

Session 1

Friday 11th October 1pm - 4pm Machine Workshop

Instructors: David Cooper and Andrew Tibbott

Aims:

- Replicate technical drawings accurately
- Show that the ability to measure correctly
- Start the task.

Health and Safety issues:

When using a hacksaw, the correct blade should be chosen depending on the material you want to cut. Secure the blade with its teeth pointing forward if you want to cut on the push stroke. The blade should be kept rigid and the frame properly aligned. When cutting it's more efficient to do strong slow strokes rather than lots of fast strokes.

PPE used:

PPE used was steel toe cap safety boots, dust coats and safety goggles. Before starting the workshop session each student suggested to use barrier cream as this can help protect their skin against long term damage.

At the start of the session I had to mark out lines onto my piece of steel and make sure they are the same size lines as the technical drawing.

[Image 1 goes here]

In the technical drawing we were given the exact measurements each area needs to be including the ~~holes~~ size of the holes needed. To mark out the lines on the steel I used a height gauge. Height gauges have a variable section for letting the user adjust the height of the metal point. I used the metal edge to mark out the height lines on the steel.

[Image 2 goes here]

These are the lines I marked out on the side of the steel. The dots represent where the holes are going to be made. To create the holes, I used a pillar drill. When using the pillar drill, I had to change out the drill bit to make different size holes in the material. When setting up the steel in the pillar drill, I placed it on top of a wooden block with a dent in it. The dent let me know when the drill had fully gone through the material as no more force would be required to push down the drill bit. For health and safety reasons when using the drill ~~bit~~, long hair should be tied back, no jewellery should be worn and the operator as well as people watching should all wear protective glasses.

When holes had been cut into the material, I then had to thread the two inside holes, this process was done using a tapered die. The correct size tap was chosen in the situation as they vary in size as well as how much of the hole gets threaded, the tap is then attached to a die. The piece of steel was then placed in a vice to keep it secure in the process. Lubricant was placed on the hole at the start of the process to make it as easy as possible. When creating the thread I did two clockwise rotations with the die followed by a half anti clockwise rotation so it wouldn't get stuck in the process.

For the end of the session I cut my steel down to the right size using a hacksaw. When cutting down the piece it was locked in place using a vice. After I had cut a section, I would take it back to the height gauge to measure the size of the piece to see if it was correct.

[Image 3 goes here]

During this session I was able to cut the majority of my steel to size with a few areas that would require a touch up in the next session. I was also able to learn how a height gauge works as I had never used one before.

I received feedback from my tutor on my cutting skills and how I could improve them.