

Tip #51 Scroll Saw

In many ways, the scroll saw is the ultimate piece of equipment for "fancy" woodworking. It can make straight or very complex curved cuts in a variety of materials including hard or soft woods, plastics, non-ferrous metals, ivory and mother-of-pearl. It's also one of the only machines which can make piercing cuts-like a donut hole-in the center of a workpiece.

These capabilities make the scroll saw ideal for cutting intricate scrollwork or making tiny models and miniatures. It's perfect for inlay, marquetry (inlaid veneer) and intarsia (wood mosaic). And with the proper blade installed, it even cuts finely enough for ornamentation or jewelry making.

Many woodworkers are confused about the difference between a jigsaw and a scroll saw because the terms are often used almost interchangeably. In fact, the scroll saw can do just about anything a jigsaw can do, but it does it better! That's because of differences in the way the two machines operate.

A conventional jigsaw powers the blade down through the cut and uses a spring to pull it back up. Since the spring is seldom fast enough to keep pace with the lower power cylinder, the blade tends to bend in the middle which produces a rough cut and leads to premature blade breakage.

With the scroll saw, however, the blade is suspended between two parallel arms. These arms move up and down with the blade, so the blade is under constant tension during both the up and down stroke. This reduces blade bending and breakage-and the slight forward and backward motion of the blade allows the teeth to cut smoothly, so sanding is often completely unnecessary.

SCROLL SAW-MODELS, SETUP AND FEATURES

The scroll saw is available in two models. One can be installed at the power mount end of the Mark V (Figure 15-1) and the other is a freestanding unit with a separate motor and stand (Figure 15-2). To set up your scroll saw, follow the instructions in the Owners Manual that came with your scroll saw.

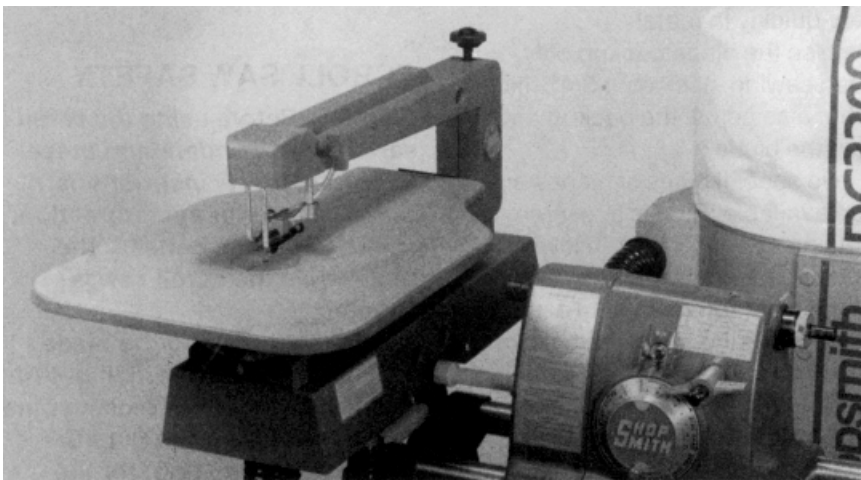


Figure 15-1. One model of the scroll saw mounts on the MARK V.

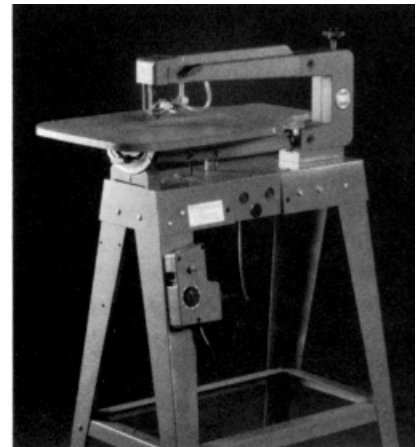


Figure 15-2. A freestanding model is also available.

Table 15-1: Scroll Saw Blades

Teeth Per Inch	Saw Kerf	Blade Width	Use to Cut	Stock Thickness	Min. Radius	Tension Clicks*	MK V Mounted		Freestanding	
							Speed Range	Strokes per Min.	Speed Range	Strokes per Min
9, with 3 reverse	.030"	.100"	Hard and Soft Wood, Plywood, Plastic	1/4"-2"	1/8	25	Slow-O	280-1200	1-10	500-1200
9-1/2	.024"	.062"	Hard and Soft Wood, Plywood, Plastic, Paper, Felt, Bone	1/8"-1-1/4"	3/32	22	Slow-I	280-700	1-6	500-720
11-1/2	.018"	.053"		1/16"-1"	1/16	19	Slow-L	280-930	1-8	500-930
12-1/2	.016"	.038"	Hard and Soft Wood, Plywood, Plastic, Bone, Horn, Paper	1/32"-3/4"	3/64	17	Slow-N	280-1110	1-9	500-1130
20	.012"	.029"	Hard and Soft Wood, Veneer, Bone, Fiber, Ivory, Plastic, Mother-of-Pearl	1/64"-1/4"	1/32	15	Slow-O	280-1200	1-10	500-1200
57	.010"	.021"	Hard and Soft Wood, Veneer, Bone, Fiber, Ivory, Plastic, Mother-of-Pearl, Non-Ferrous Metal	.020"-1/8"	1/64	10	Slow-H	280-630	1-5	500-650
65	.009"	.017"		.015"-1/8"	1/64	8	Slow-G	280-570	1-3	500-560
80	.007"	.014"		.010"-1/8"	1/64	5	Slow-F	280-510	1-2	500-530

*Start counting when the knob starts to tighten and the sound of the clicks becomes quieter.

NOTE: This chart gives recommended operational ranges. Woodcutting is done at fast speeds while plastics, bone, mother-of-pearl, non-ferrous metals, etc. are cut at the low end of the speed range for a given blade. Some experimentation may be necessary. The scroll saw accepts all standard 5" jigsaw, fret saw, and jeweler's blades.

Important features and capacities of the two scroll saw models are:

- With the proper blade installed, the scroll saw will cut stock up to 2" thick.
- It has a throat depth of 20" which means you can cut to the center of a 40" wide workpiece.
- The blade mounting blocks will accept blades ranging from 1/4" wide (very heavy) to 6/0 (very fine). The stroke of the blade is 1-3/32".

SCROLL SAW BLADES

The scroll saw accepts virtually all standard 5" jigsaw or scroll saw blades with plain, straight ends. Blade selection will be based on the thickness and type of material being cut; the amount of fine detail in the project; the cutting speed; and the desired quality of the finished cut.

Scroll saw blades are relatively inexpensive, so it's best to have several types and sizes of blades available for different jobs. Table 15-1 shows a number of common scroll saw blades and their intended uses. The following guidelines will also be helpful in selecting the best blade for your projects:

- For best results, use the thickest blade available that will make the necessary turns without binding or twisting.
- There should be at least two and preferably three teeth across the thickness of the workpiece. Cutting veneer or other very thin material may require blades with 60 to 80 teeth per inch.
- As the thickness of the stock increases, use a heavier blade with fewer teeth per inch. Only the coarsest blades have "set" in the teeth. Thin blades tend to bow in thick stock and fine-toothed blades may not be able to easily remove sawdust from the cut.
- Use a blade with hardened teeth for cutting aluminum, brass, silver and other non-ferrous metals. Wood cutting blades will dull very quickly in metal.
- Use the blade backup only when sawing stock over 3/4" thick. Otherwise adjust the backup away from the blade.

Two special types of blades are also available. First is a reverse tooth blade with the three lower teeth pointing up instead of down. These reversed teeth help eliminate splintering along the bottom side of the cut when working with thick stock. The second type is a spiral blade which will cut in any direction without turning the workpiece. Although spiral blades may be useful in certain situations, there are tradeoffs. Spiral blades tend to follow the grain of the wood instead of the intended cutting line-making it difficult to cut smooth, graceful curves-and the cut is much rougher, so more sanding is required.

SCROLL SAW SAFETY

Warning: Before using the scroll saw read and understand these important safety instructions:

- Wear proper eye protection.
- Never reach beneath the table while the scroll saw is running.
- When removing the blade, release the blade tension before loosening the chuck locking pins.
- Never attempt to cut a radius that's too tight for the blade.
- Never turn on the scroll saw with stock pressed against the blade.
- Never cut extremely small stock. Cut small components from larger stock.
- Adjust and lock the hold-down, check blade tension and adjust the blade backup as required for each operation.
- Install the blade with the teeth pointing toward the table.
- Before you turn on the machine, turn the drive shaft by hand to be sure the blade moves freely.
- Do not force stock against the blade or try to cut too quickly.
- Keep the table tilt locked.
- Do not use worn or damaged blades, or a worn blade backup.
- When mounting the scroll saw on the Mark V, secure the accessory mount lock, power plant lock, and the scroll saw mounting tubes.

PATTERNS AND LAYOUT

Full size patterns for scroll saw projects are available in magazines and books as well as from commercial suppliers who provide letter templates for signs or complete project plans. If your plans are not full size, they can be enlarged by methods such as the grid system (Figure 15-3) or by using a pantograph (Figure 15-4).

Another very effective way to produce full size patterns is by using a copier machine which can enlarge and reduce. By making an enlargement of an enlargement, small drawings can be quickly and accurately increased to many times their original size and the cost is minimal, even if several copies are required.