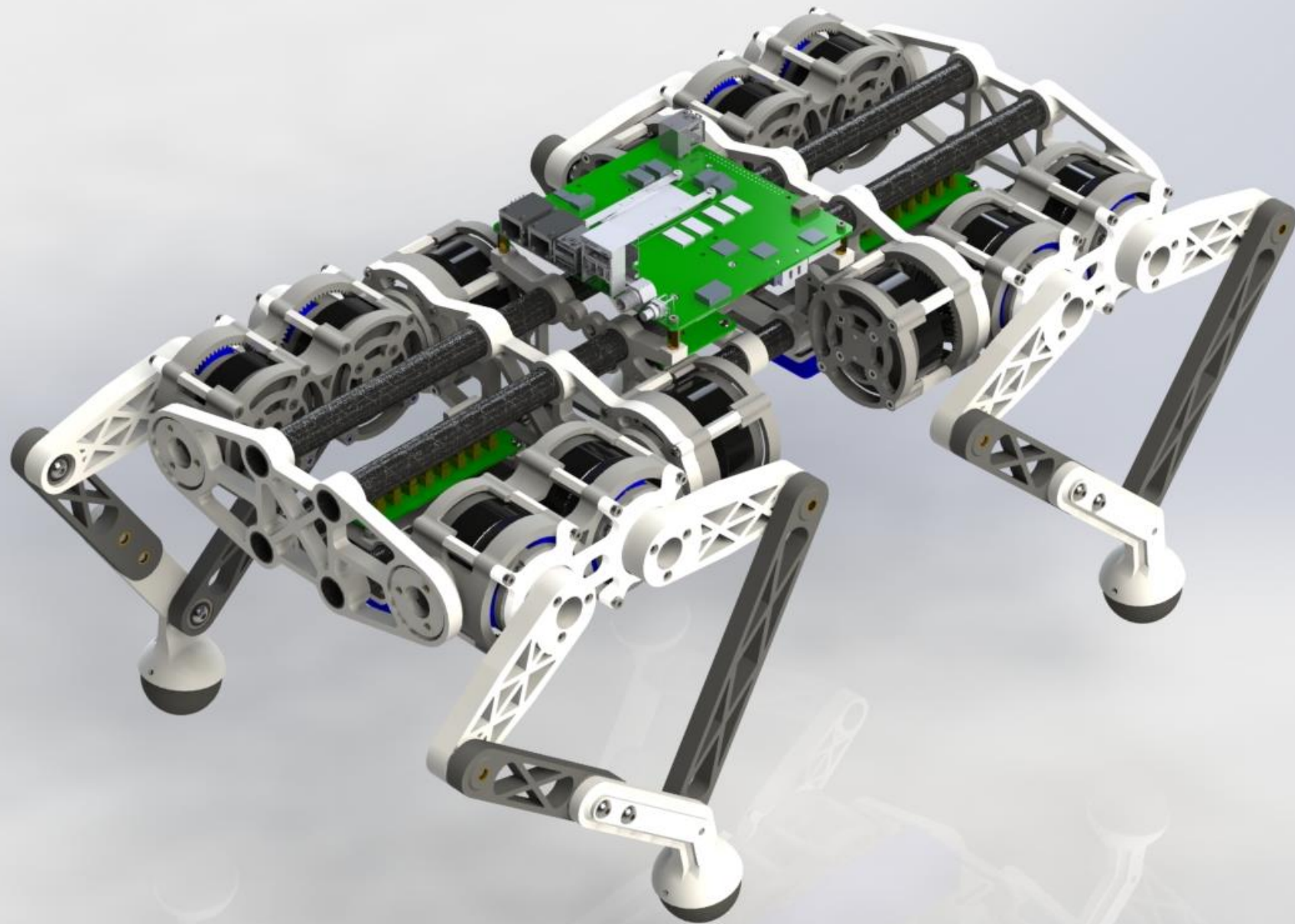


# FELIN INSTRUCTIONS

PAT92FR

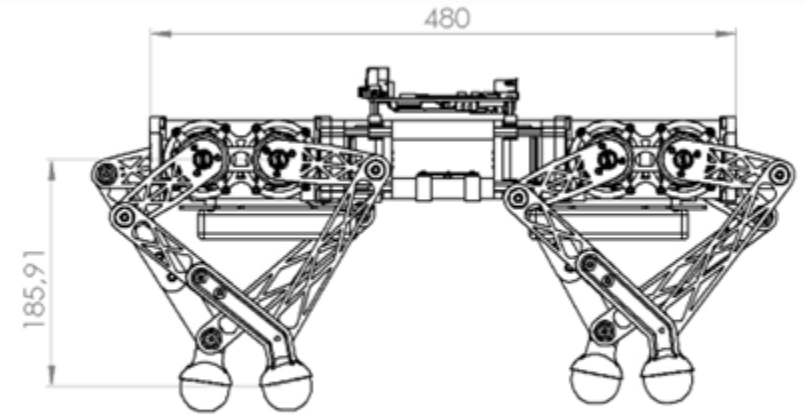
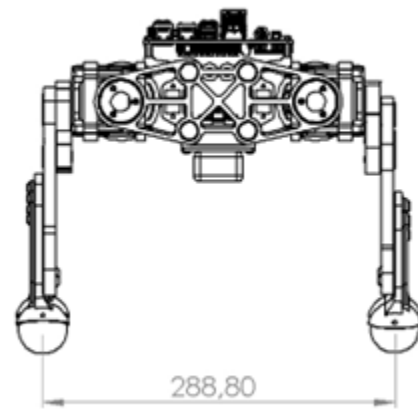
2022

V0.01



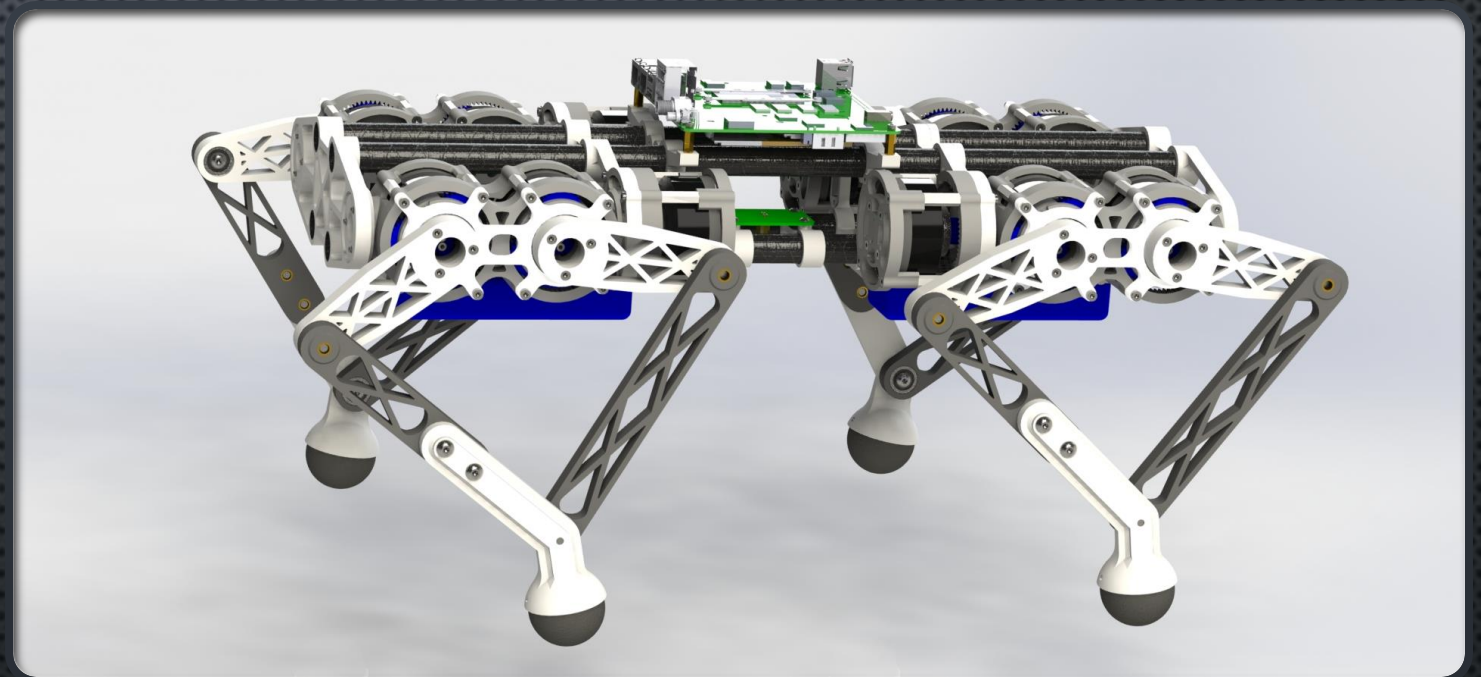
# MAIN CHARACTERISTICS

- WEIGHT ~ 5.5KG WITH BATTERIES
- WALKING VELOCITY ~1M/S
- PAYLOAD < 1KG
- BLUETOOTH REMOTE CONTROL (GAMEPAD)
- LINUX / ROS



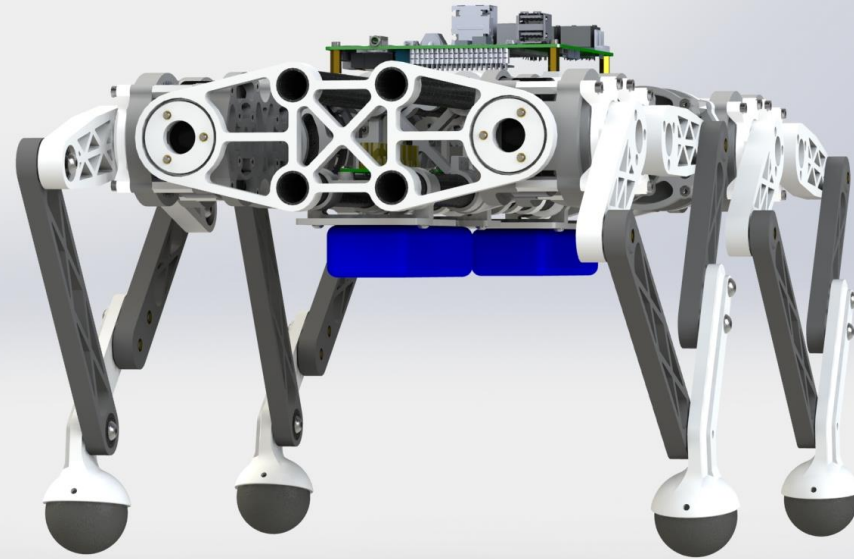
# BILL OF MATERIAL

- XT30 M/F, JACK AND WIRES (POWER SUPPLY)
- JST-3 M/F AND WIRES (CAN BUS WIRING)
- CARBON TUBES 18 x 480MM (X4)
- SCREWS M2.5 M3 M5
- INSERTS M2.5 M3 M5
- BEARINGS
- SPACERS
- BRASS TUBE
- SQUASH BALLS
- LITHIUM GREASE FOR GEARBOXES



# BILL OF MATERIAL

- MOTOR MAD 5008 240KV IPE v2 (x12)
- ESC B-G431B-ESC1 DISCOVERY KIT (x12)
  - SMALL HEATSINK FOR MOSFET (x12)
- ROS-COMPATIBLE SBC WITH CAN PORT(S)
  - UP-BOARD XTREME
  - PEAK PCAN-M.2 QUAD
- AS5048A OR AS5600 BOARD (x12)
  - MAGNET (x12)
- LIPO BATTERIES (x2)



# 3D PRINTS

- DEFAULT SETTINGS

- PLA (EX. : FORMFUTURA VOLCANO PLA)
- NOZZLE 0.4MM
- LAYER 0.2MM
- FILL 30%
- 80MM/S

- GEARS SETTINGS

- TOUGH PLA (EX. : POLYMAKER POLYMAX PLA)
- NOZZLE 0.4MM
- LAYER 1MM
- FILL 50%
- 40MM/S



# MOTOR PREPARATION

MAD 5008 KV240 IPE V2



**REMOVE** BOTH  
CIRCLIP AND  
SPACER FROM  
THE REAR SHAFT





**CUT** OUTPUT SHAFT

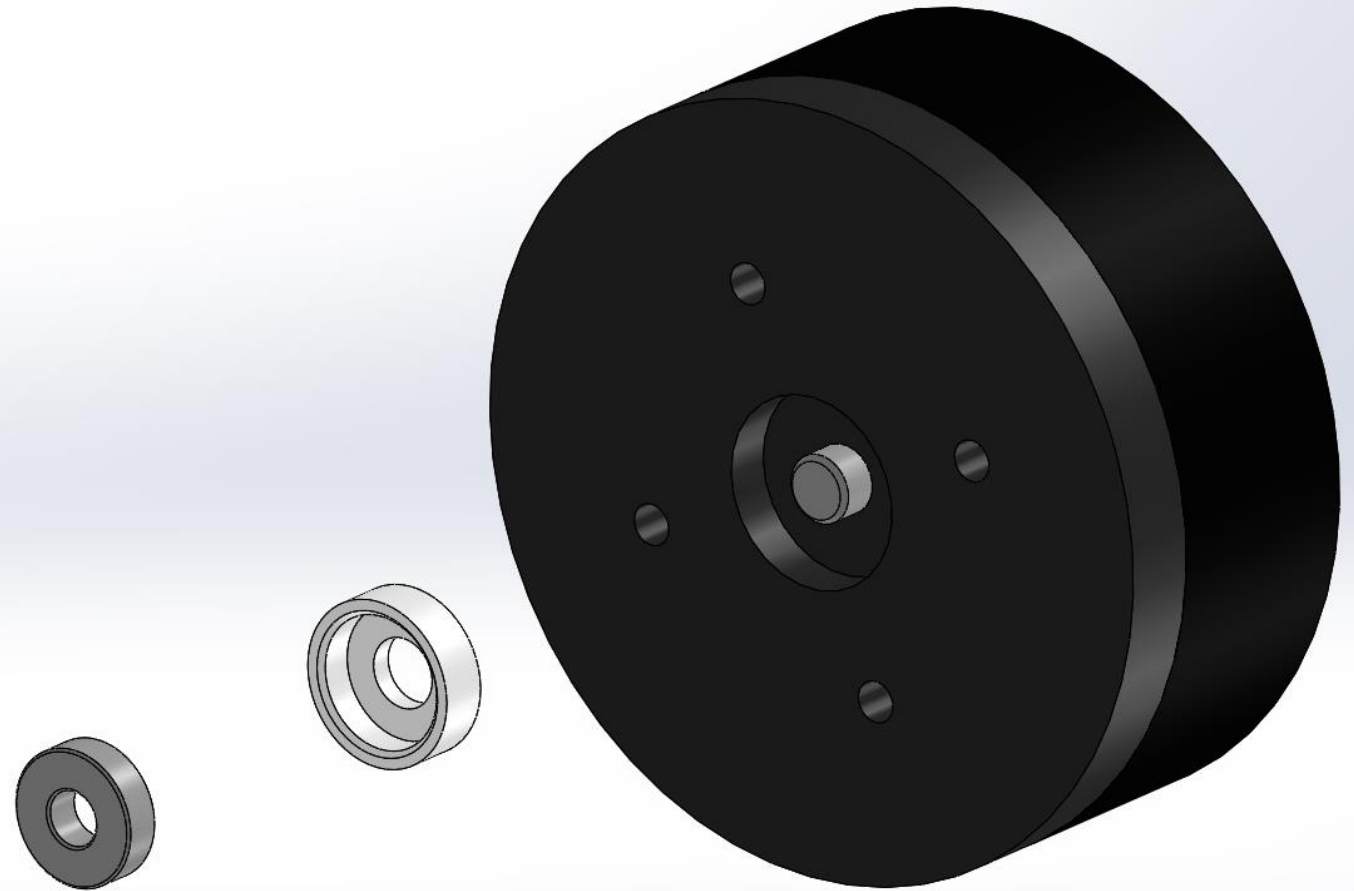
HEIGHT FROM 3.5MM TO ZERO

ENCODER MAGNET

REPEAT 12X

## MAGNET & MAGNET HOLDER

- INSERT THE MAGNET INTO THE  
MAGNET HOLDER
- APPLY GLUE (CYANO) ON THE  
REAR SHAFT
- PRESS THE MAGNET HOLDER ON  
THE REAR SHAFT
- MAGNET SHALL BE IN CONTACT  
WITH THE REAR SHAFT



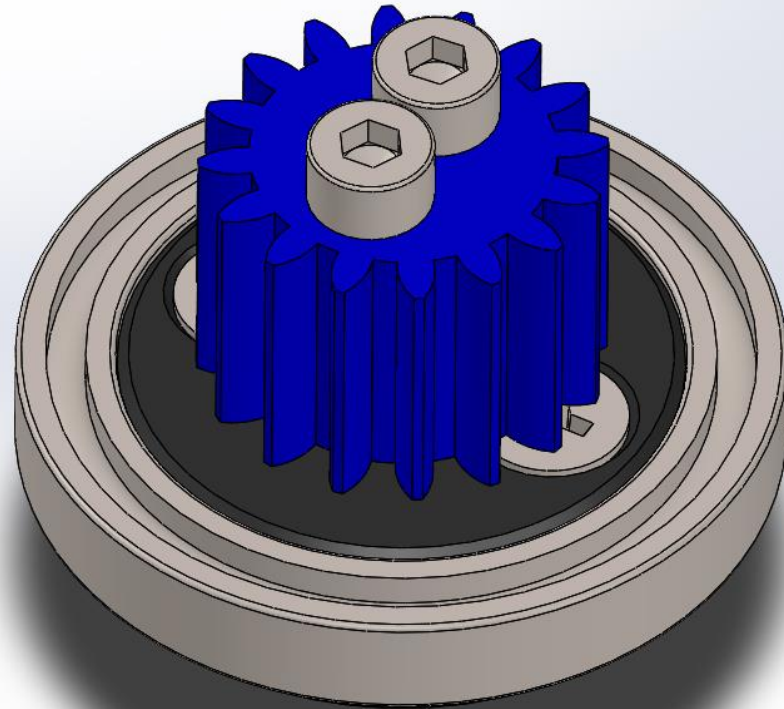
The background of the image is a dense field of interlocking gears. The gears are rendered in a grayscale palette, with some appearing in sharp focus while others are blurred, creating a sense of depth and mechanical complexity. The lighting highlights the metallic texture and the sharp edges of the gear teeth.

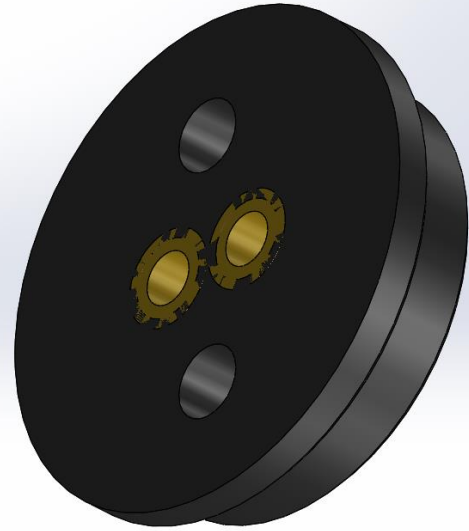
# SUN GEAR

REPEAT 12X

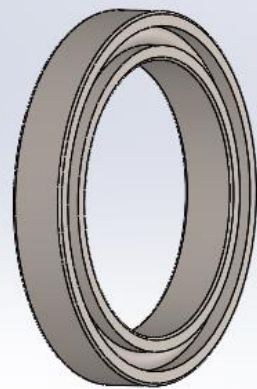
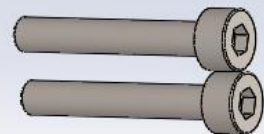
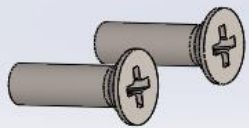
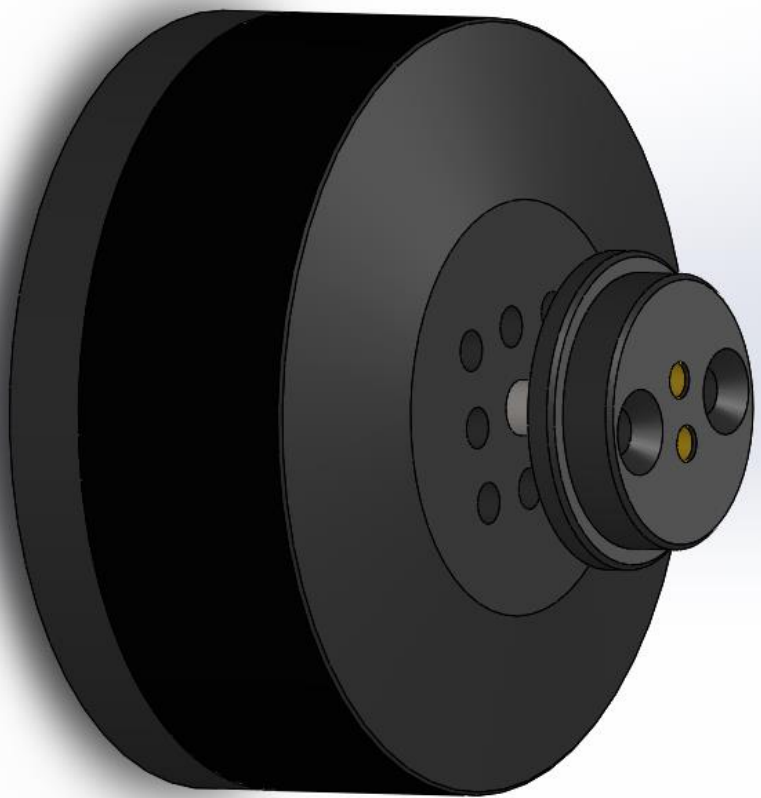
# SUN GEAR

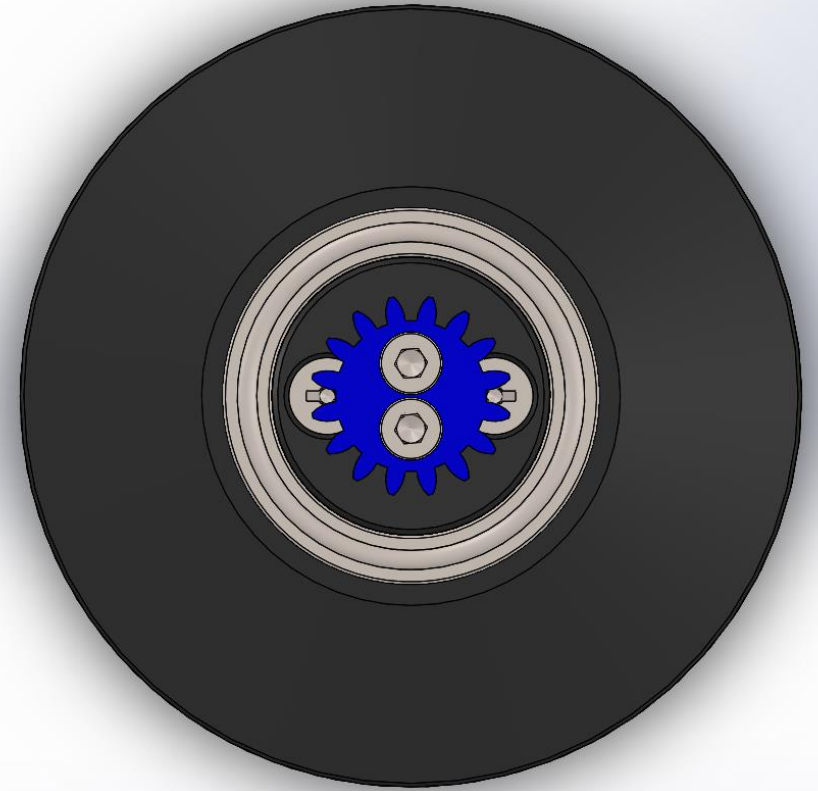
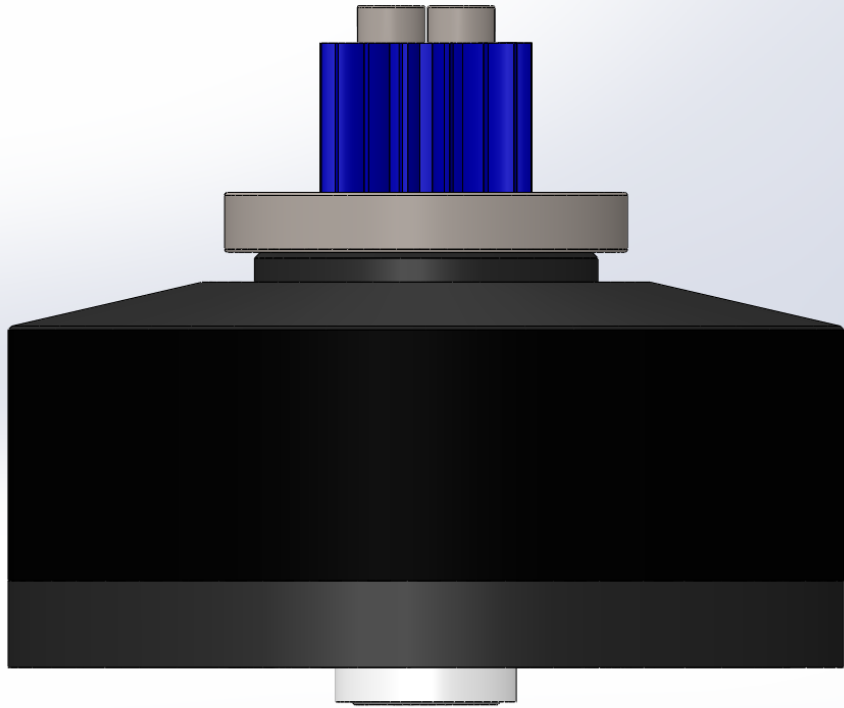
- M3x10 FHC (x2)
- INSERT M2.5 (x2)
- M2.5x16 CHC (x2)
- BEARING 20x27x4
  - 6704-2RS





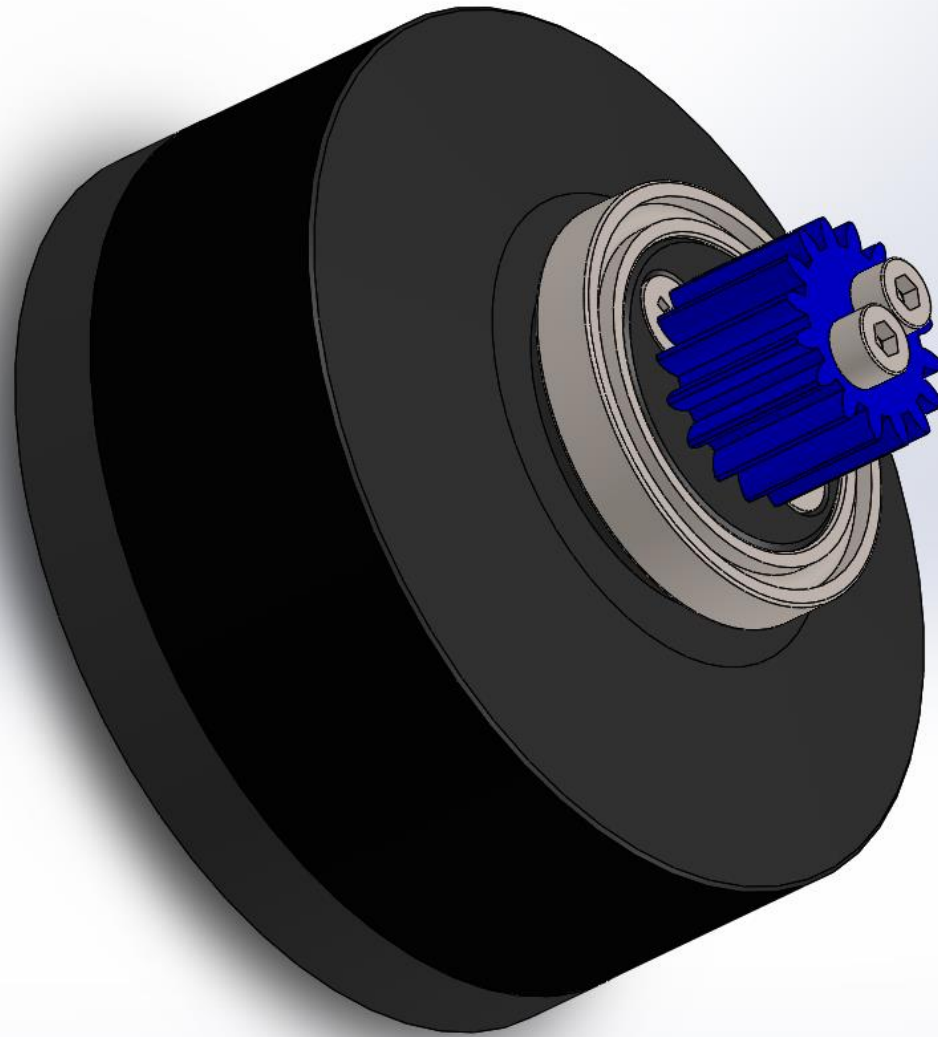
M2.5 INSERTS





MOTOR + MAGNET + SUN GEAR





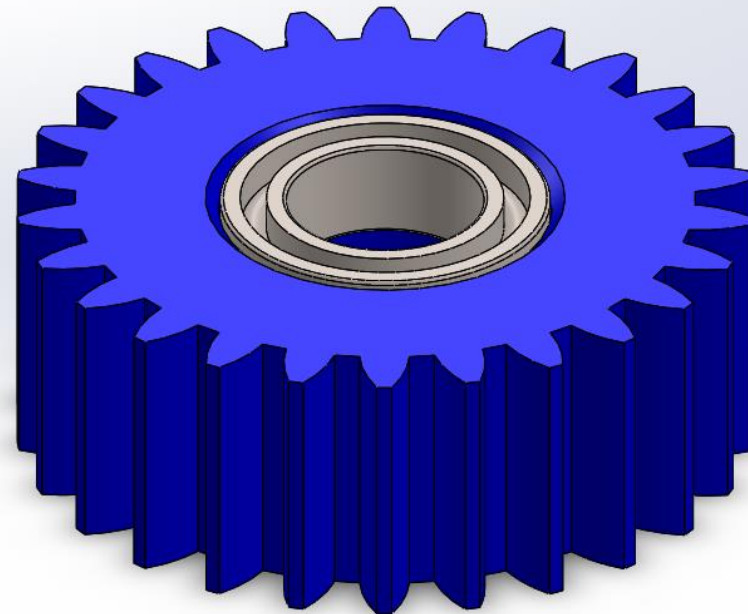
The background of the image is a blurred, grayscale photograph of planetary gears. The gears are arranged in a circular pattern, with their teeth and central hubs visible. The focus is soft, creating a sense of depth and mechanical complexity.

# PLANETARY GEAR

REPEAT 36X

# PLANETARY GEAR

- BEARING 6X10X3 (x2)
  - MR106ZZ



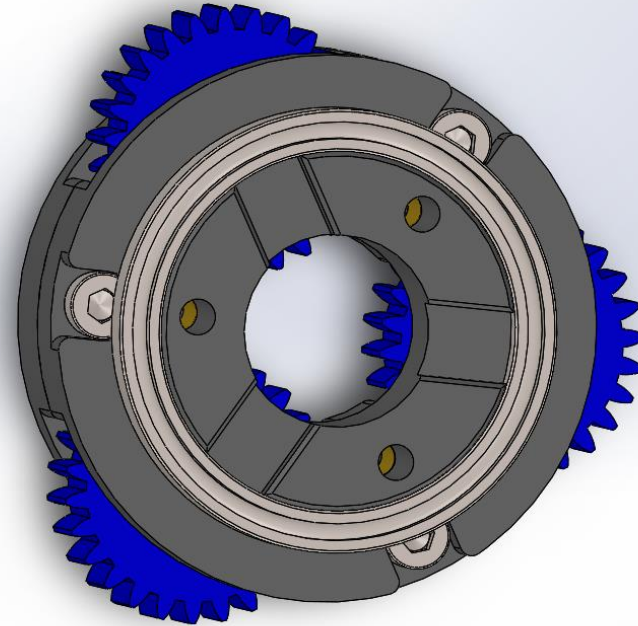


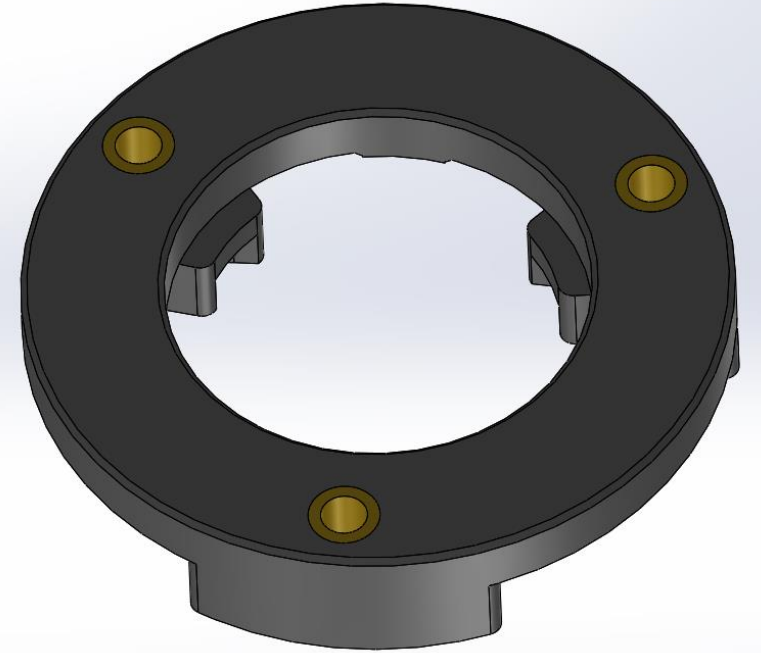
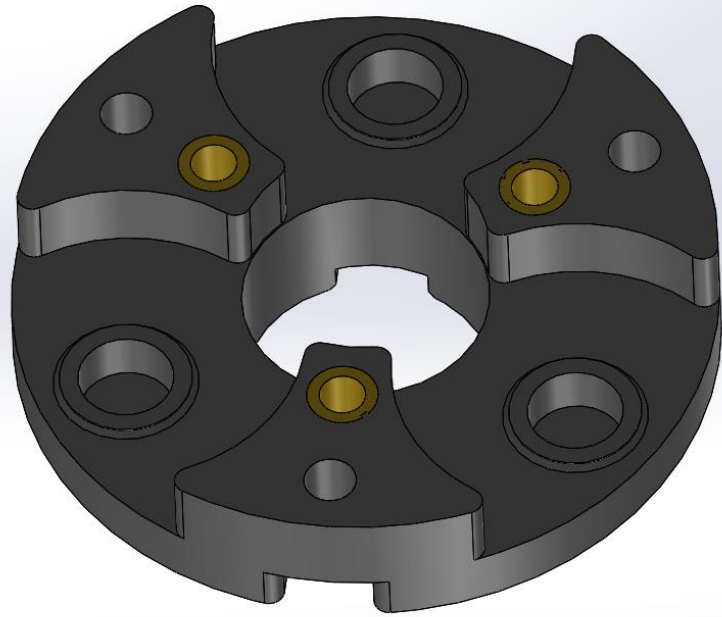
# PLANETARY CARRIER

REPEAT 12X

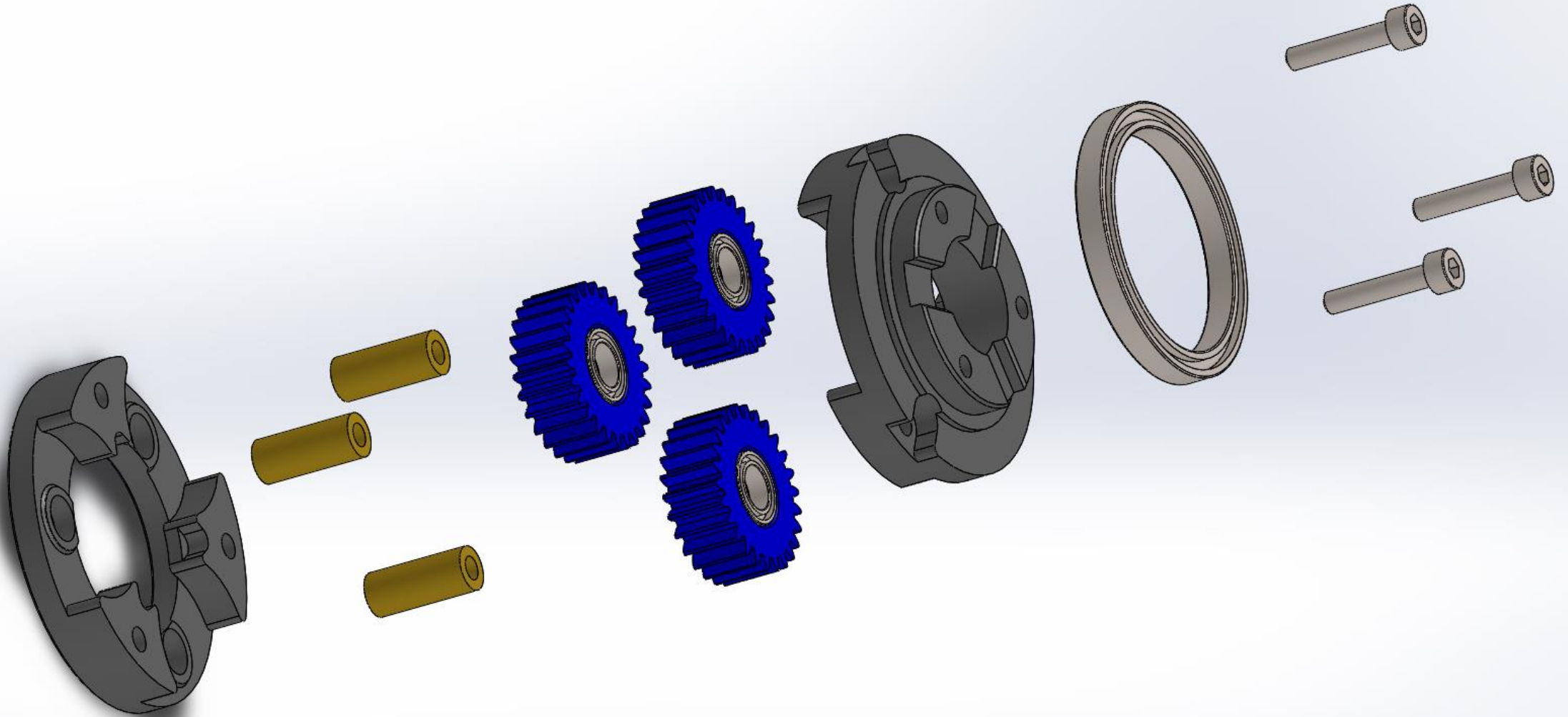
# PLANETARY CARRIER

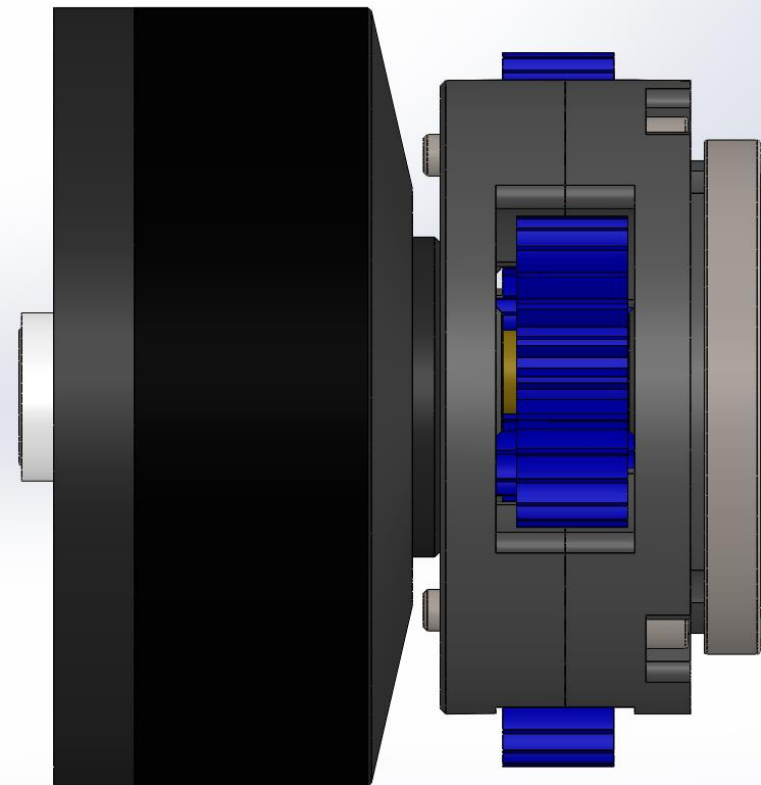
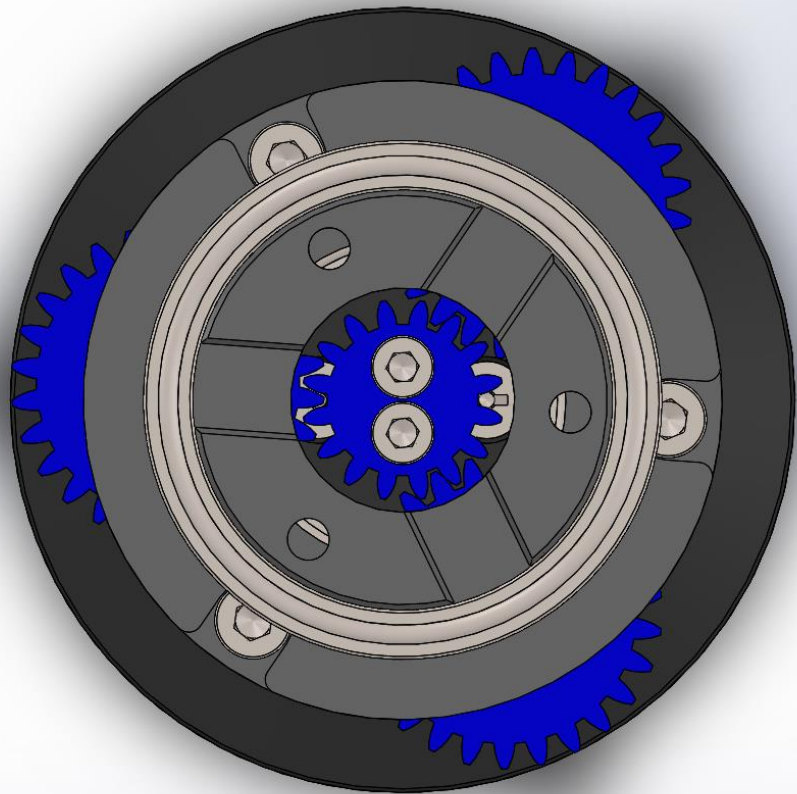
- INSERTS M3 (x6)
- M3x16 CHC (x3)
- SPACER D6MM X L14.5MM (x3)
- BEARING 30x37x4
  - 6705ZZ





M3 INSERTS





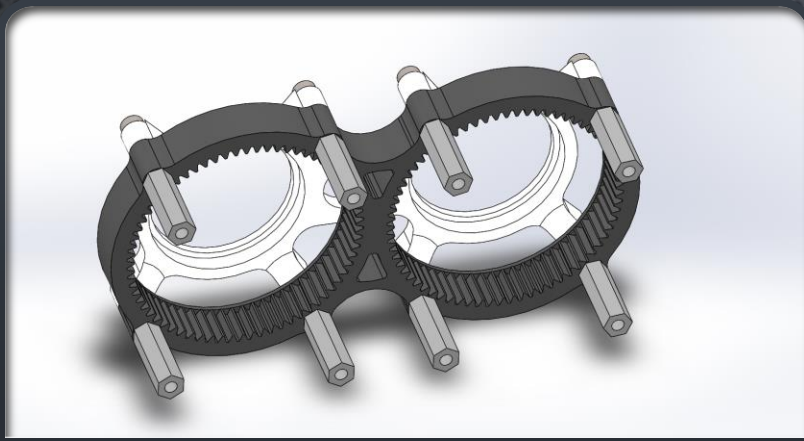
MOTOR + MAGNET + SUN + PLANETARY CARRIER



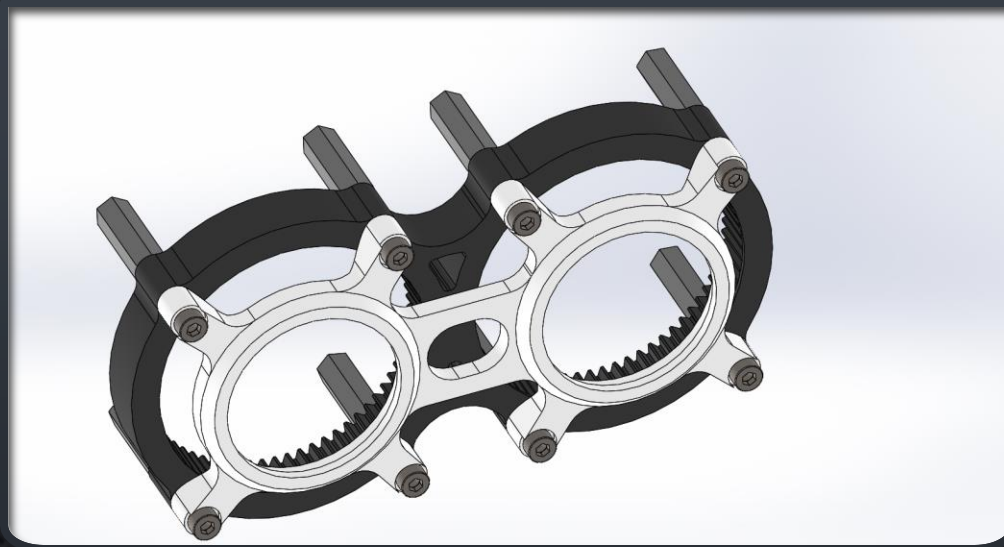


# HIPS RING GEAR

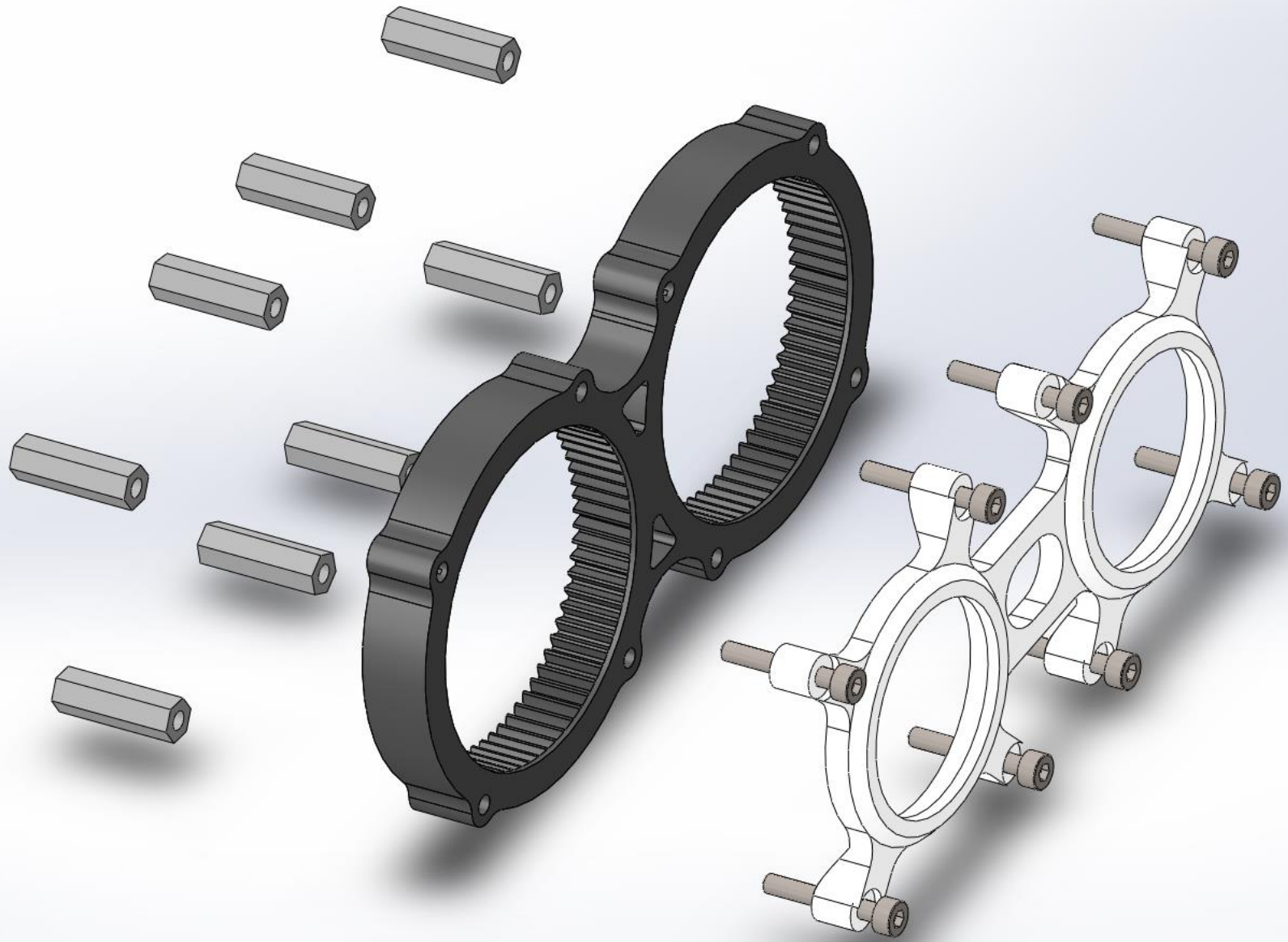
REPEAT 4X



## DUAL RING GEARS (X4)



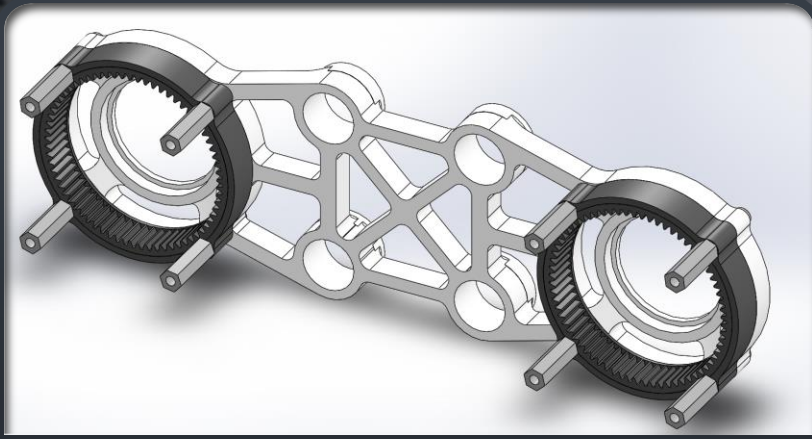
- M3X25 CHC (X8)
- SPACERS M3X20 (X8)



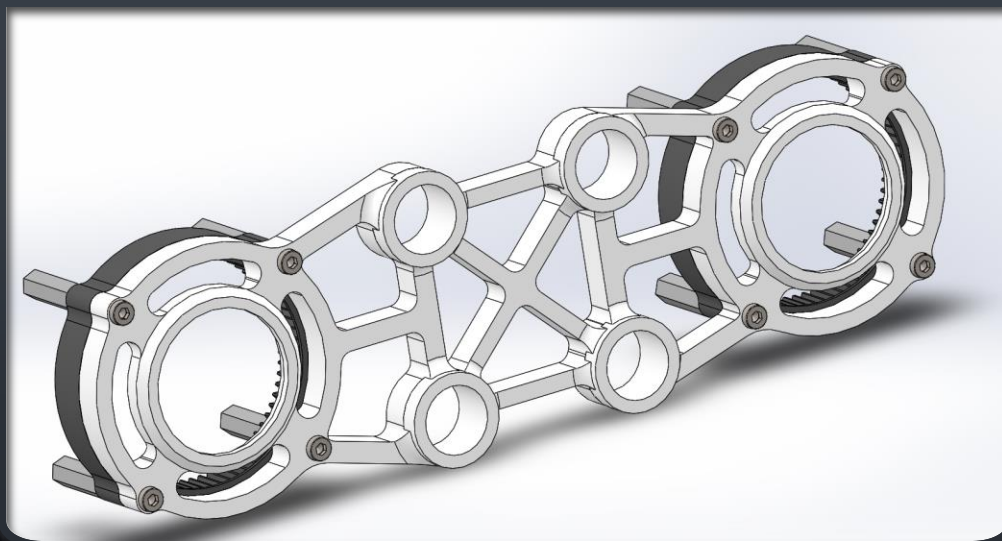


# COXA RING GEAR

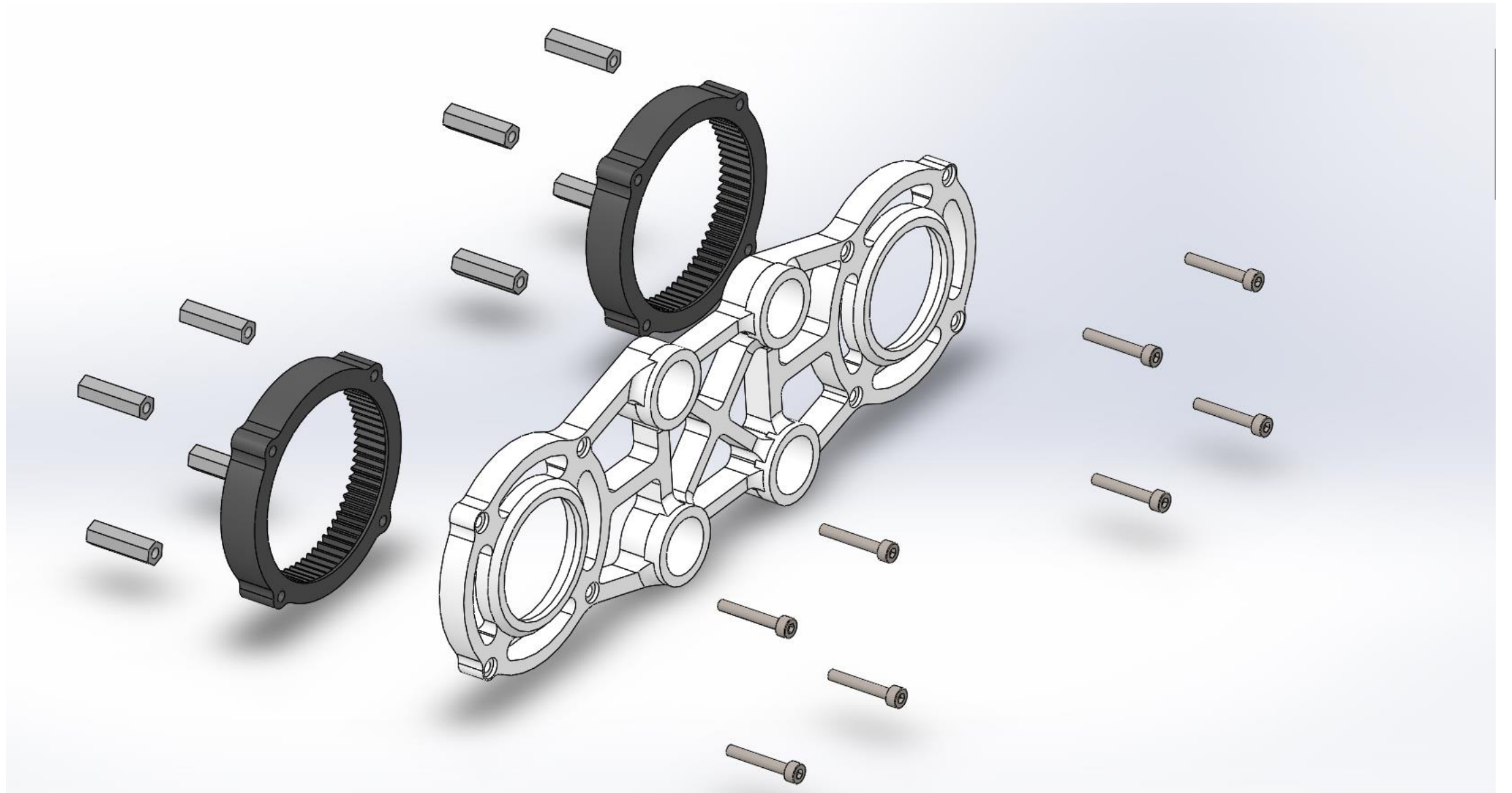
REPEAT 2X



## DUAL RING GEARS (X2)

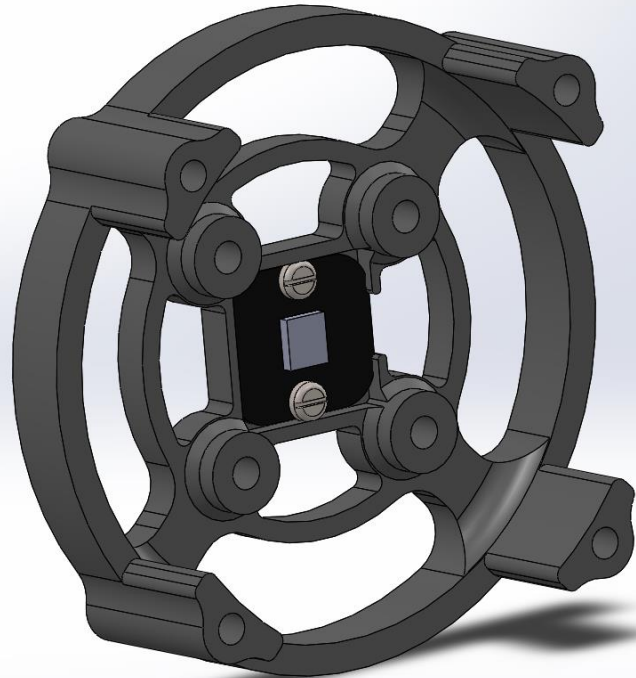


- M3X25 CHC (X8)
- SPACERS M3X20 (X8)



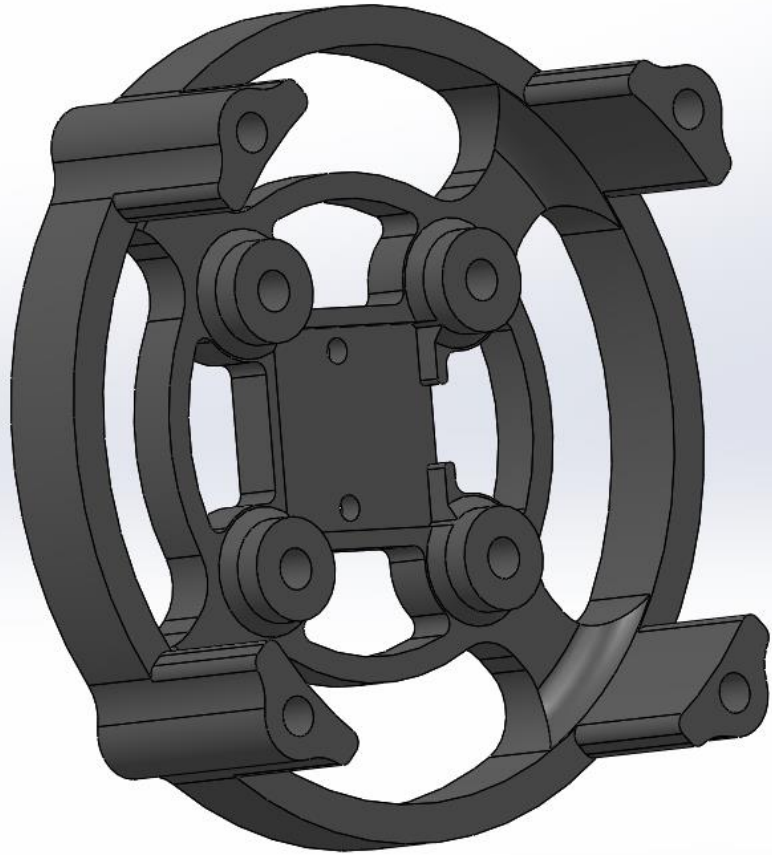
# COXA MOTOR MOUNT

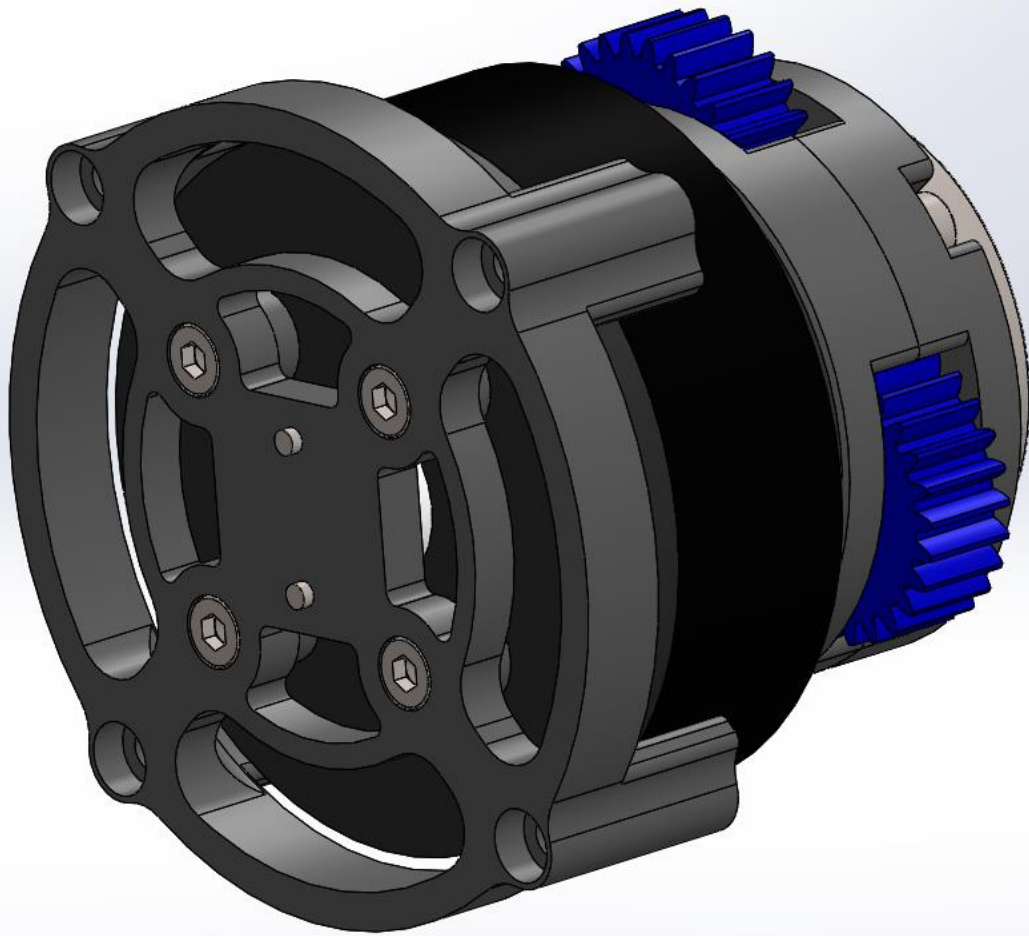
REPEAT 4X



COXA  
ENCODER  
M2x4 BUTTON HEAD (x2)

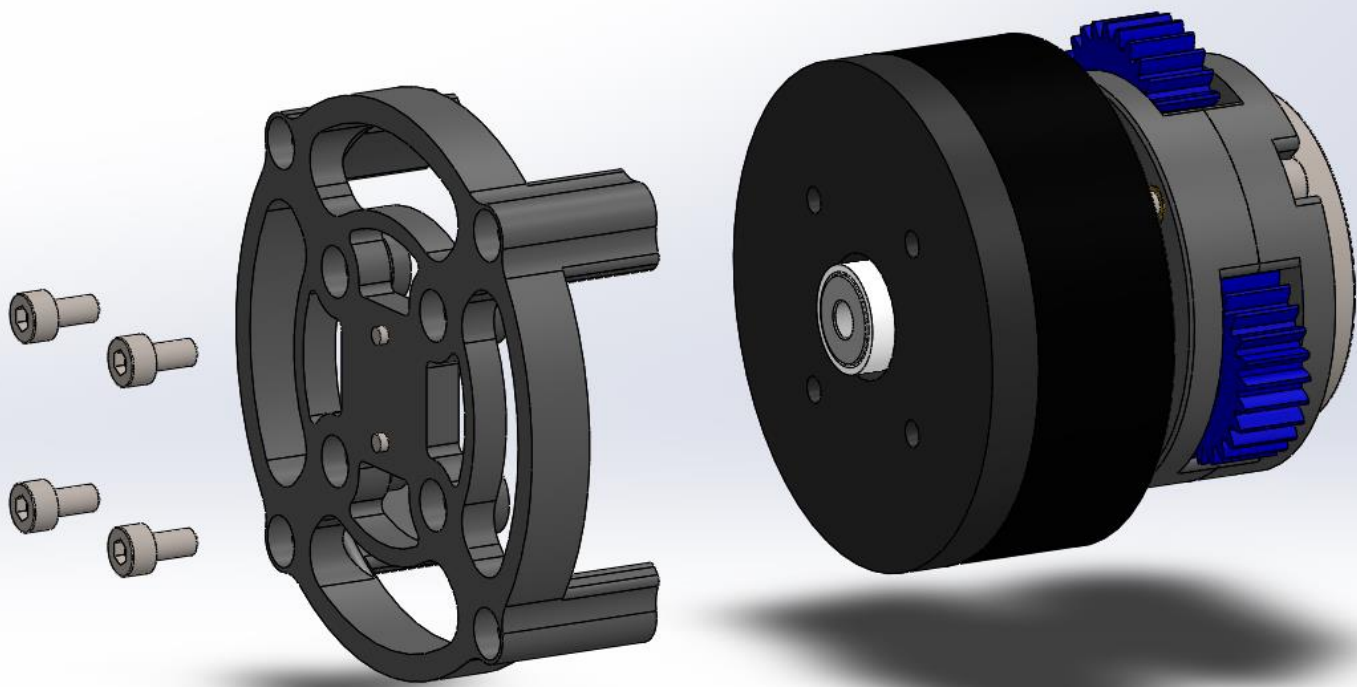


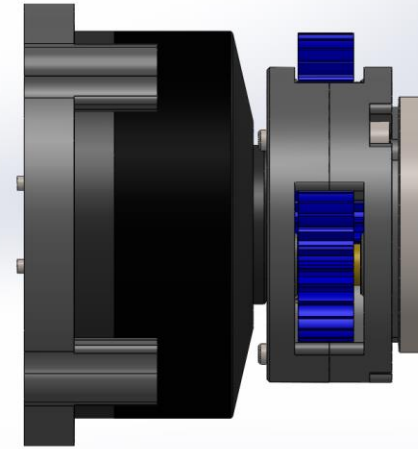




# COXA MOTOR

M3x8 CHC (x4)





MOTOR + ENCODER + GEARS

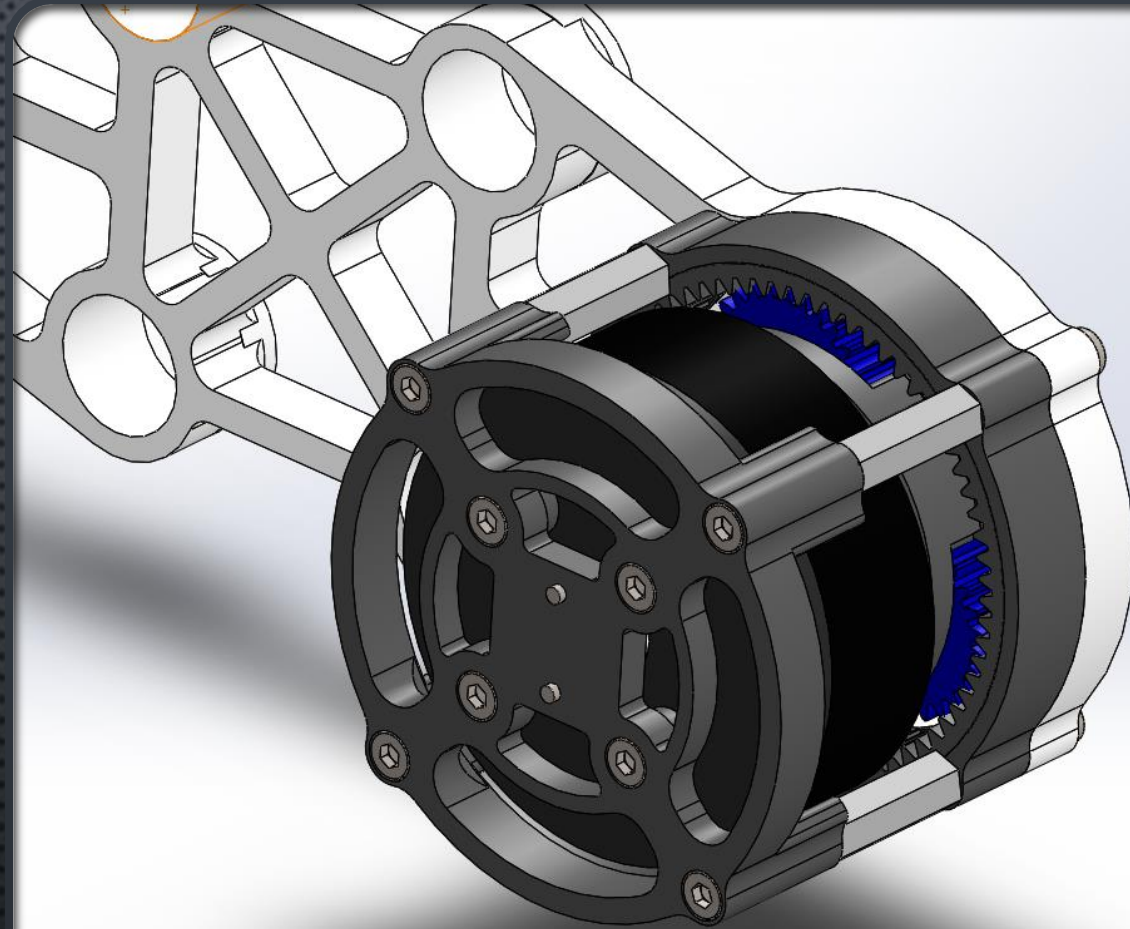


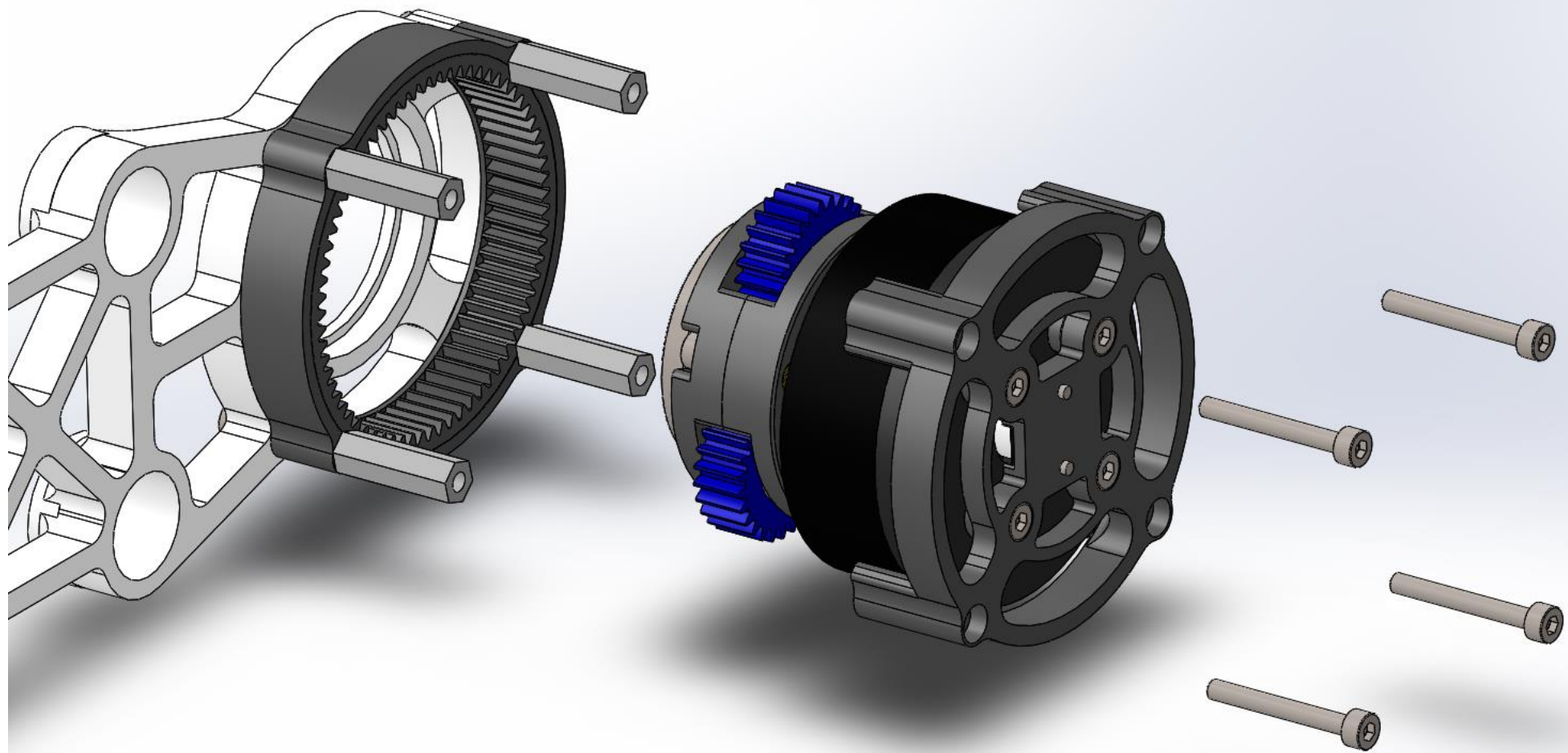
# COXA GEARBOX

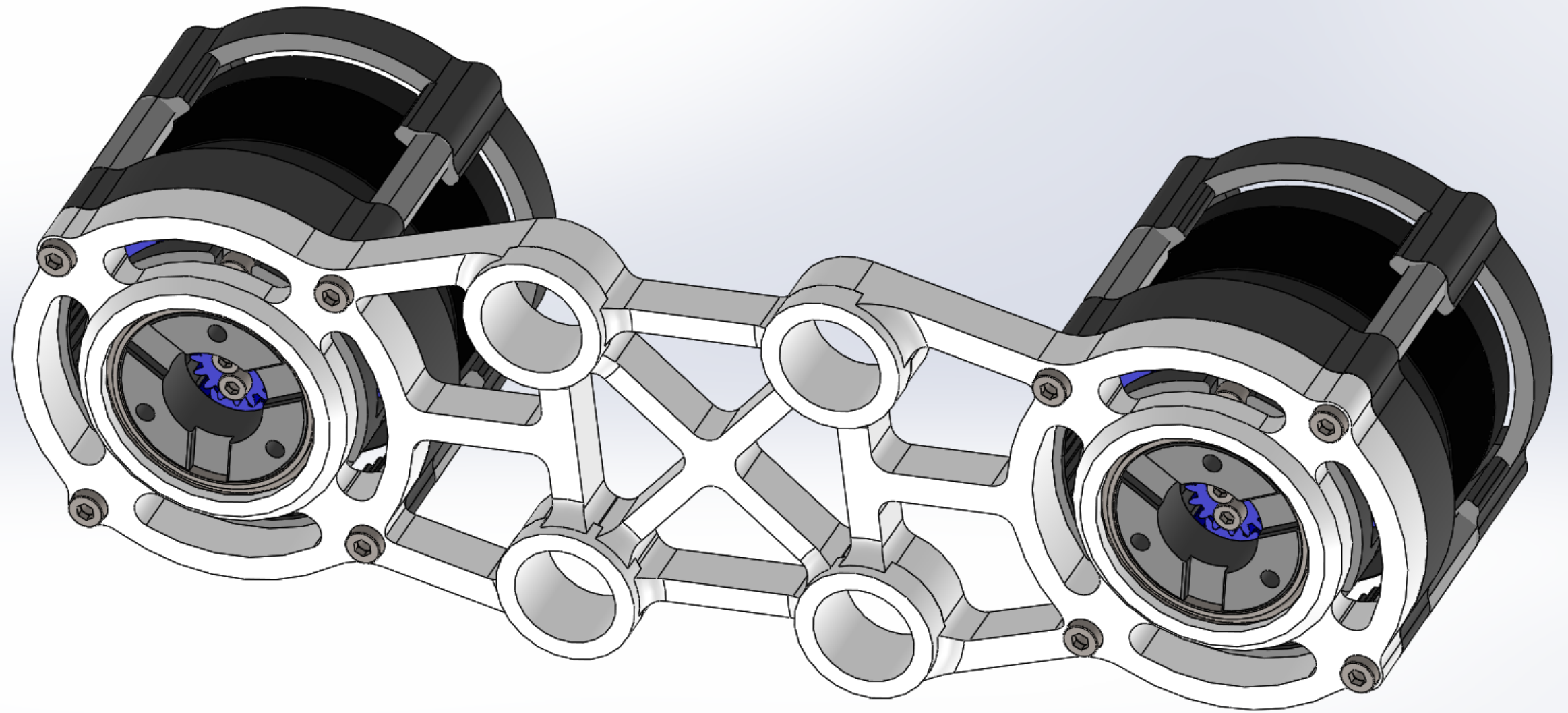
REPEAT 4X

# COXA GEARBOX

- M3X25 CHC (X4)
- APPLY GREASE ON GEARS





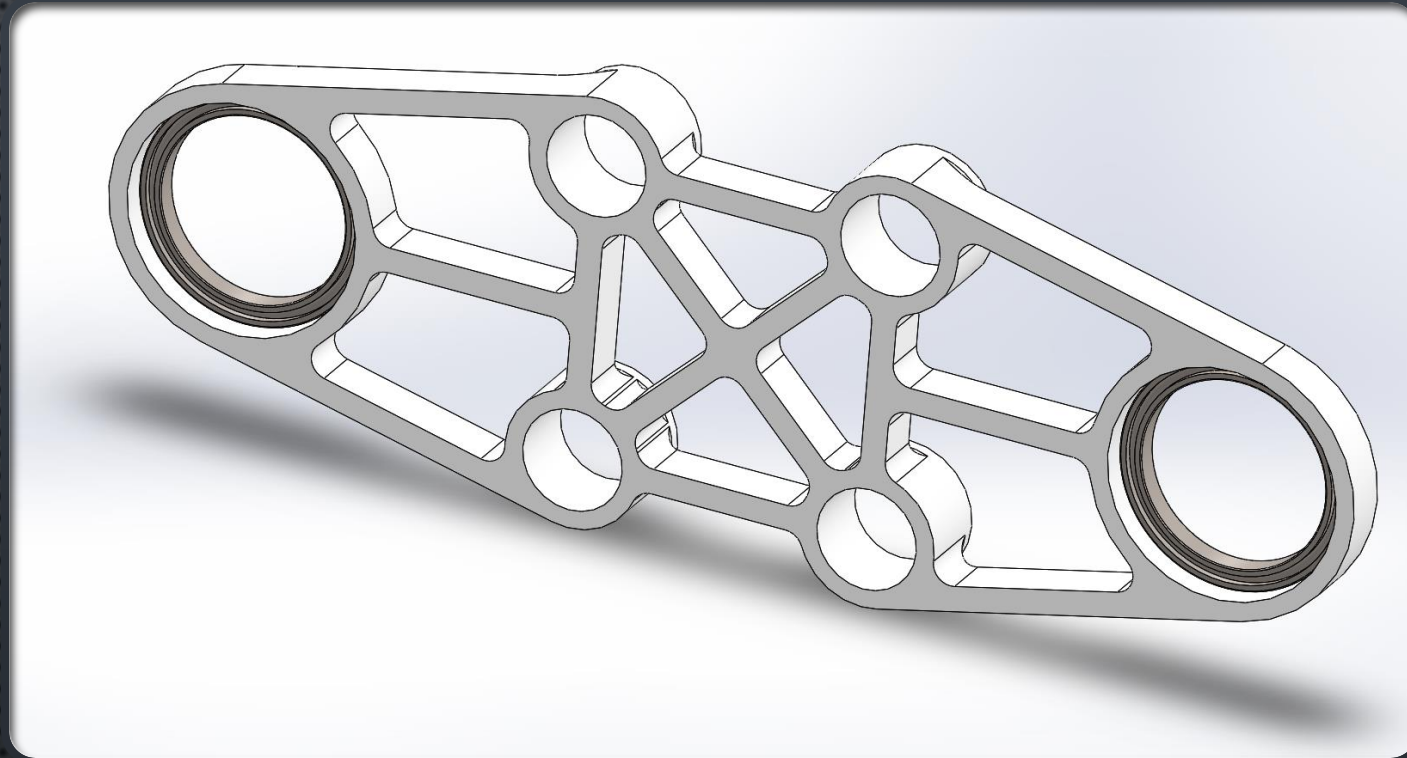


FULLY ASSEMBLED COXA



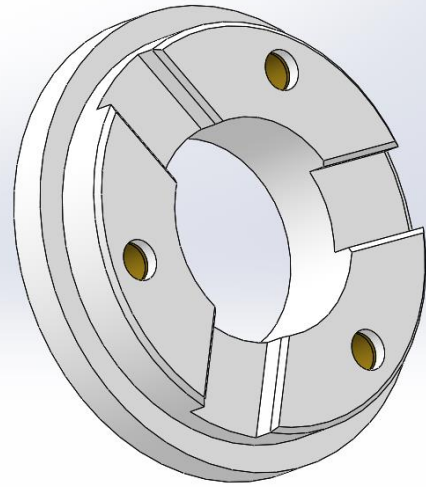
COXA FRONT/REAR FRAME

REPEAT X2



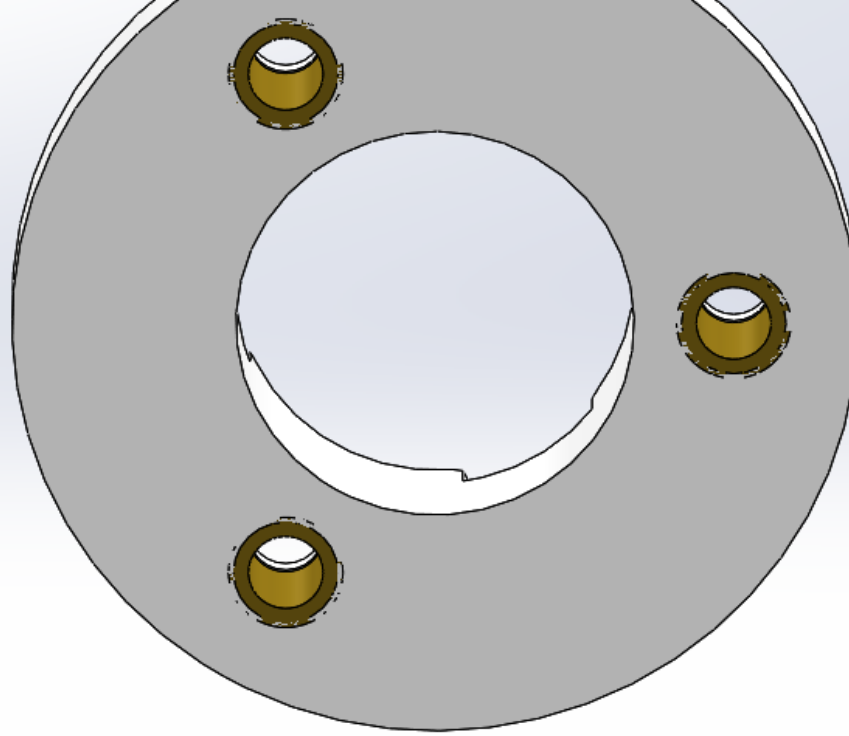
# COXA FRONT/REAR FRAME

BEARING 30x37x4 (x2)



# STOPPERS

M3 INSERTS (X3)



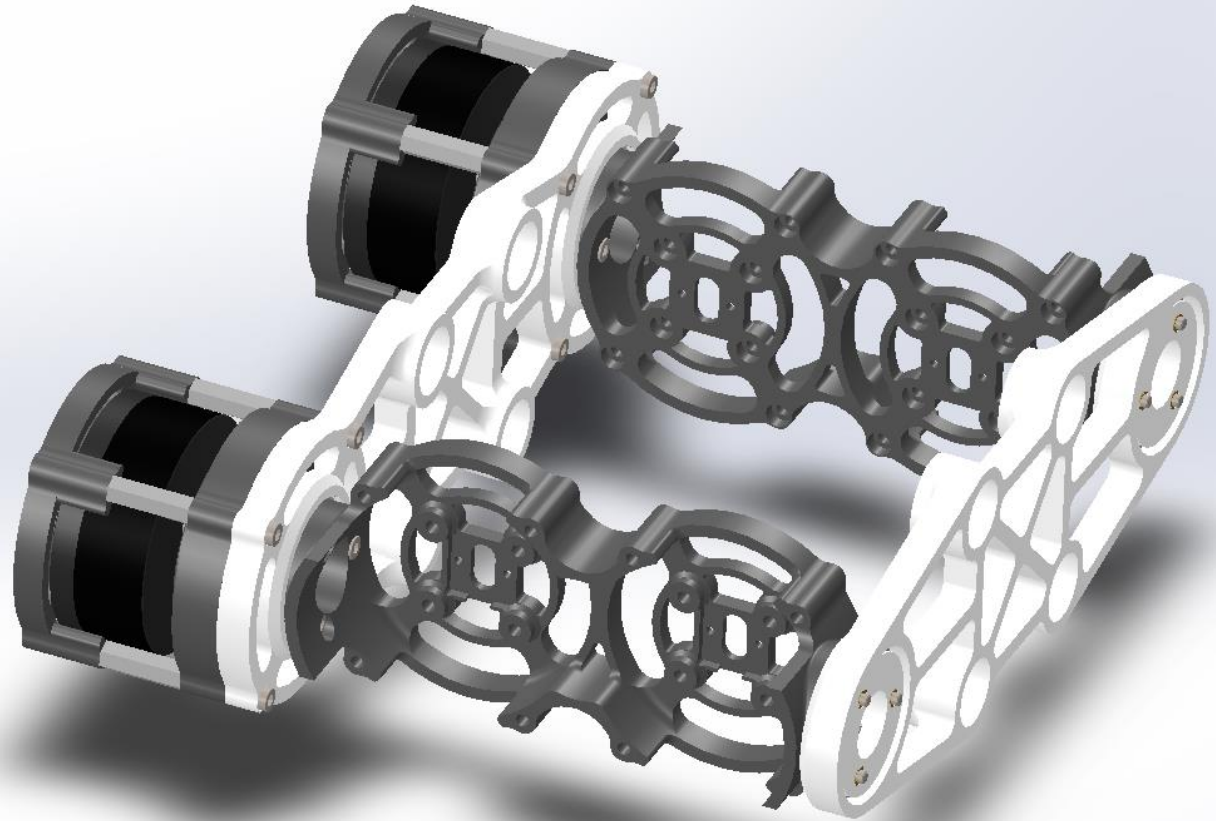
M3 INSERTS

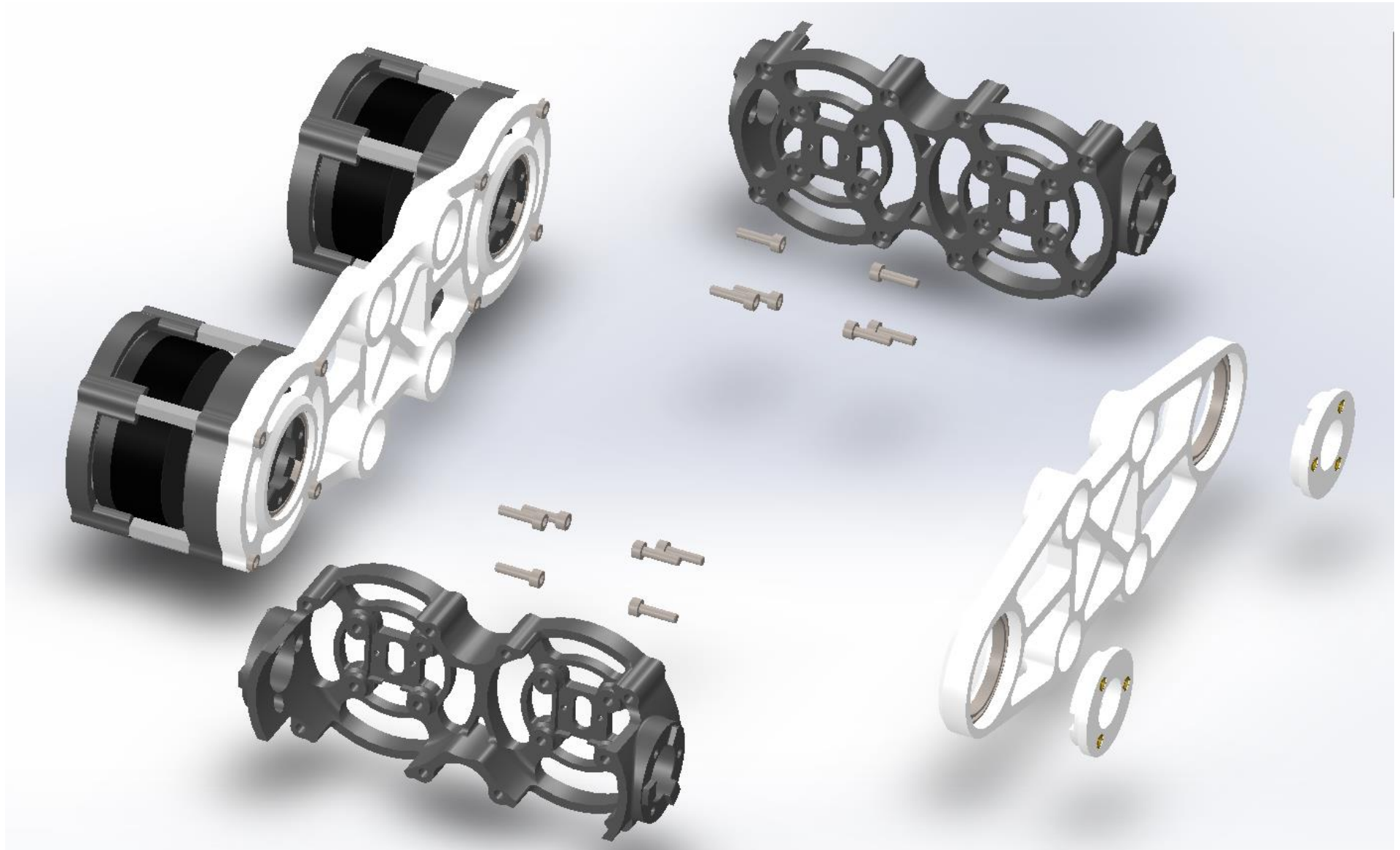
# COXA-HIPS FRAME ASSEMBLY

REPEAT X2

# COXA-HIPS ASSEMBLY

- M3x10 CHC (x6)
  - STOPPER SIDE
- M3x18 CHC (x6)
  - GEARBOX SIDE





# HIPS MOTOR MOUNT

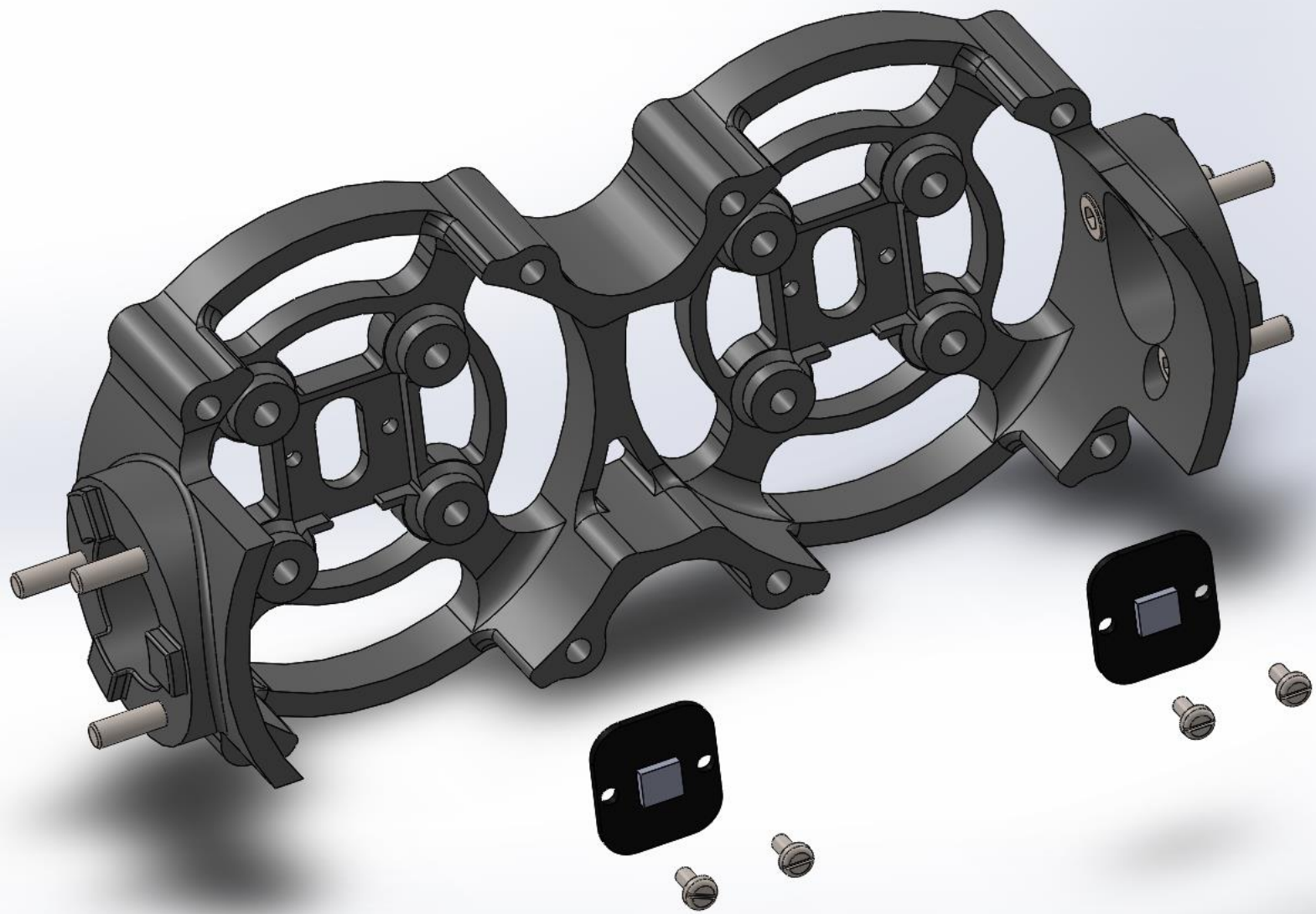
REPEAT 4X

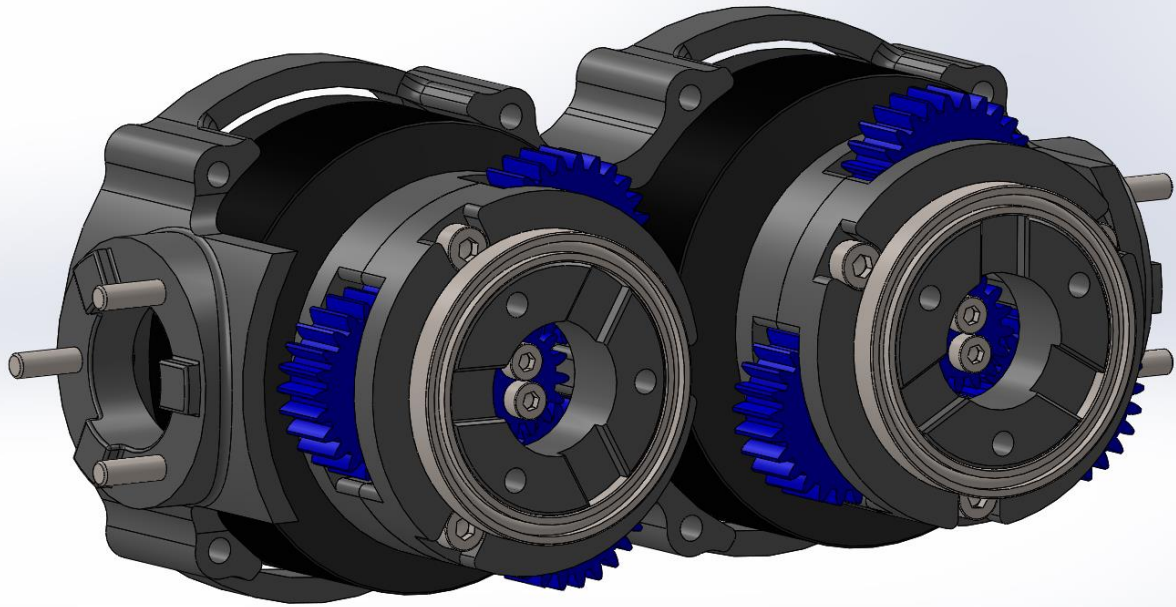




# ENCODER

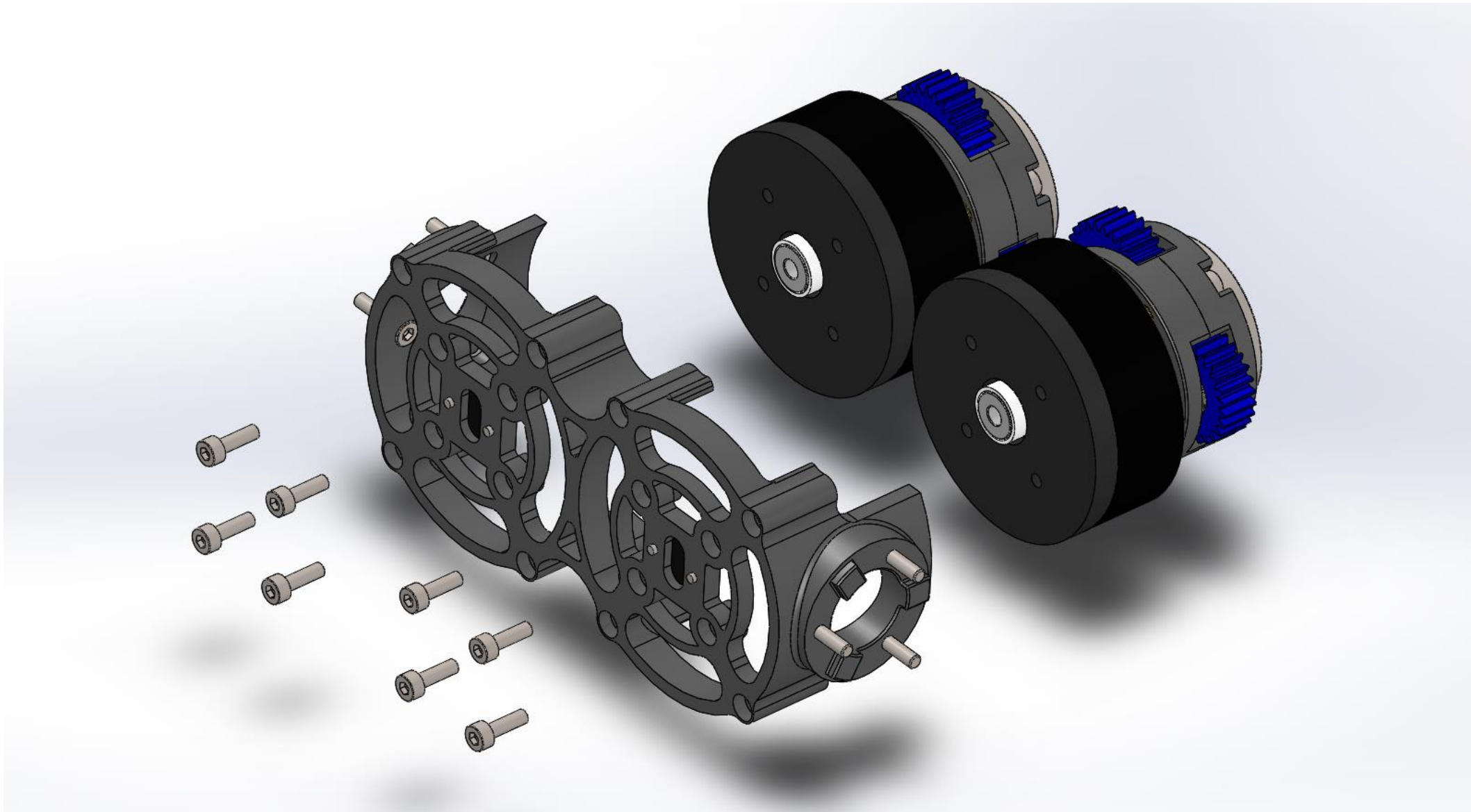
- M2X4 BUTTON HEAD (X4)

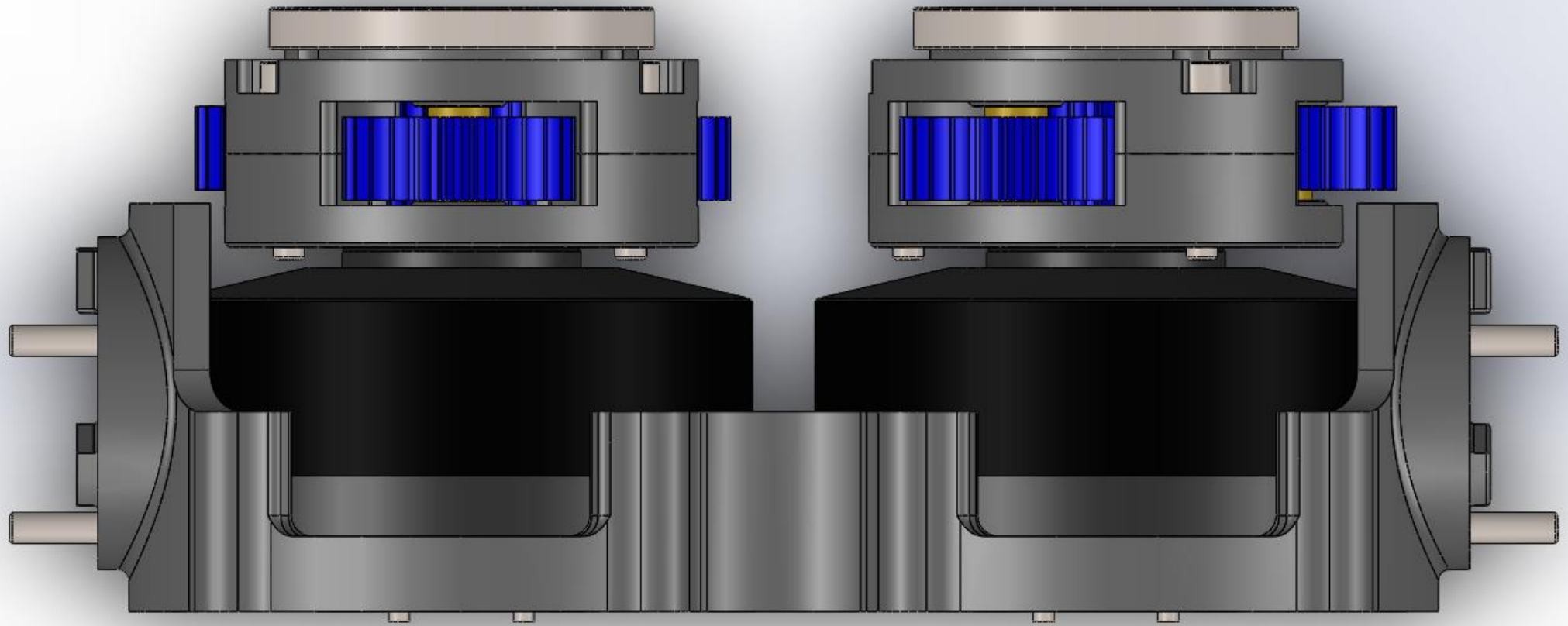




# HIPS MOTOR

M3x8 CHC (x8)





MOTOR + ENCODER + GEARS



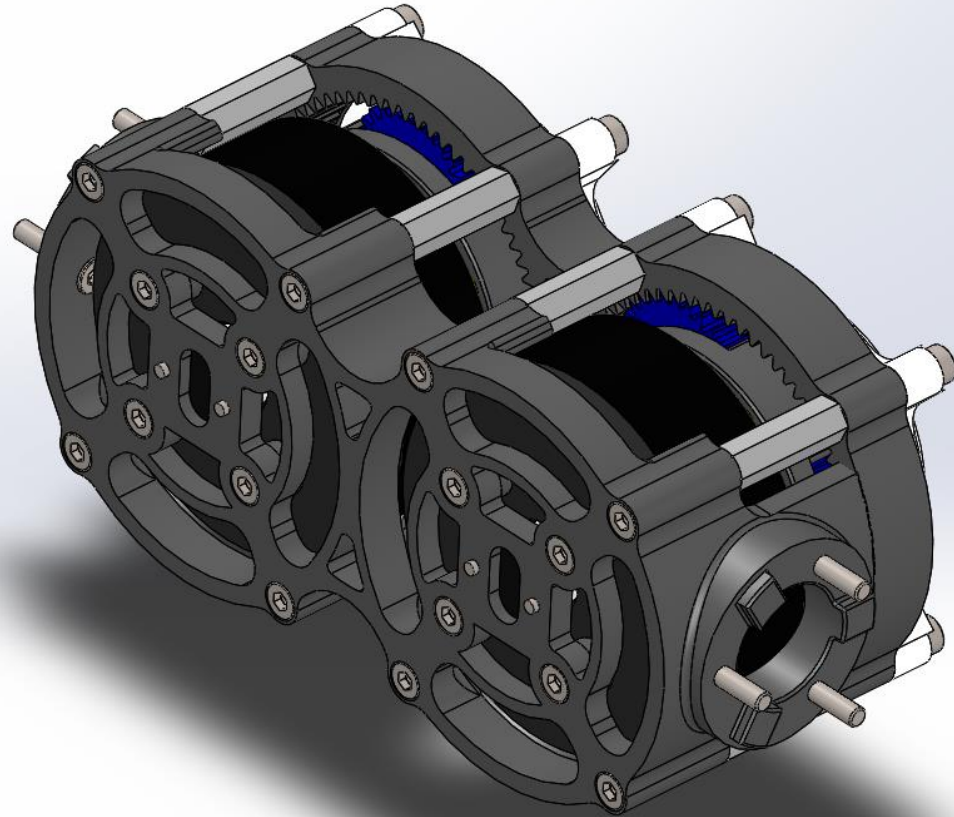


# HIPS GEARBOX

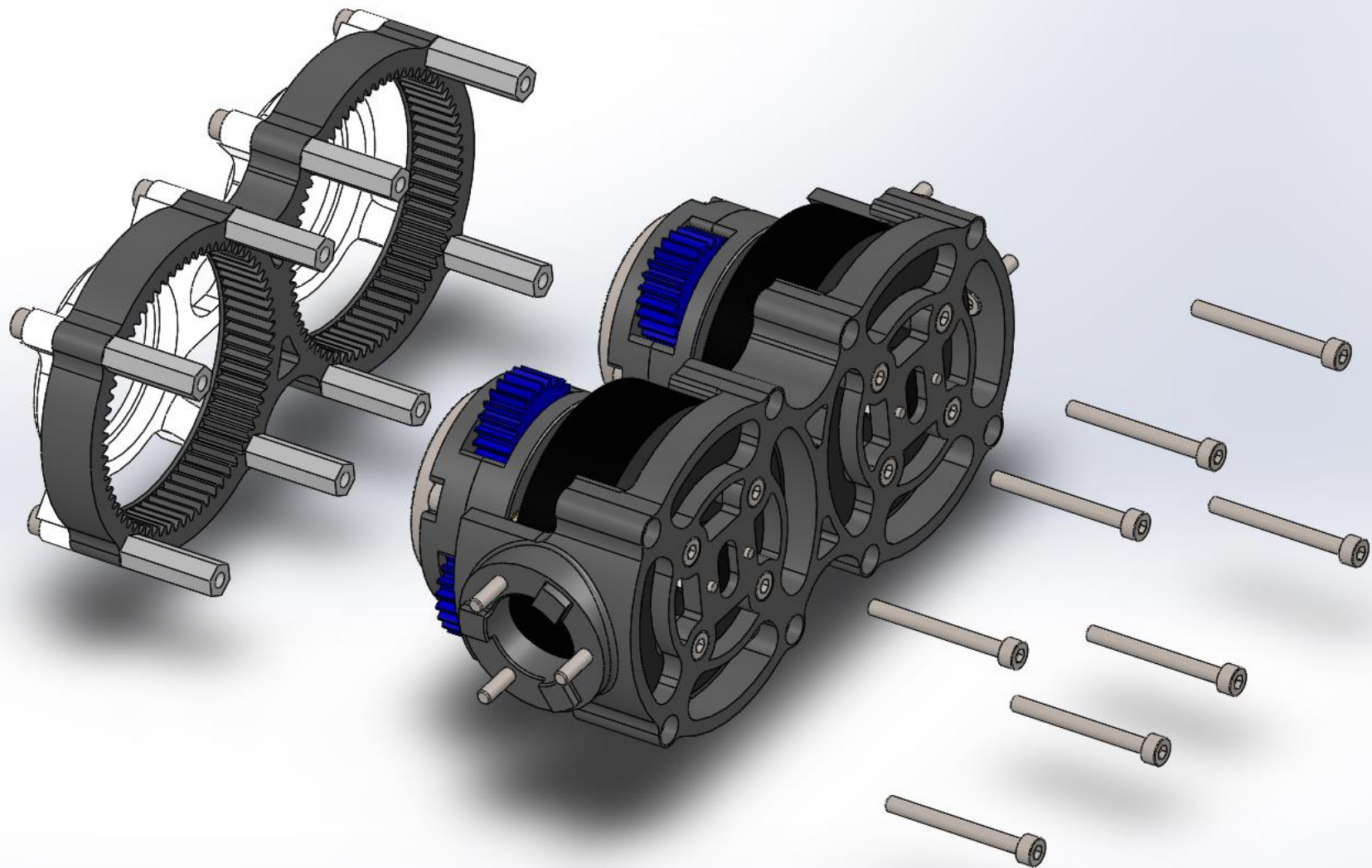
REPEAT X4

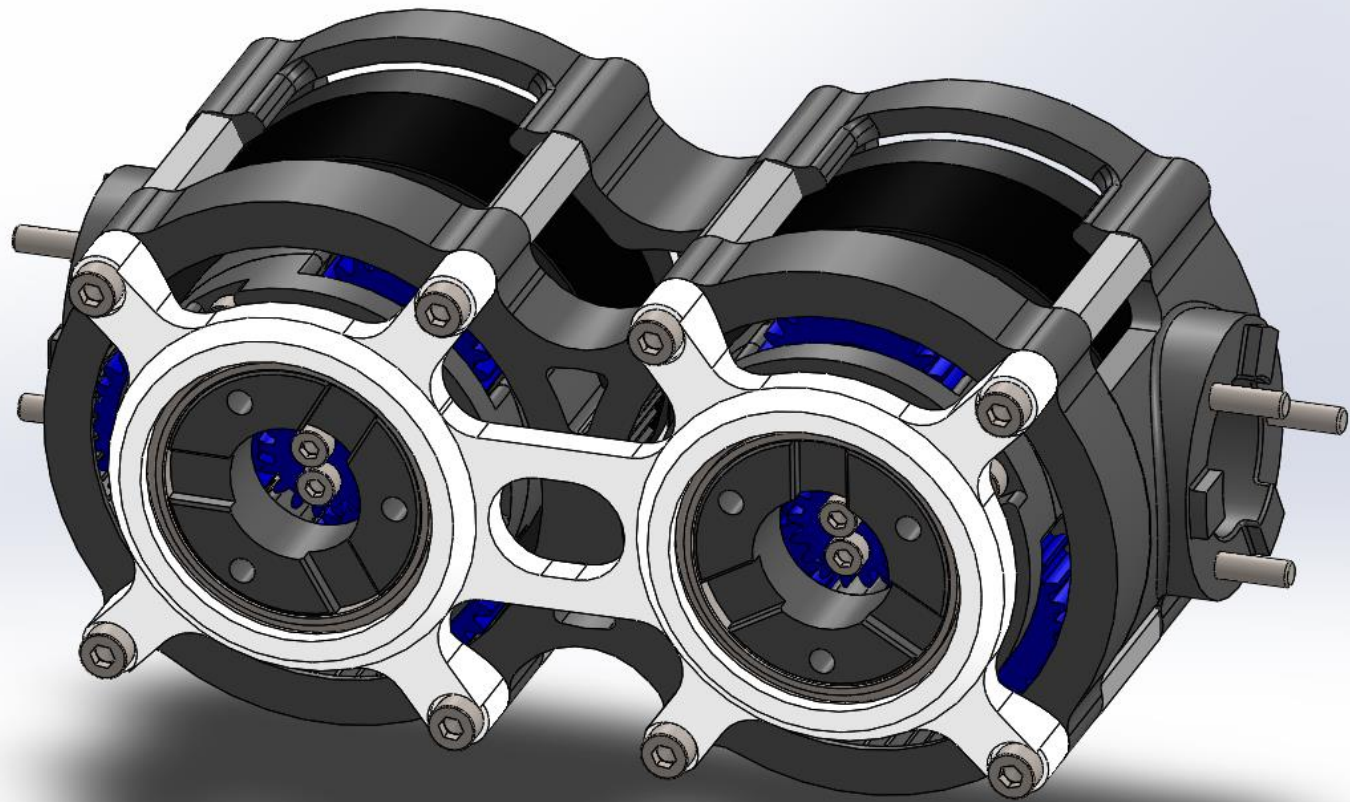
# HIPS GEARBOX

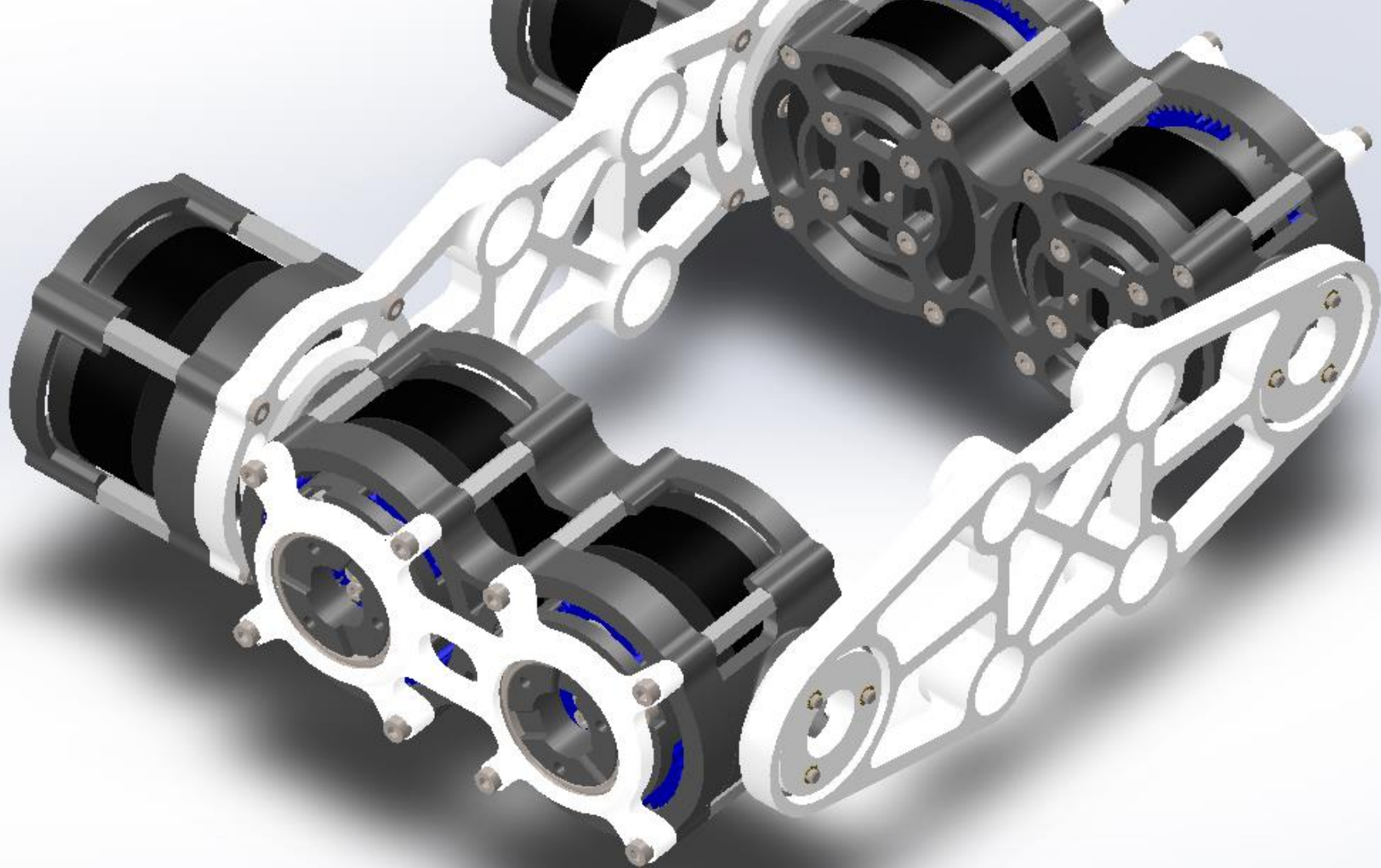
- M3X25 CHC (X8)
- APPLY GREASE ON GEARS









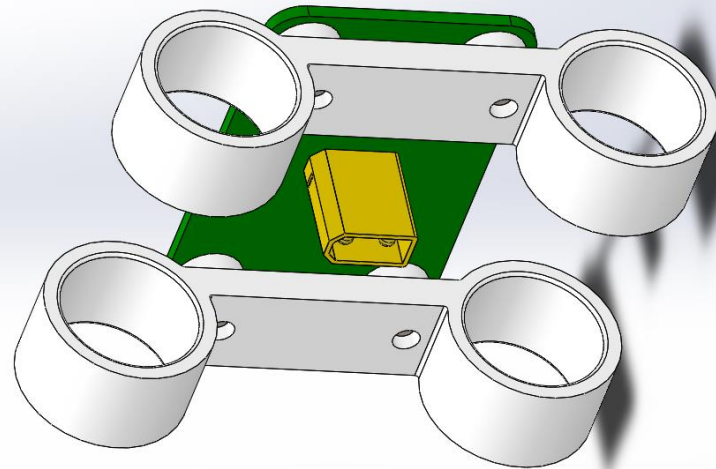


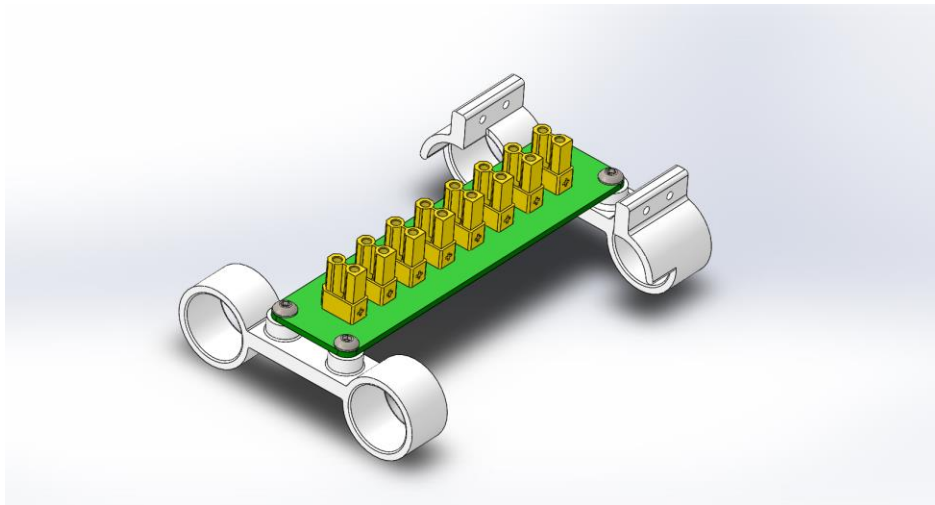
COXA-HIPS MODULE  
FULLY ASSEMBLED

# XT30 RAILS

# POWER DISTRIBUTION (CENTER)

- XT30 MALE
- PCB





## POWER DISTRIBUTION (FRONT/REAR)

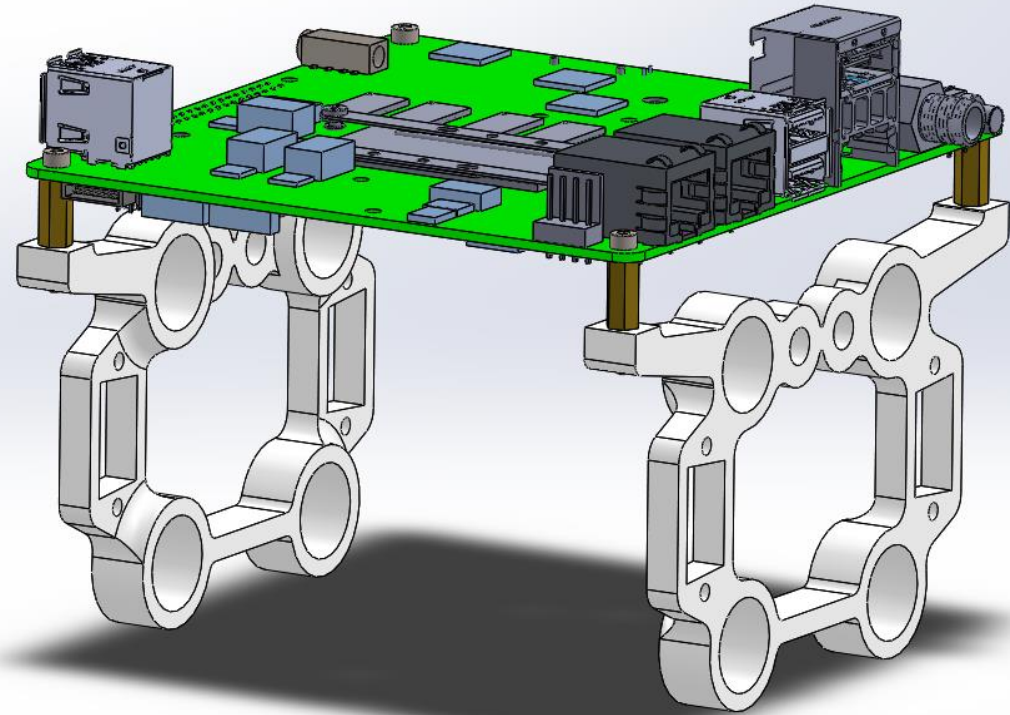
- XT30 FEMALE (x6 MINIMUM)
- PCB

SBC

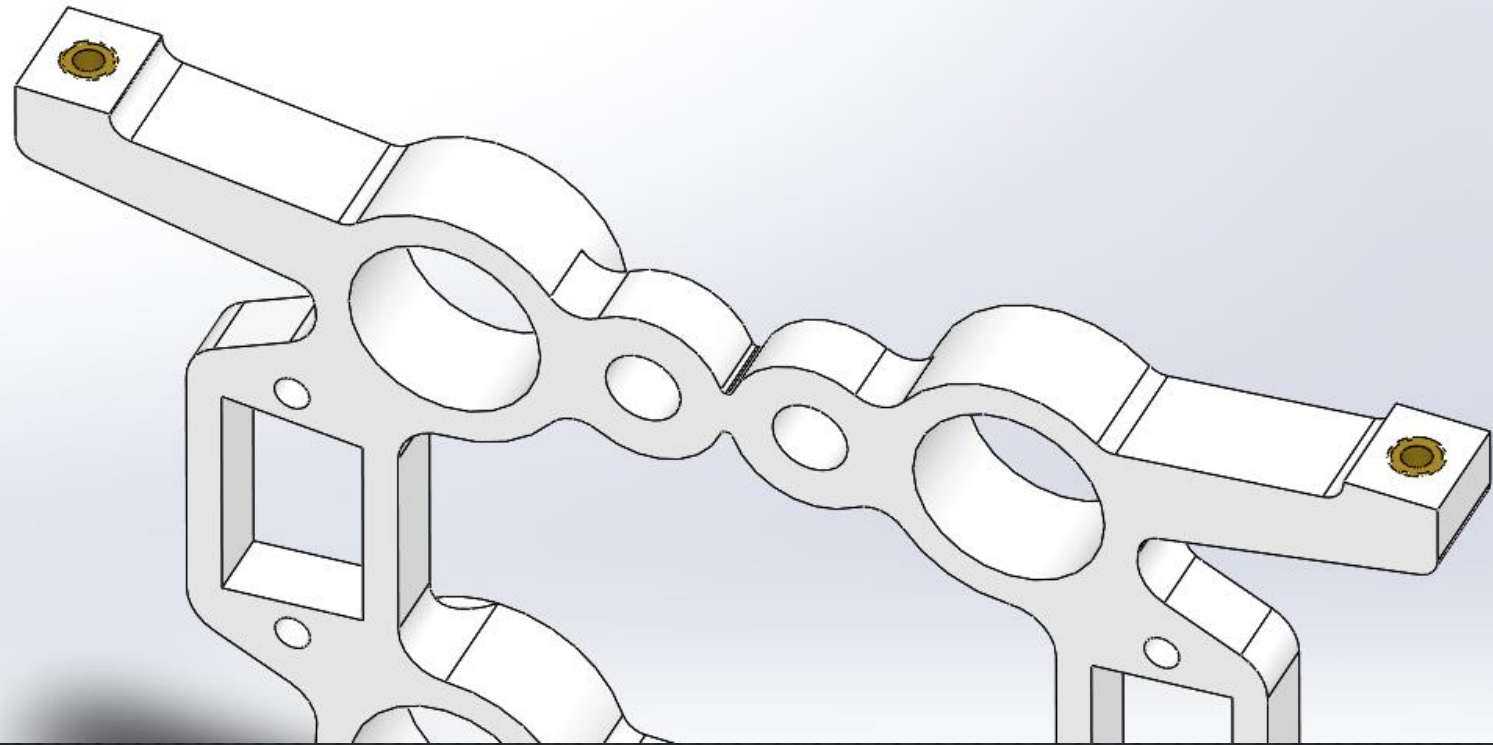
UP-BOARD XTREME

## UP-BOARD SUPPORT

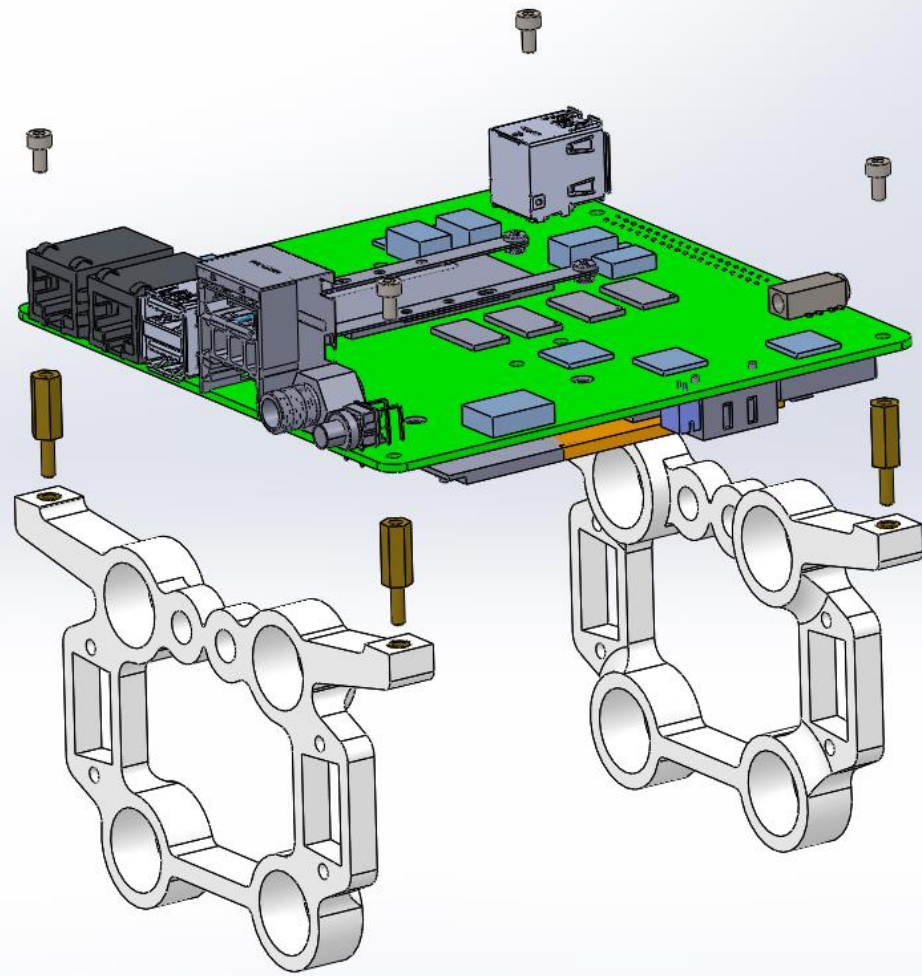
- M2.5 INSERTS (x4)
- SPACERS M/F 12MM THREADED M2.5
- M2.5 CHC (x4)





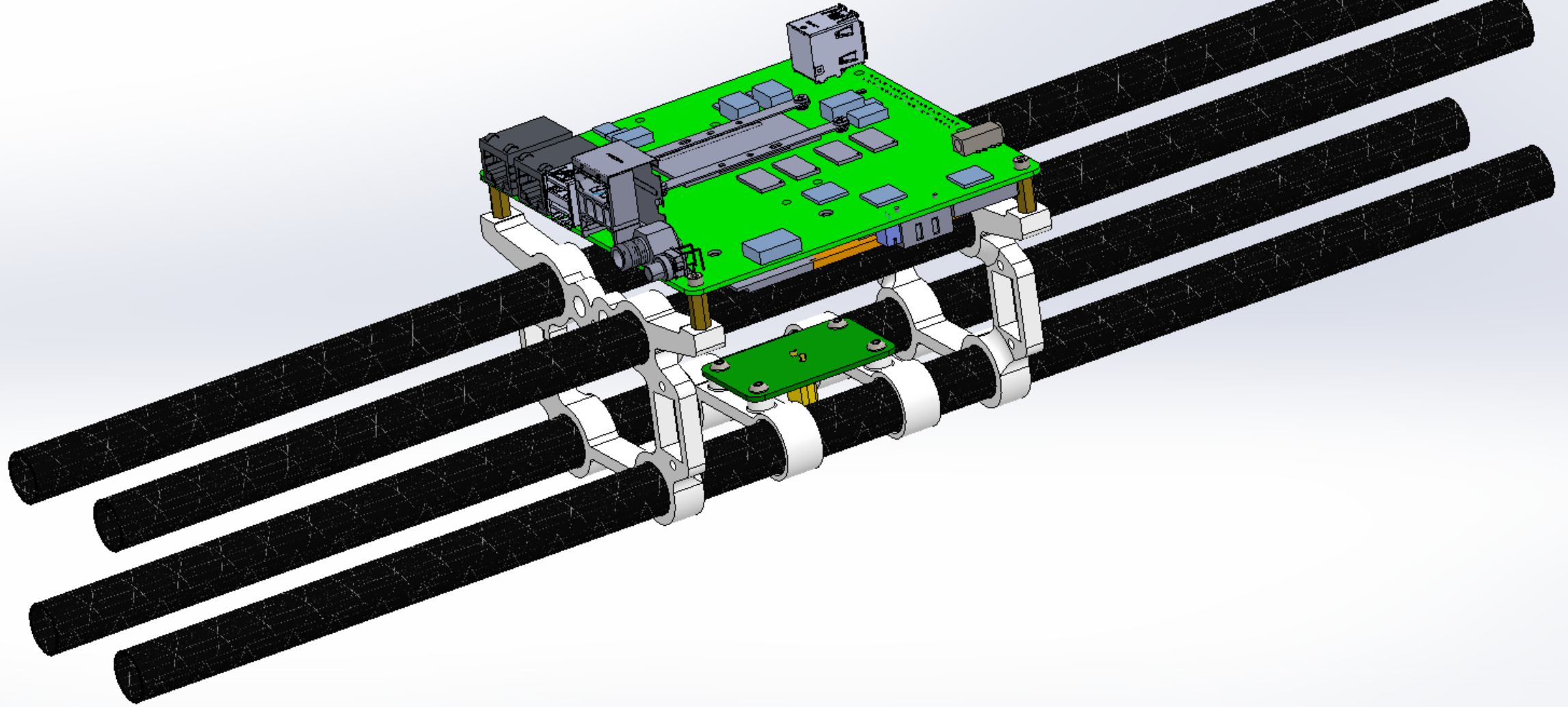


M2.5 INSERTS

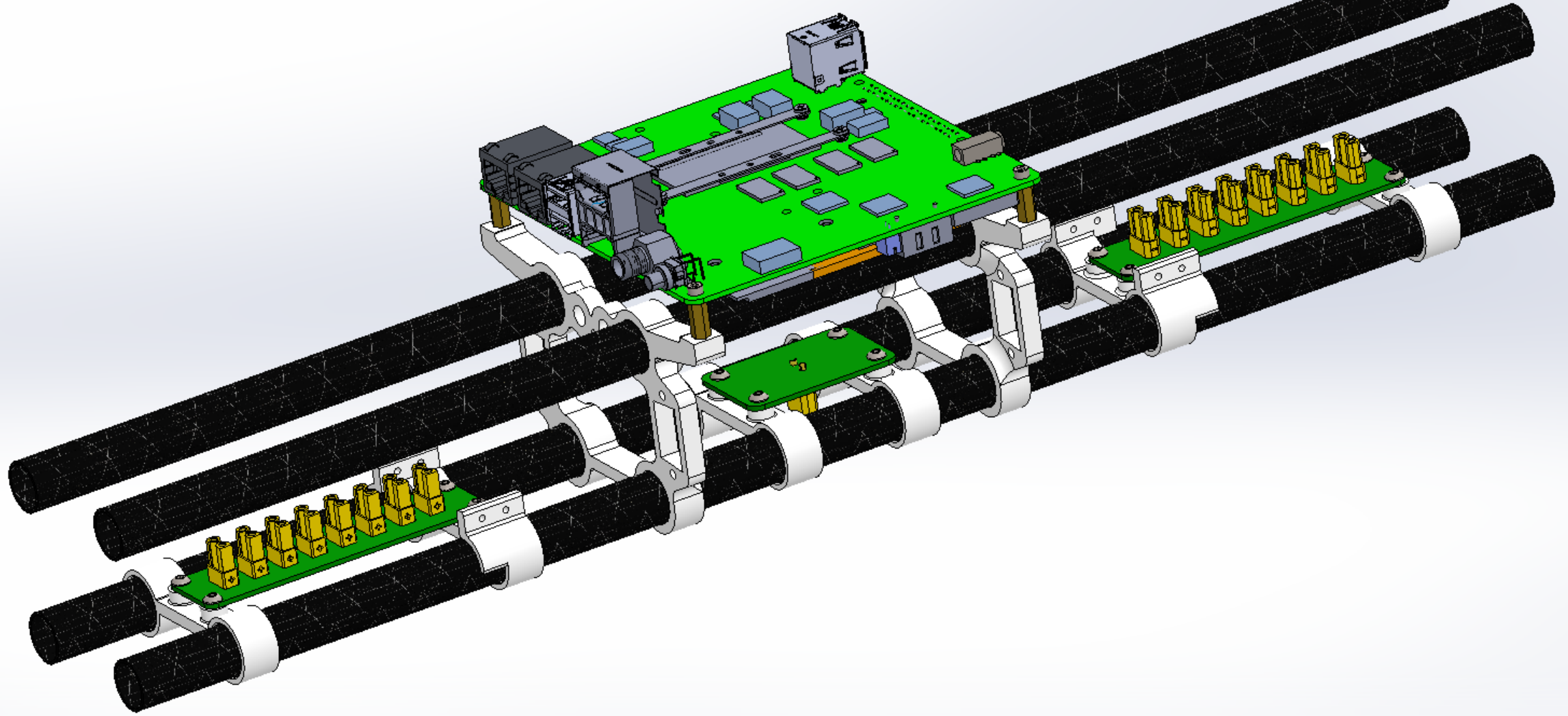


# BODY ASSEMBLY

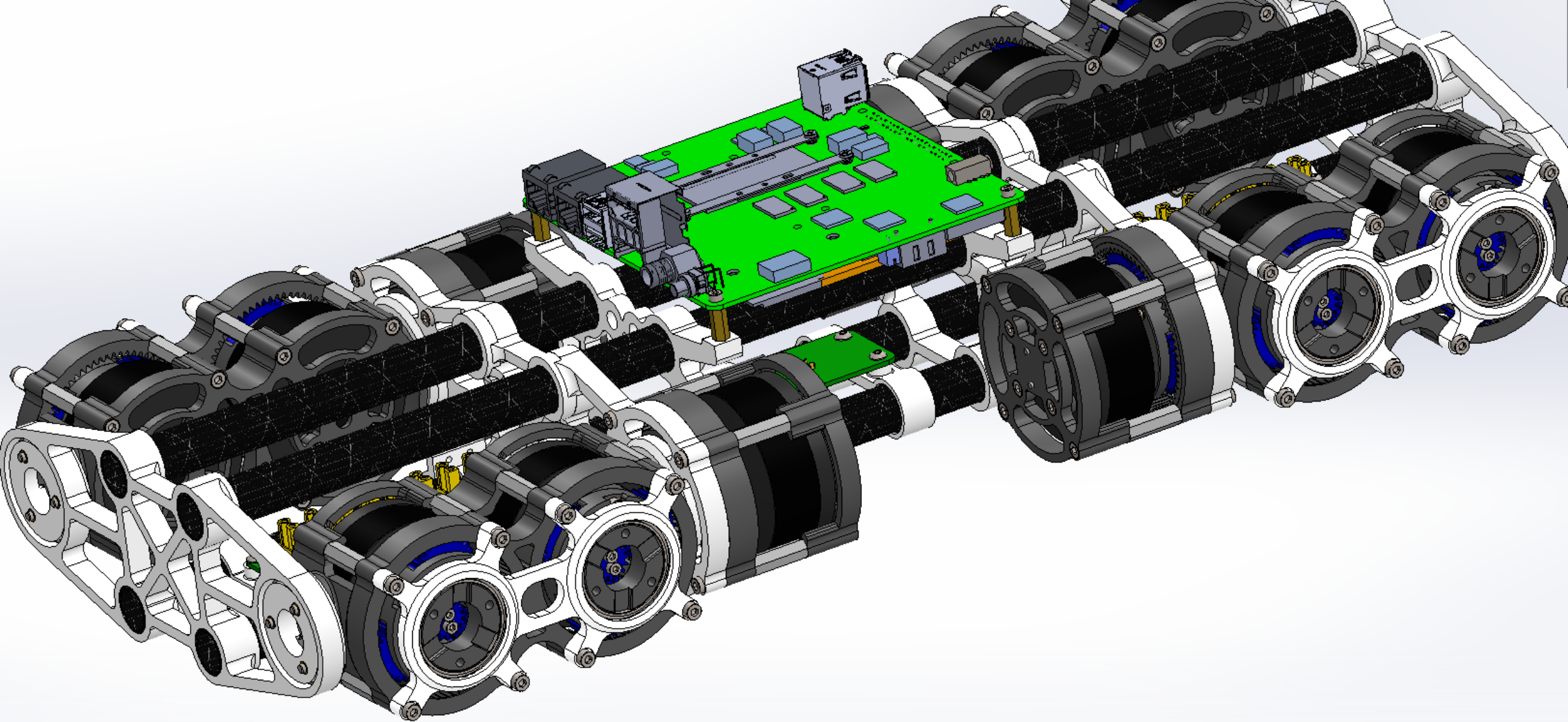
CARBON TUBES 18 x 480MM (x4)



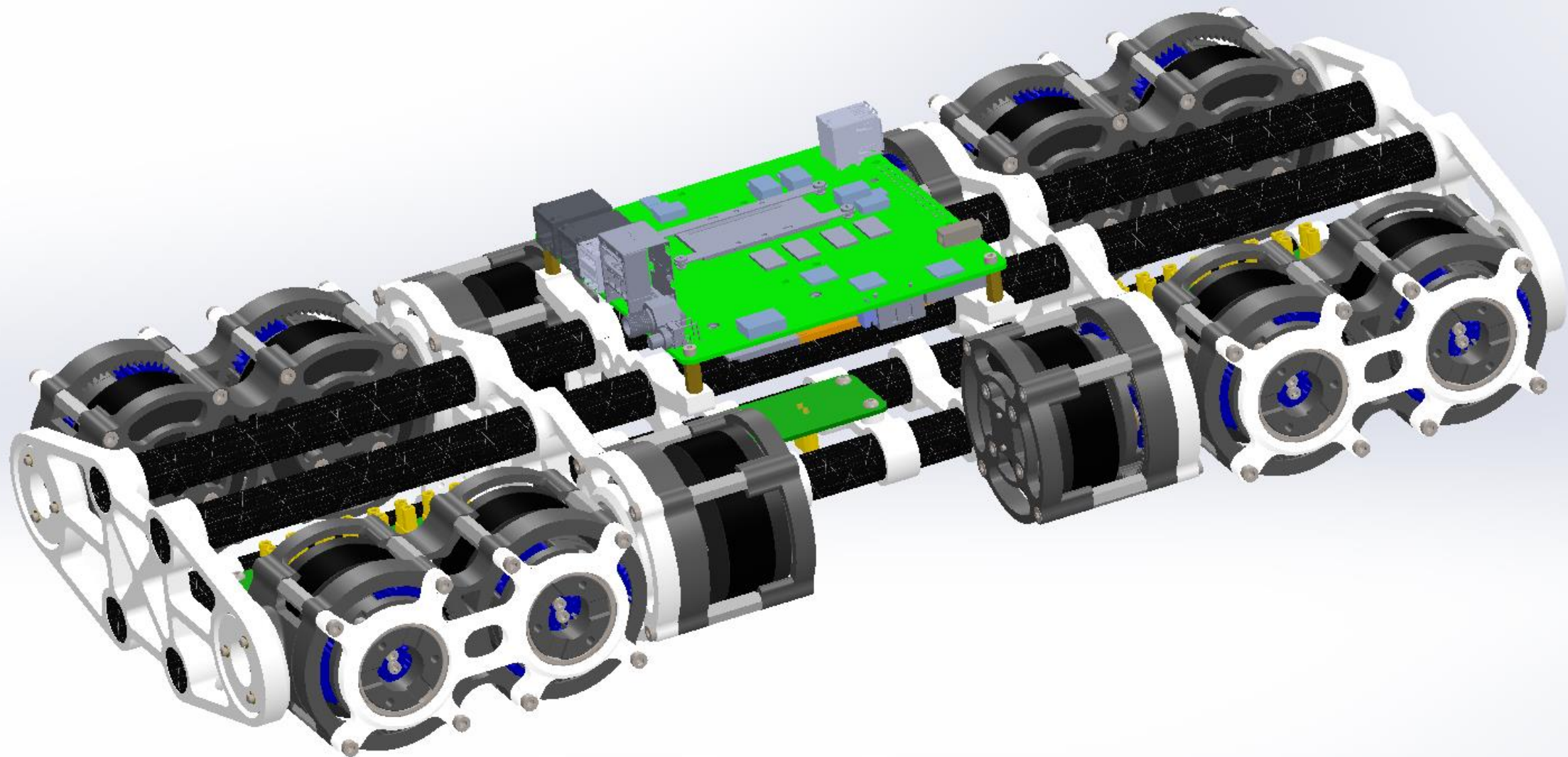
INSERT POWER DISTRIBUTION AND SBC



INSERT FRONT/REAR POWER  
DISTRIBUTION AND COXA-HIPS MODULE



INSERT FRONT/REAR POWER DISTRIBUTION AND  
COXA-HIPS MODULE



BODY ASSEMBLED

LEGS



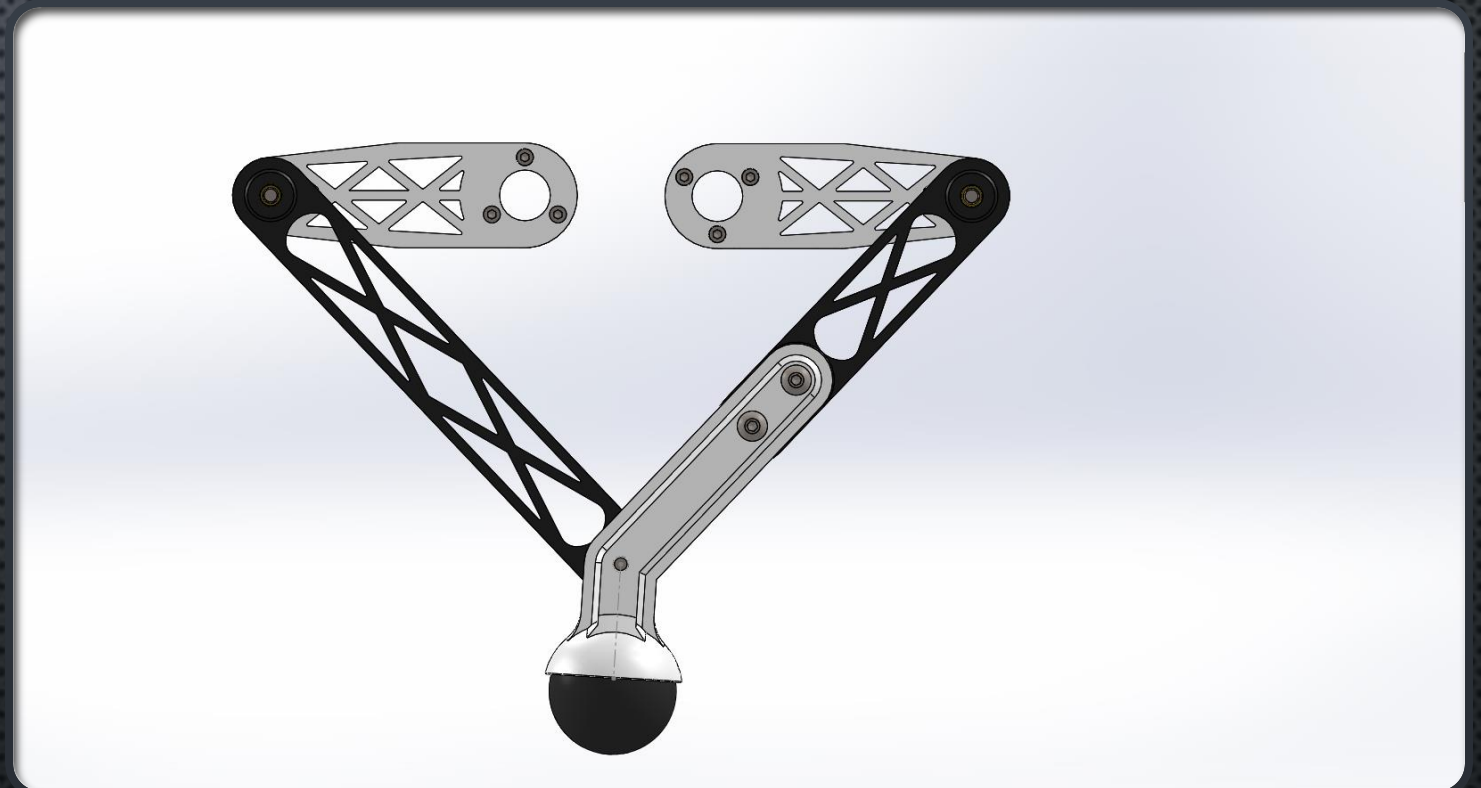
## RIGHT LEG (X2)

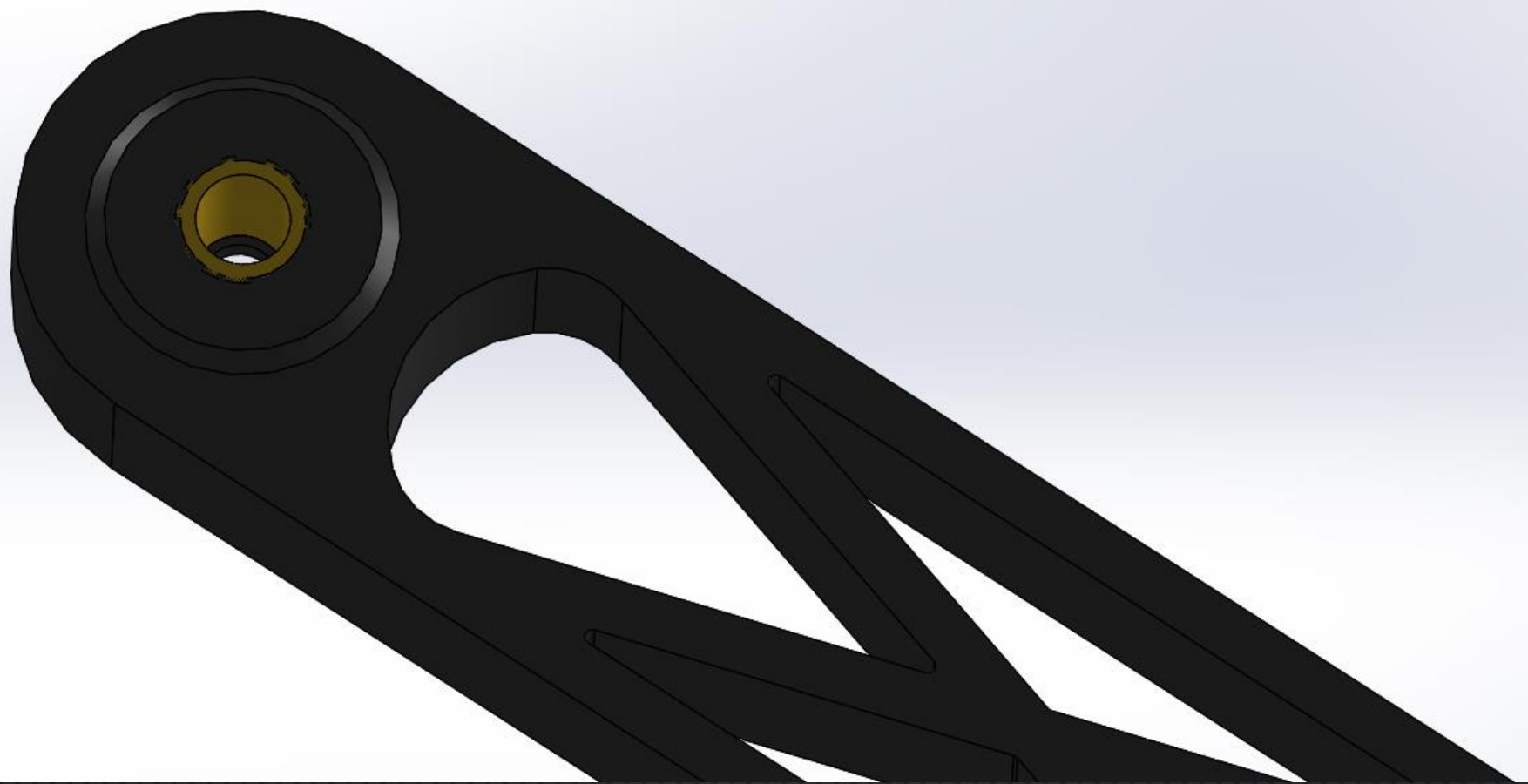
- BEARING 6X15X5 FLANGED (X6)
  - F696ZZ
- M5X20 TBHC/BUTTON HEAD (X5)
- M5 INSERTS (X5)
- M5 SPACER (X3)
- DIY ALLOW TUBE 6X5X10MM (X3)
- SQUASH BALL (PRO (2 YELLOW)



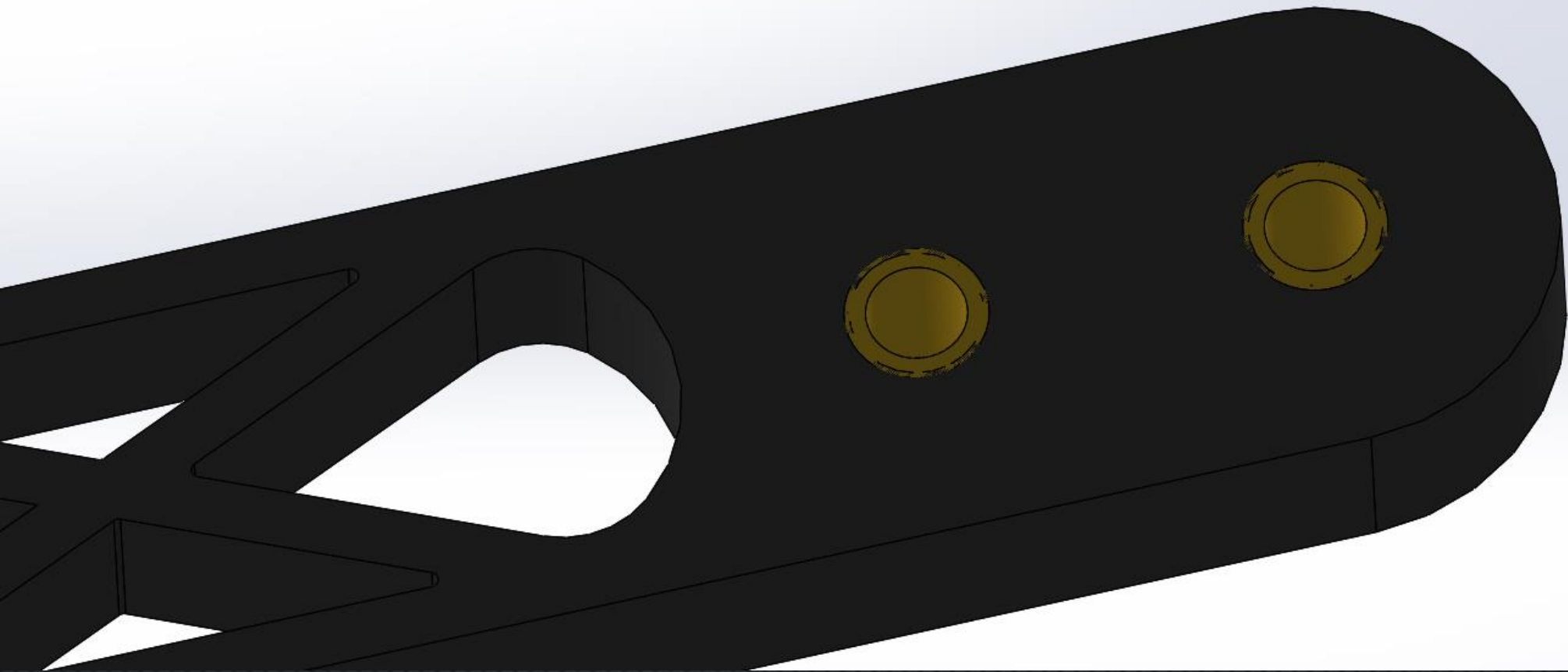
## LEFT LEG (X2)

- BEARING 6X15X5 FLANGED (X6)
  - F696ZZ
- M5X20 TBHC/BUTTON HEAD (X5)
- M5 INSERTS (X5)
- M5 SPACER (X3)
- DIY ALLOW TUBE 6X5X10MM (X3)
- SQUASH BALL (PRO (2 YELLOW)

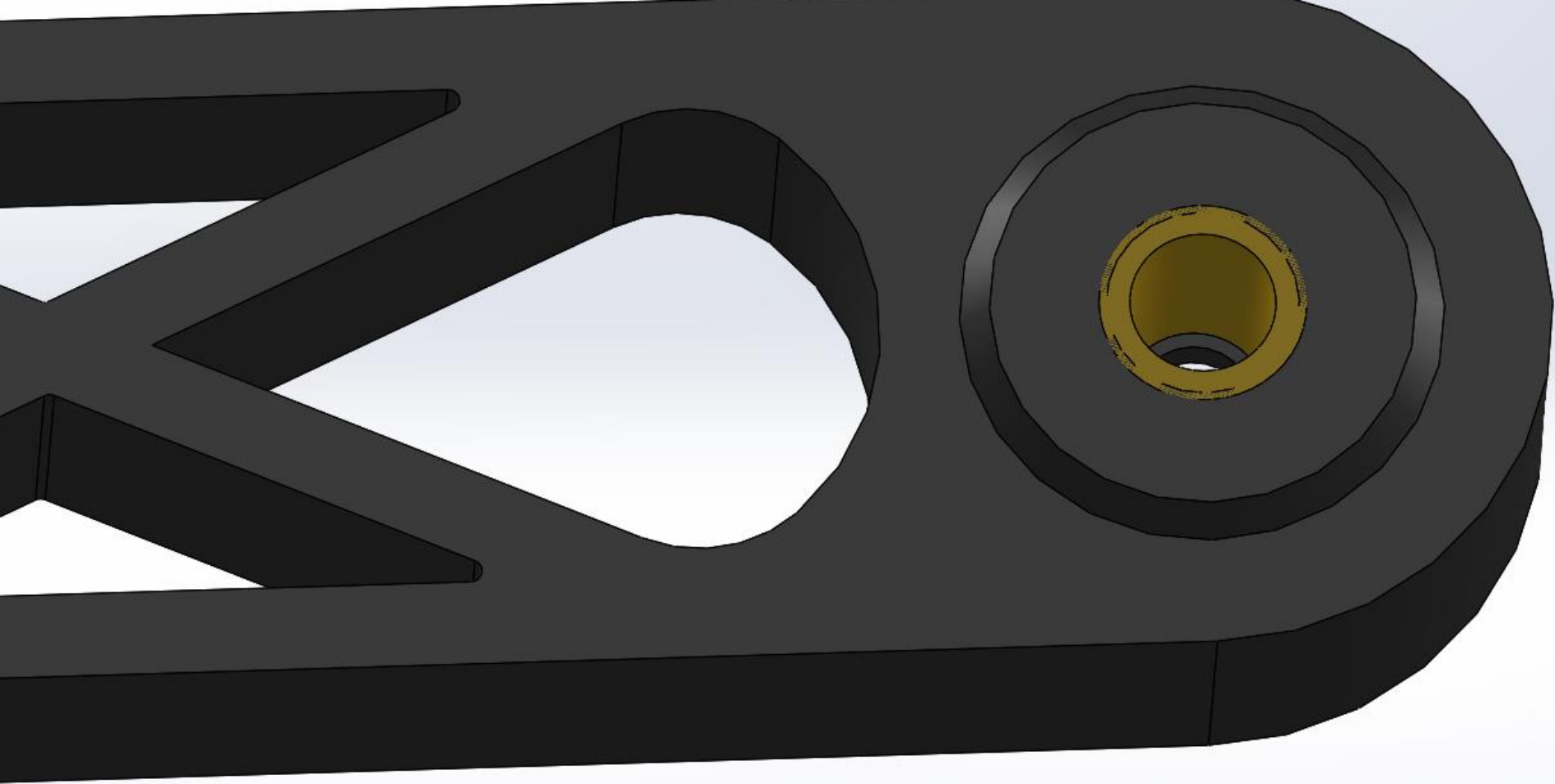




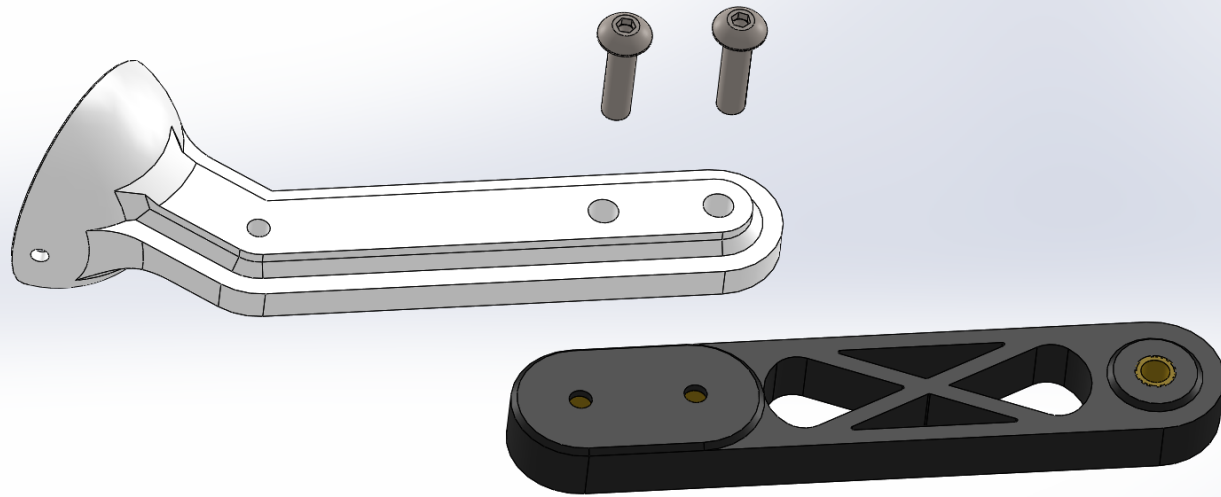
M5 INSERTS IN LONG TIBIA



M5 INSERTS IN SHORT TIBIA



M5 INSERTS IN SHORT TIBIA

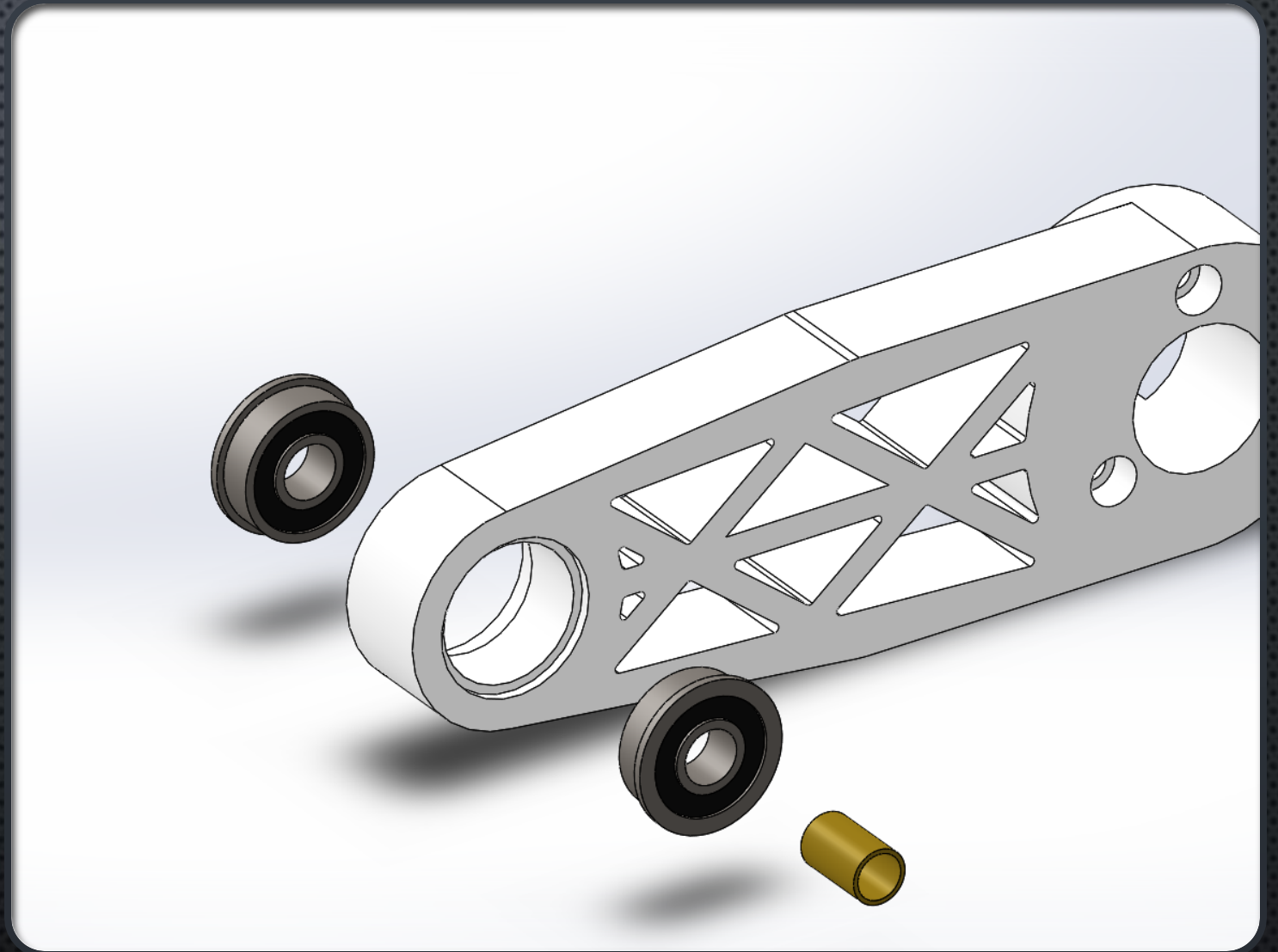


# FOOT ASSEMBLY

M5X20 BUTTON HEAD (X2)

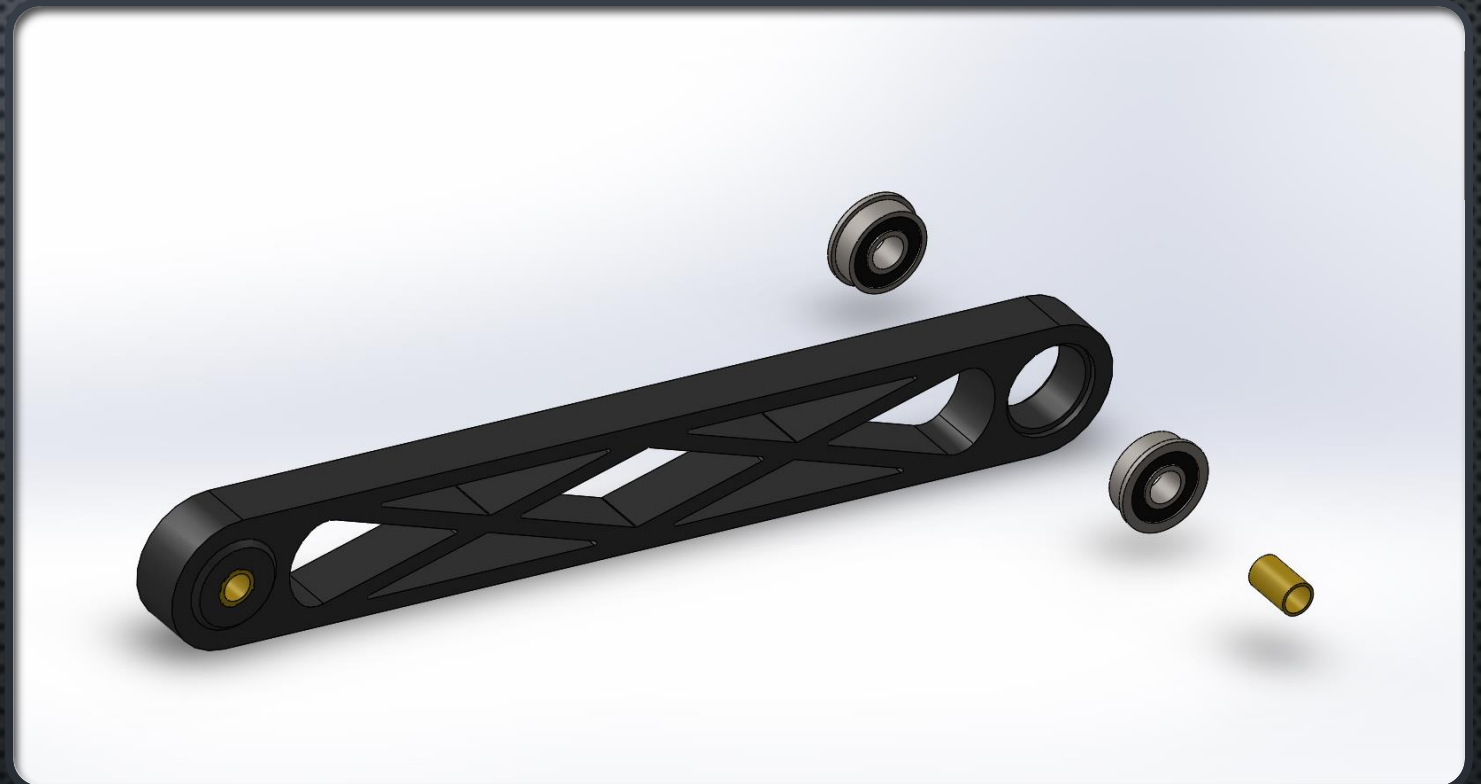
## FEMUR ASSEMBLY

- BEARING 6X15X5 FLANGED (X2)
  - F696ZZ
- DIY ALLOW TUBE 6X5X10MM



# LONG TIBIA ASSEMBLY

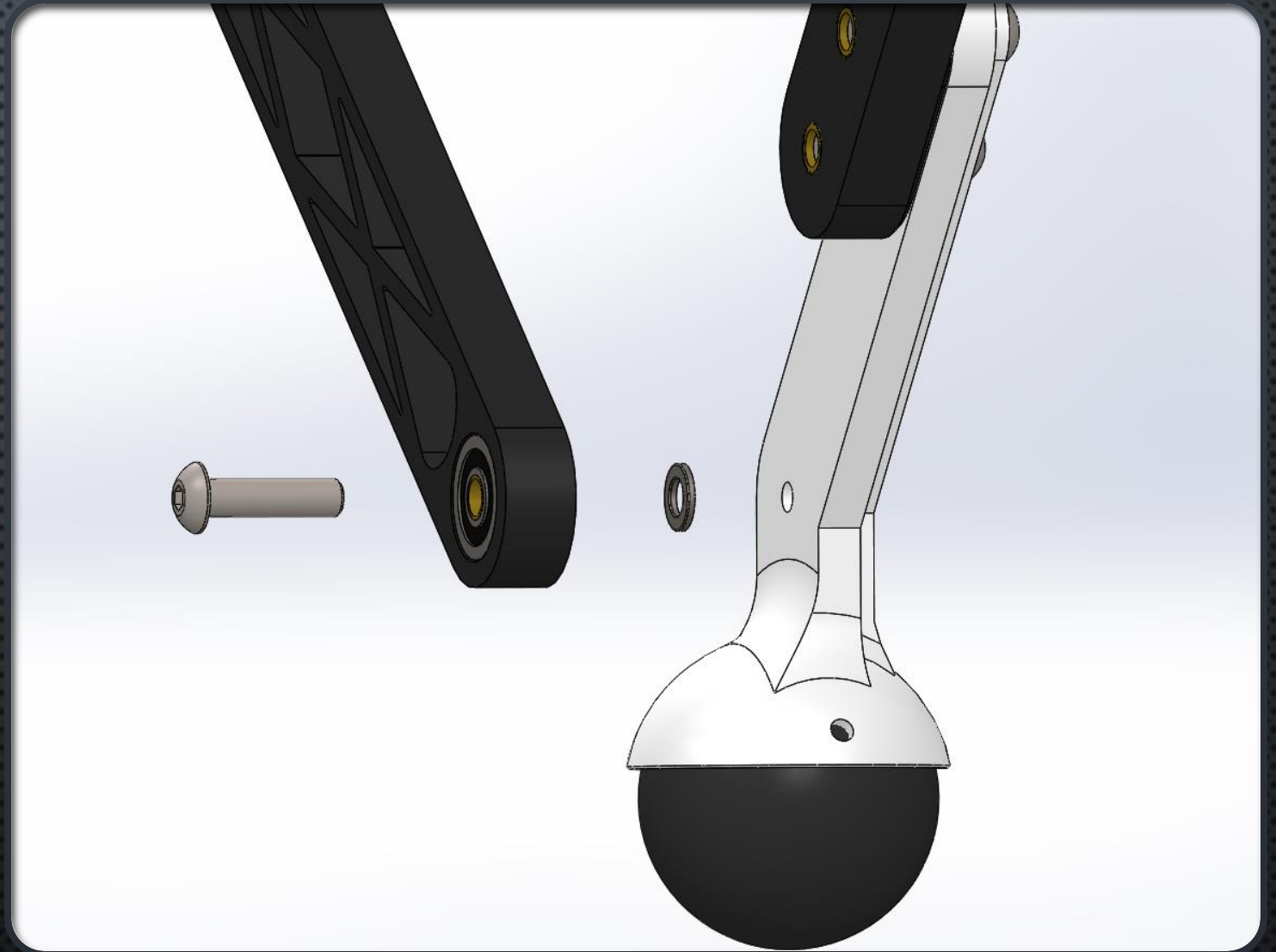
- BEARING 6X15X5 FLANGED (x2)
  - F696ZZ
- DIY ALLOW TUBE 6X5X10MM





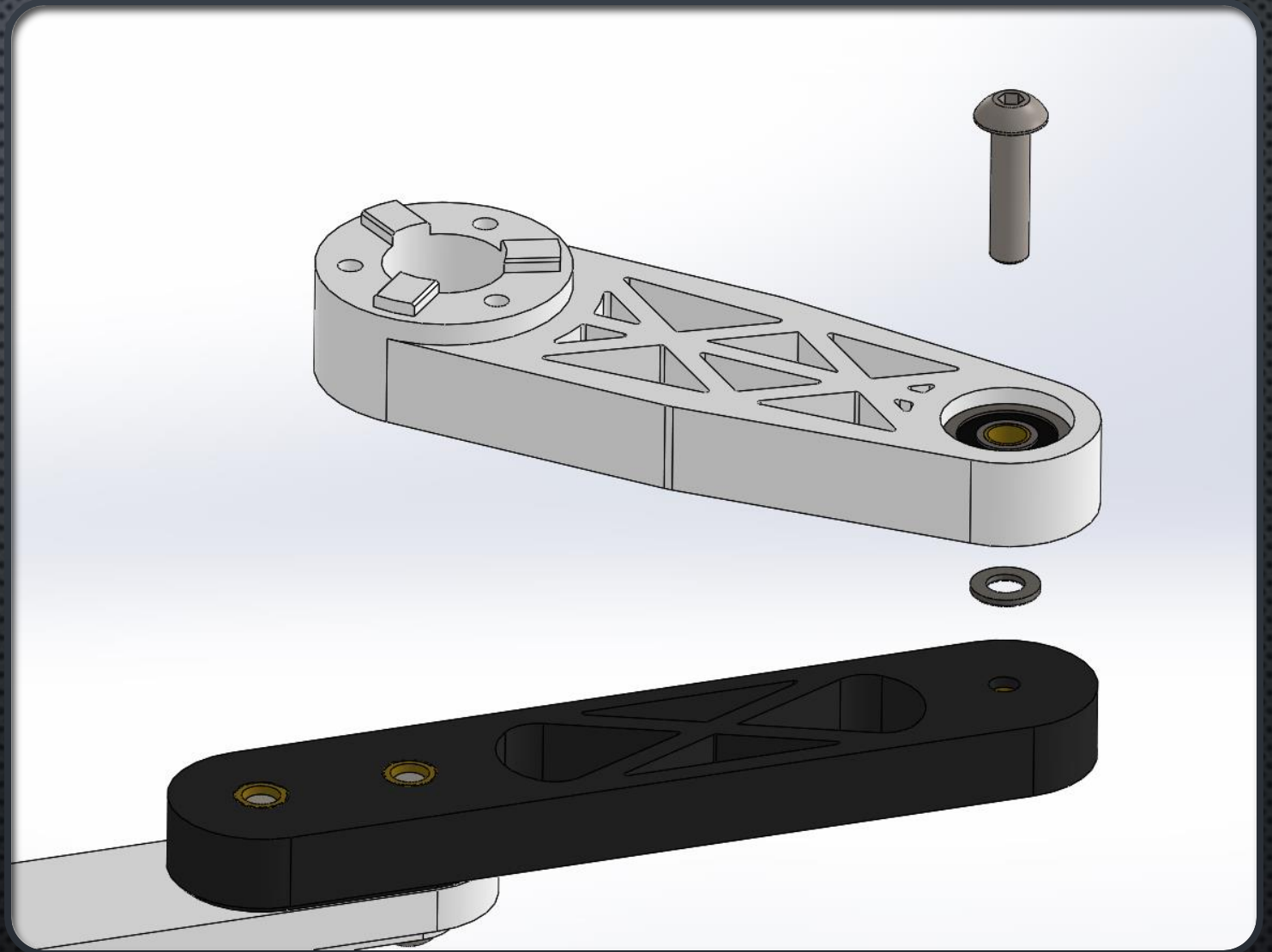
## ANKLE ASSEMBLY

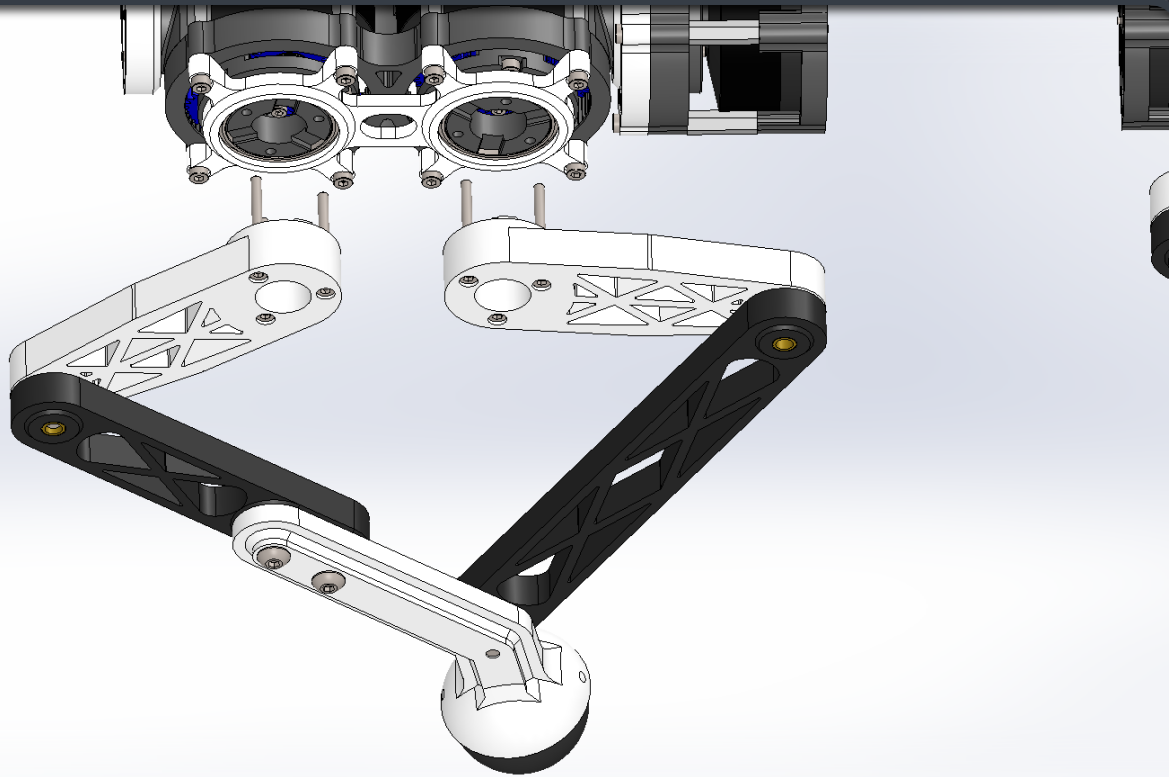
- M5x20 BUTTON HEAD
- M5 SPACER
- EPOXY GLUE FOR SQUASH BALL



# KNEE ASSEMBLY

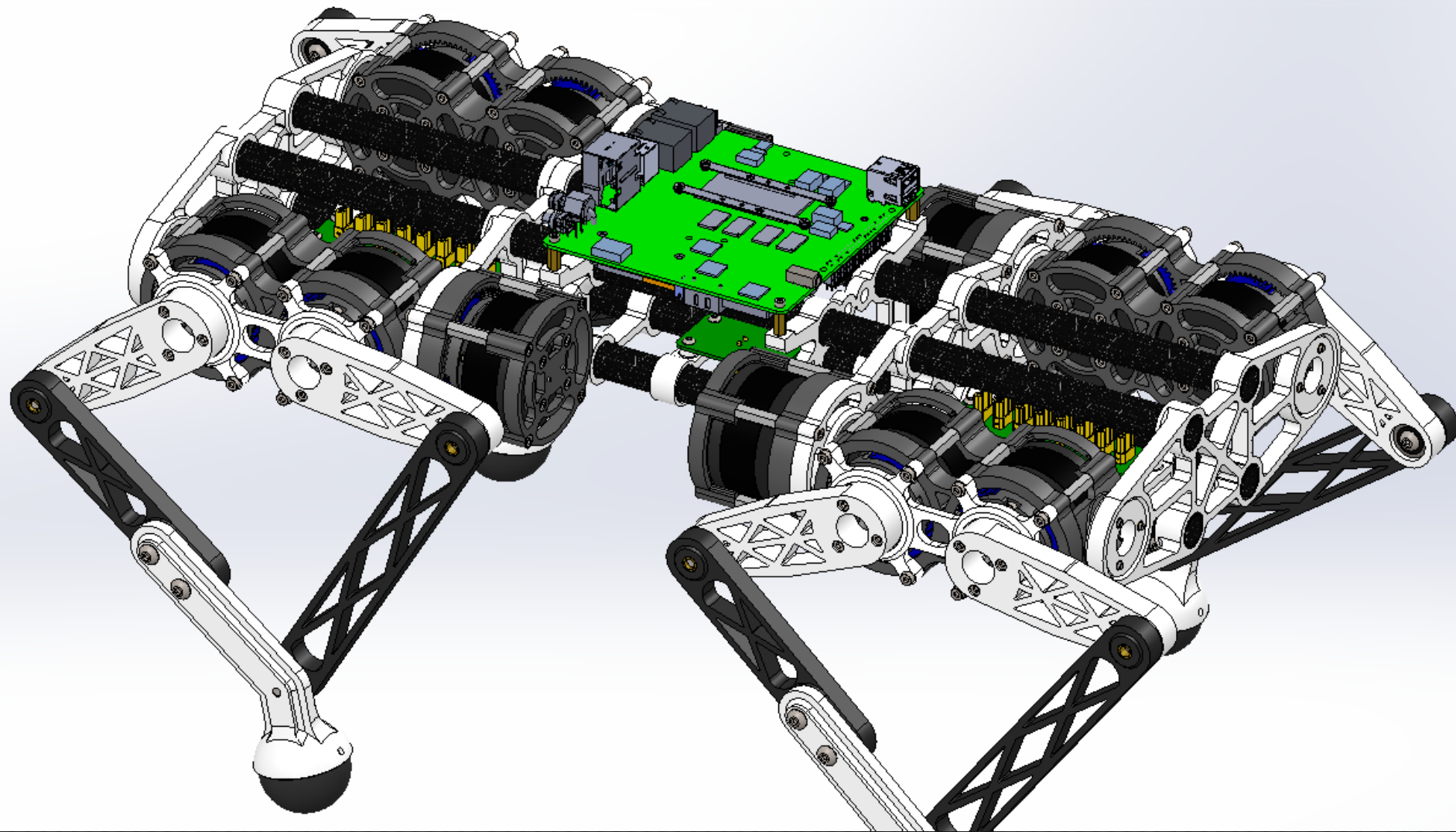
- M5x20 BUTTON HEAD
- M5 SPACER





FIX LEGS  
ON HIPS

M3X25 CHC SCREWS  
(x24)



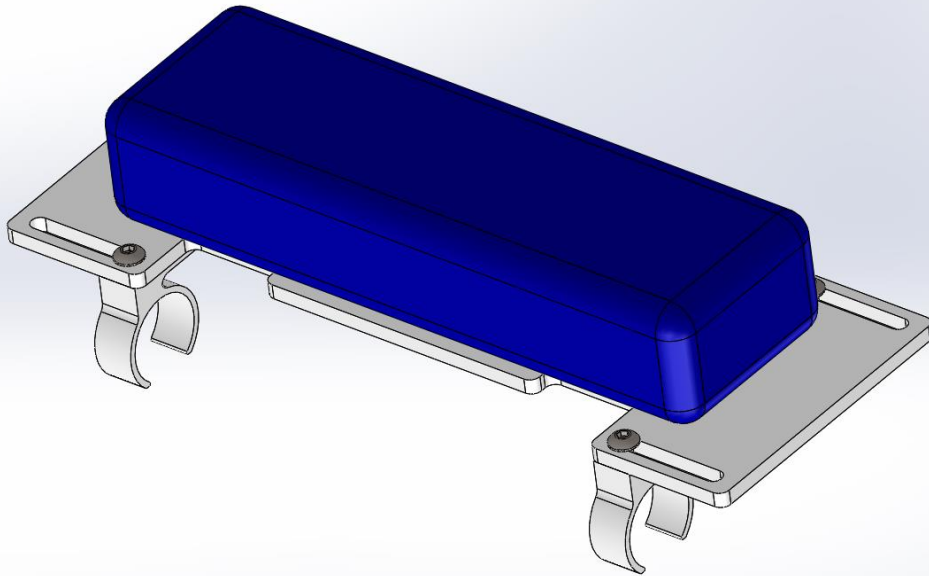
LEGS ASSEMBLY FINISHED

# BATTERIES

## LIPO PACK (X2)

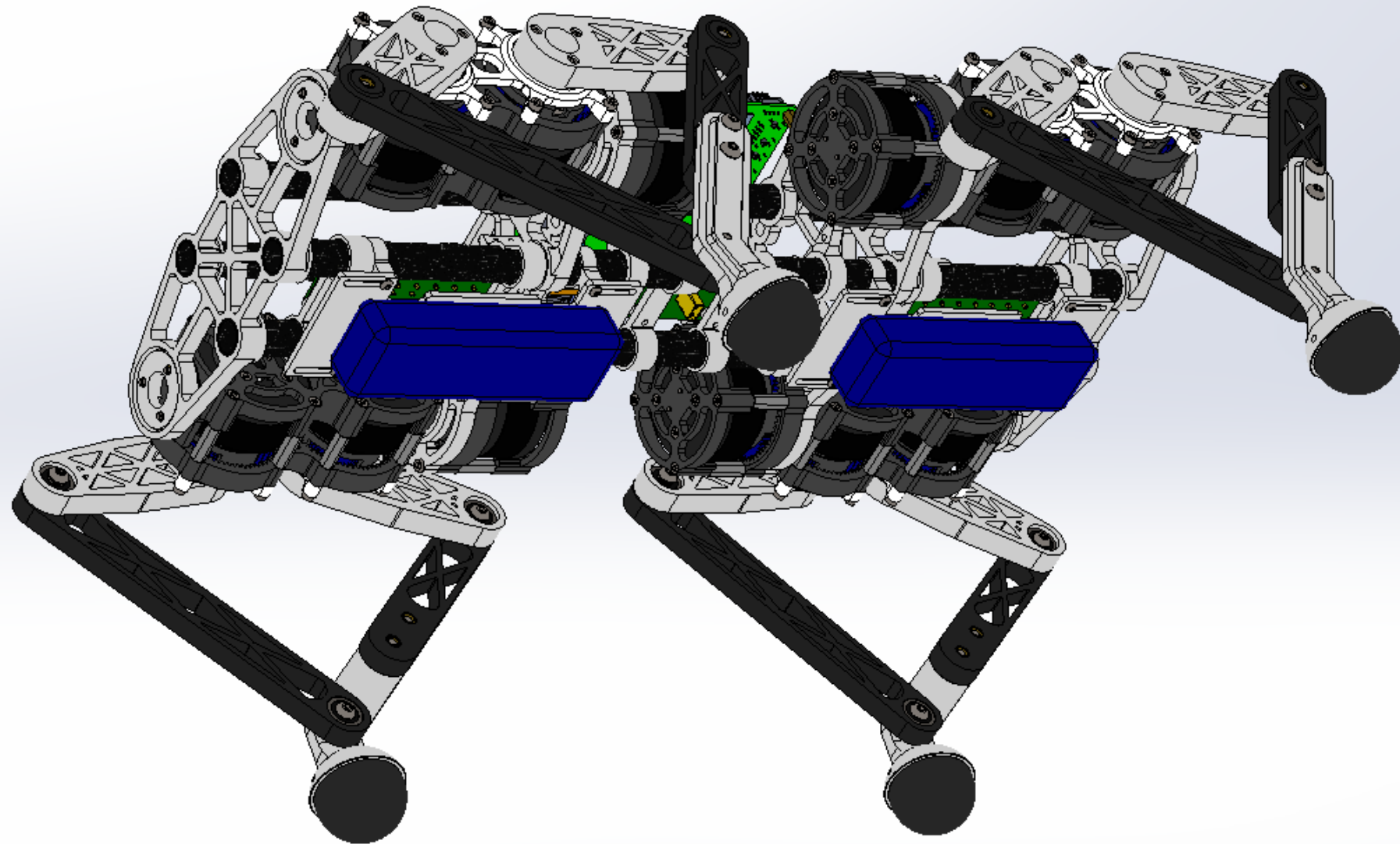
- 3..6S
- 3000..5000MAH
- MOTORS ~ UP TO 24V (6S)
- UP-BOARD VIN > 12V (3S)





# STRAPS THE PACK ON BATTERY HOLDER

VELCRO STRAP (X2)



CLIP BATTERIES ON LOWER CARBON TUBES





# WIRINGS...

POWER DISTRIBUTION + CAN BUS

# UPLOAD FIRMWARE B-G431B-ESC1 BRUSHLESS SERVO CONTROLLER FOC

# INSTALL FELIN ROS NODE

CONNECT BLUETOOTH  
GAMEPAD ... AND RUN!