**Mechanical Construction**

The assembly used in testing was designed to fit into the load balance of the student wind tunnel in Kingsbury hall. A motor mounting bracket was fabricated from sheet metal and welded onto a shaft collar, allowing for axial and radial positioning of the motor mount along the shaft. Torque was transferred from the motor to the airfoil by sprockets and roller chain via a plain bearing connected to the end of the airfoil. This allowed the airfoil to rotate on a stationary shaft, which is required because the shaft must be anchored in the force balance. The end caps of the airfoil were lazer cut from plywood, balanced for rotation up to 6,000 RPM, and press fit into the ends of each airfoil (beer can). The pressfit allowed the end caps to allign themselves with the axis of the shaft, which was required to prevent binding allowing for smooth operation. Any time the airfoil was removed from the shaft carelessly or dropped, the allignment process was repeated. The process consisted of running the motor at low speed for roughly 20 seconds, or in the case of the largest airfoil – manually turning the airfoil many times, until satisfactory allignment was achieved.

