

BUILD YOUR OWN HAND OPERATED SCROLL SAW

HAND OPERATED FOR FINE CONTROL



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DEDICATION.

This book is dedicated to the perpetuation of hand sawing techniques
in the making of fine works of Art and Craft.

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CONTENTS

	Page #
INTRODUCTION _____	4
PICTURES OF A FINISHED SAW _____	6
LIST OF MATERIALS AND SUPPLIES _____	7
CUT AND FORM WOOD PIECES _____	8
METAL PIECES _____	13
FINAL ASSEMBLY _____	19
GENERAL _____	22

INTRODUCTION

We have come to realize through our collective experience in the teaching and practicing of Marquetry and Inlaid Picture making that there is a very widespread need for table saws which are hand operated and capable of performing very fine work, accurately. Such a saw can be used by hobbyists, craftspeople, artists, artisans and those who just like to be creative. The problem is that they are expensive and difficult to find, so we decided to get our heads together and show anyone who is interested how to make one themselves.

The intention of this manuscript is to show you in a very comprehensive step by step and systematic method how to build a hand-operated scroll table saw. Then we must do our best to show you how it is operated. We make no attempt at motorizing this unit, although it probably could be done very easily. Should you ever attempt to attach a motor, please remember that the action would have to be smooth, variable and definitely very slow for the best control possible.

The saw is capable of using the finest jeweler's blades for Marquetry and Inlaid Picture making. Blades as thin as 8/0 can be used with minimal breakage if the saw is made carefully and trued properly as you will be shown. It can also be built in smaller versions for use with jewelry making or the many other applications that are tediously performed with a hand-held fret saw. The unit can also use standard jigsaw blades for larger work. However it is not our intention to infer that this unit can do the same work as a motorized jigsaw. It is rather very useful for those artisans who feel they must have absolute control of the saw while performing very intricate work.

For the most part you will use jeweler's blades which can easily be obtained in sizes 1/0 through 8/0 with the largest number size being the finest blade and measuring about .007" wide across the teeth and 5" long. At the end of the book we will go into whatever information we can on the proper use of these blades. For now, remember that they are easily obtainable at jeweler supply companies and are the least expensive if bought by the gross. They are not cheap to buy, but if you make this saw properly and align it well, breakage will be minimized.

The hardware and materials used in the making are standard and easily obtainable at hardware stores except that the brake line tubing must be bought at an auto parts store. Although sizes are shown throughout the book, they may be varied in any way that works for you. The only thing we are copyrighting is the actual writing of this book and our presentation concerning the making of a table saw. There are many similar saws in use and we seriously doubt that anything about it can be patented. Our intentions are to show you how to build one or have one built expressly for your own personal use. If you can in any way do any marketing of the product, we will not in any way make any claims that the saw belongs to us. The written instructions, however, do belong to us as well as any computerized graphics and any original photography.

The sequence of operations will work well for you, but we could easily have done some things differently. However, when it comes to the actual assembly of the components, it is best that you follow everything step by step as we show you. Everything is really pretty easy. Measurements will have to be made precisely. Some accurate cuts will have to be made and some holes will have to be drilled and tapped in metal. The trickiest operation is the forming of the metal tubing without putting a kink in it. More about that at the appropriate time.

We must make the assumption that you possess all the basic skills necessary to properly perform the operations. We have no way of knowing what type of tools and equipment are accessible to you. Thus we will not tell how to do each step, but rather just show what each step is and an orderly sequence. I would suggest that you read the entire manual before you get started so you will always have a general idea of what to look for as you proceed. This saw is not very difficult to make, but it does require careful workmanship. I have built a good number of them.

Due to manufacturing processes beyond our control, drawer slides may vary somewhat from the model shown in this manual, but the procedures should basically remain the same.

Good luck with your project. Do not skimp on materials in any way. Especially do not use anything but the best for the drawer slide. To our knowledge this is the only type of slide available and they really are made for horizontal use, so buy the strongest and best you can. Now let us get into the meat of this book. Thanks. John and Dave.

CHAPTER 1 PICTURES OF A FINISHED SAW

Just to make things more clear as you progress, we are showing you a couple pictures of a finished saw from different angles.



CHAPTER 2
LIST OF MATERIALS and SUPPLIES

Eye protection of your choice. Make certain that you protect your eyes in the manner you find adequate during the building of the saw and during the subsequent use when the finished saw is being operated. Also follow all safety procedures.

Wood:

Table top - 14 1/2" x 19 1/2" x 3/4" thick .
Base of stand - 5" x 10 3/4" x 3/4" thick.
Sides of stand - (2 ea.) - 3 3/4 to 4 1/4" x 5" x 3/4" thick. (See page 9.)
Rear guide plate - 4 1/2" x 10 3/4" x 1/4" thick.
Slide holder - 1 3/4" x 12" x 3/4" thick.
Hand grip - 2" x 4 1/4" x 3/4" thick.
Access plate - 2 1/2" x 2 1/2" x 1/4" thick.
Dowel rod - 5/16" x 6" long, **hardwood**.
Cleats - 1/2" or 3/4" square x 5" long. (Optional for butt method.)

Hardware:

Drawer Slide - 1 3/4" wide x 12" long. (Accuride (TM) or Sterling (TM) 100 pound test, full extension or equivalent. The different brands may be built somewhat differently.)
Hinge - (2 ea.) - 1 1/2".
Screws, flat head - (6ea) - #6 x 5/8".
Screws, round head - (6ea) #12 x 5/8". (2 for slide to table & 4 for rear plate.)
Lock washer - (2ea) #10.
Flat washer - (2ea) #10.
Screws, flat head - (2ea) - #8 x 1 1/4".
Right angle bracket - 1/2" wide x 1 1/2" on each leg.
Screw eye - (2ea.) - 1/4" or 3/8" hole.
Spring - 5/16" x 3" x .028 or one of your choice.

For saw frame:

Knobbed turn screw- (2ea.) - #10-32 x 1/2" long thread.
or: Cap screw - (2ea.) - #10-32 x 1/2" with:
Wing head to press onto cap screw head - (2ea.)
Square nut - (2ea.) - #10-32.
Washer, flat - 4 ea. - #10.
Washer, nylon (or Teflon) - (4ea.) - #10.

For slide assembly:

Screws that come with the slide.
Screws, round head - (2ea) - #6 x 5/8".

For saw frame to slide assembly:

Cap screw - (2 ea.) - #8-32 x 1/2" (or 5/8" long per step j on page 15).
Washer, lock - (4 ea.) - #8.

For handle attachment:

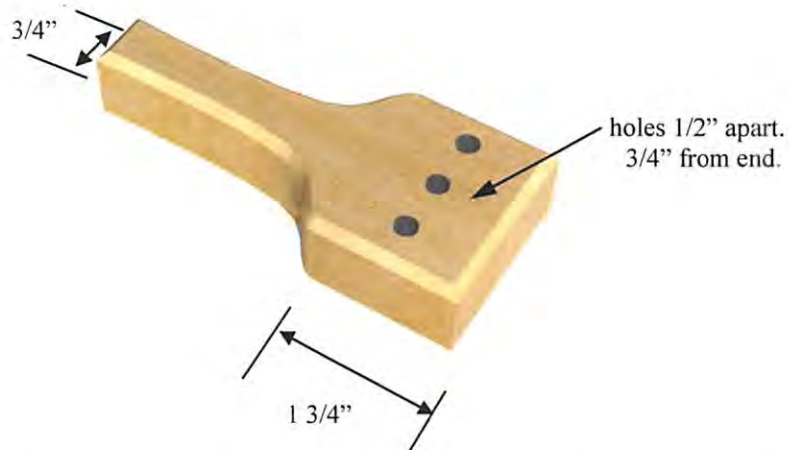
Cap screw - (3 ea.) - #10-32 x 1".
Washer flat - (6 ea.) - #10.
Washer, lock - (3 ea.) - #10.

Brake line tubing (automobile) - 3/8" OD x double the depth of the throat plus 3" to 4".
Also wood screws as needed according to your method of making the stand for the table.

CHAPTER 3 CUT AND FORM WOOD PIECES

With all the wood pieces, sand as you go along and remove all corners so as to avoid splinters during assembly and subsequent later use.

HANDLE - Cut a piece of poplar, ash, maple or any wood of your liking to the dimension of 2" x 4 1/4" x 3/4" thick. Using the tools and/or machinery available to you, form the wood as shown in the following diagram:



Drill the 3 holes - (1 centered and 1 at a 1/2" distance on each side) with a 13/64" drill so as to allow clearance for later alignment when installing the handle to the slide with #10-32 x 1" cap screws. Round all corners.

ACCESS PLATE - May be made from 1/4" plywood, masonite, Formica or any durable material to your liking. Cut to dimensions of 2 1/2" x 2 1/2" and put a small radius on the 4 corners.

Locating and cutting a slot for the saw blade will be the last thing you do, as there is no way to locate it until final assembly is done.



BASE OF STAND - Rabbit each end as shown or if you would rather, just make butt joints. Use the wood available to you for the stand components, but 3/4" thick is preferable. Make the base 5" x 10 3/4" x 3/4" thick.



For Butt Joints



For Rabbit Joints

SIDES OF STAND - The length will vary depending on whether or not you use a rabbit joint with the bottom piece and if you use a butt joint at the underside of the table top or recess 1/4". The 2 sides will each be 3/4" thick x 5" wide x 3 3/4" to 4 1/4" in length depending on the joints used. The finished inside height must be 3 3/4".



For Butt Joints



For Rabbit and Recess

SLIDE HOLDER - We feel this piece of wood should be strong and stable. A nice piece of maple would be ideal. Maybe you have some other scrap of hardwood. Particle board or plywood might work, but would be an inferior selection. Make it 3/4" thick x 1 3/4" wide x 12" long.



REAR GUIDE PLATE - This plate is really necessary only with a long arm set on an angle. A plate slotted at a 90 degree angle may be desirable for large amounts of perpendicular cutting, but for small amounts it is not necessary. IF THE BASE IS NOT MADE PARTICULARLY WELL, THE PLATE CAN BE VERY MUCH NEEDED FOR ADDITIONAL SUPPORT AND STABILITY. Make it 1/4" thick x 4 1/2" x 10 3/4". The open end of the slot will be centered perfectly and will go against the bottom of the table and centered perfectly with the center line which you will establish later. The slot will be cut 12 degrees from perpendicular as shown, which is the optimum angle for Marquetry unless you choose to make it some other angle. Of course you may want to make a perpendicular plate in which case the slot will still want to be centered at the top. In either case the slot will be 3/8" wide with just enough sanded clearance for the tubing to slide freely.

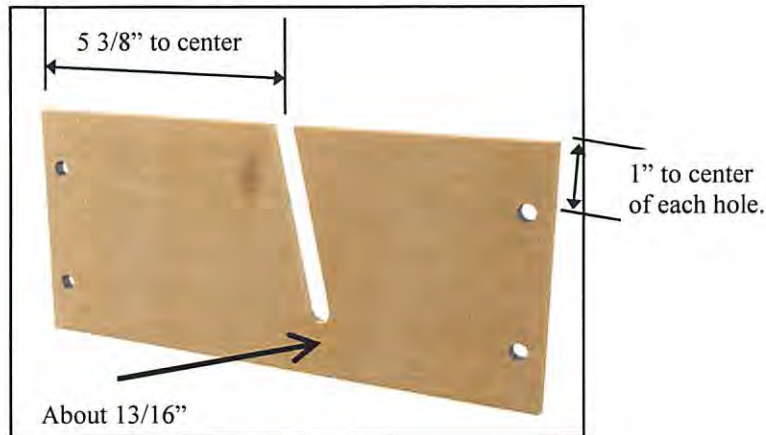


TABLE - The table can be made from plywood or a good laminated material, preferably 3/4" thick. Make the table any dimension you wish, but we will make the dimensions 14 1/2" wide x 19 1/2" from front to rear because it happens to be a good size.

TABLE TOP - On both the top and bottom measure accurately and lightly mark a center line carefully from front to rear. This will be your reference line for all work. From the very front of the table and on the top measure 4 3/4" and mark it on the reference line. From that point mark a line perpendicular to the reference line and measure 1" in each direction so as to plot a 2" x 2" square which will later be cut all the way out. Now mark a 2 1/2" by 2 1/2" square by measuring 1 1/4" in each direction. This section will be routed or chiseled out to the correct depth to accept the access plate. Next take off the 4 table corners by making about a 3/4" radius. You will get a very nice edge all around the top if you can take it down to about a 1/4" radius. This will finish the top surface of the table.

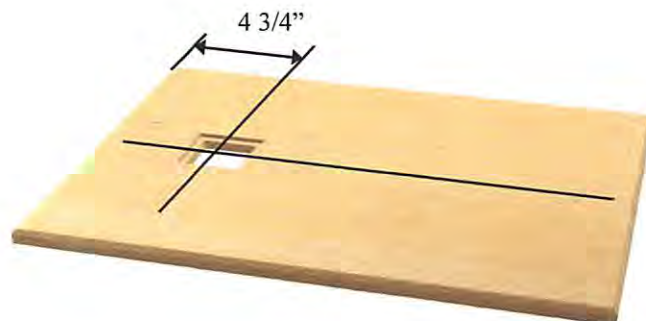
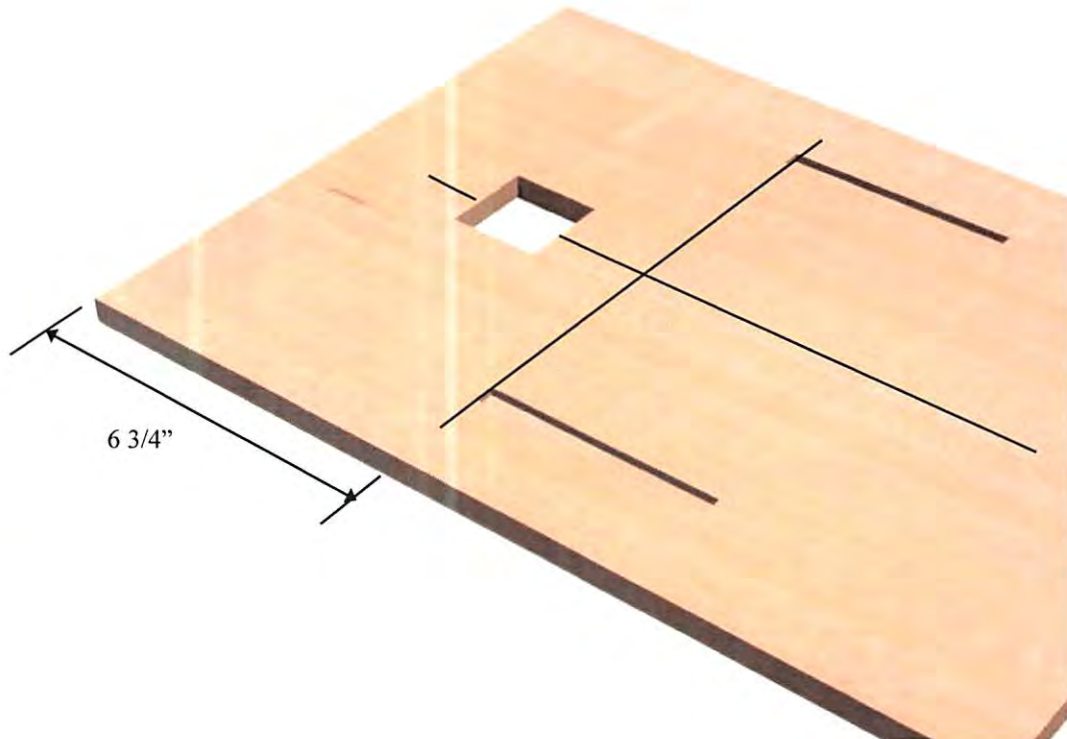
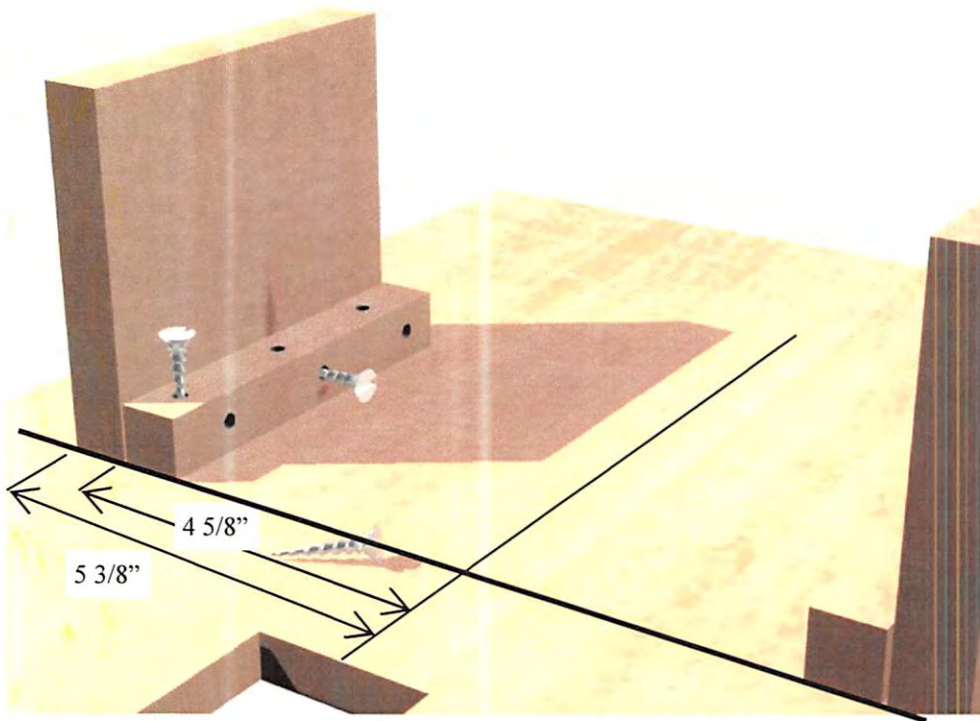


TABLE BOTTOM - We will now plot out exactly where the stand will be attached. No matter what the finished dimensions of the table, this plotting will remain the same as it has to do with the correct distance from the front of the saw for the operator. From the front table edge measure $6 \frac{3}{4}$ " and mark a line that extends about 6" from side to side on both sides of the reference line. This is where the front of the stand will set.

Now on each side of the reference line measure $4 \frac{5}{8}$ " and $5 \frac{3}{8}$ " (see page 12) and mark lines about 6" long to show the positioning of the 2 sides of the stand. Based upon your skill and equipment level, you will now install the 2 stand ends using a butt joint method with cleats or a recess method using a router. If you are using the recess method, I probably can't tell you a thing about how to do it so I will concentrate on the less advanced method. I recommend the use of a high quality glue wherever wood is permanently joined. Below, the recessed method is shown.



ATTACH THE STAND ENDS PERMANENTLY IN PLACE.



ATTACH THE BASE TO THE STAND ENDS.

