

The goal of exercise four

Technology



The first stage was designing the part using SolidWorks. This stage starts by drawing and dimensioning a sketch handed out in class by Dr. Sanchez using SolidWorks. A few calculations were required for making this piece in SolidWorks. The second stage used SURFCAM to define the stock size, shaping tools, feeds and speeds. The SURFCAM software also define each tool path. The third stage involved generating the G-code for the machine the piece. During the fourth stage, the G-code was transferred to the HAAS machine using the GibbsCAM software in the machine shop. The final stage included loading the tools, selecting the zero points for each tool with the stock and running the machine to build the block.

Design

To start, a new file was open with a sketch on the front plane. Drawing from the origin, a center rectangle was drawn with dimensions of six in. on the x-axis and four in. on the y-axis. Fully defined, a fillet was then made with a radius of 0.250 in. on all corners. Following that, the rectangle was extruded with a one in. depth. After the extrusion, the upper portion of holes to be drilled was worked on next.

The first hole, which was drawn for a linear pattern, was placed at the top left corner with a 0.250 in. diameter and an extruded cut depth of 0.250 in. The distance on the x-axis from the left edge to the center of the circle right had a dimension of 0.500 in. indentation. From the top of the rectangle to the center of the circle down, a dimension of 0.500 in. was also added. From here, a linear pattern was used to generate six holes by patterning with the x-axis with a distance of 0.43 in. from the center of one circle to the next.

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The step that proceeded with the drilling of the upper portion of the holes came to an extruded cut of a filleted rectangle with dimensions of 1.25 in. on the y-axis and 2.250 in. on the x-axis with an extruded cut of 0.250 in. This rectangle was to be positioned at the bottom left corner of the part with a dimension from the bottom edge of the part up to the bottom of the rectangle of 0.38 in. This same dimension was to be added to the left edge of the part towards the right direction to the left edge of the rectangle. From here, we moved to the next circular extruded cut. This circular extrusion started with a circle with a diameter of 2.00 in. and an extruded cut of 0.250 in. From the bottom of the part up to the center of the circle, a 1.250 in. dimension was set. From the right edge of the part, left to the center of the circle, a 1.500 in. dimension was also set to fully define the part. The next step that followed was to sketch on the base of the circle (extruded part) and draw eight evenly spaced circles within the circle.