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Design Intent

My goal is to create an oscillating air engine that dominates the competition in the coast category. My design also keeps creativity in mind, orienting like a tabletop with the flywheel on top. On the bottom will be a single, double acting piston with large displacement. This will allow push during all movement (except hang points), which will get my heavy flywheel moving quicker.

For a tabletop orientation a baseplate can be avoided. What will replace it is four legs down from the four corners of the valve plate. These legs will be 1”x3”white delrin. The valve plate will be simple ½” x 4” x 8” aluminum mounted on top of the delrin legs. The cylinder will be a double acting 1 1/2" x 1 1/2" x 2” aluminum square with a 5/8” brass piston inside, but offset towards the outside, to leave ¾” of cylinder wall against the valve plate. The piston once exiting the cylinder housing will be minimized to ¼” while it runs 5.5” to the E-Pin. The E-Pin will be a ¼” steel rod 1.4” long. In order to get enough momentum to trigger my clutch system, my crank disc will basically be a secondary flywheel. It will be 3” aluminum, ¾” thick. The brass crankshaft is a preset ¼” steel shaft that will need to be 4 3/4” long. My flywheel is designed for max momentum. With that in mind, it will be 3” diameter aluminum, and 2” deep. 1” of that depth will be fit to the bearing (.6350), while the other inch, the outside part, will have a 1 1/2” inside diameter. Set eqi-distance apart in the acrylic flywheel will be 5 press fit brass shafts 2” long and ¼” in diameter, designed to add weight. Lastly, my clutch system will consist of two 3/4" x 3/4" thin black delrin plates mounted to springs, designed to fly out and apply force once spinning.