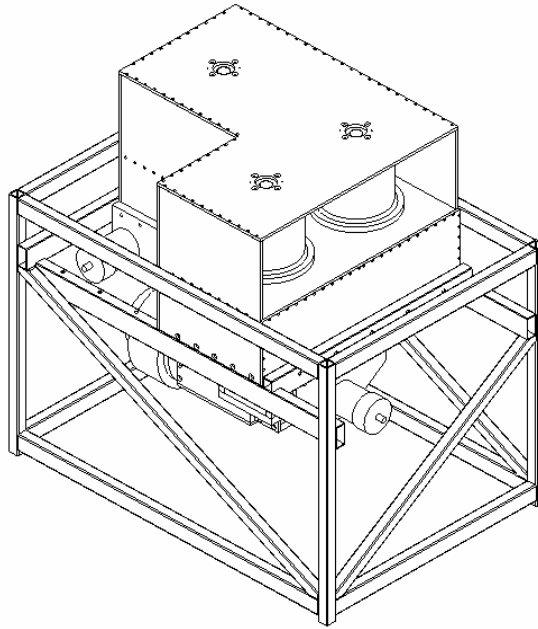


# Kite Winch User's Manual



## Growth Innovations Kite Group

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## Mounting the Motors:

1. Motors will be mounted to the motor mount plates with the couplings set screwed to the shaft of the motors on the flats provided.
2. Start with the Turn Motor affixed to the 3/8" thick mounting plate as shown below in Figure 1a.

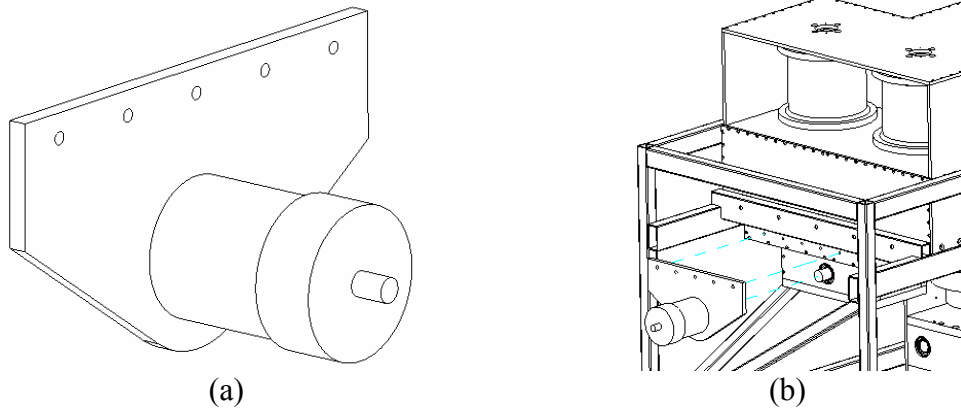


Figure 1

3. Slide the Motor onto the input shaft on the front of the system as shown in Figure 1b, and tighten the coupling set screw onto the input shaft.
4. Start all 5 of the 1/4-20 x 3/4 socket head cap screws (SHCS) in their place, after all screws have been started, tighten the screws from the middle out.
5. Repeat the same process for the pitch magmotor mounted to the 3/4" thick plate as seen in figure 2a, and affix with the 5 - 1/4-20 x 1" SHCS in the same manner as described above (see figure2b).

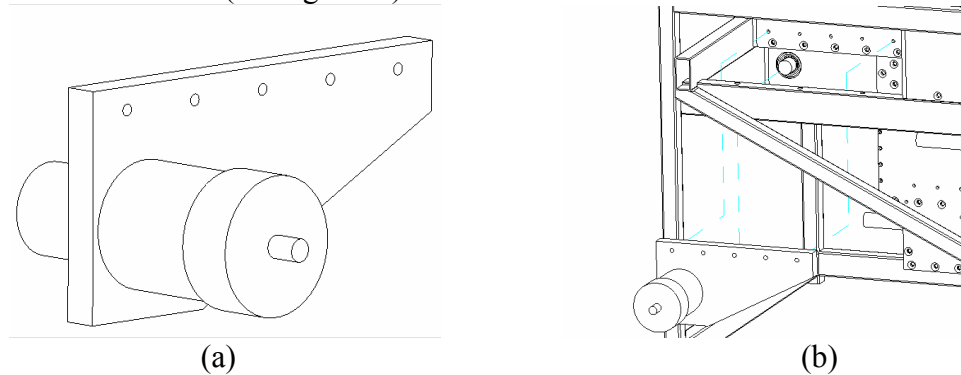


Figure 2

6. For the ETEK motor that is affixed to the mounting plate assembly as seen in figure 3 below, follow the same steps starting with the coupling set screwed onto the input shaft flat.
7. Start one 1/4-20 x 3/4 flat head cap screw (FHCS) on each side of the motor mounting plates at a time to assure proper alignment.
8. After all FHCS have been started follow up by tightening them in an alternating fashion from one side to the other.

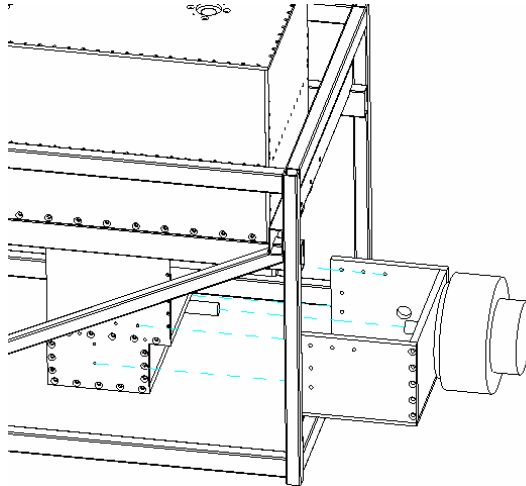


Figure 3

### Hooking up the Electronics:

1. Before any electronics are hooked to the system make sure the batteries are hooked to each other properly, assure that they are connected in series (+ post connected to - post) and are making around 48volts.
2. Make sure that the batteries for the receiver and transmitter are fully charged.
3. Place the motor controller plate with the motor controllers attached to them on the topside of the bottom frame rails and affix with the 2 -  $\frac{1}{4}$ -20 x  $\frac{3}{4}$  SHCS on the leading edge, the ground wire attached to the motor controllers should be fastened to the frame for proper chassis ground.
4. Make sure that the blade connector attached to the motor controllers is not connected to the blade connector attached to the batteries; you can begin hooking up the motor leads to the appropriate motor controllers assuring that the proper polarity is maintained.

### Powering up the Electronics:

1. Check that all motor mounts are attached properly and all of the fasteners are properly tightened; also check that the motor leads are properly attached.
2. Before connecting any of the power supplies power up the radio control transmitter.
3. Connect the small red radio control receiver battery to the RC receiver on the plug labeled 8/B.
4. Next connect the two positive battery leads (one with two cables and one with one cable) to each other.
5. Finally connect the negative battery leads together by inserting the leads and folding over the lever on the red plug.
6. Check that all of the LED's on the motor controllers stay lit up, if they are flashing please refer to the motor controller calibration paper in the appendix.

## Attaching the Spools and Top Plate:

1. With the top plate removed and the spool shafts exposed place one of the spools on one of the shafts as seen in figure 4 below.

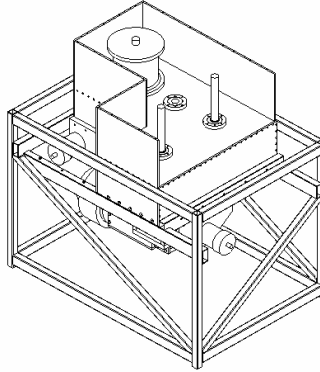


Figure 4

2. Align the set screw with the line ground on the shaft and tighten one of the set screws down.
3. Using the Joystick run the appropriate spool until another one of the set screws can accessed and tighten the set screw.
4. Repeat this process for each of the spools.
5. Place the 1/8" thick spacers on top of the spools before placing the top plate on the system, see figure 5.

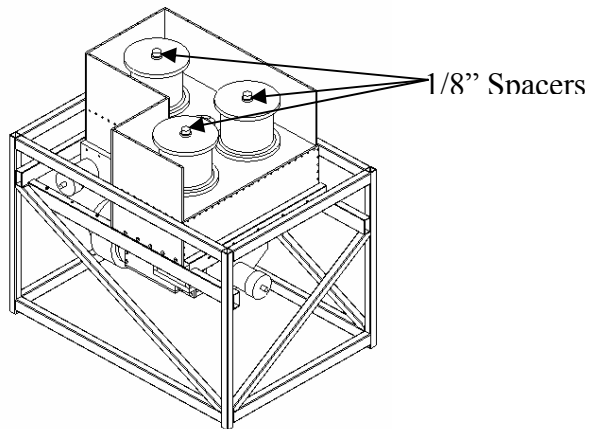


Figure 5

6. Align the bearing races with the shafts and lower the plate onto the spools.
7. Start the 6-32 x 3/4 FHCS in the holes on the edges of the vertical plates. Make sure to get a few started on each row of screws before tightening any of them down as seen in figure 6.

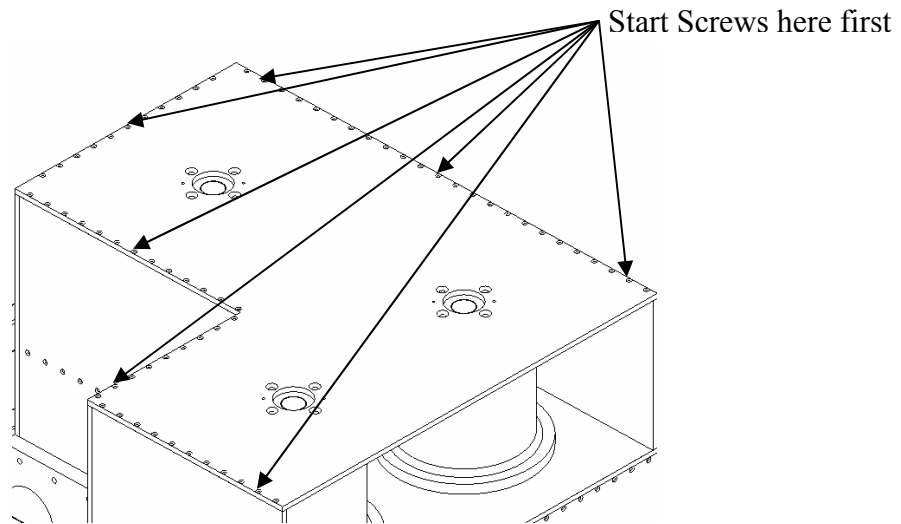


Figure 6

8. If any holes are misaligned start at the holes that are lined up the best and tighten the FHCS fully and work towards the holes that are not aligned they will line up as you get closer to them.
9. Make sure not to over tighten the screws, and install all the screws around the perimeter.

## Planetary System Assembly

1. Insert bearing R14 in center hole of Ring Plate Float #002 with larger hole facing upwards as shown in figure 1.

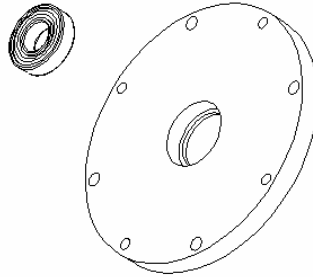


Figure 1

2. Insert four 3/8 inch rod into rimmed hole of Ring Plate float #002.
3. Place Ring Plate Ring #003 on top of Ring Plate Float as shown in figure 2.

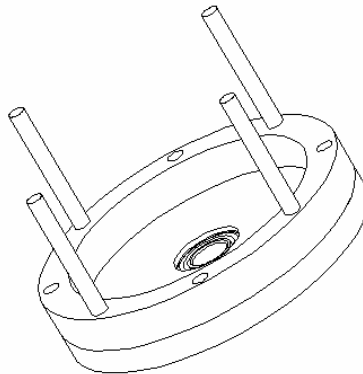


Figure 2

4. Set 7/8 ID and 1/4 thick spacer on top of bearing R16.
5. Place ring gear on top of Ring Plate Ring #003 as shown in figure 3.

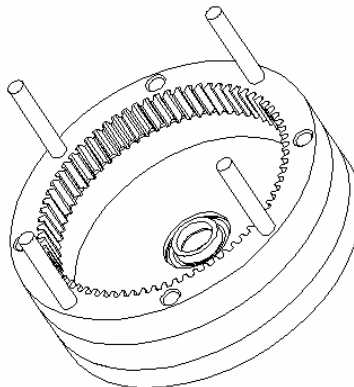


Figure 3

6. Start on new subassembly as follow: Set bearing R14 inside center hole of Planet Plate Float #004 with larger ID hole facing up as shown in figure 4a.
7. Using hydraulic press, insert shafts into remaining holes of plate #004.
8. Place 7/8ID and 0.3125 thick spacers on top of bearing. Spacers 0.625ID and 0.125 thick are then placed through the shafts followed by spacers of same ID and 0.0625 thick. Figure 4d shows spacers in place.

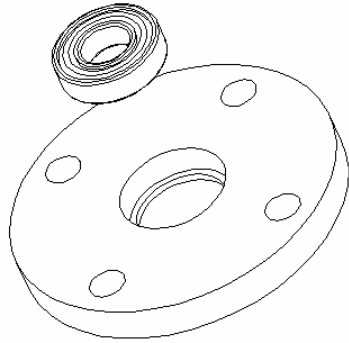


Figure 4a

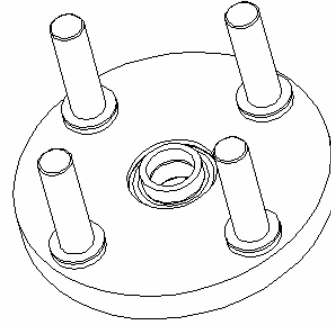


Figure 4b

9. Place sun gear and planetary gears through their corresponding shaft with the hub side facing upwards. Next set the 0.625ID and 0.44 inches thick spacers on top of planetary gears.
10. Insert the shaft until it is flush with the bottom of the sun gear and tighten setscrew with shaft in this position. Step 9 and 10 appear in Figure 5.

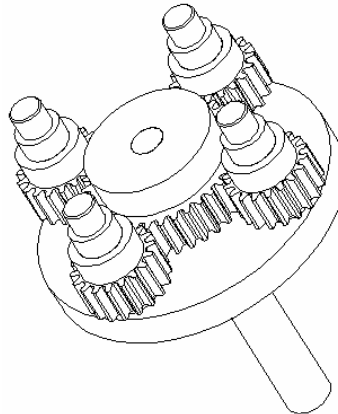


Figure 5

11. Place assembly shown in figure 5 inside rest of assembly shown in figure 3. You should obtain figure 6.

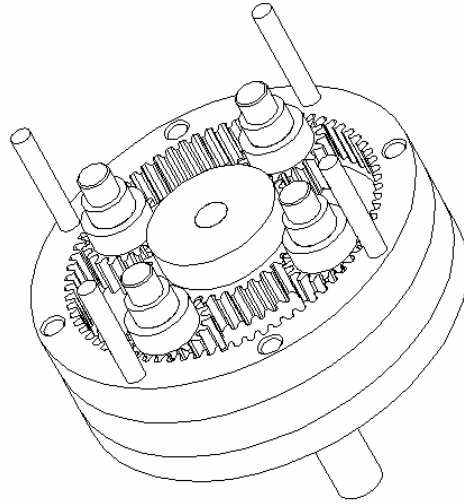


Figure 6

12. Using hydraulic press, press Planet Plate Drive #004 into planetary shaft as shown in figure 7a.
13. Place 1 inch shaft through Planet Plate Drive #004 until flush with the bottom side. Set setscrew in this position.
14. Place outer ring gear on top of assembly with rimmed holes aligning with shafts as shown in figure 7b.

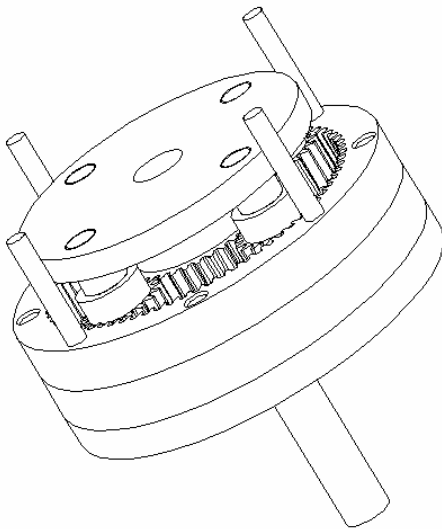


Figure 7a

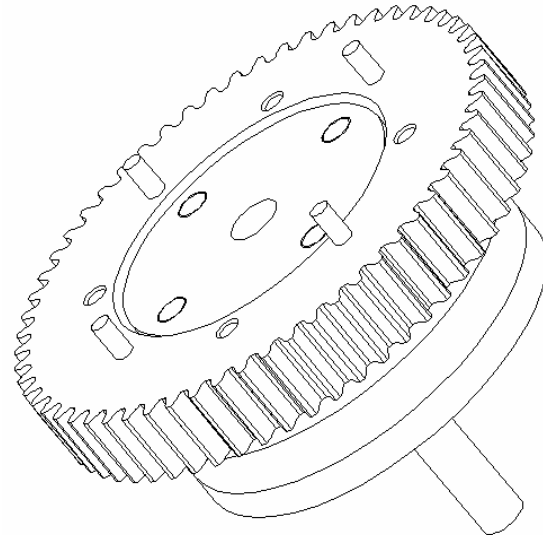


Figure 7b

15. Place Ring Plate Drive on top of outer ring gears with rimmed holes aligning with the rods. Next place bearing R16 inside center hole and place fastener through remaining holes. Tighten fastener to keep assembly together.



16. Final Planetary system is shown in figure 8.

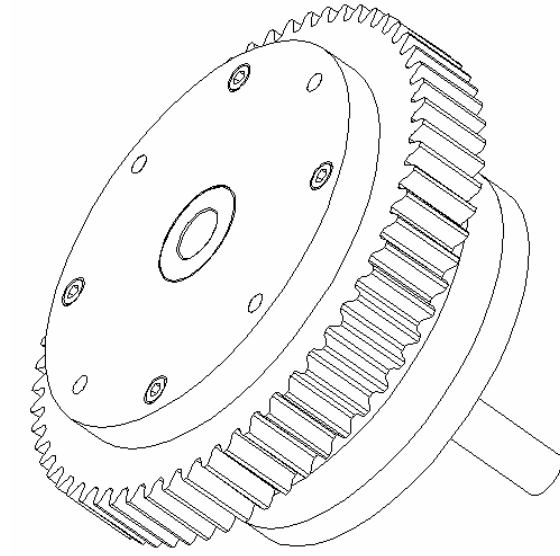


Figure 8