

Orbital Test Stand

Operations and Assembly Manual



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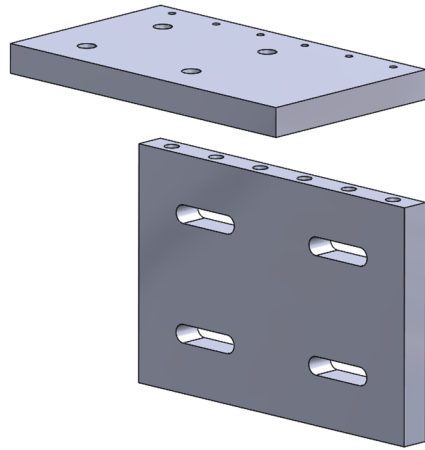
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1.0 Components List

Description	Quantity
Motor	2
Speed Reducer	2
Roller Chain	2
16 T Sprocket	2
32 T Sprocket	2
Trailer Wheel	2
Spindle	2
Spindle Backing	2
Wheel Hub	2
Threaded Insert, 3/8"-16 x 1"	12
Threaded Insert, 5/8"-18 x 11/16"	8
Threaded Insert, 1/2"-20 x 21/32"	8
Cap Screw, 1/2"-20 x 1-1/4"	8
Cap Screw, 5/8"-18 x 2"	8
Hex Head, 1/2"-20 x 5"	8
Cap Screw, 1/4"-20x2"	12
Standoff 2-3/4"	8
Bearing Grease	1
Adapter Plate	2
Slotted Horizontal Plate	2
Vertical Plate	2
Nut, 1/2"	16
Washer, 1/2"	32
Bolt 29/64	8

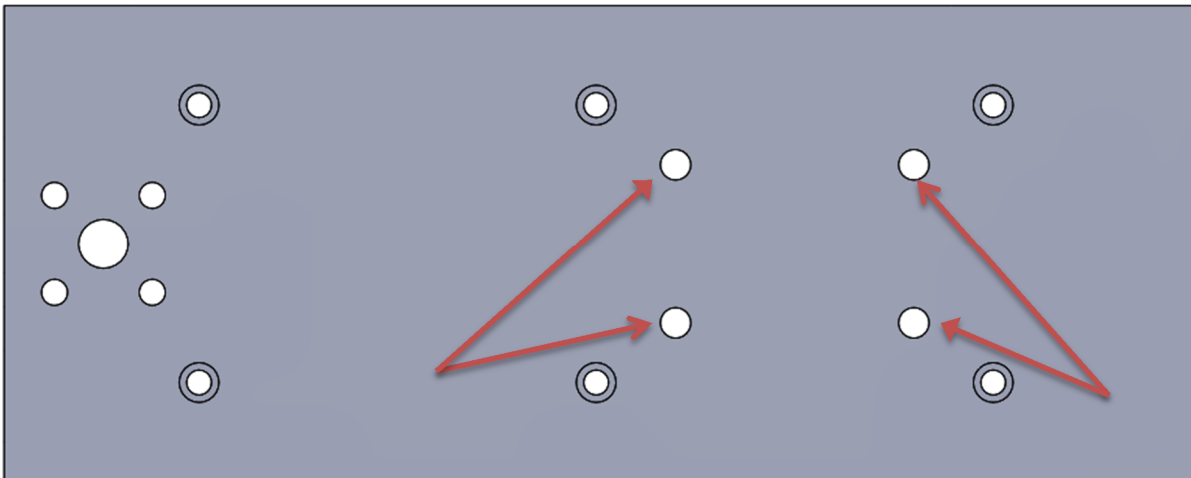
2.0 Assembly Instructions

2.1 L-Bracket



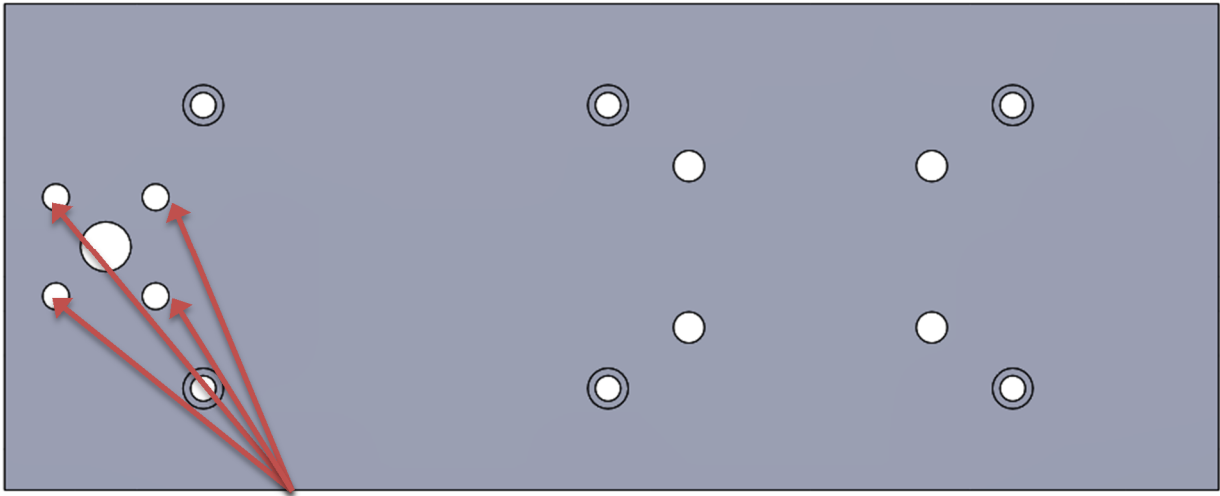
Place 6 of the 3/8"-16 threaded inserts into the 6 holes along the top of the slotted plate. Place 6 of the XXXX bolts through the 6 through holes along the top face of the horizontal plate and into the threaded inserts to complete the L shape.

2.2 Adapter Plate

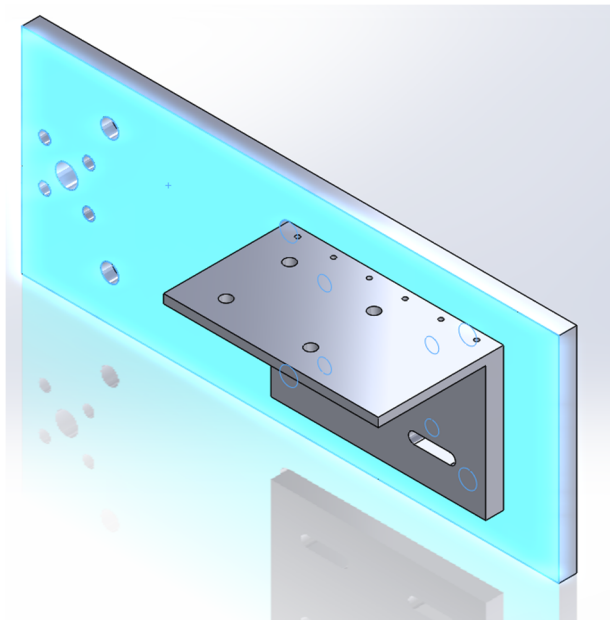


Place a 5/8"-18 threaded insert into each of the holes of the smaller square pattern (identified above in red). Make sure the plate is the right

side up by looking at the 6 bolt pattern across the top and bottom and looking for the bored out part.

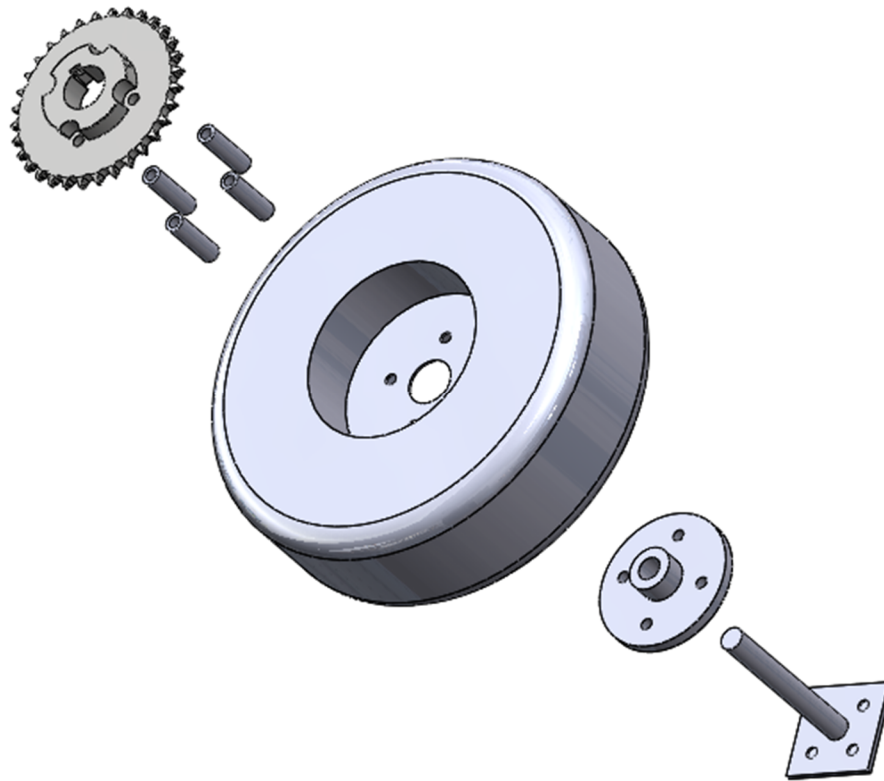


Place a 1/2"-20 threaded insert into each of the 4 holes identified by the red arrows. Again, make sure that the plate is orientated with the correct side up.



Now place the sliders from the L bracket over the 5/8"-18 threaded inserts that were inserted into the large 4 bolt pattern at the start of this section. Place the one 5/8"-18x2" cap screws through each of the sliders into the inserts and tighten to fix the plates together.

2.3 Spindle

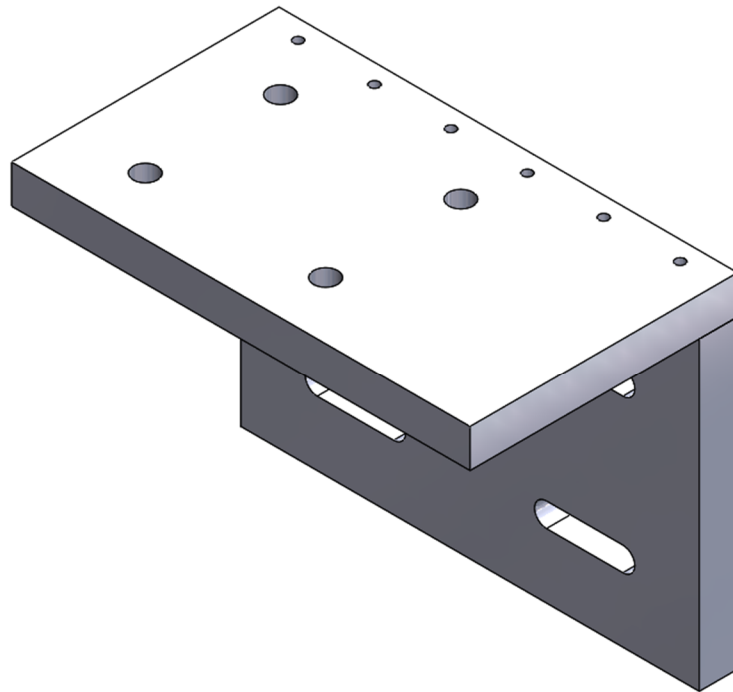


Assemble the spindle portion with the hub by placing the seal along the bottom of the spindle. Then add the inner bearing, the hub itself, the outer bearing. Following the outer bearing, place the washer on the top, and then add the nut to prevent the system from moving. Then add the castle nut, and the cotter pin to secure the system. Lubricate the bearings and add the cap to retain the grease over the top.

Proceed to place the tire on the hub. Next, place 4 of the 1/2"-20x5" bolts through the back of the hub, and place a standoff on top of each bolt. Pushing the bolts flush with the hub, place a nut on top of each of the bolts and tighten. Place the 32-tooth sprocket in the orientation shown in the exploded view with the remaining threads of the bolt sticking through. Place a washer over each of the bolts and then add another nut and tighten to secure the wheel and sprocket together.

To attach the spindle assembly to the adapter plate, place the base inch of the spindle into the large hole in the adapter plate and line up the 4 bolt patterns. Place a 1/2"-20x1.5" bolt through each of the holes and screw them down into the threaded inserts.

2.4 Gearbox Assembly

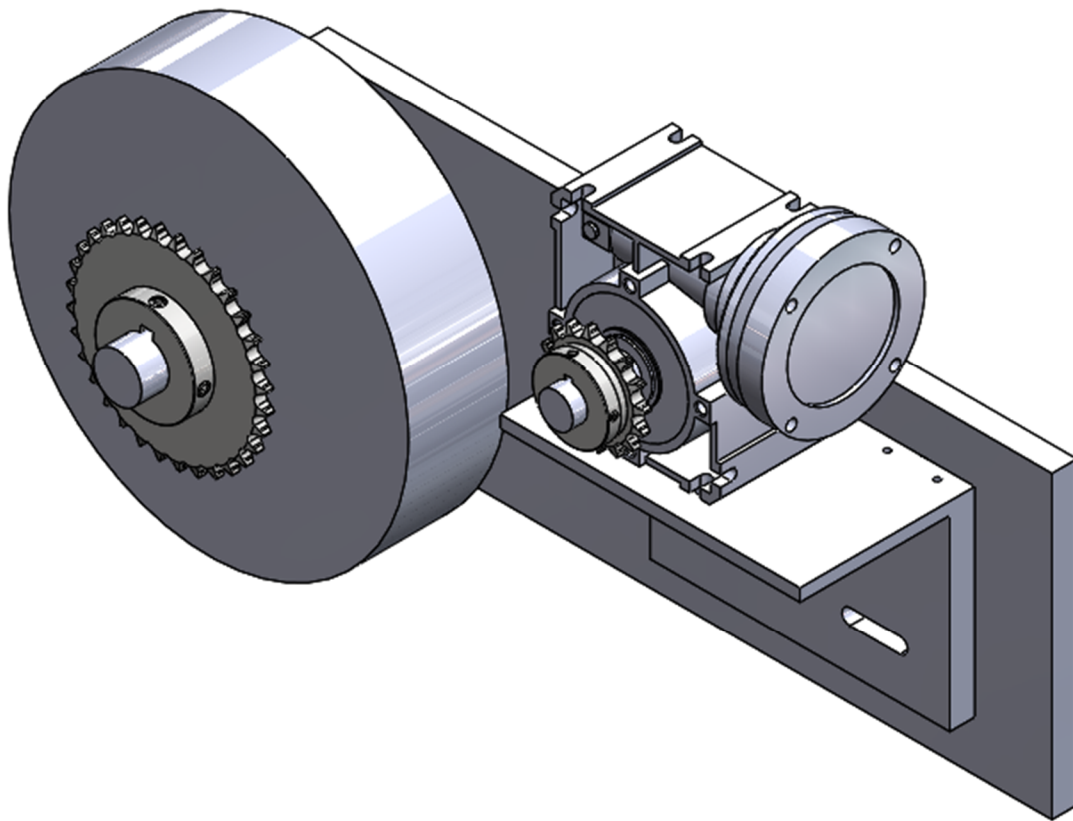


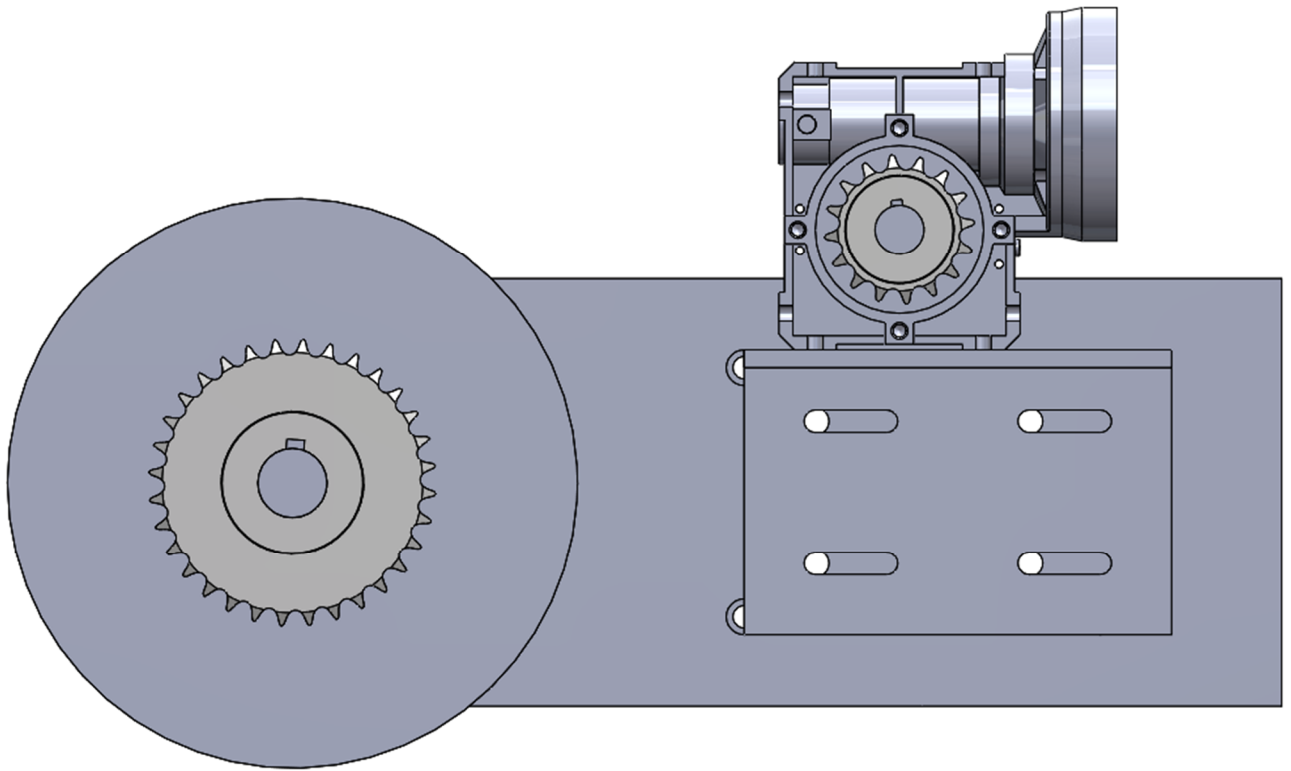
Place two of the 29/64 bolts through the two holes in the back of the plate (closest to the 6 bolt holes creating the L bracket). Slide the bottom of the gearbox over so the two bolts so that the front corner of the

gearbox lays adjacent to the front two holes. Place two more $29/64$ bolts through the bottom of the gearbox and the through holes to fix the gearbox in place.

Slide the output shaft of the gearbox in place and hold it in place using the snap ring. Using the key provided, place the 16-tooth sprocket onto the output shaft, and fix it in place using the setscrews. Use a level to ensure that the two sprockets lie in the same plane and will function correctly.

Upon completion, the assembly should look like the pictures below.





Place the chain over the two sprockets and tighten accordingly using a combination of chain tension and the sliders in the plate.

3.0 Operation Instructions

The system is controlled via a 3-pole, 120VAC controller that allows for reversible output. The controller will supply power to the circuit, powering the motor and turning the wheel. The controller has options for a reversible current, allowing the tires to spin both CW and CCW. The system can be manually shut down via a red mushroom button that overrides the circuit and cuts power immediately. Once the true rotation speed is calibrated, certain degrees can be programmed into the system

to allow the controller to automatically power the system to rotate the ring into a specific position.



4.0 Safety Considerations

- Gloves and hard hats must be worn at all times while assembling/disassembling the system.
- All personnel should be behind the test stand when the fairings are loaded.
- Keep liquids away from electronic controller.
- If anything about the system is malfunctioning use the emergency shutoff and repair as needed.