



# Swerve & Steer AM-3009

PART REV:

**8**

Rotational Center (ip-3009 page1)

SECTION  
REV:

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DATE:

10/18/2017

QTY	Parts Needed On This Page	Tools Needed On This Page
1	AM-3013 40T Steer Gear, plated	Arbor Press
1	AM-0253 1/2" ID, 1/2" Long Bushing	5/32 Allen Wrench
1	AM-0028 3/8" ID Flanged, Ball Bearing (FR6ZZ)	Drill with 5/32 Allen Bit
1	AM-3017 Swerve & Steer Gear Plate	
1	AM-2928 1.25" ID Bearing (R20ZZ)	
1	AM-3016 Swerve & Steer Bearing Plate	
1	AM-2927 Thrust Bearing, 2" OD 1/16" Thick	
4	AM-1120 #10-32x5/8" SHCS w/ Nylon Thread Lock Patch	

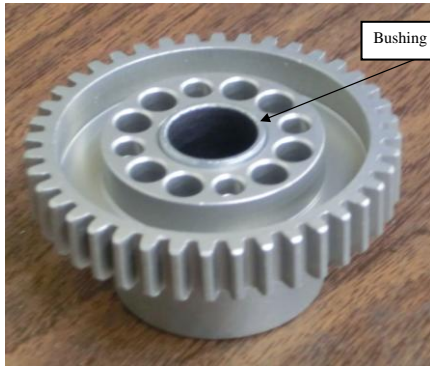
## Step 4

Press the sleeve gear assembly through the center of the bearing plate assembly so that the gear and bearing are in contact.



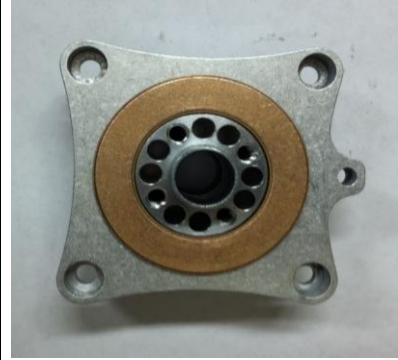
## Step 1

Press one bushing (am-0253) into the gear side of the Steer Gear (am-3013) using an arbor press.



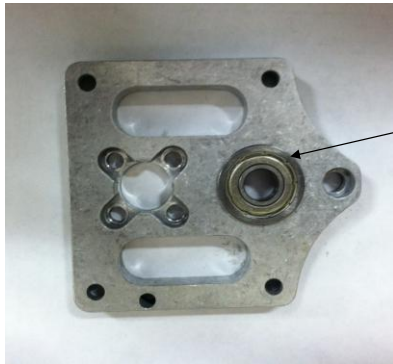
## Step 5

Place the thrust washer (am-2927) onto the top side of the Bearing Plate (am-3016).



## Step 2

Press an FR6ZZ (am-0028) bearing into the Gear Plate (am-3017).



## Step 6

Add the gear plate so that the recesses are facing outwards. Insert and tighten four nylon thread screws (am-1120). (Tighten all the way and then back off 1/2 turn to allow bearing plate to rotate freely)



## Step 3

Press an R20ZZ bearing (am-2928) into the Bearing Plate (am-3016).





# Swerve & Steer AM-3009

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Wheel Housing (ip-3009 page2)

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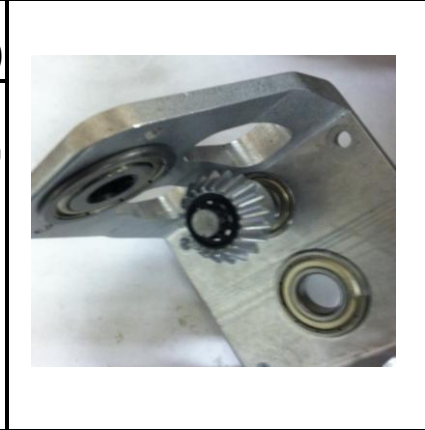
10/18/2017

QTY	Parts Needed On This Page	Tools Needed On This Page
6	AM-1123 #10-24x3/4" Thread Forming Screw	5/16" Socket Head
1	AM-2231 375 Hex Hub	Arbor Press
1	AM-2256 4 inch HiGrip Wheel	
1	AM-3020 U Housing for Swerve & Steer	
2	AM-0692 3/8" Hex Flanged Bearing (FR6ZZL-Hex)	
1	AM-0030 1/2" ID Flanged Bearing (FR8ZZ)	
1	AM-0028 3/8" ID Flanged, Ball Bearing (FR6ZZ)	
1	AM-3019 Bevel Input Shaft	
1	AM-1121 2x2x10mm Machine Key	
1	AM-2621 20 Tooth Mod 1.25 375 Key Bore Bevel Gear	
1	AM-0033 Retainer Clip, 8mm ID	
1	AM-3021 375 Hex Output Shaft for Swerve & Steer	
1	AM-2930 Spacer, Plastic, 0.443 ID, .750 OD, .125 thick	
1	AM-2620 40 Tooth Mod 1.25 3/8 Hex Bore Bevel Gear	
2	AM-1124 External klipring for 3/8" Shaft	

**Step 9**  
Insert the Bevel Input Shaft (am-3019). Place the machine key (am-1121) in the groove.



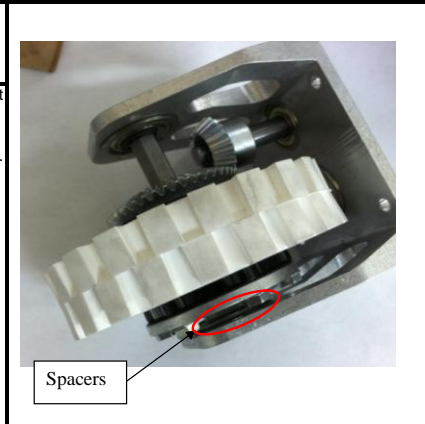
**Step 10**  
Attach the small Bevel Gear (am-2621) and secure in place with a retaining clip (am-0033).



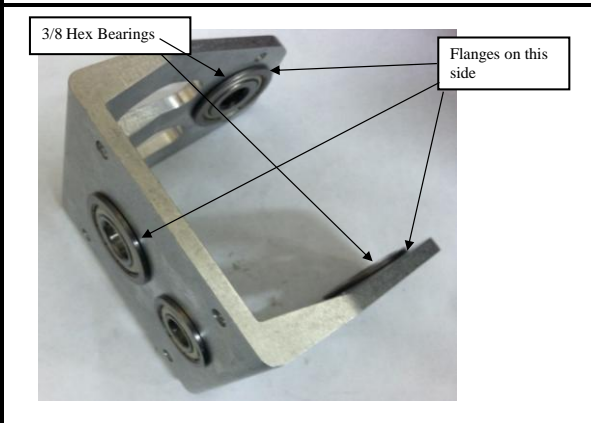
**Step 7**  
Attach the 3/8" Hex Hub (am-2231) to the HiGrip wheel (am-2256) with 6 thread forming screws (am-1123).



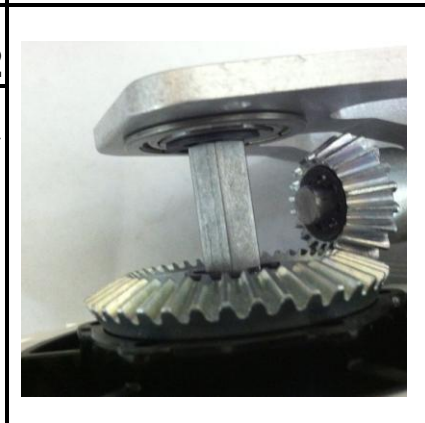
**Step 11**  
Insert the Hex Output Shaft (am-3021) so that the (2) slots are below the bevel gear. Add a 1/8" plastic spacer (am-2930), HiGrip wheel (am-2256), and the 40 Tooth Bevel Gear (am-2620).



**Step 8**  
Press bearings into the U housing (am-3020). Both hex bearings (am-0692) will have their flanges on the inside while both round bore bearings (am-0030 and am-0028) will have their flanges on the outside.



**Step 12**  
Secure the shaft and hardware in place with two klipring (am-1124) inserted into the grooves.





# Swerve & Steer AM-3009

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Motor Mounting (ip-3009 page3)

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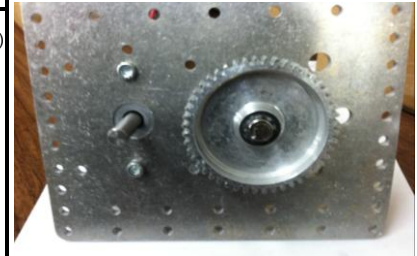
REV DATE:

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QTY	Parts Needed On This Page	Tools Needed On This Page
1	AM-3012 Swerve & Steer Motor Plate	5/32 Allen Wrench
1	AM-2971 PG71 Gearmotor with Encoder	M4 Allen Wrench
4	AM-1264 M4-0.7 x 10mm	
1	AM-1249 Machine Key 4mm x 12mm	
1	AM-2931 Spacer, Plastic, .406 ID, 1.00 OD, .438 thick	
1	AM-3014 48 Tooth, 10mm Bore Steer Gear	
1	AM-0255 2.5" CIM Motor	
2	AM-1120 #10-32x5/8" SHCS w/ Nylon Thread Lock Patch	
1	AM-1253 3/8" Retaining Ring	

## Step 16

Insert and attach the CIM motor (am-0255) using two nylon thread screws (am-1120).



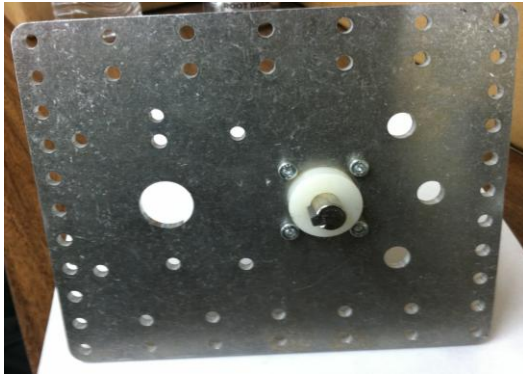
## Step 13

To keep ALL modules the same orientation, be sure the double hole near the CIM shaft hole is up when looking at the bottom of the plate as shown here. Attach the PG71 Motor (am-2971) to the Motor Plate (am-3012) using (4) M4 screws (am-1264).



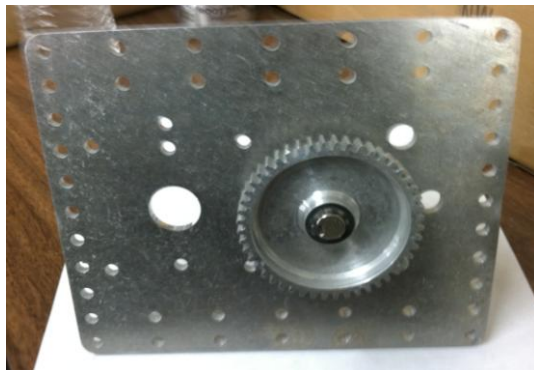
## Step 14

Slide the large Plastic Spacer (am-2931) over the shaft and then insert the 4mm machine key (am-1249).



## Step 15

Slide the 10mm Bore Gear (am-3014) onto the shaft so that the carved out portion is facing away from the plate. Push the 3/8" retaining Ring (am-1253) on to the PG motor shaft.







# Swerve & Steer AM-3009

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Overall Assembly (am-3009\_page4)

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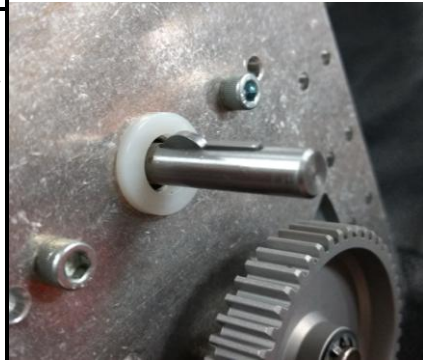
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QTY	Parts Needed On This Page	Tools Needed On This Page
2	AM-1065 Washer, 1/2" ID, 3/4" OD, Steel	5/32 Allen Wrench
1	AM-0024 40 Tooth Large Cluster Gear	3/8" Wrench
1	AM-3018 12 Tooth Gear Shaft for Swerve & Steer	5/16 Drill
4	AM-1041 Screw, SHCS 10-32 X 1250	Arbor Press
4	AM-2919 Spacer, Aluminum, .62"	
8	AM-1042 10-32 Nylock Jam Nut	
1	AM-2929 Collar Clamp, 1/2" Base	
4	AM-1048 Screw 10-32 SHCS X 1750	
4	AM-2920 Spacer, Aluminum, 1.100"	
1	AM-1433 Woodruff Key	
1	AM - 1121 2MM x 2MM KEY	
4	AM-1026 #10 Steel Washer	

## Step 20

Place both the woodruff key (am-1433) and the 2mmx2mm Key (am-1121) on the CIM output shaft in the key slot in the shown orientation



## Step 17

On the Wheel Housing assembly, add the 40T Cluster Gear (am-0024) to the end of the bevel gear shaft with two Metal Washers (am-1065) on either side.



## Step 21

Slide one 1/2" collar clamp (am-2929) onto the tip of the gear shaft.



## Step 18

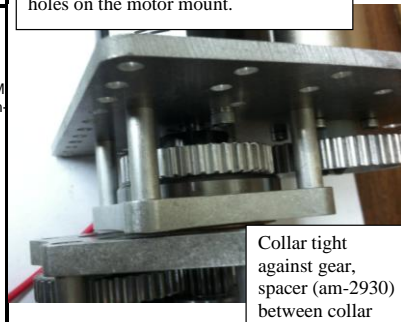
Insert the short end of the Gear Shaft (am-3018) into the FR6ZZ bearing using an arbor press. Use 5/16 Drill to drill out the top end of the gear shaft.



## Step 22

Attach Rotational Center and Motor Mount assemblies together by sliding the gear shaft onto the CIM shaft with a spacer (am-2930) between the plate and collar. Secure in place with four 1.75" Bolts (am-1048), long Alum Spacers (am-2920), and Nuts (am-1042). Be sure to put bolt heads in recesses of the Rotational center assembly.

Make sure all (5) holes on the Rotational Center plate line up with the holes on the motor mount.



Collar tight against gear, spacer (am-2930) between collar

## Step 19

Attach this assembly to the Rotational Center using four 1.25" bolts (am-1041), short aluminum spacers (AM-2919), #10 Washers (AM-1026), and Nylock Nuts (am-1042). Be sure to put the bolt heads in the recesses of the Rotational Center assembly.



## Step 23

Tighten the 1/2" Collar (am-2929) onto the top of the sleeve gear.



