

To develop our shaved bearing part, we used Autodesk Inventor Professional 2021. The primary purpose behind creating this part is to decrease the amount of time and effort it takes to shave a bearing when it needs to be attached to the inside of a channel. To develop the part, we first downloaded the derlin flat bearing part from the VEX library. Then we shaved exactly 0.065 of an inch from either side of the bearing. We shaved this amount since the width of the metal of a channel is .0625 inches, and the extra .0025 inches allows for a small margin of error (such as the bending of the channel). Lastly, we filled in the center portions of the back side of the part to make it more stable.

From this project, we learned that there are many things that go into the design of a new part, even one as simple as a shaved bearing. We had to conduct research in order to find the common width of a shaved bearing, and the amount of time it takes to make a shaved bearing. In our experience, it took around 15 minutes to make a singular shaved bearing, and some of these had missing feet or holes that were cut through at the end. We found that .0025 inches of clearance is enough for bent metal and other error, and that the width of a channel is .0625 inches.

In our design process, we implement the use of CAD by testing out certain mechanisms before physically building them, which allows us to visualize and test a design without the time and labor. We CAD our robot and place it in a Unity simulation to test whether this robot and/or mechanism has a valuable function in the robot game.

Learning 3D design software will help me in my career path because it is always very useful to model something online before implementing it. Many companies, technology or not, use CAD to ensure their products are optimal in terms of design, cost, and functionality prior to its production and construction. I would love to be a part of a process that consistently makes the design process more efficient.