

OPERATING PROCEDURE FOR:

Delta 18” Scroll Saw
(RBI Hawk Scroll Saw is similar)

SAFETY RULES:

Warning: Willful violations of these safety rules, disruptive actions or horseplay may result in loss of the privilege to use the tools and machinery in the workshop.

As with all machines, there is a certain amount of hazard involved with the use of this scroll saw. Use the machine with the respect and caution demanded where safety precautions are concerned. **You are responsible for you own safety.**

Read and understand the operating procedures for this machine before attempting operation.

Personal Protective Equipment. At a minimum eye protection and hearing protection must be worn when operating this machine. Eye protection must be safety glasses with side shields, goggles, or face shield, which meet ANSI Z87.1. Remove tie and loose jewelry. Button sleeves or roll up sleeves above the elbow. Remove loose outer clothing and confine long hair. **Do not wear loose fitting gloves.** If gloves are worn, they must fit tightly to the hand.

Use the appropriate NIOSH approved respirator in dusty work conditions (N95, N100, P95 or P100). Wood dust has been listed as a known carcinogen by the U.S. government.

Guards. Keep the machine guards in place for every operation for which they can be used. Ensure that the wheel cover doors are closed when the saw is in operation.

Work Area. Keep the floor around the machine clean to minimize the danger of tripping or slipping. Be sure the table is free of scrap or foreign material. Make sure the dust collector is hooked up and operating.

Operator Position. Maintain a balanced stance and keep your body under control at all times, so that you do not fall or lean against the blade or moving parts. Do not overreach or use excessive force to perform any machine operation.

Careless Acts. Give the work you are doing your undivided attention. Looking around, carrying on a conversation and “horseplay” are careless acts that can result in serious injury and loss of work shop privileges.

Disconnect machine before performing any service or maintenance. A machine under repair must be Locked Out following the Club Lockout Procedure until the maintenance is complete.

Maintain Tools In Top Condition. Do not operate the scroll saw with a dull or badly worn blade. Keep the blade sharp and clean for safe and best performance.

Hand Safety. Keep hands clear of the cutting area. Use a stick to move off-cuts away from a moving blade.

Material Condition. Reclaimed or pressure treated wood is not to be cut on this machine.

Machine Adjustments. Make all machine adjustments with power cord disconnected and the machine locked out following the Club Lockout Procedure.

Job Completion. If the operator leaves the machine area for any reason, the scroll saw should be turned “off” and the blade should come to a complete stop before his departure. In addition, if the operation is complete, the operator should clean the scroll saw and the work area. Never clean the scroll saw with the power “on” and never use the hands to clear sawdust and debris; use a brush.

If you are not thoroughly familiar with the operation of the scroll saw, obtain advice from the Shop Leader.

Drugs, Alcohol, Medication. Do not operate this machine while under the influence of drugs, alcohol, or any medication. Do not operate this machine if you are tired, sick, or distracted.

Familiarize yourself with all caution and warning decals used on this machine.

Capacities:

Throat Capacity (behind blade)	18”
Height Capacity	2”
Table Tit.....	-45° L, 45° R
Blade Size Range	0.07”-0.25”
Standard Blade Length.....	5” pinless
Blade Speed	50-2000 SPM
Horsepower	1/6

The scroll saw is used primarily for cutting curved or irregular work. Its main advantage over other curve cutting saws is that it can be used to make inside cuts.

The major parts of the saw consist of a work table, stationary curved over-arm, a “U” shaped yoke that pivots up and down, upper and lower blade chucks and the drive mechanism. There is a crank system that converts the rotary motion of the motor into an up and down motion that causes the yoke to pivots up and down. The blades chucks are connected to the ends of the yoke and thus the blade moves up and down.

When making cuts extreme care should be taken to keep your fingers away from the blade.

The number of TPI and the blade type will determine the smoothness of the cut. In general, the more TPI, the smoother the cut surfaces will be. However, as the number of TPI increases, the tendency of the blade to bind and burn the stock increases because the blade has trouble removing the sawdust from the cut. This can also result in a broken blade and personal injury. As a result, a slow or very slow feed rate may be needed. If this is the case, it may be better to go to a blade with fewer TPI. Many blades will produce a smooth finished surface. However, after cutting out the stock, it may be necessary to sand the stock to the final size and smooth the curves. When feeding stock into the blade, keep the blade just outside of the cut line. This will permit sanding to the cut line to obtain a smooth surface.

Blade selection is dependent on the material being cut, its thickness and the complexity of the cut. In general:

- Thicker materials require a bigger blade
- Harder substances require larger teeth
- A complex pattern requires a blade with small teeth

For additional guidance, refer to Figure 1

Figure 1. Scroll saw Blade Recommendations for Hardwoods						
Number	Width	Thickness	Teeth per inch	Pilot hole	Material thickness	Application
3/0	.022	.008	33	1/32	≤ 3/16	Ultra-intricate sawing, line art, jig saw puzzles
2/0	.022	.010	28	1/32	≤ 3/16	Extremely intricate sawing, line art
2	.029	.012	20	3/64	≤ 3/16	Tight radius work, fretwork
4	.035	.015	15	1/16	1/4 - 1/2	Tight radius work, fretwork
5	.038	.016	12.5	1/16	1/4 - 1/2	Close radius cutting
7	.075	.017	11.5	1/16	1/2 - 3/4	General purpose
9	.053	.018	11.5	1/16	1/4 - 3/4	General purpose
12	.062	.024	9.5	5/64	1/4 - 3/4	Heavy duty for fast cuts

When making a curved cut, turn and feed the stock carefully so the blade follows the cut line without twisting. When making curved cuts, try to pivot the stock around the center of the arc that is being cut. This will help in obtaining a smooth curve and following the cut line. It is usually not difficult to backup when making curved cuts. Just go slowly and carefully follow the kerf. In order to minimize the need to back up, ensure that the blade width is small enough for all of the radii to be cut (Refer to Figure 1). It is also helpful to make relief cuts from the edge of the stock to the cut line. This will allow waste material to be removed as the cuts are made, and prevent the blade from binding.

The scroll saw cuts on the down stroke. Therefore, the blades should be installed with the teeth pointing down and toward the front of the saw. The blades are held in the blade chucks by means of socket head set screws. Position the blade so that it is in front of the screw in the blade chuck.

The tension of the blade is adjusted with the blade tension adjustment knob. Turning the knob clockwise tightens the blade. A blade tension lever is positioned next to the blade tension adjusting knob. Adjust the blade tension when the lever is in the down position. Moving the lever up will release the tension and allow the blade to be unclamped from the blade chucks. When a blade is reinserted into the blade chucks and the chucks tightened, the lever can be lowered to re-tension the blade. The blade tension should be no more than what is needed to keep the blade from bowing while cutting. Blade tensions that are too high or too low will increase the potential for the blade to break.

The speed of the saw is controlled by a dial knob at the front of the saw base. Pulling out on the knob turns the saw on; pushing it in turns the saw off. Rotating the knob clockwise increases the

speed of the saw, or strokes per minute. The speed of the saw to be used is somewhat of a personal preference. For most work with hardwoods, a speed of 500-1000 SPM is appropriate. A higher speed does not necessarily mean that the saw cuts faster. In most cases, the speed of the cut is determined by the skill of the operator in following the cut line.

OPERATION:

Install the desired blade.

Tension the blade.

Adjust the holddown so that it rests gently on top of the workpiece.

Start the saw and set the speed to about 500 SPM.

While holding the workpiece tight against the table, gently push it into the blade to start the cut. If the blade tension does not appear to be right, stop the saw and make an adjustment. If the speed is too fast or too slow, speed changes can be made while the saw is still in the cut and running.

Hold the workpiece firmly against the table. Do not attempt to saw stock that does not have a flat surface that can rest on the table, unless a suitable support (jig) is used.

Carefully feed the work piece through the blade with even and steady pressure, keeping the fingers a safe distance from the blade.

When the job is complete, shut off the machine. After the blade has come to a complete stop clean the saw table with a brush and clean up the area. If the saw will not be used again that day, disengage the blade tension lever by raising it to the vertical position.