VEX CAD Challenge Latch

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9457X

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If you have a VEX part that slides or hinges down, in some designs, there is the risk of it going into and undesirable position. With a latch, it can move past a point, but not return. I have designed such a latch, that is small enough to fit inside a C-Channel, and can be positioned in almost any way. There is a spring that will enable the latch itself to spring back to its original position. Different spring types have not been tried yet, but a simple pen spring is expected to work. Included is a release lever, just pull it back with your finger, and it can be reused.

Several teams under 9457 have a mechanism that hinges, or slides. They’ve all had to deal with the problem of keeping it where it needs to be. With a latch included in the design, this will be quicker and easier to achieve. My team (9457X) does not need this part, but I saw other teams struggle with this problem, which inspired me to design this part.

Designing the part itself was pretty easy, I just knew I wanted it to fit inside a C-Channel, so I grabbed a dial caliper to get the correct dimensions. The base is 1.25 inches long by 7/8ths wide, and .188 tall. It has 9 unthreaded holes large enough for VEX screw to fit through. The shell holding the latch, spring, and release lever is centered widthwise, but offset lengthwise, at .958 inches long, .292 inches wide and tall. It’s hollow to allow the latch to fit inside. It was designed with Autodesk Inventor version 2017.

I learned from this project how hard it is to settle on a final design, and how to go about making it. I took lots of input from fellow team members, and used their advice to determine the final product, such as having many holes in the base to be used in any position. I would definitely use CAD in the future for almost any project. I find it fun, and it makes designing things easy, as I can foresee problems, and render it to make it realistic. I’m not sure if I’ll use CAD in my career path, but if I do, I know how to use it.