The Snap Bearing

When designing motion systems on a VEX robot the need for a bearing that allows a shaft to spin freely is paramount to the function of this system. However when many shafts need to be placed in a small area a problem arises. Currently when you mount a bearing block to the surrounding metal structure you must use two screws, or pop-rivets, to attach it to the metal, while leaving the center hole in the bearing open for the shaft. However when so many gears are tightly packed together a problem usually arises from the arrangement of bearings and screws. This problem is that the hole that the shaft is going to be placed in is already occupied by a screw which is in turn supporting the bearing, and can therefore not be removed. The solution that I have created is a simple snap bearing block. Instead of using the regular screws to attach it to the metal it utilizes tiny rounded barbs on the side that will be placed flush with the metal. These little barbs are situated around the hole that the shaft will run through so that no matter how many gears and shafts are in this area there are no holes that will be needed for both screws and shafts. Finally the miniscule barbs are arranged so that they fit snuggly into the holes at half inch increments in the metal.

When designing my new part I used a couple different means to arrive at its final design. First I brainstormed an important problem that existed in the VEX design system, next I thought of ways this could best be solved, and finally I designed the actual part using Autodesk Inventor. Since I realized that this part would need to coincide with other VEX parts seamlessly I based most of it off of the already existing bearing block provided by VEX. Next I used Autodesk sketch the rudiments of my design over the top of the already existing bearing block. Then I extruded these sketches into three dimensional features on the bearing block. Finally I wanted the part to be longer than the original bearing block, so using a .iam assembly I cut up my model and assembled it into a 2 ½” bearing block with five bearing holes in it, instead of the original 1 ½” part with only three bearing holes.

So what exactly has been created from these brainstorm, draw, and design processes? The resulting part is a 2 ½“ long, five hole bearing, that doesn’t require screws or pop-rivets to attach it to the surrounding metal, allowing for a more clean and concise design of any motion system by future VEX STEM students.