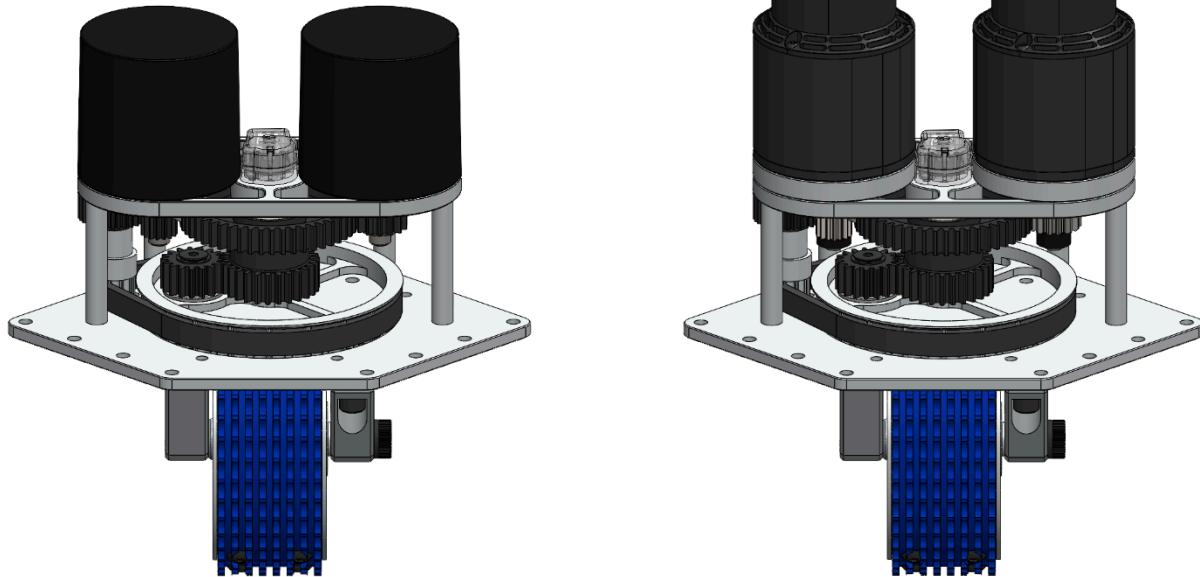


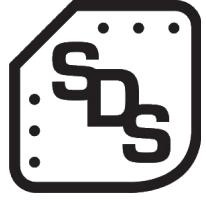


**SWERVE DRIVE
SPECIALTIES**

MK4 Swerve Module Assembly Guide

v20240305a



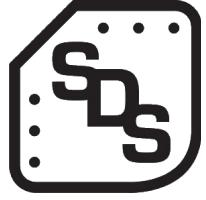


Recommendations:

Use Loctite 243 Threadlocker on all bolts, excluding the screws used to mount the encoder

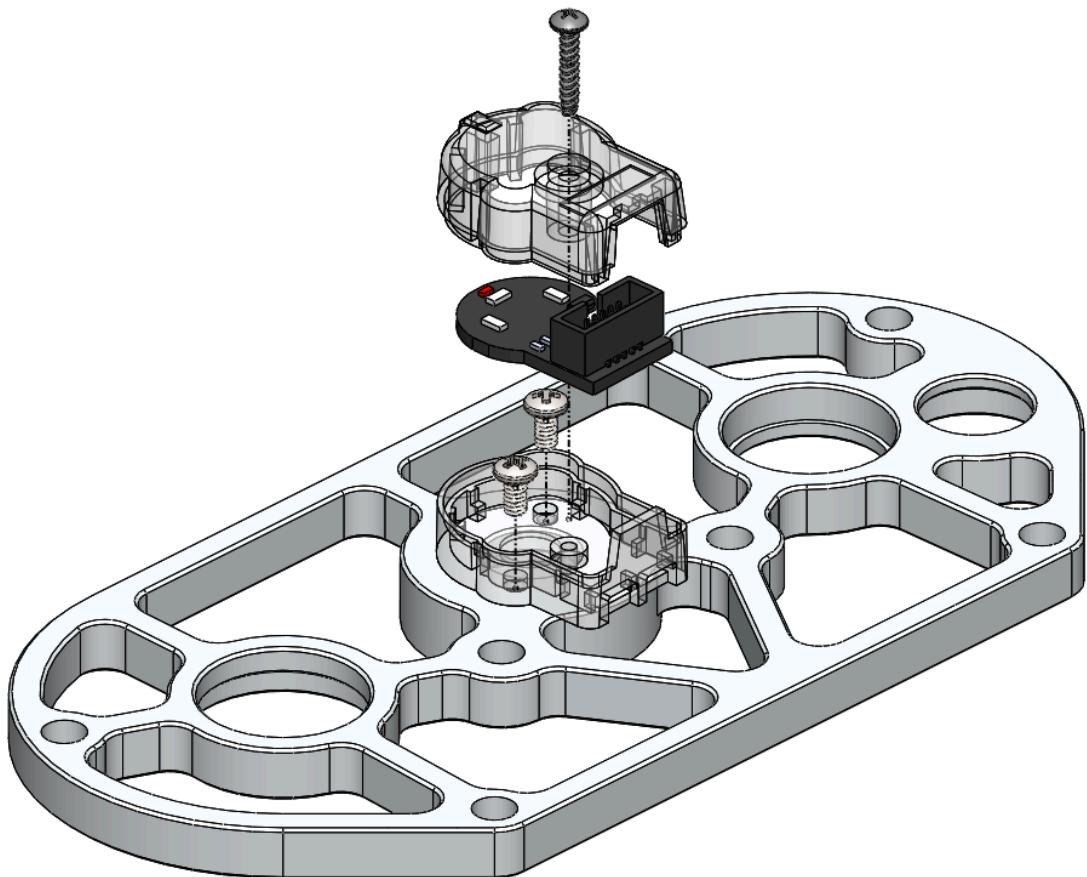
Purchase [SDS motor risers](#) if unable to cut motor shafts

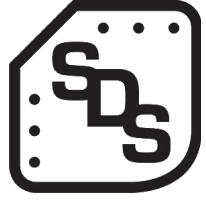
Lubricate gears with white lithium or Red "N" Tacky grease after assembly



Step 1: Encoder Mounting

Begin by mounting housing base with both #3 – 48 screws included with the encoder (without retaining compound) before inserting the encoder circuit board (attaching data cable if using SRX Mag Encoder or soldering on CAN wires if using CANcoder). Place housing cap and follow CTR Electronics instructions: DO NOT OVER TIGHTEN THE 2-28 SCREW AS THIS MAY RESULT IN PERMANENT DAMAGE TO THE HOUSING. HAND TIGHTEN UNTIL RESISTANCE IS FELT.





Step 2: Motor Configurations

For Falcon 500 Motors, use the acetal shaft spacers provided with those motors. For NEO and NEO Vortex Motors, use REV press-fit process for steering pinion, and aluminum shaft spacers and retaining rings included in the swerve module kit for the drive pinion. Without usage of [SDS Motor Risers](#), cut approximately .25" cut from motor shafts. Drive Pinions below are for L2 Gearing Modules. **Note:** Falcon 500 shaft spacer configurations indicated below are for swerve module kits with 0.5"-long steering pinions, so if Falcon 500 steering pinion is .75" long, reduce spacer stack thickness on each side of that steering pinion by 0.125".

Falcon 500 Motors w/o Motor Risers (shaft cut .25"):

- **Steering Motor:** .125" and .0625" spacers before pinion, .25" spacer after
- **Drive Motor:** .125" spacer before drive pinion, .25" and .0625" spacer after

Falcon 500 Motors w/ Motor Risers:

- **Steering Motor:** qty 2 .25" spacers before pinion, .125" and .0625" after
- **Drive Motor:** .25", .125", and .0625" spacer before drive pinion, .25" after

NEO or NEO Vortex Motors (8mm keyed shaft) w/o Motor Risers (shaft cut .25"):

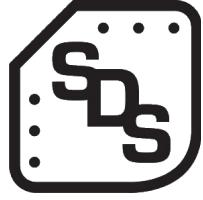
- **Steering Motor:** Install gear (may be slip or press fit) .125" from end of shaft, using Loctite 609 Retaining Compound to fully secure gear in place
- **Drive Motor:** .1875" spacer before pinion, retaining ring after

NEO or NEO Vortex Motors (8mm keyed shaft) w/ Motor Risers:

- **Steering Motor:** Install gear (may be slip or press fit) .125" from end of shaft, using Loctite 609 Retaining Compound to fully secure gear in place
- **Drive Motor:** .3125" and .1875" spacer before pinion, retaining ring after

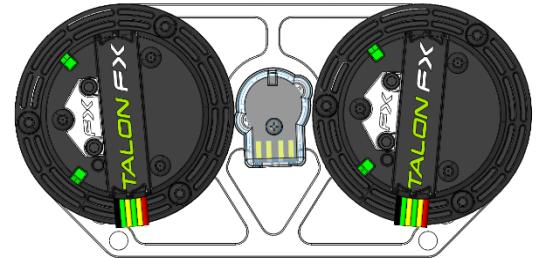
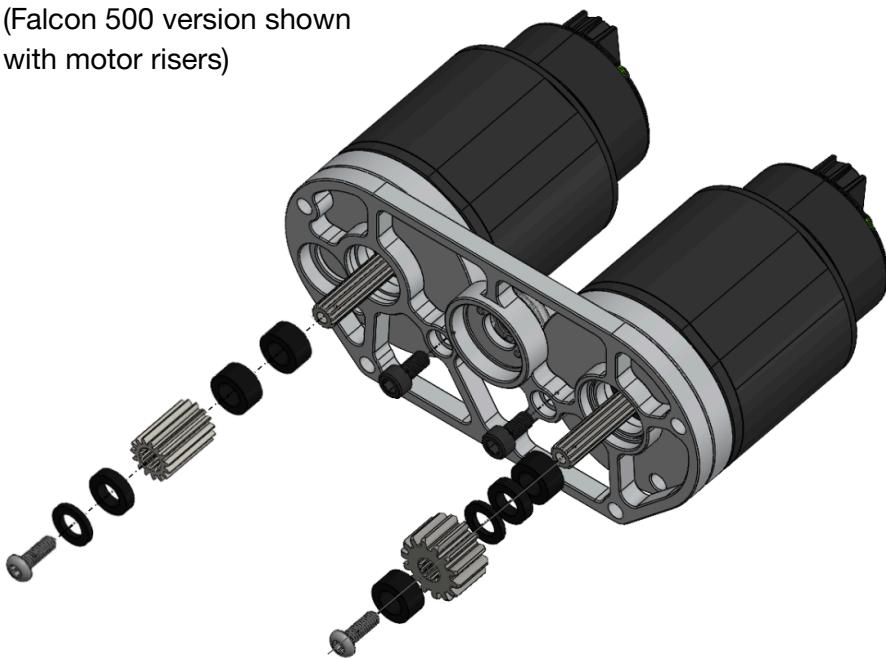
Kraken X60 Motors w/ Motor Risers:

- **Steering Motor:** Install .125" and .375" spacers first, then gear, and screw last
- **Drive Motor:** Install .125" and .375" spacers first, then gear, and screw last

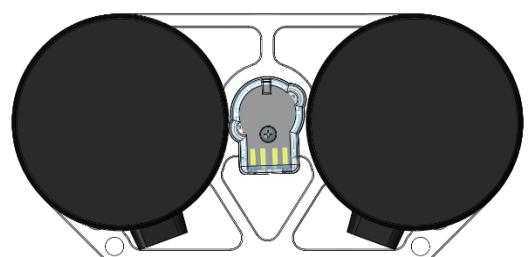
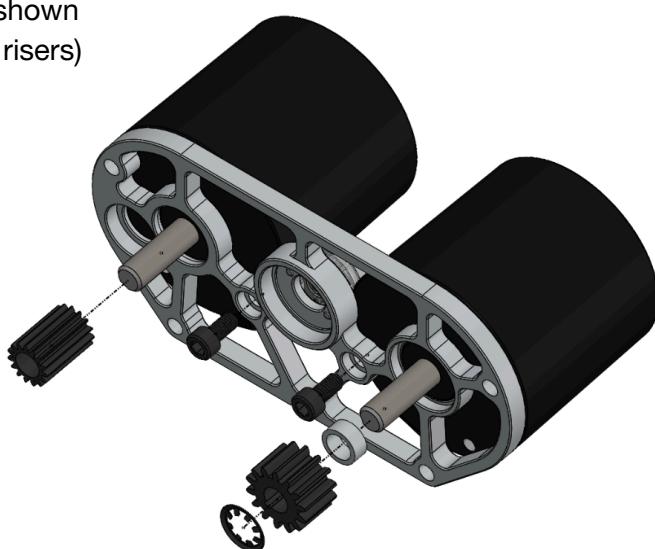


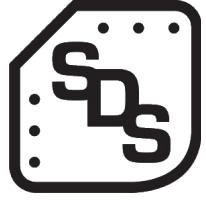
Step 2: Motor Configurations (Cont.)

(Falcon 500 version shown
with motor risers)



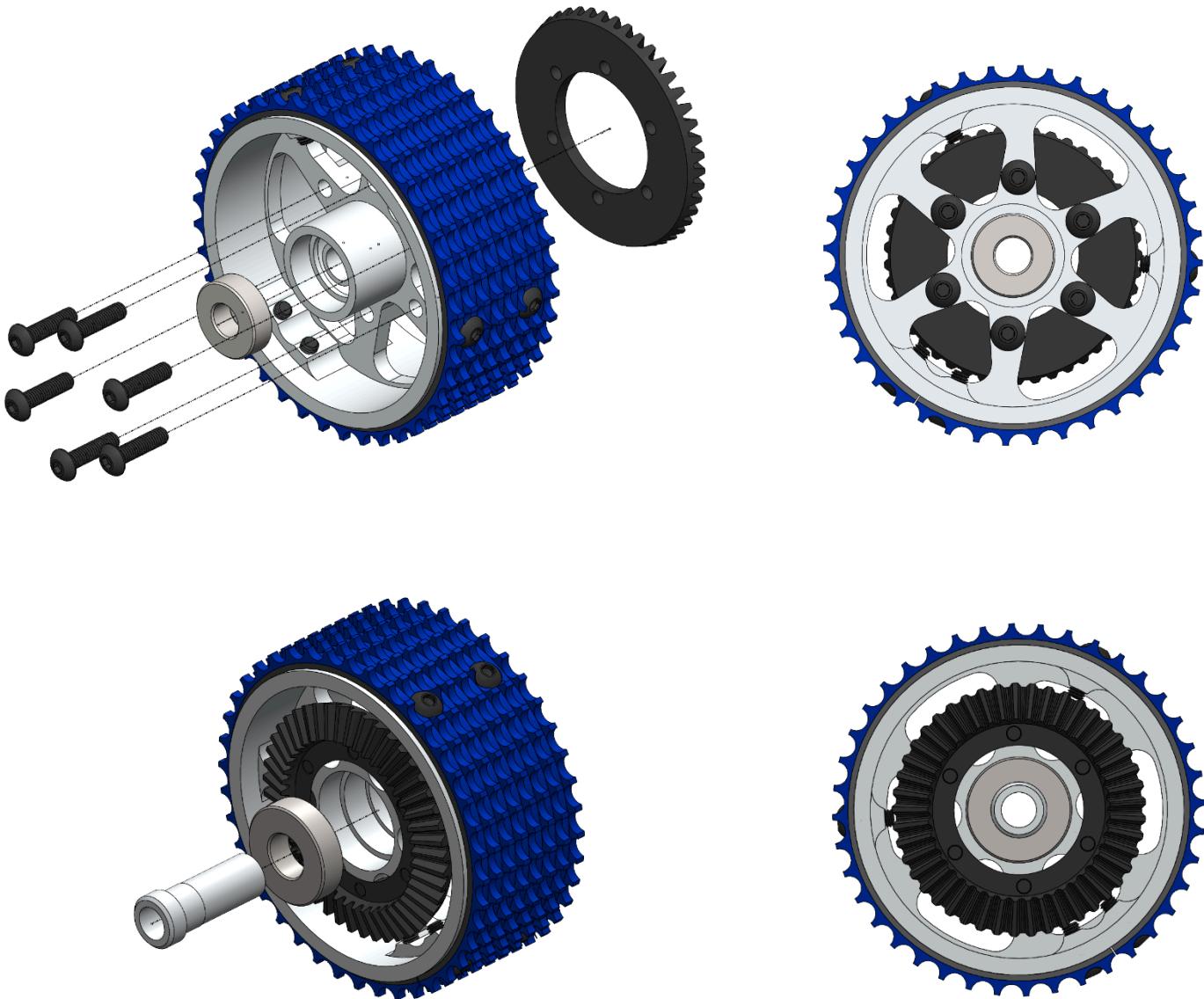
(NEO version shown
without motor risers)

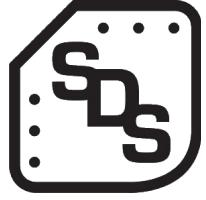




Step 3: Wheel Assembly

The MK4 Module uses the 4"D X 1.5"W Billet Wheel from SDS. Tread comes pre-installed. Mount 45t Bevel Gear with six #10-32 X .75 Button Head Screws. Insert .5" ID Bearing and Wheel Spacer on 45t Bevel Side, insert .375" ID Bearing on opposite side.

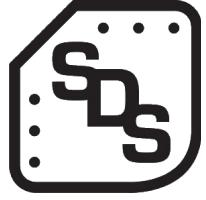




Step 4: Bearing Mounting

Secure with five #10-32 X .25 Button Head Screws.





Step 5: Intermediate Shaft Assembly

Install Bearing

For V1/V2 Intermediate Shaft

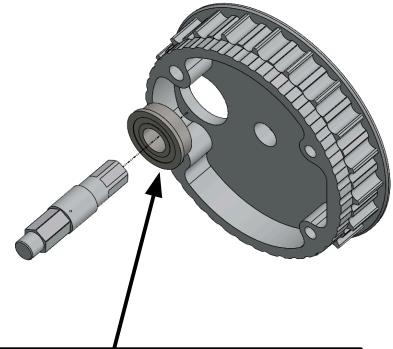
Insert FR6ZZ-10.25mmID

Flanged Bearing and Shaft

For V3 Intermediate Shaft

Insert 6802ZZ Bearing (*not*

flanged) and Shaft



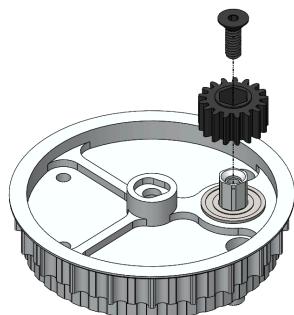
IMPORTANT

If using the flanged bearing (for V1/V2 shaft), ensure its flange is on the **bottom** of the Base Pulley

Secure Shaft and 20DP .375 Hex Bore Gear

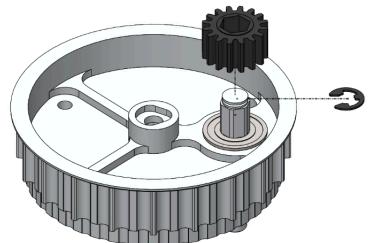
For V1 Intermediate Shaft

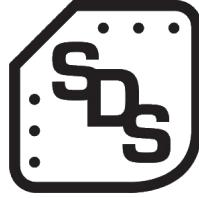
Install #12-24 X .5" Flat Head Screw



For V2/V3 Intermediate Shaft

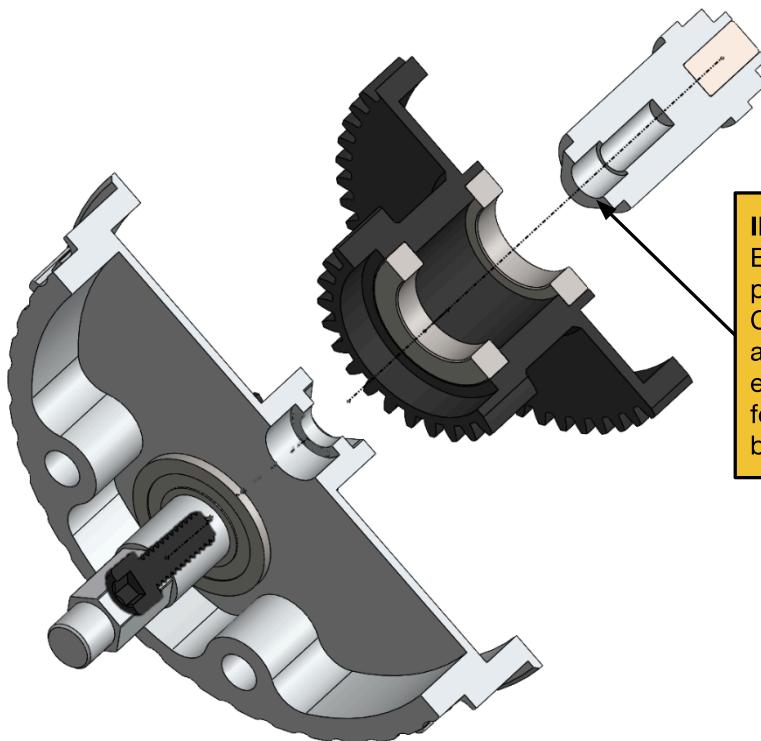
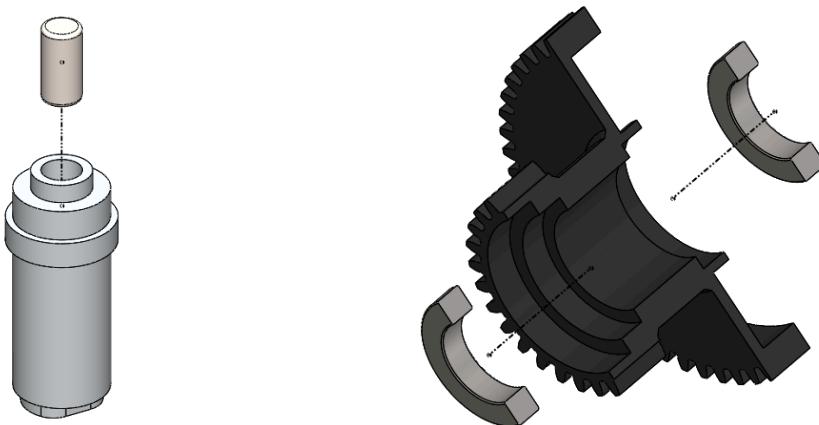
Install E-Clip into Shaft's groove



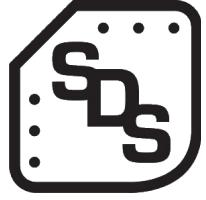


Step 6: Center Column Assembly

Insert encoder magnet (provided separately with encoder) into Center Column and retain with Loctite 609 Retaining Compound (wipe off excess), ensuring magnet is flush with top of Center Column. Insert two 6802ZZ Bearings into Double Gear and capture with Center Column and 1/4"-20 X .625" Socket Head Cap Screw.

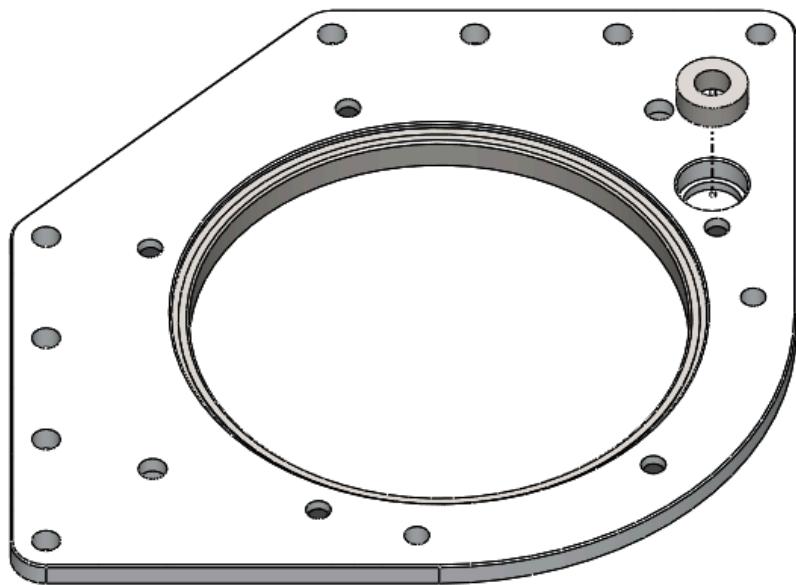
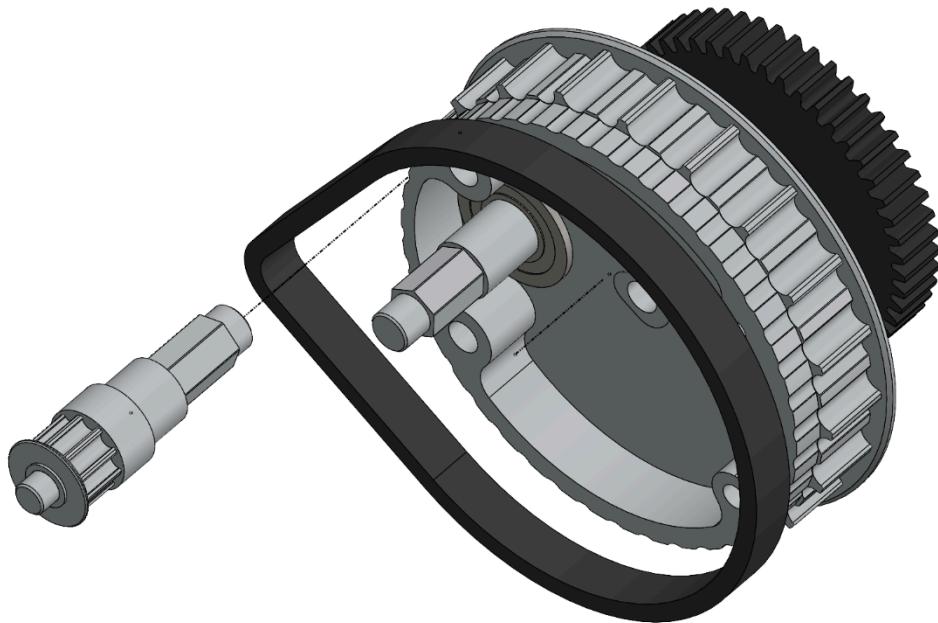


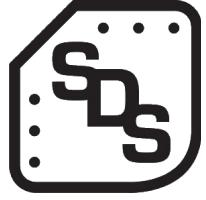
IMPORTANT
Ensure cone-shaped
protrusion on bottom of
Center Column is
aligned and fully
engaged with mating
feature in Base Pulley
before tightening screw



Step 7: Pulley Mounting

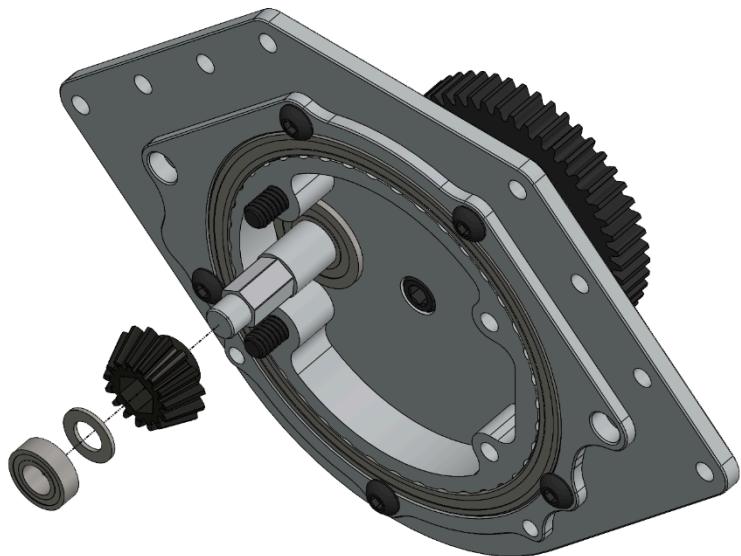
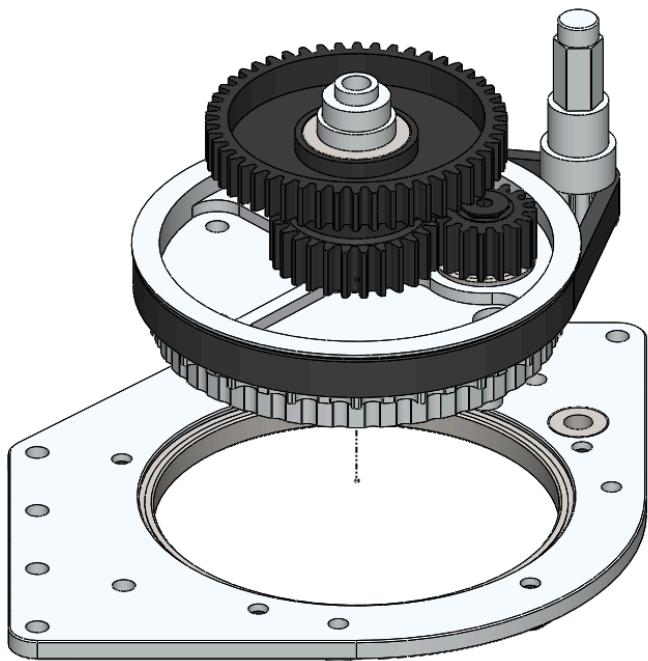
Capture Steering Belt between Steering Shaft and Base Pulley. Insert R188ZZ Bearing before continuing with assembly.

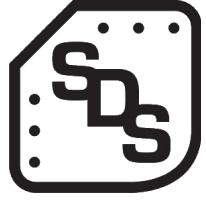




Step 7: Pulley Mounting (Cont.)

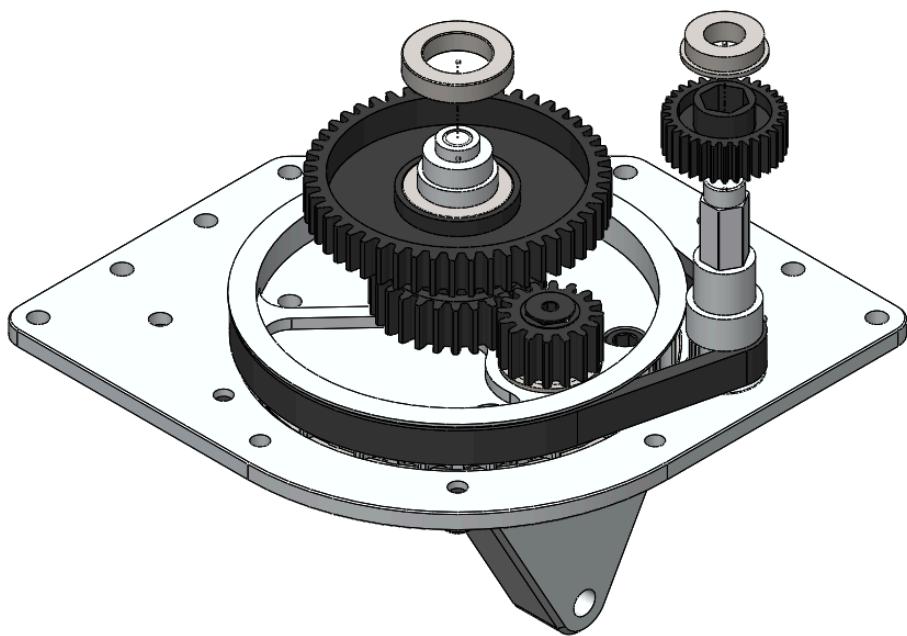
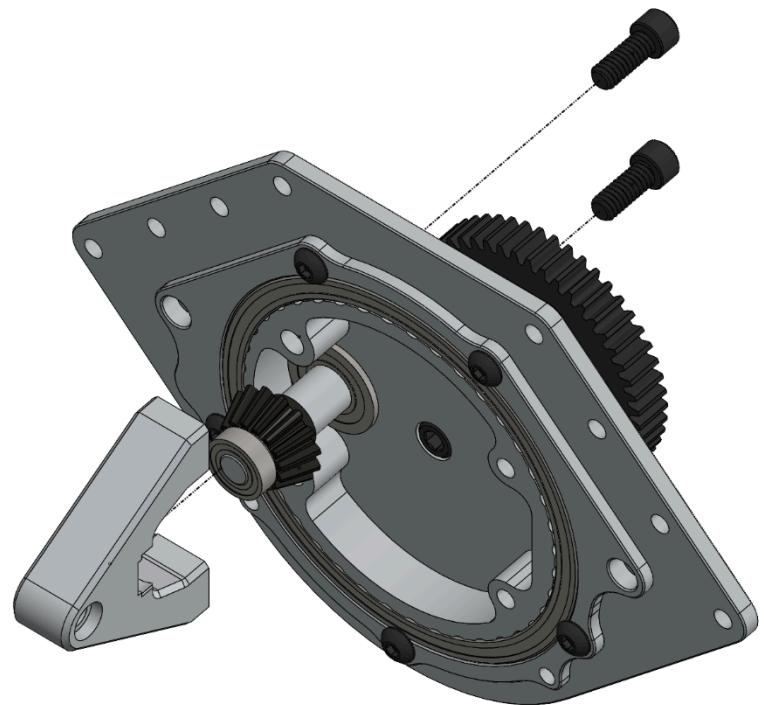
Insert Base Pulley Assembly, aligning Base Pulley with X-Contact Bearing and Steering Shaft with R188ZZ Bearing. Insert 15t Bevel Gear, followed by 1mm Shim and 688 Bearing.

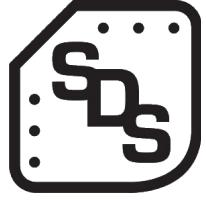




Step 8: Wheel and Motor Mount Prep

Attach Wheel Mount B with two .25"-20 X .625 Socket Head Cap Screws. Place 6802ZZ Bearing, 32DP 32t Gear, and F689 Bearing on respective shafts.

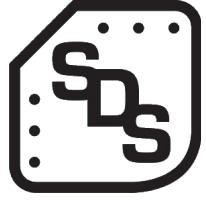




Step 9: Motor Plate Mounting

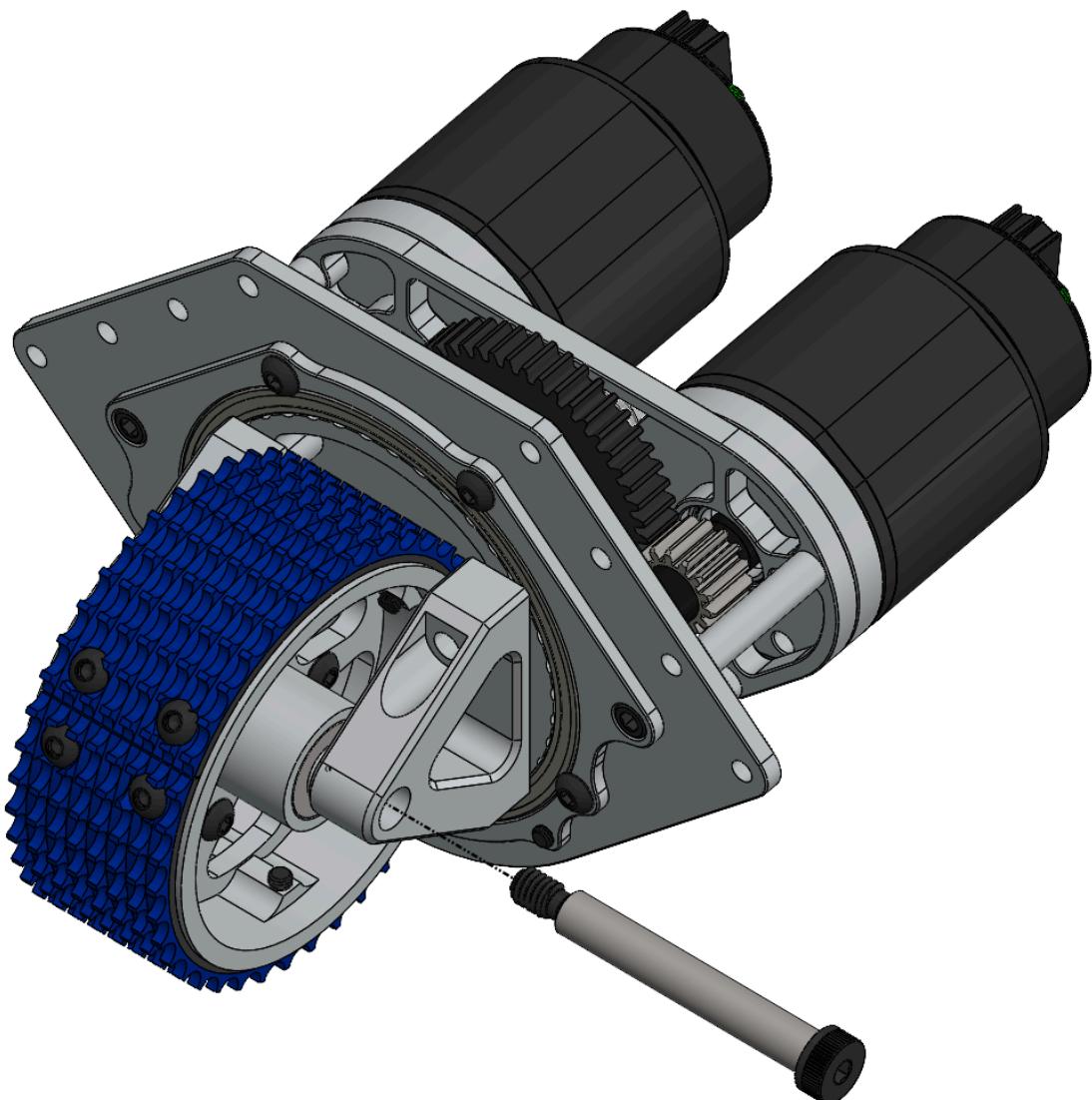
Secure four #10 X 1.875" spacers with four #10-32 X 2.5" Socket Head Cap Screws, ensuring proper alignment of all necessary mating surfaces and bearings.

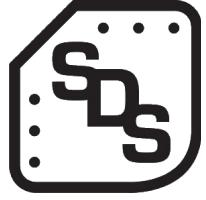




Step 10: Attach Wheel

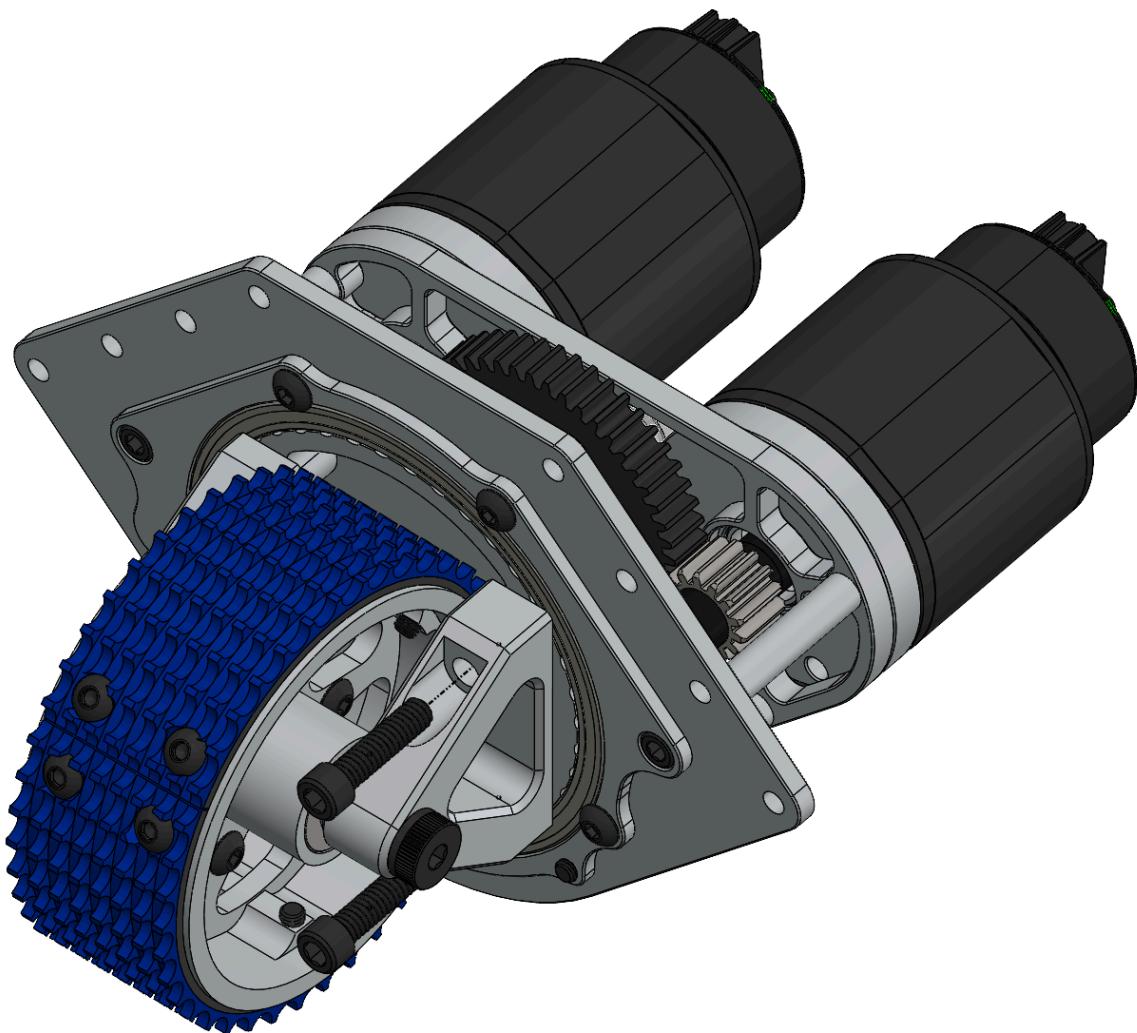
Mount with .375" X 2.5" shoulder bolt

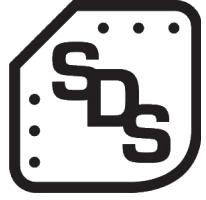




Step 11: Wheel Mount Assembly

Secure Wheel Mount A with two .25"-20 X 1" Socket Head Cap Screws.





Assembly Complete

IMPORTANT Lubricate gears with white lithium or Red “N” Tacky grease before usage, and regularly with use.

