Irvine Royal Academy—Technical Department

S1/S2 Design & Manufacture

Hacksaws

When cutting **metal** a **Hacksaw** is used. These comprise three parts—a **frame** a **handle** and a **blade**. The blade is held tightly in the frame—to adjust the tension you twist the thumbscrew or wingnut.

Blades can be made of different materials:

- **High Carbon Steel** blades are cheaper and blunt or dull quicker
- **Bimetal (High Speed Steel Teeth and Spring Steel blade)** are dearer but last longer and cut better.

The number of teeth on a blade is important. The number of teeth results in different sizes of teeth. Small teeth are used for cutting thin material. Large teeth are used to cut thicker material.
The size of teeth is measured in **teeth per inch** or **tpi**. Normal examples are:

18 tpi— large teeth **24 tpi**—middle sized teeth
32 tpi—small teeth

Using a Hacksaw

Make sure your material is held tightly in an **engineer's Vice** or else is **clamped** tightly to a workbench.
Keep the place where you are going to saw as **close** as possible to the vice (this prevents the material from moving and causing the blade to jam.
You only cut on the **forward stroke**. Lean heavy when pushing forward and lightly when pulling back.
Hold the saw with your dominant hand on the handle like a pistol grip. Your other hand should hold the front of the frame.
If your saw cut wanders a bit from the line you wish to cut, twisting the frame to the side can often brink it back.
If you are sawing a lot, a spot of **oil** reduces the friction and makes the blade last longer and the metal easier to cut.
If you need to cut wide material and the frame would get in the way, you can loosen the wing-nut, twist the blade to 45 degrees, then tighten the screw once more.

Hacksaws are used for cutting **Metals** (e.g. Aluminium, Steel, Copper, Brass) and **Plastics** (e.g. Acrylic, High Density Polyethylene). They are not design for cutting timber.

The following YouTube videos demonstrate a Hacksaw being used

https://www.youtube.com/watch?v=IX59lXMx8mw