



## Scroll Saw Accreditation Notes

Revised: August 2016

Scroll Saw Accreditation is managed by and conducted at meetings of the Scroll Saw SIG.

**Note:** *Accreditation should be viewed as the start of a learning experience, not the end. Continue to learn as much as you can about setting up and using each item of equipment. By increasing your knowledge, you will reduce the chance of an accident and get better results.*

### ***Safety***

1. Make sure the saw is stable and fixed, either to its own table or stand, or clamped to a work bench.
2. Check the location of the stop/start controls and that the machine is switched off before plugging in.
3. Turn off the power when the machine is unattended.
4. Keep the work table free of any extraneous material.
5. Wear a dust mask and eye protection, keep long hair contained and do not wear loose clothing or jewellery.
6. Stand or sit in a comfortable and balanced position while operating the saw.
7. Remove anything in close proximity that may impede your vision or movement.
8. Make sure your work is well lit. (Some scroll saws are fitted with an adjustable light and even a magnifying glass for fine work).
9. Keep your hands to the side of the blade, and preferably several inches from it. When cutting very small pieces fingers may need to be much closer, so extra care must be taken.
10. Turn off the saw when removing any waste from the table.
11. Do not reach behind the blade or pull material into the blade from behind while cutting.
12. Keep others, especially young children, out of reach of the machine while in operation.

### ***Scroll saw components***

1. Table - the working platform through which the blade is oscillated. This is usually set at the horizontal, but on most scroll saws it may be tilted and set for angled or bevelled cutting. Tables vary in size; some extend the full length of the upper arm. The distance from the blade to the rear support of the upper arm gives the size of the machine throat and determines the length of possible straight cuts and that of the material used.
2. Upper Arm - at the front of the arm is the upper blade *clamping mechanism*; sometimes requiring a special tool, sometimes a simple wing nut. Over tightening the blade clamp can damage the mechanism. Some machines will only take pinned blades, some only plain-ended blades, while some take both. There may be a *blade tension lever* for the quick



release of blade tension, thus retaining the machine's set tension while blades are changed or replaced. This is sometimes below at the rear. When the saw is not in use blade tension should be released.

3. Blades - though all of a standard length (5"), vary greatly in width, thickness of cut and teeth per inch. Blade selection depends on the type and thickness of material being cut - as a general rule at least three teeth should be engaged when cutting but it is also a matter of experience and personal preference. For example, wide thick teeth are suited to cutting straight lines and sweeping curves, but will not turn tight corners. Narrower thinner blades with finer teeth will cut more slowly but will turn much tighter corners in intricate work, and leave a very smooth finish that may not need sanding.
4. Lower Arm - operates beneath the table and includes the bottom blade clamp. Over tightening the blade clamp can damage the mechanism.
5. Hold Down Clamp - usually hung from the upper arm and is adjustable up and down. Prongs either side of the blade are used to lightly hold down the work piece to prevent lifting on the upstroke of the blade.
6. Blade Tension - set initial tension so that the blade deflects less than 3 mm when pushed from the teeth side and it makes a medium note when plucked. Over tensioning will cause the blade to break and can cause damage to the saw.
7. Dust Blower - most machines have an adjustable blower which should be set to clear dust from just in front of the blade, thus clearing reference lines. If possible it should blow away from the operator while not obstructing hand movement. The 'General' scroll saw has a dust extraction fitting.
8. Switch - be familiar with the on/off switch on the particular machine you are using. Quick turn off is essential to prevent injury, or damage to work and/or machine, when a blade breaks.
9. Variable Blade Speed Control - many machines are fitted with a knob to vary the blade speed. This allows the selection of the best speed for the particular job.

### ***Before you start***

1. Select appropriate blade, install from bottom to top, then tension. Ensure that the blade is in the correct cutting direction. Always use a clean, properly sharpened blade. Dirty or dull blades are unsafe and can lead to accidents.
2. Check angle of table and set speed to low.
3. Plug power into outlet.

### ***Operation***

1. Place work on table, threading blade through work if required.
2. Adjust blower (if present) to clear dust from just in front of the blade. If possible it should blow away from the operator while not obstructing hand movement.
3. Turn on and adjust speed to the speed suitable for the job in hand and to avoid vibration.
4. Hold the work firmly to the table, and using your thumbs for directional control, feed the work into the blade with steady even pressure. Do not force the work forward, but allow the



teeth time to work efficiently.

***When you have finished your job***

1. Turn power off and loosen tension on the blade.
2. Reset any adjustments to standard settings.
3. Clean up all sawdust and offcuts. Sawdust should be swept up and the area vacuumed.



### ***Working tips for beginners***

1. When inserting a blade into the saw the clamping mechanism must be tightened just enough to hold the blade securely. Over-tightening the clamping mechanism can damage it.
2. Be aware that each blade will cut in a slightly different direction. Do not assume that a blade will always cut straight forward. Angles may also change slightly during operation, especially with thinner blades, so vigilance is required to keep to the line of cut.
3. The point at which the blade passes through the hole in the table is the pivot point of all cuts you make. Hence while steering the work into the blade always bring the line being cut to face into the blade in its central and vertical position. Even experienced users tend to put side pressure on the blade in turning cuts causing it to flex sideways. This distorts and slants the cut off the vertical or set angle, and does side damage to the kerf. It also contributes to blade failure.
4. On tight curves, slow the feed rate to maintain control.
5. Try to avoid staying in one place during the cut as this may cause burning.
6. With thin blades it is possible to make right angled turns by pressing the work against the side of the blade, then the back of the blade, and using that contact as a pivot point while turning the work piece. This skill however needs practice on scrap material before attempting it on project pieces.
7. Where only one side of the cut is part of the finished work, cutting on the waste side of lines is advised. In this situation sharp angled corners may be achieved by cutting away excess waste to allow the blade a direct approach to the second line of the angle. With larger blades this is the best method for making sharp turns.
8. To cut a number of identically shaped pieces, *stack cutting* may be used. Place the piece of timber with the shape marked on it on top of several other similar pieces. They should be held firm by either wrapping with masking tape, or secured by brads in waste timber parts of the item. The height of the stack should stay well within the saw and blade's capability.
9. Be aware of the type of blades (pinned or unpinned) that a saw takes when purchasing a scroll saw, as there are limited varieties of pinned blades.
10. Teeth configuration on blades varies from a full set to skip tooth, double skip tooth (which clear sawdust more efficiently) and lower reverse tooth (which prevent splintering to the underside of the work and give a smoother finish). Spiral blades will cut in any direction. Spiral blades can be useful especially in fretwork, but require very careful control to cut only where needed.
11. In general the best results and smoothest cutting are achieved with the highest speed without vibration that you are comfortable using based on your experience and skill level. However, harder or denser materials require lower speeds to prevent overheating that may cause burning and/or blade failure. Slower speeds are best for thinner blades, or when cutting most metals, as well as for brittle or delicate material such as fine veneers.
12. Experience will show when a hold down clamp is best used and when it may be inhibiting the free flow of movement.

Please feel free to ask advice of any experienced member of the Scroll Saw and Marquetry SIG which meets on the 3<sup>rd</sup> Sunday of the month between 10am and 4pm.







## ***Questions***

1. The blade tension should always be initially set to provide a maximum deflection measured at the rear of the blade of \_\_\_\_\_ mm and \_\_\_\_\_ tone when plucked.

2. Name personal safety protections required when using a scroll saw.

---

---

3. Where should fingers be kept when feeding material into the cut?

---

4. What rate of speed is required on tight curves to maintain control?

---

5. What two adjustments are essential to protect scroll saw mechanisms from damage?

---

6. What blade conditions can lead to accident and/or injury?

---

---

7. What actions should be undertaken when you have finished the job?

---

---