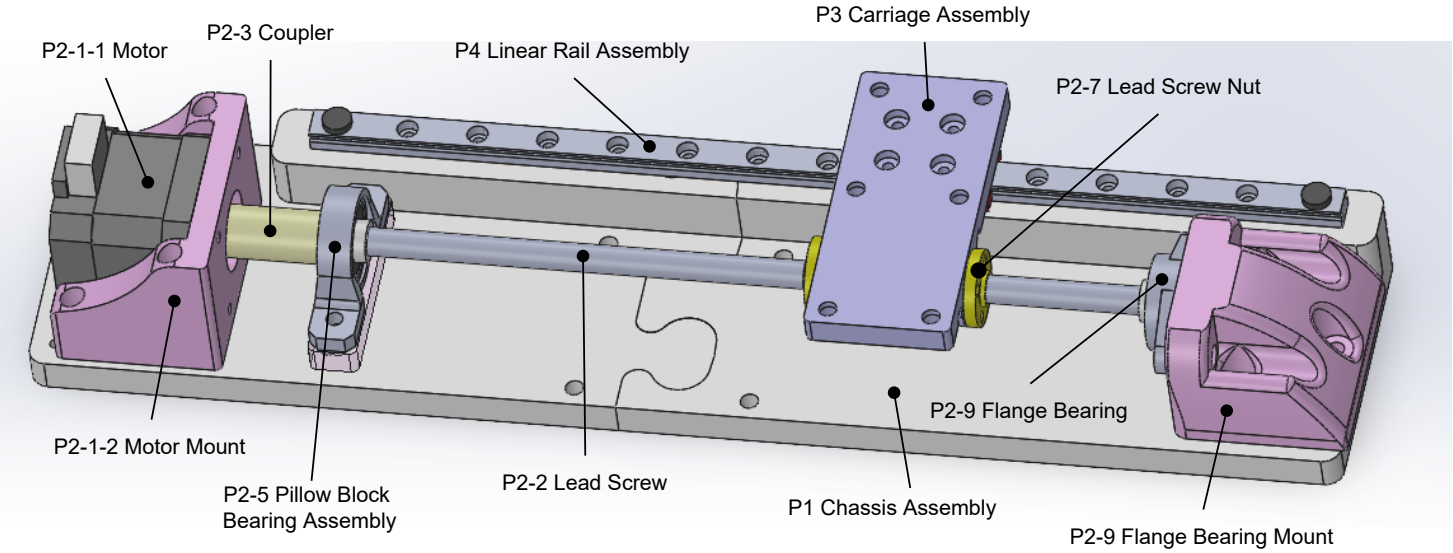
D1 - Mechanical System Diagram

Rev. 2 - 2026-01-13

A Carriage moves left and right, controlled by a motor that spins a lead screw through a coupler.

The lead screw is supported on one side with a motor, and on the other side with a bearing. The bearing sits on a bearing mount, which bolts to the chassis (shown as ground). On the lead screw rides a carriage assembly. The carriage assembly is driven by two lead screw nuts, which are in turn driven together by the lead screw.

The carriage is supported in linearity and in rotation by the Linear Rail. A Slide is secured to the Linear Rail, and the Carriage is secured to the Slide.



Note: The pillow block bearing was removed from the current version of the assembly because I couldn't get the alignment just right between the linear rail, the flange bearing, the pillow block bearing, and the motor. Failure to align these components perfectly introduces a large amount of friction in the linear rail system. I need to re-develop these parts in a way that makes it possible to align them perfectly.

The ground symbol represents the chassis, which is currently printed in two ABS pieces, joined together. In the future I will want to change this to a single piece of metal, such as a T-rail extrusion.