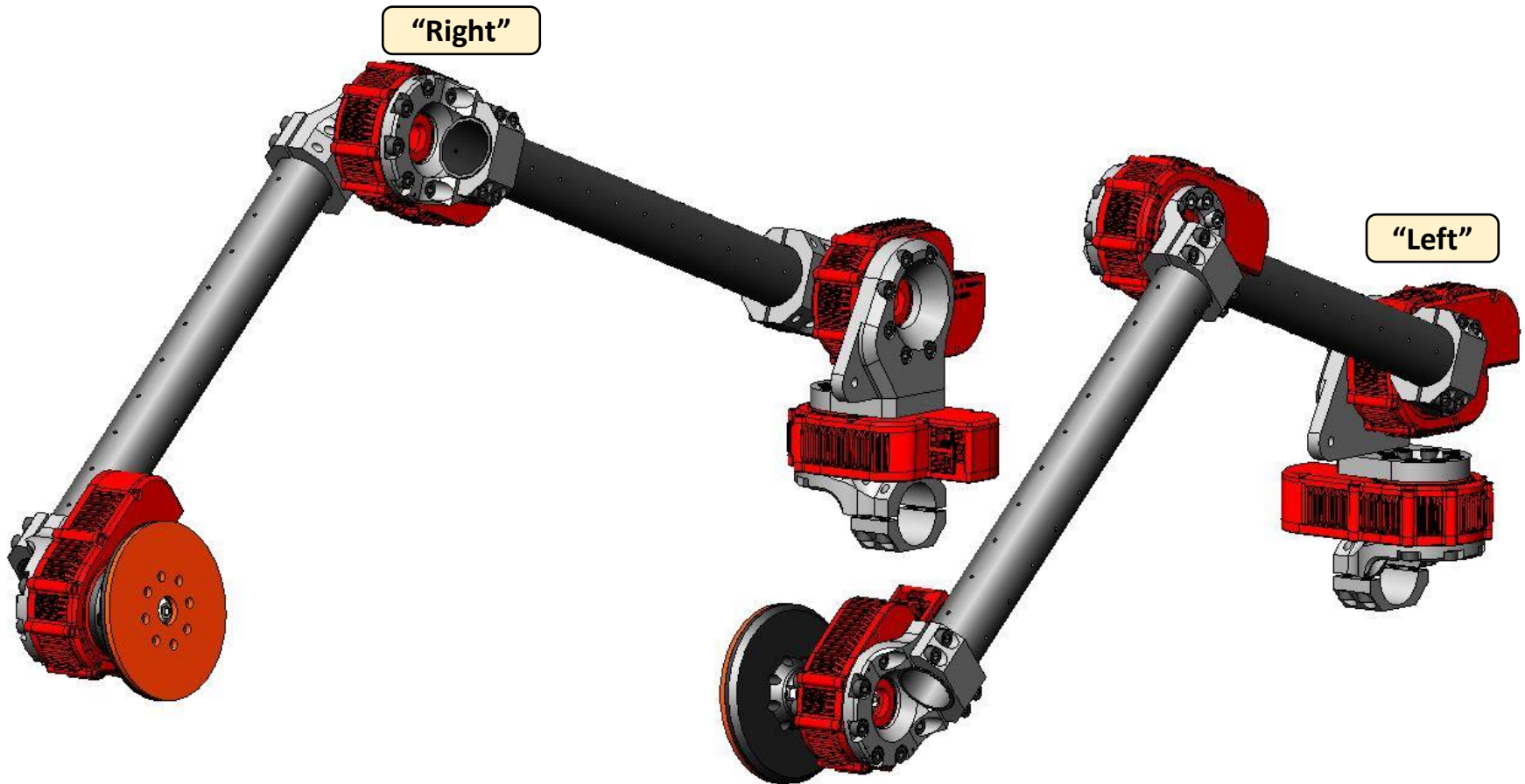


Gas Spring Adapter has a pin for locating on tube

1/4\"-20 x 3/8\" (BHCS)

Spine Wiring

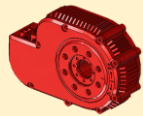
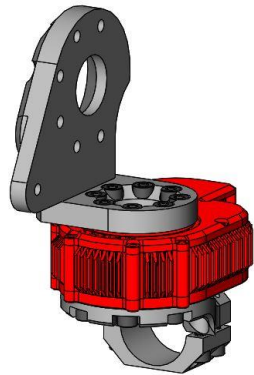




Arms

(1x Left & 1x Right)

1x L
1x R



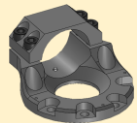
2 x
X5-9



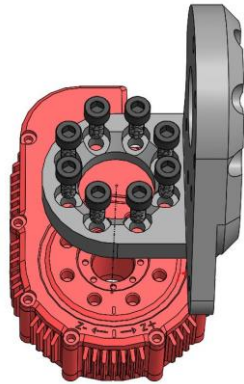
1 x
A-2040-01L



1 x
A-2040-01R

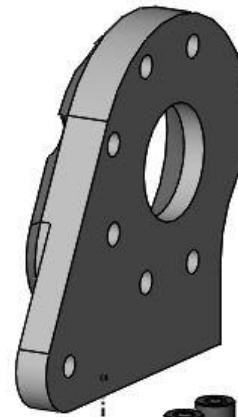


2 x
A-2039-03



Align with actuator
output hub tick mark

(face parallel with tick mark and
mounting hole pointed on same side)

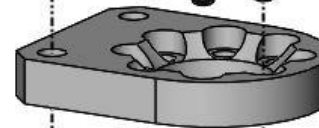


Flat face towards inside



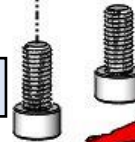
M5x12mm

Step 2 of 2

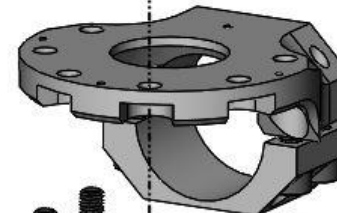
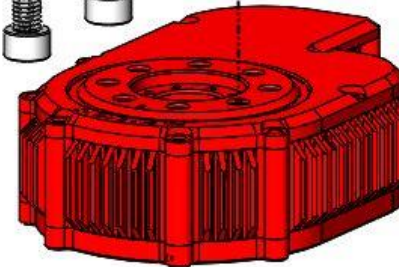


Step 1 of 2

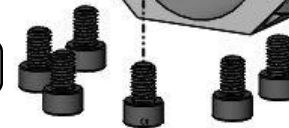
M6x10mm

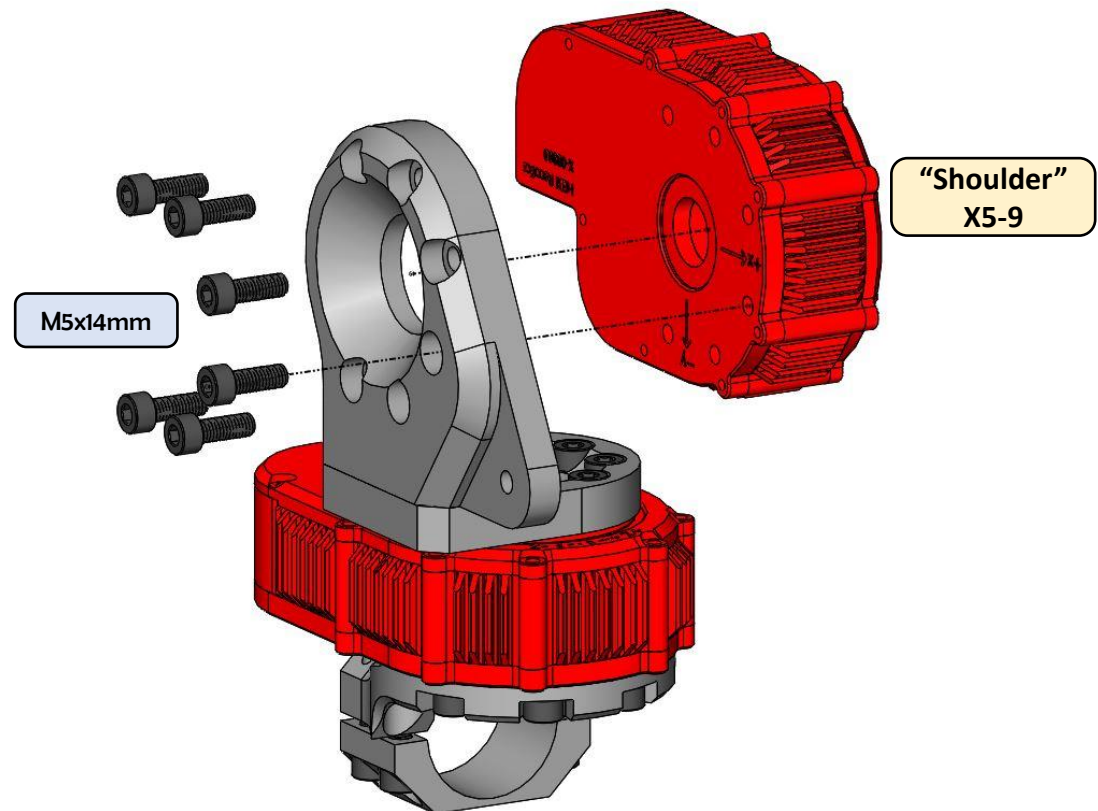
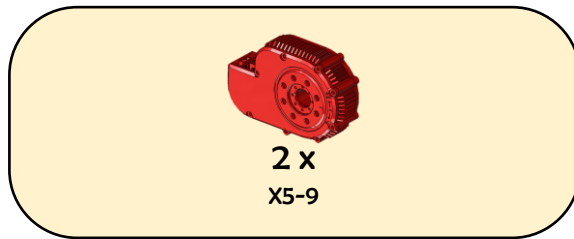
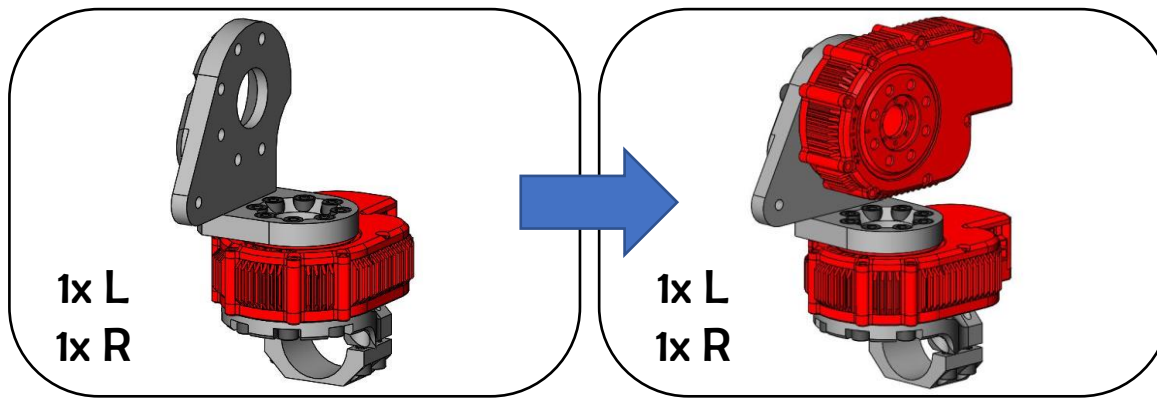


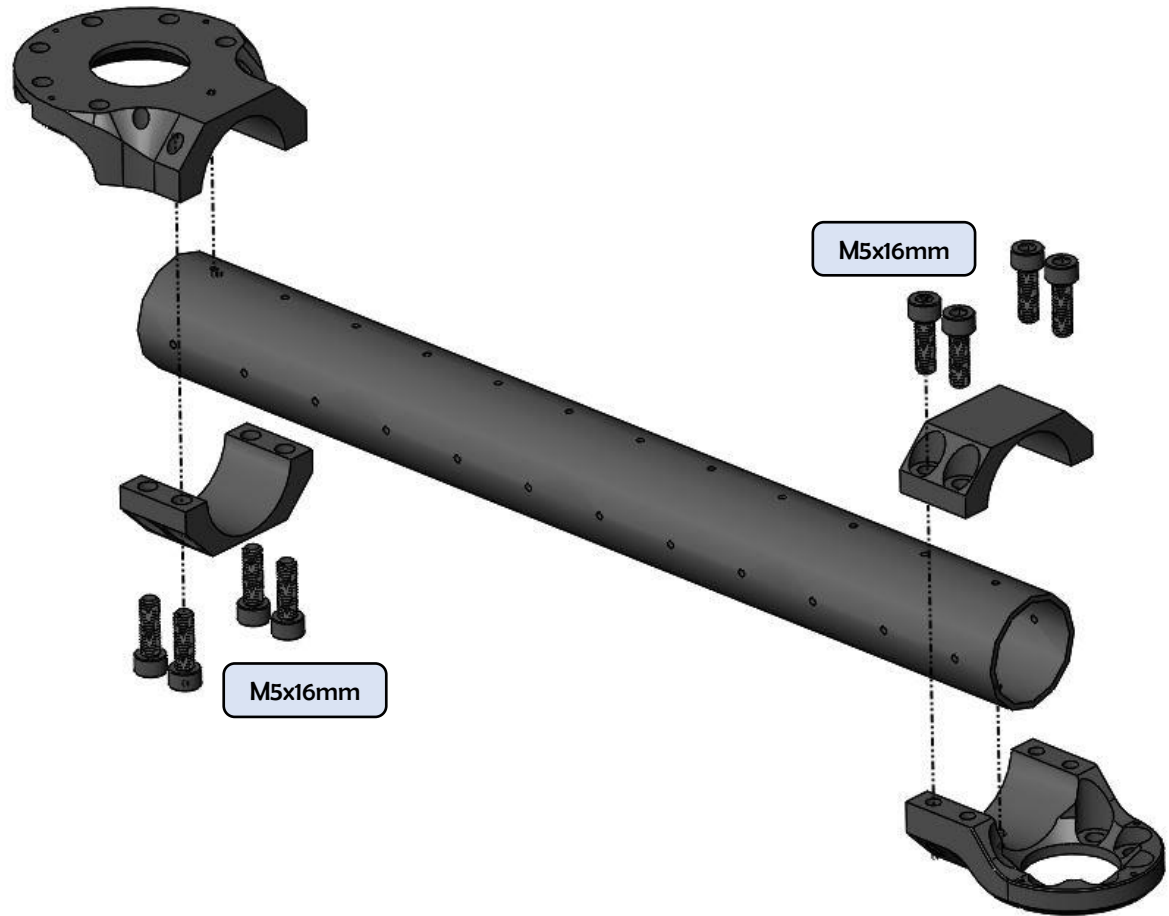
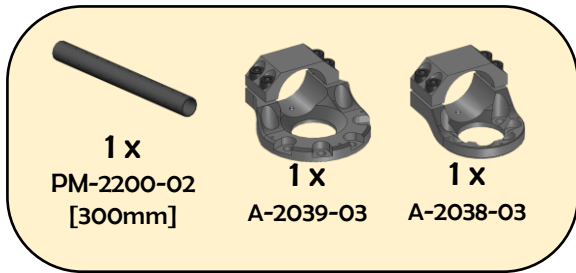
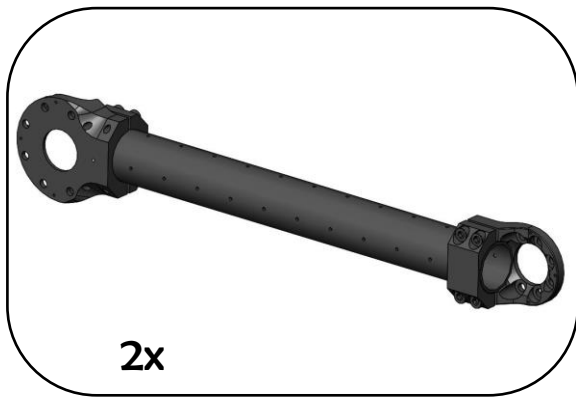
"Base"
X5-9

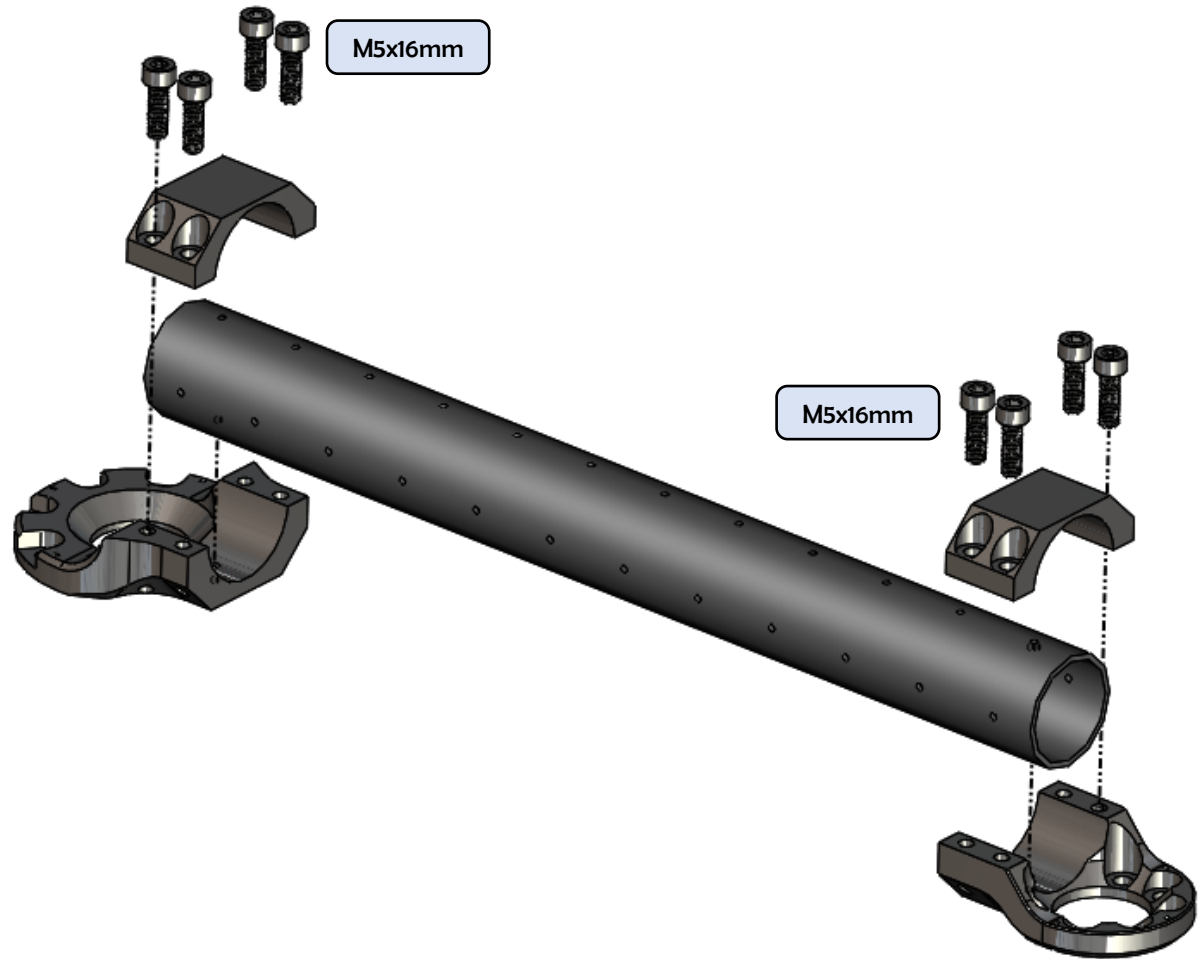
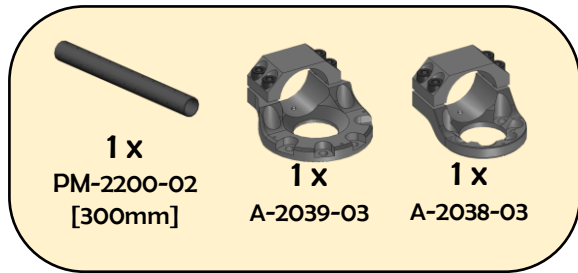
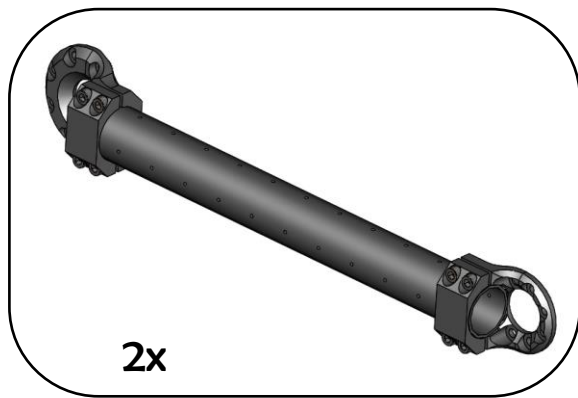


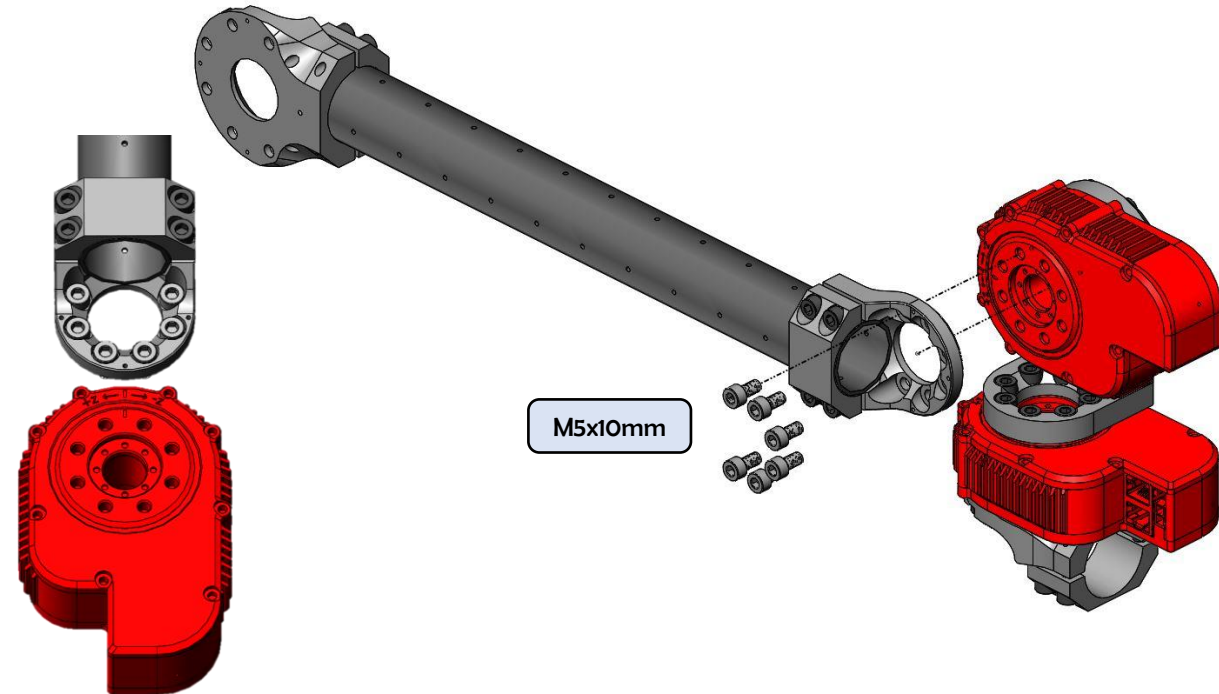
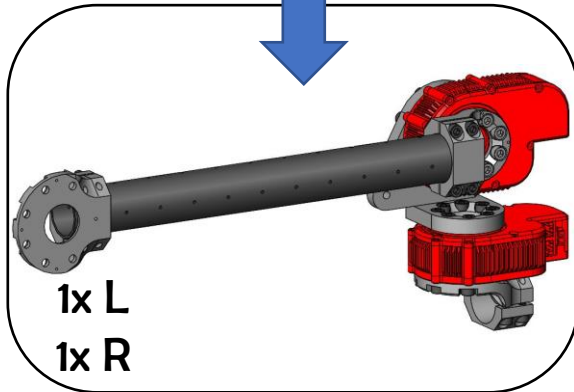
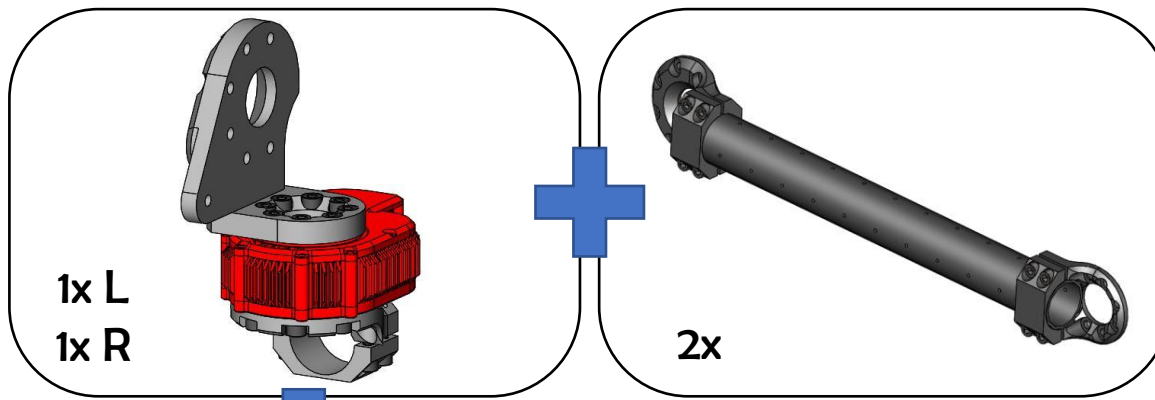
M5x10mm FHCS



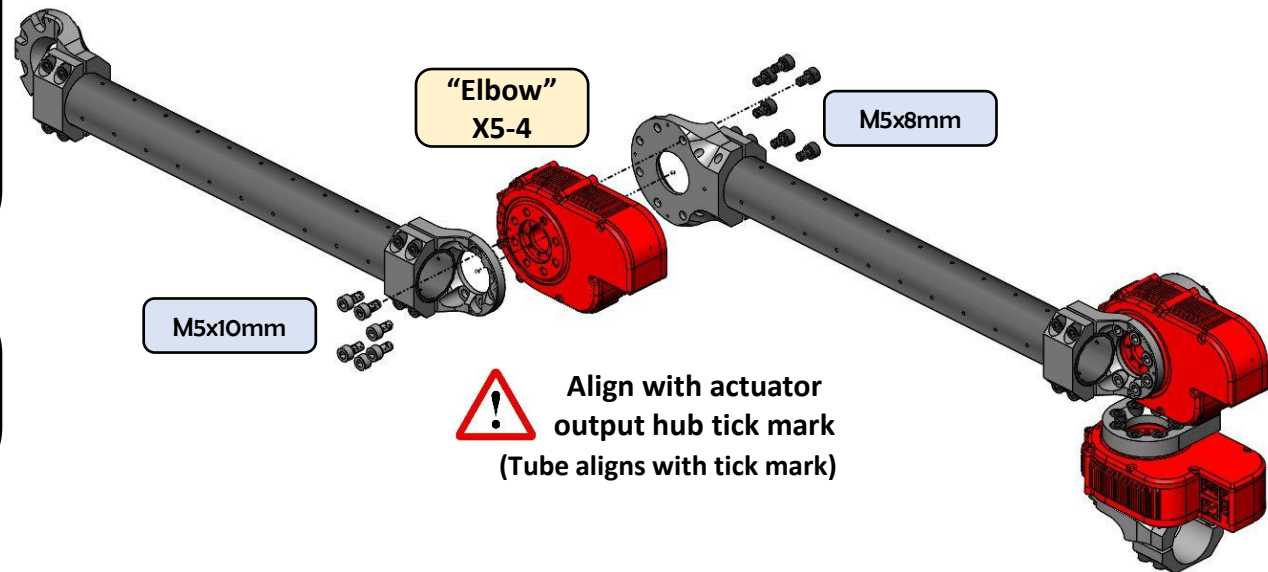
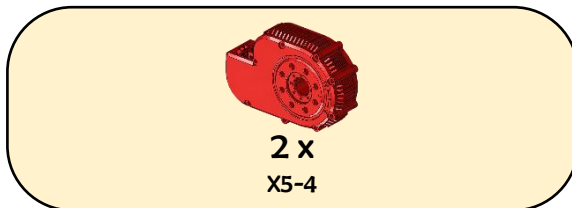
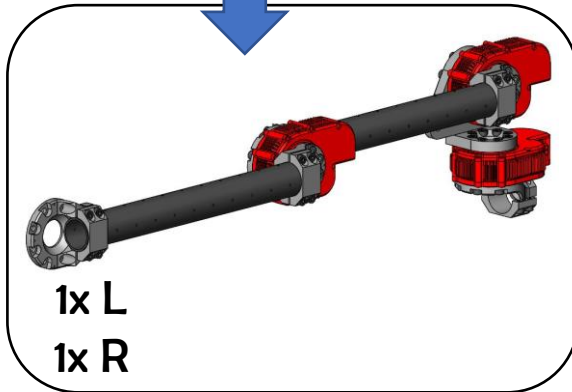
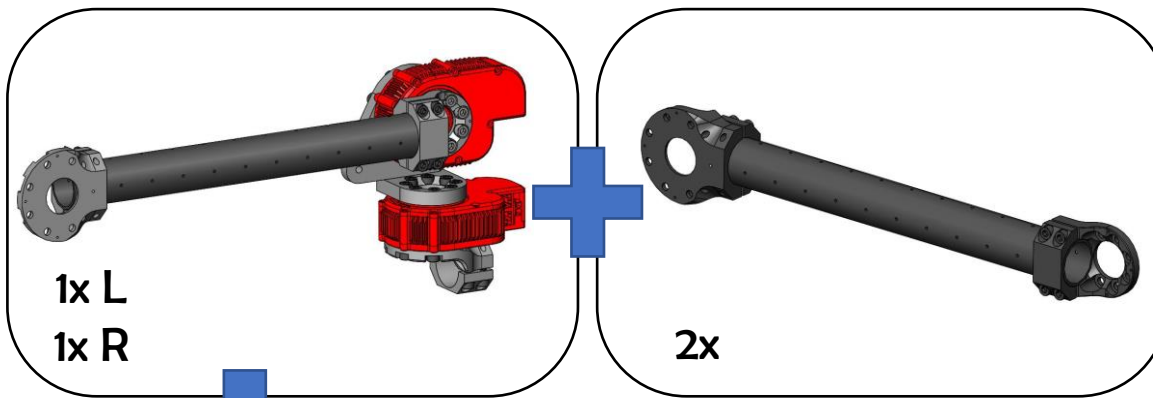


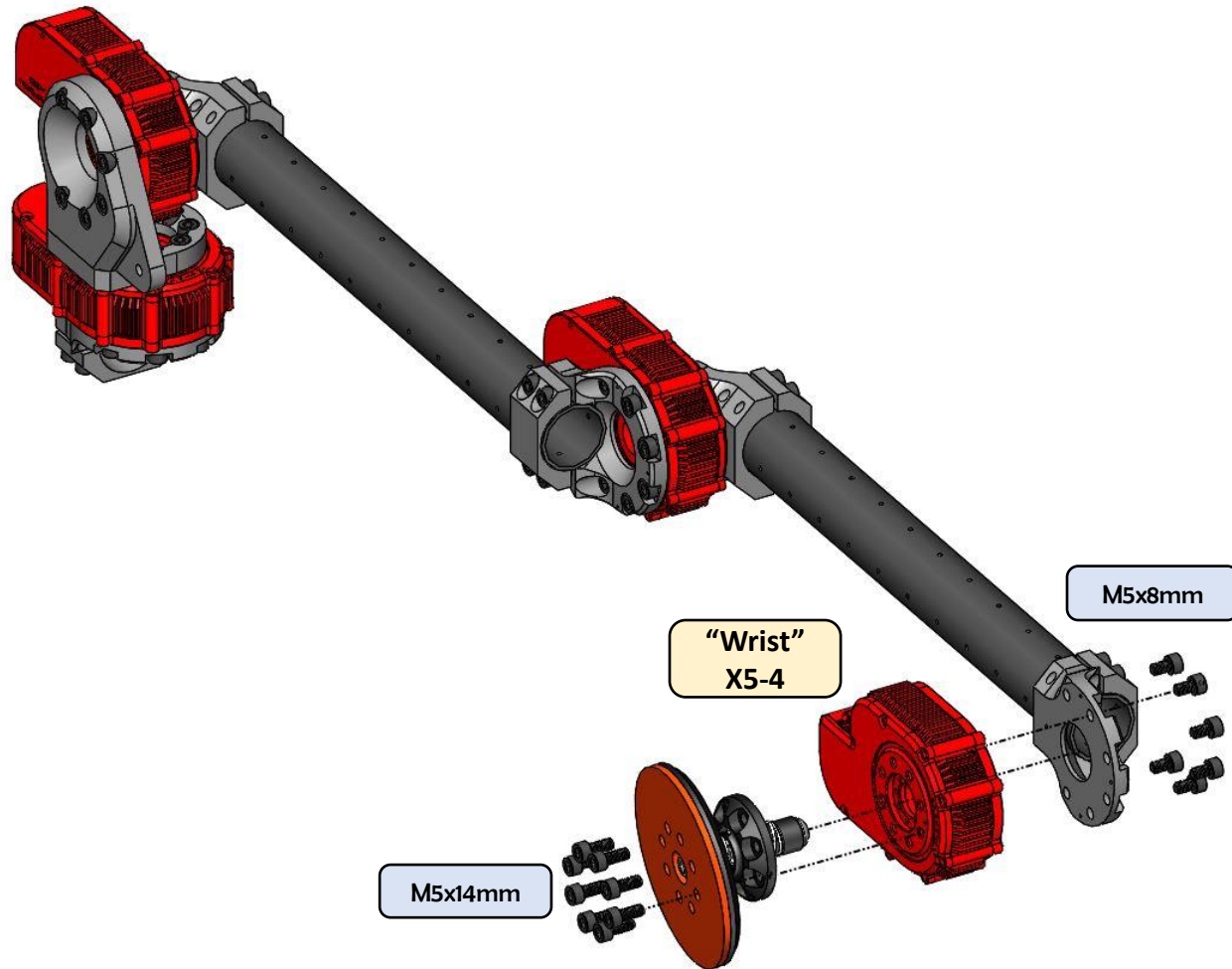
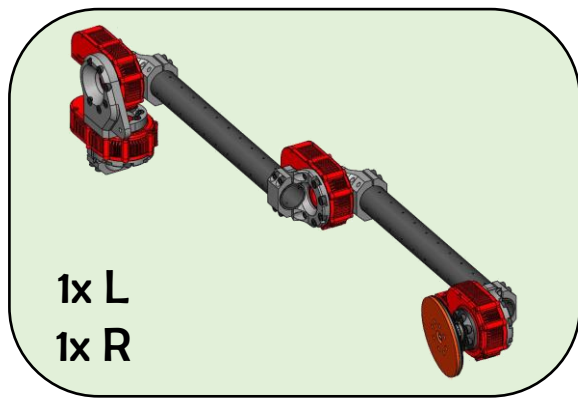




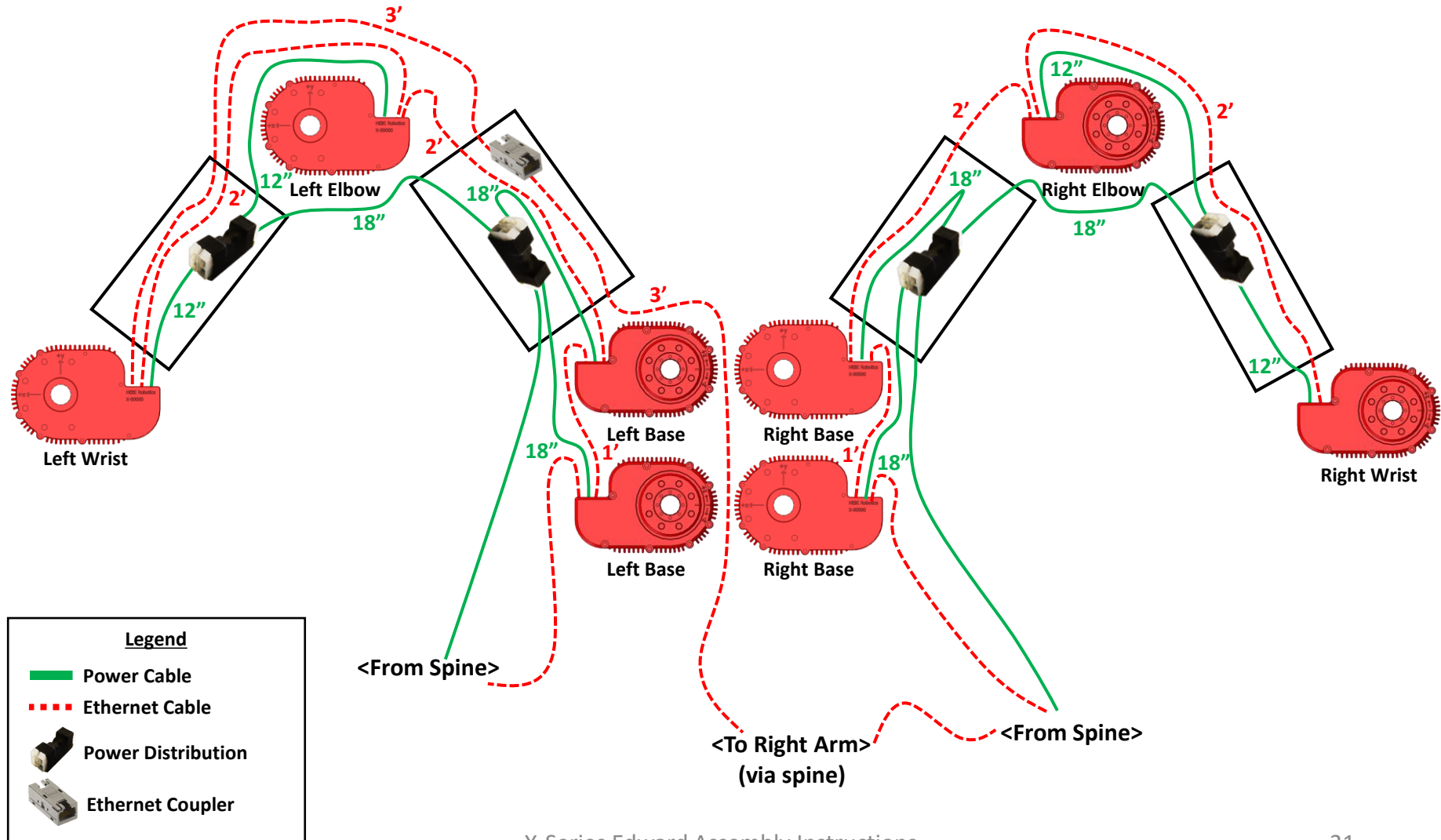


 **Align with actuator
output hub tick mark
(Tube aligns with tick mark)**



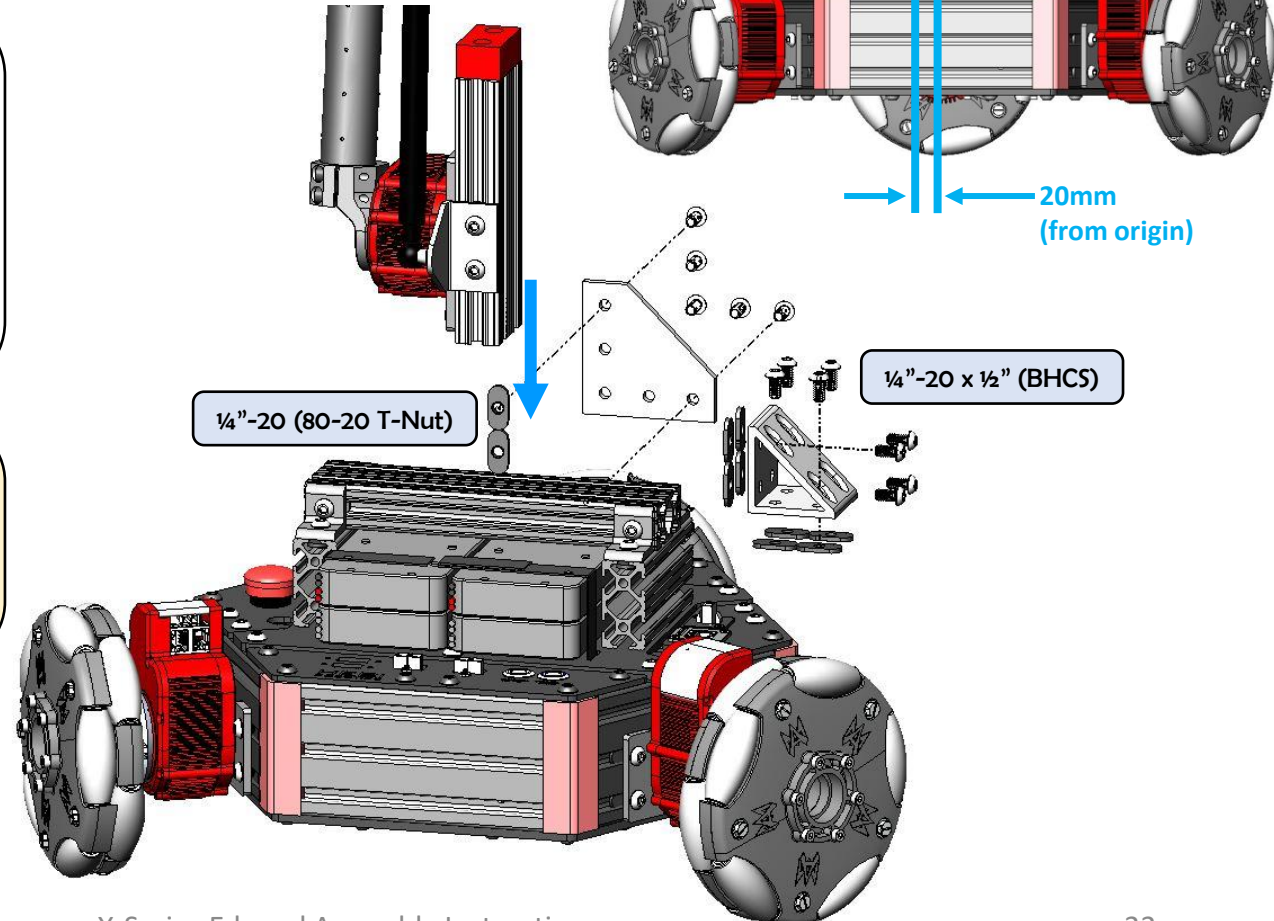
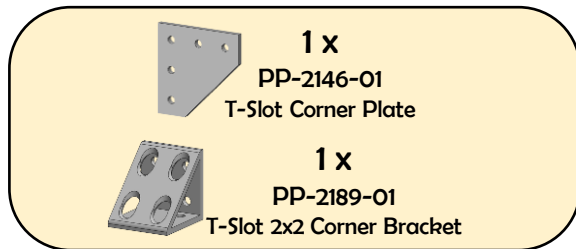
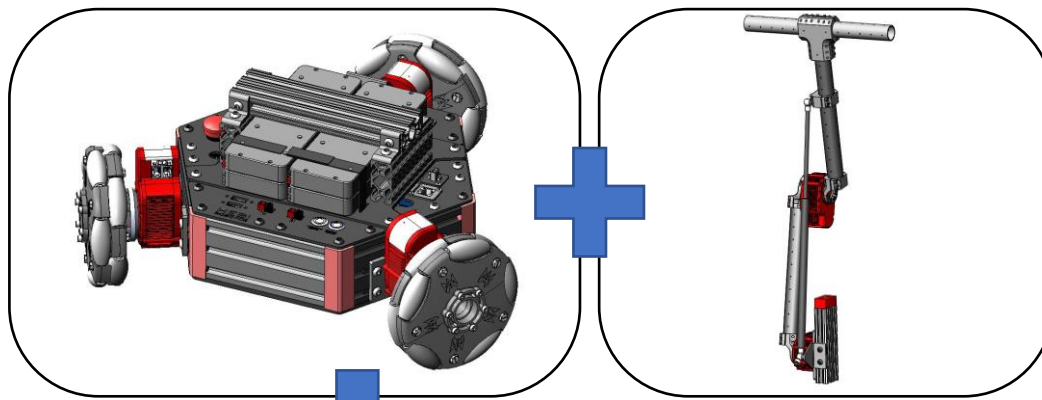


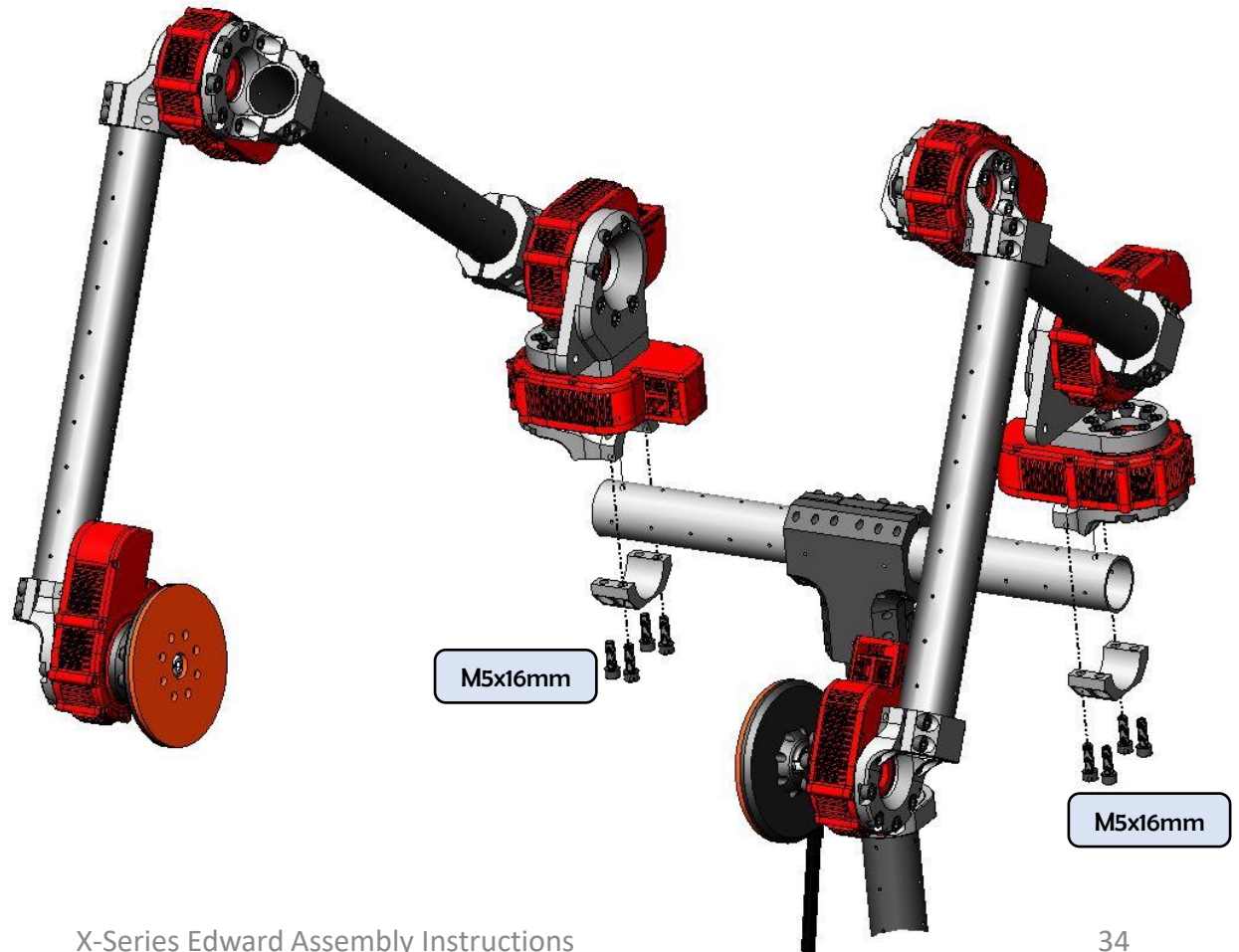
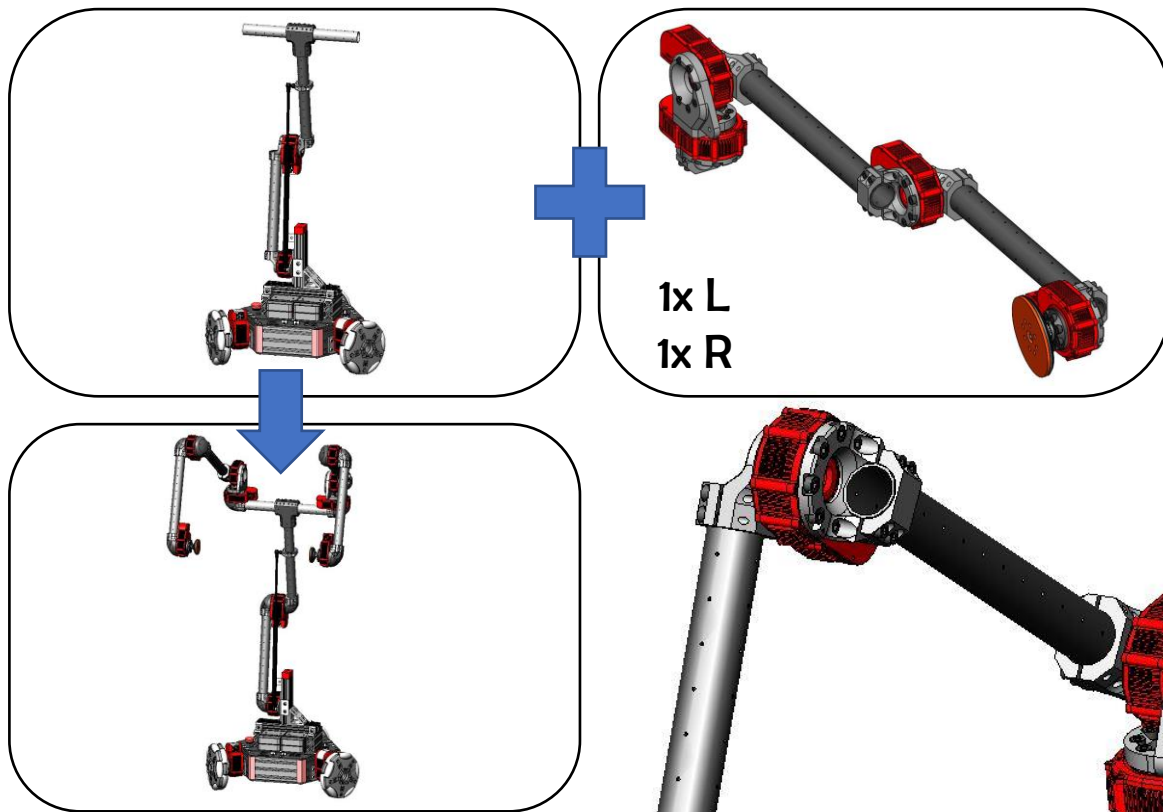
Arms Wiring





Final Assembly

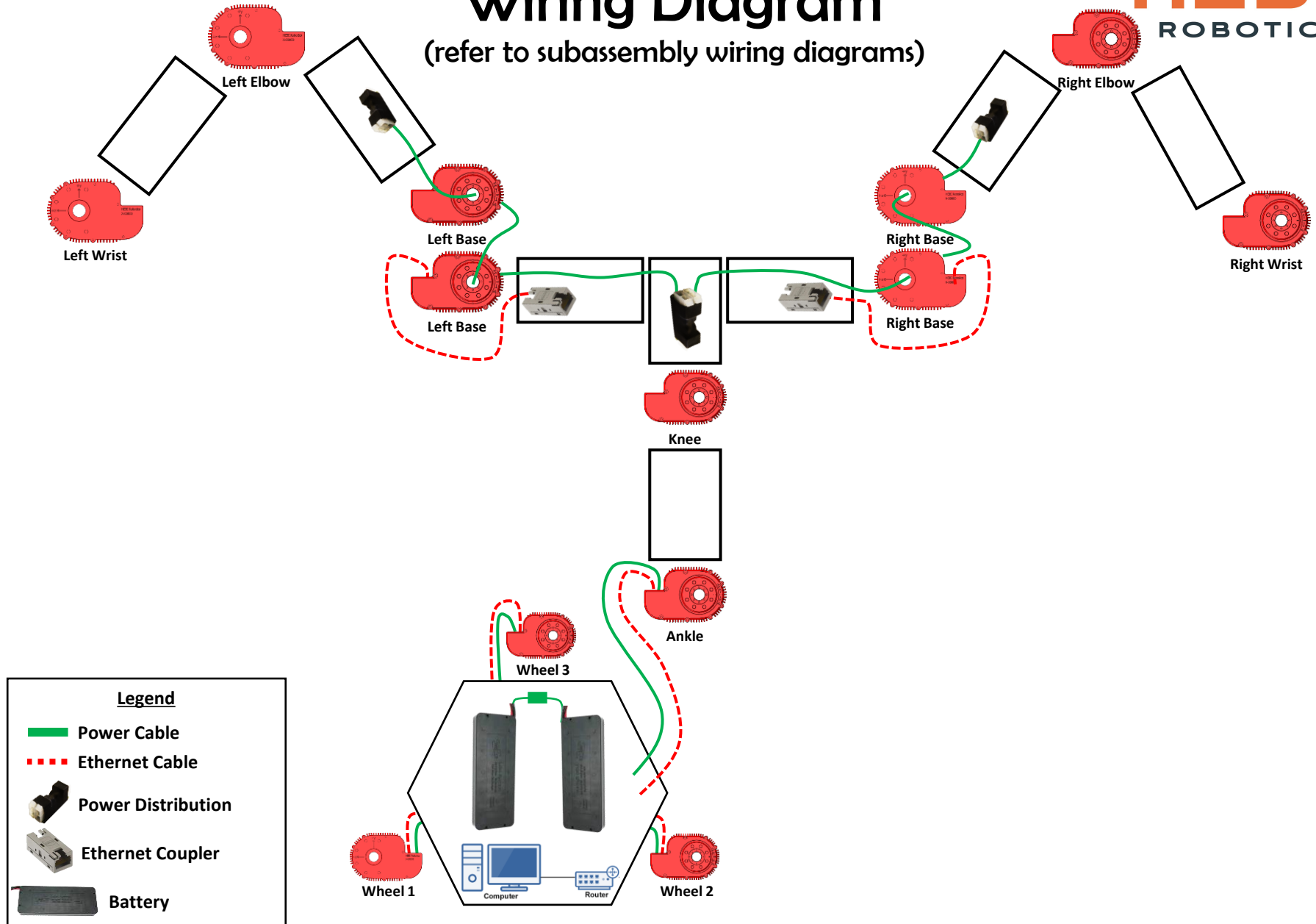


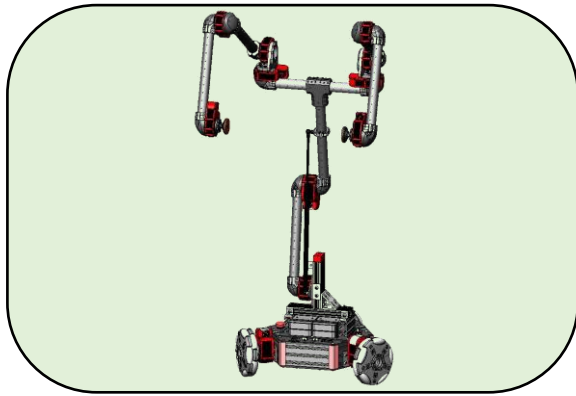




Wiring Diagram

(refer to subassembly wiring diagrams)





6 x
A-2090-02



7 x
A-2091-02



Install all cables before
attaching covers

