

5/1/2019

Senior Capstone
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Manufacturing Plan

Stainless Steel Shielding

Material: 304L Stainless Steel
Measurements: ¼ in thick Plate
Process: Laser Cut, Drilling, Tapping

For the Stainless Steel Shielding we began by first mocking up the parts in Solidworks and then sent the files off to CDA Metals in Coeur d'Alene to be laser cut out. Once we received the laser cut pieces, we began drilling and tapping a total of 12 M3 holes to bolt the shielding together. This drilling and tapping was all completed on the manual mill in the ME Shop.

Stainless Steel Wall Mount

Material: 304L Stainless Steel
Measurements: ¼ in thick Plate
Process: Laser Cut, Cutting, Grinding, Welding

Similar to the Stainless Steel Shielding, the Wall Mount was designed in Solidworks and those files sent off to CDA Metals in be laser cut out. Upon receiving the parts back, we cut the base of the Wall Mount, ground the face to a 60 degree angle, and welded the supporting piece onto the bottom of the plate. It was required be cut and weld rather than put the piece through a press due to the small end and limiting material for the press.

Aluminum Basket

Material: 5052 Series Aluminum
Measurements: 14 Gauge Sheet Metal
Process: Bending, Cutting, Welding

The Aluminum Basket was also cut out via the laser cutter at CDA Metals after first being drawn up in Solidworks, and the design sent out. Upon receiving the part, the sides of the place were cut on a bandsaw and each component individually bent on the press in the ME Shop. After bending each individual component, the entire basket was welded together.

5/1/2019

Aluminum Pipe Nipple

Material: 6061 Series Aluminum

Measurements: $\frac{1}{2}$ in diameter Rod

Process: CNC Lathe Cut

The Aluminum Pipe Nipple was found in the excess pile of the ME Shop and cut to a length of 3 inches. After cutting the pipe nipple, the piece was mounted on the CNC Lathe and using the program built into the CNC Lathe, BSPP Threads were cut into the pipe.

MagSwitch Magnets

Material: Plastic

Measurements: $\frac{1}{8}$ in diameter Knob

Process: Heating, Press Fitting

The plastic knobs on top of the MagSwitch Magnets were too small for the remote manipulators to grab onto, and therefore we were forced to remove them. This process involved a heat gun to soften the plastic and then a pair of pliers to pull off the knob. After the original knobs were removed, two new aluminum pieces were added to aid in grabbing and were attached to the magnets by press fitting them over the $\frac{1}{8}$ in knobs.

Acrylic Lens (Acting in place of ClearView Panel)

Material: Acrylic

Measurements: 2.43 in x 2.66 in x 2.5 in

Process: Cutting

After ordering the Acrylic Lens and receiving a piece roughly 3 in x 3 in x 2.5 in, the piece was faced down on the manual mill in the ME Shop until it fit within the front face of the camera shielding.