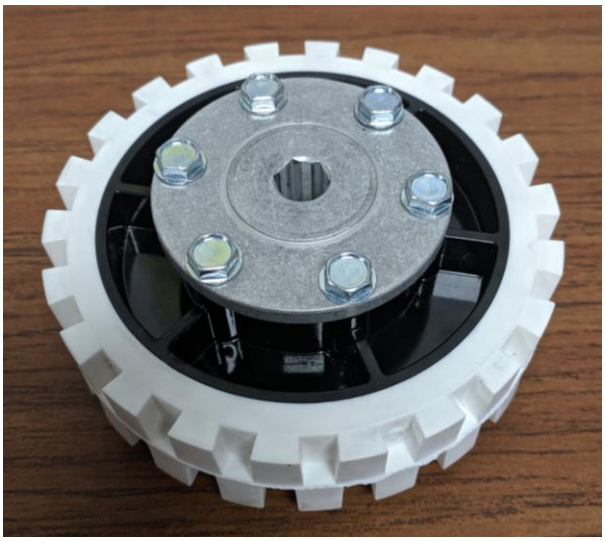
Swerve and Steer

Jan 2021 Revision

am-3009_WXYZ

Section “a” covers building am-3009_yoke.

Step 1a:
Take 6 thread-forming screws (am-1123), and attach the 3/8” hex hub (am-2231b) to the 4” HiGrip wheel (am-2256).

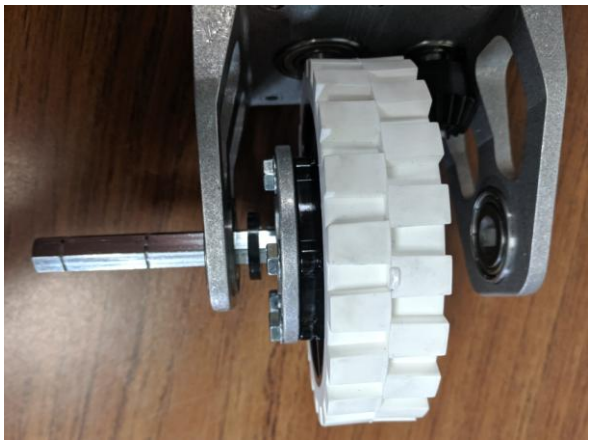


Step 2a: Press the 4 bearings into the 4 bearing pockets on the U housing (am-3020b). The 3/8 hex bearings (am-0692) go into the two lower holes, the 3/8” round bearing (am-0028) goes into the smaller upper hole and the 1/2” round bearing (am-0030) goes into the larger upper hole. All flanges face “out”.

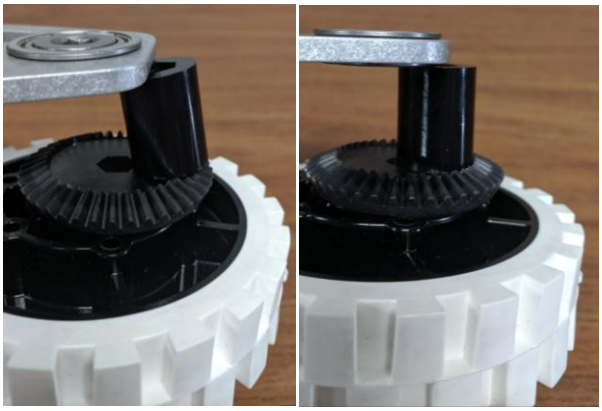
Step 3a: Install the bevel gear shaft (am-3019a) into the 3/8” round bearing and insert the key (am-1121) into the keyway.

Step 4a: Install the 8mm bore bevel gear (am-2621) onto the shaft and secure in place with a push on retaining ring (am-0033).

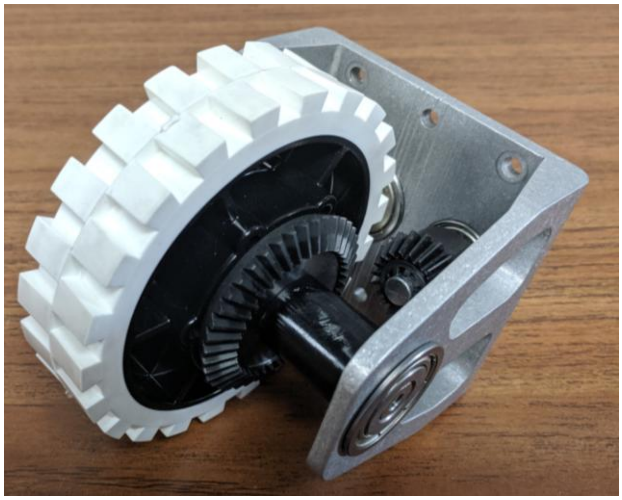
Step 5a: Insert the 3/8” hex shaft (am-3021b) through the hex bearing on the opposite side of the U housing as the bevel gear. Place a 1/8” hex spacer (am-3948-125) on the shaft then place the wheel/hub assembly on the shaft with the hub facing the spacer.



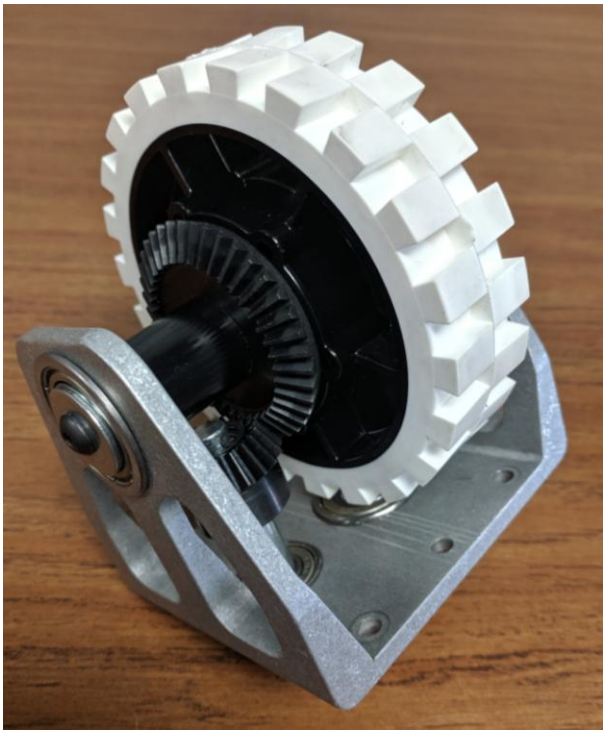
Step 6a: Place the hex bore bevel gear (am-2620) on the face of the wheel and wedge the 1” long hex spacer (am-3948-1000) between the gear and the other hex bearing.



Step 7a: Slide the hex shaft the rest of the way through.



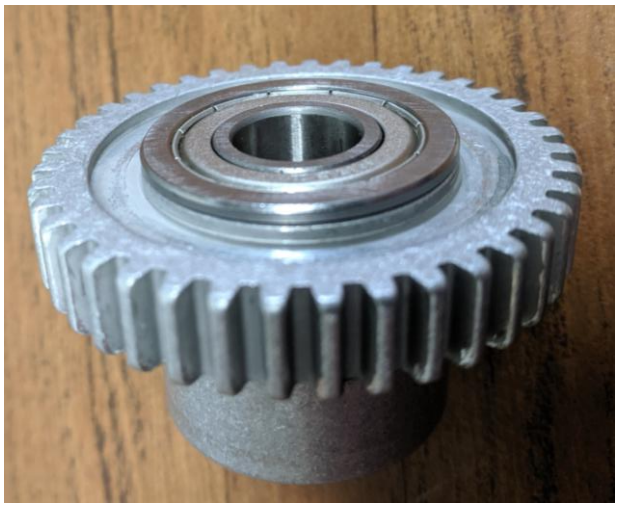
Step 8a: Install a #10 fender washer (am-1523) and thread patch button head screw (am-1506) on either end of the hex shaft to retain it. This completes am-3009_yoke.



Section “b” covers building am-3009_center.

Step 1b:
Press the 3/8” round bearing (am-0028) into the gear plate (am-3017a)

Step 2b: Press the 1/2” round bearing (am-0030) into the bearing gear (am-3013b)

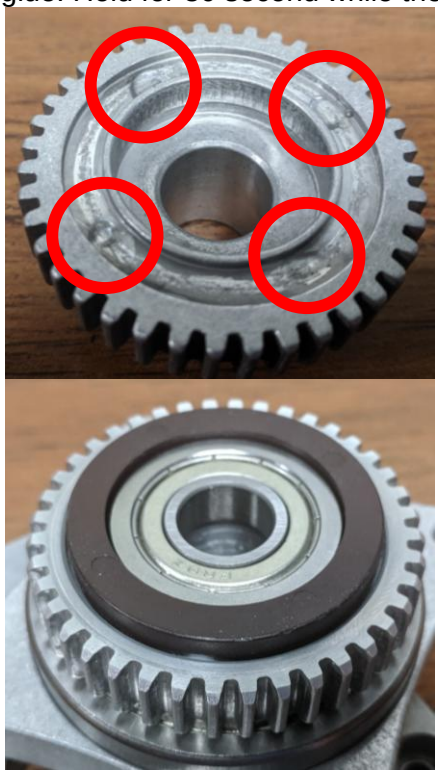


Step 3b: Press the large bearing (am-2928) into the bearing plate (am-3016c)

Step 4b: Press the gear/bearing assembly from Step 2b into the large bearing. Note the orientation of both parts in the pictures.

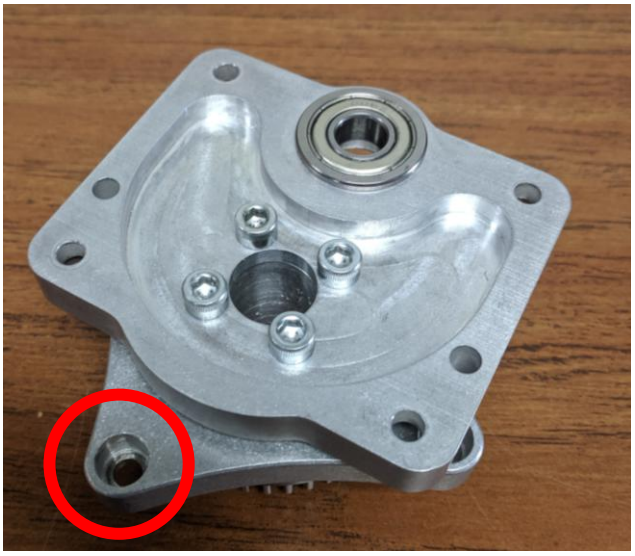
Step 5b: Place the large washers (am-1534) and thrust bearing (am-1535) in a sandwich on the protruding part of the bearing gear.

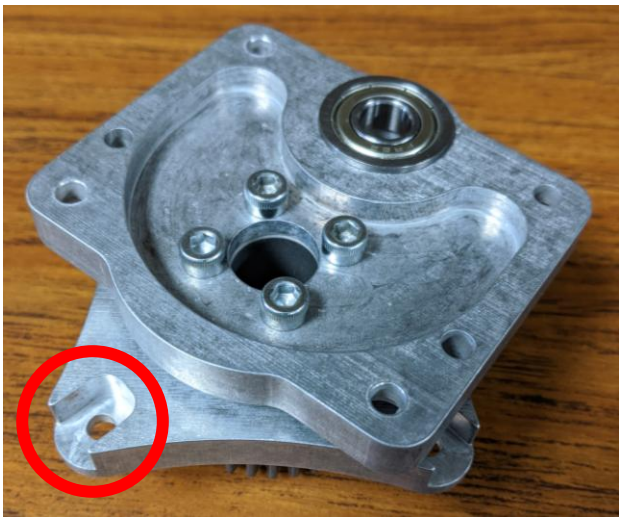
Step 7b: (Optional) If you are using a Lamprey encoder apply a few drops of super glue to the ring around the 1/2 in. bearing. Press the magnet down onto the glue and give it approximately a quarter turn to disperse the glue. Hold for 30 second while the glue sets.



Step 6b: Screw the gear plate with bearing from Step 1b to into the tapped holes on the gear from Step 2b using (4) 10-32 screws with thread locking patch (am-1120). This completes am-3009_center.

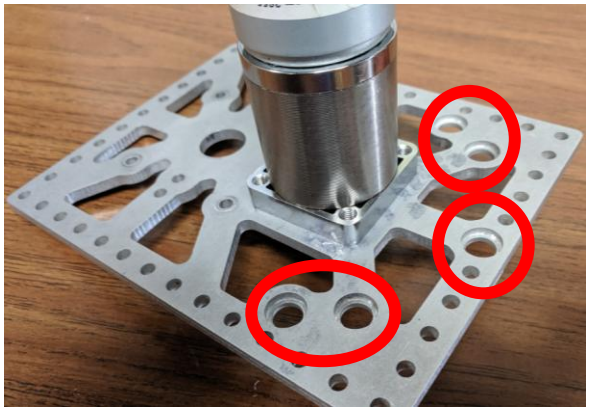
Note: You may have an updated bearing plate that has nut pockets instead of screw head pockets. This guide may alternate between both.





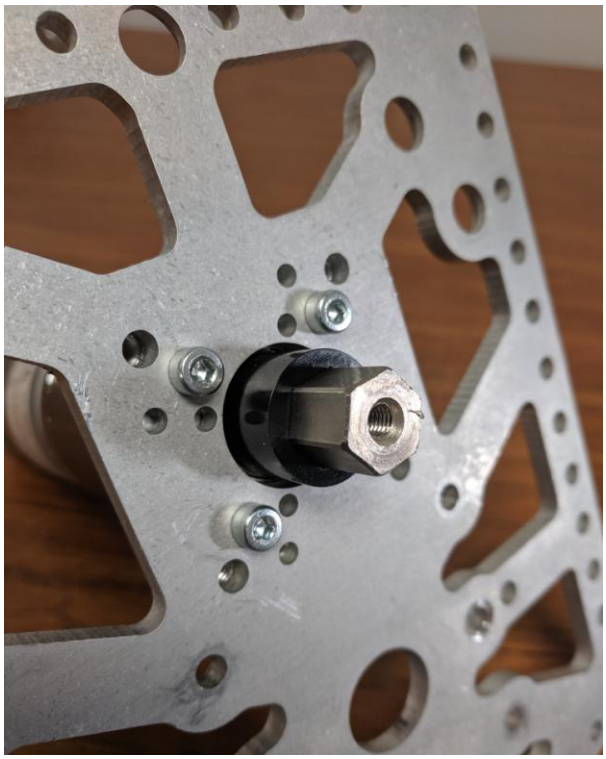
Section “c” covers building am-3009_motor.

Step 1c:
Take the motor plate (am-3012d) and the PG 71 gearmotor (am-3655) and place the hex shaft through the largest round hole in the plate. Make sure that the 5 counter bored holes are on the same side as the gearmotor.



Step 2c: Install the four m4 screws (am-1264) through the plate and into the tapped holes in the PG71.

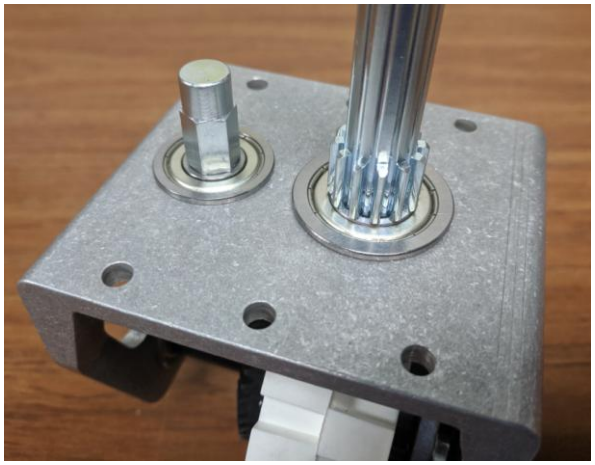
Step 3c: Slip the 1/2 in. long 1/2: in. hex spacer (am-3948-500) over the hex shaft.



Step 4c: Slip the 1/2: in. hex gear (am-4056) over the hex shaft and install the 10-32 SHCS (am-1120) and the fender washer (am-1523) to the end of the PG hex shaft to retain the gear.

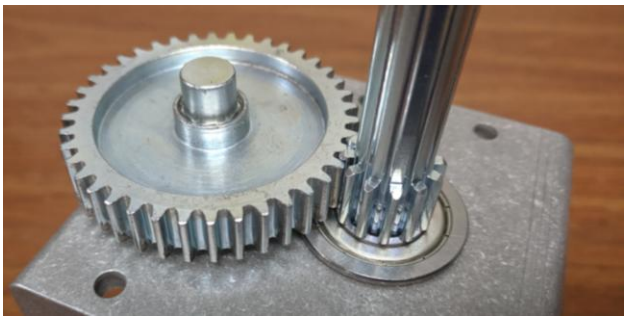
Section “d” covers finishing assembly

Step 1d: Insert the short end of the drive shaft gear (am-3018b for CIM/NEO versions or am-4145 for Falcon versions) into the 1/2” round bearing on am-3009_yoke

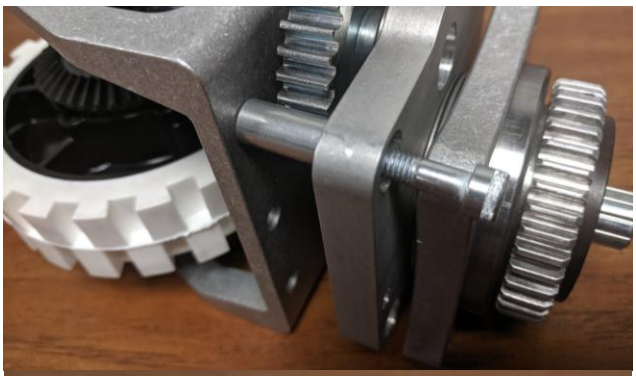


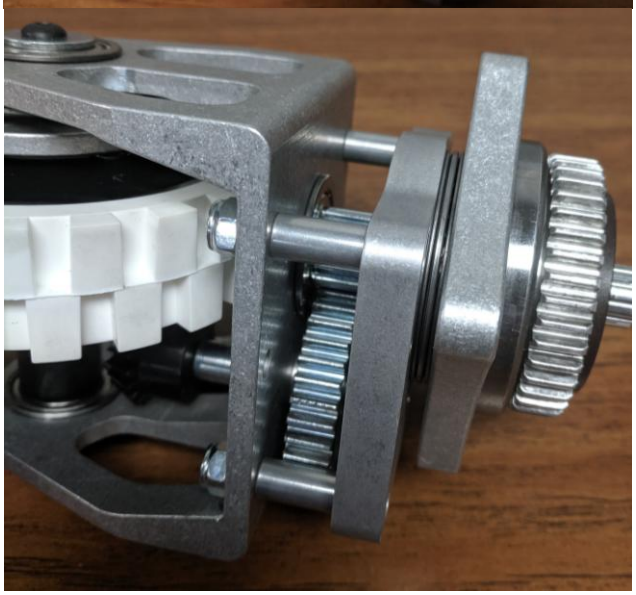
Step 3d: Place the previously assembled am-3009_center onto the two protruding shafts as shown.

Step 2d: Place the 3/8 in. hex bore gear (am-3976) on protruding hex shaft so that it meshes with the drive shaft gear.

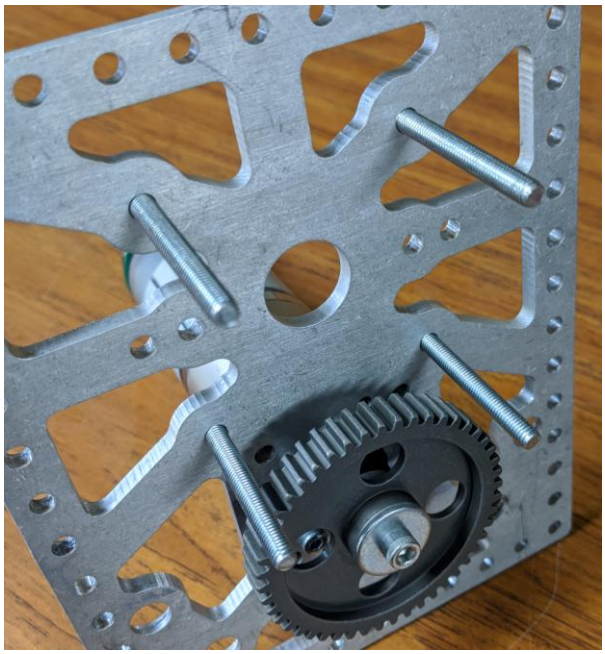


Step 4d: Locate four 5/8 in. long aluminum spacers (am-2919a), four 1.25 in. long #10-32 screws, and four nylock nuts. Install these in sets around the top of the yoke to join the bearing plate to the yoke.

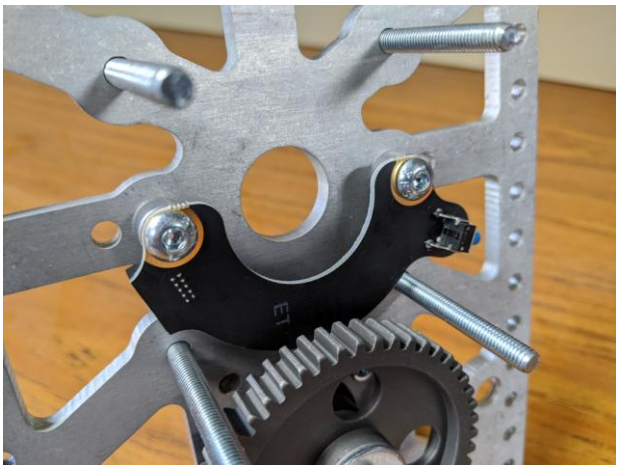




Step 5d: Insert four BHCS into the motor plate in the holes shown below

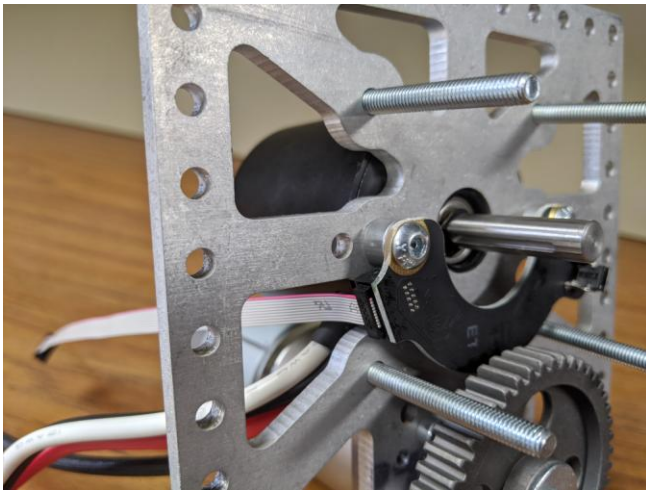


Step 6d: (Optional) If using the Lamprey encoder, insert two 3/4 in. long BHCS #10-32 screws through the encoder, place two 1/4 in. long aluminum spacers on the back side of the encoder, and place that assembly on the motor plate in the orientation shown.

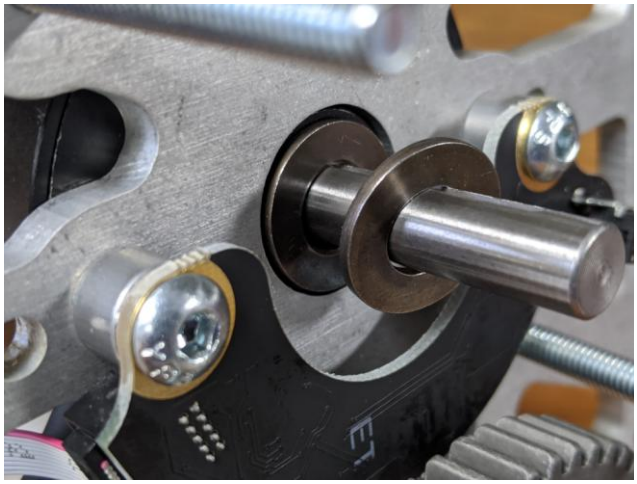


Step 7d: Place the motor on the opposite side of the plate and install using the BHCS.

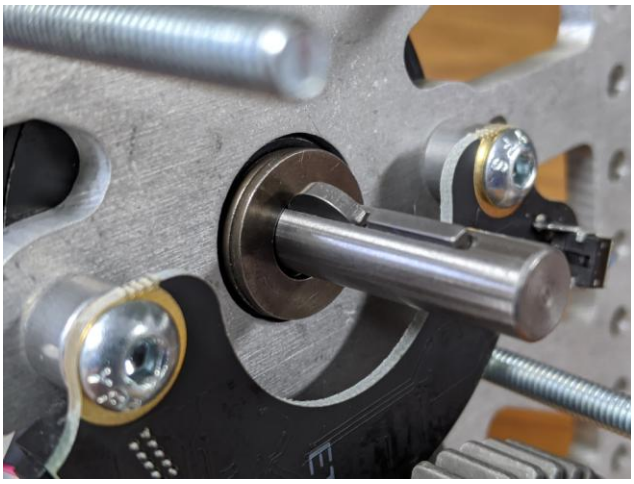
Step 8d: (Optional) If using the Lamprey encoder, insert the ribbon cable in the orientation shown.



Step 9d: (If using a Falcon skip to Step 11d) Place the two hardened steel washers on the motor shaft.



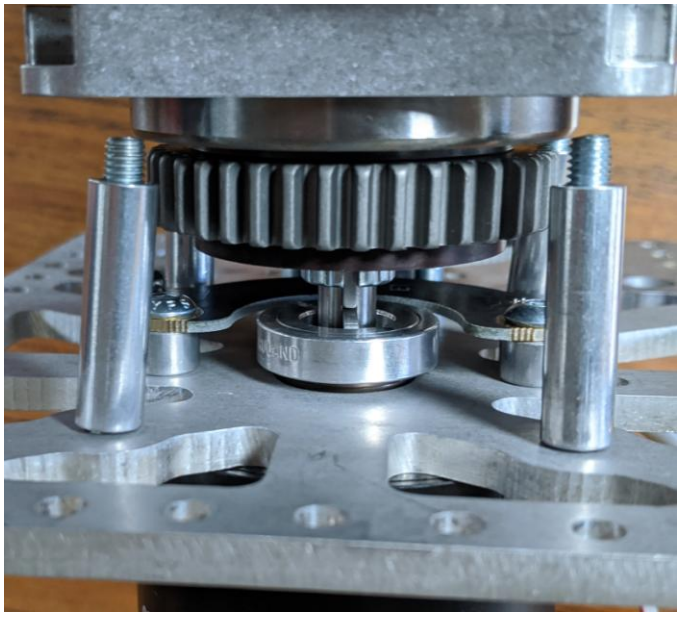
Step 10d: Place the woodruff key and the standard key in the motor shaft keyway as shown.



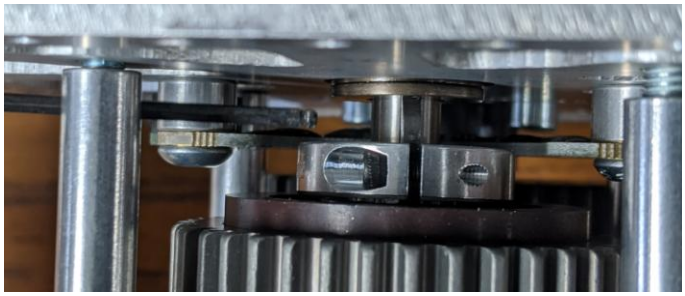
Step 11d: Place the 1/2 in. round collar clamp loosely on the motor shaft.

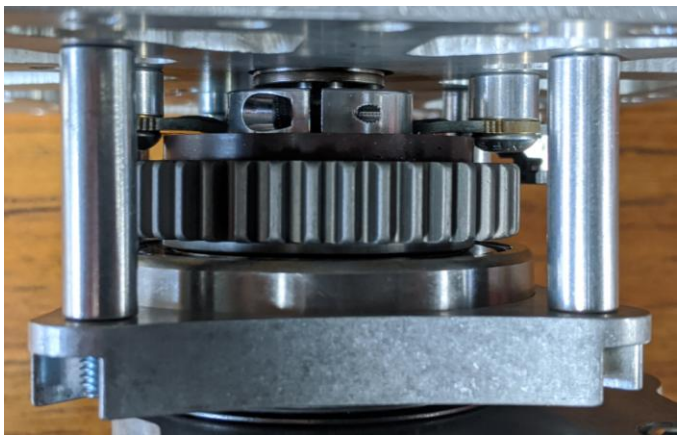
Step 12d: Place the 4 long aluminum spacers on the protruding BHCSs from step 5d

Step 13d: If using a CIM or NEO align the slot in the drive shaft with the keys in the motor shaft and press the motor shaft into the drive shaft.

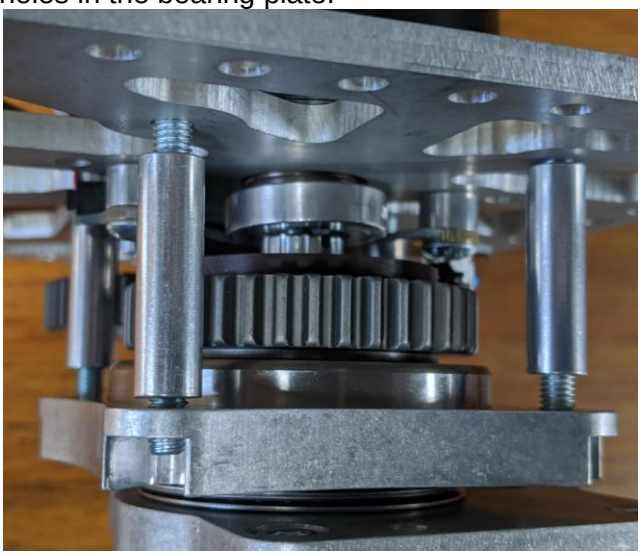


Step 15d: Move the collar clamp from the motor shaft to the top of the drive shaft allowing the drive shaft to continue to be pressed on. If using a CIM or NEO, align the slot in the drive shaft with the slot in the collar clamp. Do NOT tighten the collar clamp yet.

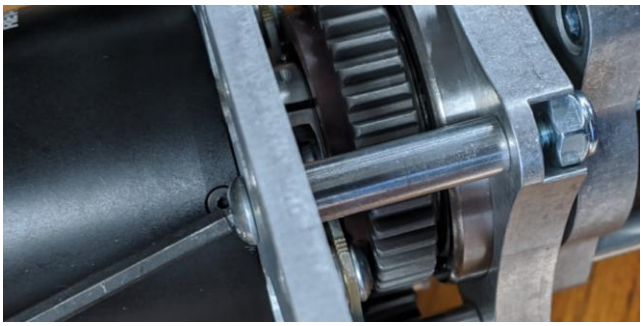




Step 14d: (As you continue pressing, make sure that the 4 screws with spacers align to the 4 holes in the bearing plate.

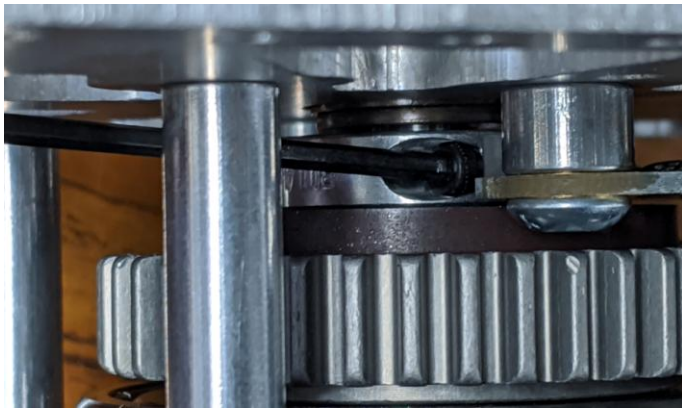


Step 16d: Insert four #10-32 Nylock nuts into the nut pockets in the bearing plate and tighten the BHCSs around the perimeter of the motor.



If using a NEO one of the screws will be under the motor wires, but can be accessed by carefully parting the red and black wires. A ball-end Allen wrench is recommended here.

Step 17d: Tighten the collar clamp while forcing it down into the bearing pressed into the gear.



Step 18d: You now have a completed Swerve and Steer