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**CHAPTER 1**

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Introduction

The use of these plans are governed by the below agreement. To continue to use the sawmill plans you must agree with the statements below.

To save you the time and aggravation, you should not attempt to build this or any sawmill, if you have any doubts about your abilities to use common sense. If you are in doubt stop now and purchase a professionally made sawmill. Please remember you are constructing a machine that could be life threatening. Sawmills are inherently dangerous. A poorly built sawmill can and will cost you your life. You should be an adept welder and experienced with metal fabrication. With this said I assume no liability or responsibilities whatsoever pertaining to the use or inability to use these plans.

Terms of use

The Sawmill Plans are provided “as is” without warranty of any kind, either express or implied, including without limitation any warranty with respect to its fitness for any particular purpose.

In no event will the author of the Sawmill Plans or any other associated party be liable to you for any consequential, incidental, direct or indirect damages (including personal injury, and death) arising out of the use or inability to use the Sawmill Plans, even if advised of the possibility of such damages.

In cases where the above limitations do not apply by law Any liability to you for actual damages for any cause whatsoever, and regardless of the form of the action, will be limited to the greater of U.S. $1.00.

If any provision of this agreement shall be held to be invalid or unenforceable for any reason, the remaining provisions shall continue to be valid and enforceable. If a court finds that any provision of this agreement is invalid or unenforceable, but that by limiting such provision it would become valid or enforceable, then such provision shall be deemed to be written, construed, and enforced as so limited..

Acknowledgements

Some aspects of the plans are based on the LinnLumber http://www.linnlumber.com brand of sawmills. These aspects are used with permission.
Material List

Tools

- Quality angle grinder with multiple cut off wheels and grinding wheels
- Minimal 130 amps MIG, or 225-amp stick welder, or equivalent welding method.
- Quality chop saw or other means of cutting steel accurately.
- Quality drill or drill press, and drill bits. Largest bit used is 1 inch.
- Quality center punch.
- Measuring tape, and level.
- Quality clamps, Example C Clamps, vise grip type clamps
- Socket and wrench set, Pliers screwdrivers, hammer, Allen wrenches etc.
- Tap and die set largest used is 1 inch
- Red and Blue lock tight

Material

- Two 1 inch pillow block bearings
- Two 1 and 7/16 pillow block bearings
- One quality made 1000-2000 pound hand winch. With cable
- Two 19-inch B belt sheaves with 1 and 7/16” mounting hardware, and appropriate B belts. (Sheaves are available from Ozark supply, Ozark supply will also recommend the correct size B Belt) Please note the B belts do not come installed and may need to be taken to a tire shop and pried on.
- One 14 inch sheave with 1 and 7/16” mounting hardware
- Two pre made 1 and 7/16” axles (Available from LinnLumber)
• Two Linn blade guides, for 1 and 1/4" blade width. (Available from LinnLumber)

• 4 v groove track rollers (Available from LinnLumber)

• Appropriate 4 inch B belt clutch. Shaft size will depend on engine size used (Available from LinnLumber)

• Engine with governed RPM of 3600 or less. Minimal recommended horse power 13

• 60 feet of 3/8" X 3 X 3 angle iron.

• 10 feet 1” solid square stock, 10 feet 3/16” X 2” X 2” X 2” angle iron.

• 5 feet ½” X 2” flat iron.

• 5 feet 1” solid round stock

• 80 feet 1.5” X 3/16” square tube. (If need be 60 feet of this can be 14 gauge thickness)

• 10 feet 3/16” X 1” X 1” angle iron

• 10 feet 3/16” X 2.5 X 2.5 square tube

• 15 feet 3/16 X 2 X 2 square tube

• 5 feet 3/16 X 2 flat iron.

• 20 feet 1” X 1”14 gauge square tubing

• 10 feet 3/16” X 1” flat stock, 5 feet 3/16” X 8 flat stock

• Metal 5 gallon bucket (Old kerosene can will work great)

• 10 feet of small gauge hose for blade lubrication, Also an adjustable valve for lubrication control (Your best bet here is to just see what is available)

• 10 feet 1” and ¼” square tubing, 1 foot 2” round tube

• The LinnLumber 190 assembly video (To familiarize your self with blade tracking and adjustment. Free with parts order)
- Twelve 5 inch all thread 3/8" bolts with lock washers and nuts. Four 3" 3/8" bolts with lock washers and bolts. Ten 2" 3/8" bolts with lock washers and nuts. One 1" bolt 5 inches long. 8 5" 5/16" bolts with lock washers and bolts.

**Building the Track**

Start by cutting 6 42-inch sections of the 3" X 3" X 3" angle iron. Use your angle grinder and cut the top corners off 4 of the sections, starting 1 inch from the end and 1 inch down the side of each section. (Please see illustration 1B below). Next lay out two 20' foot sections of the 3" X 3" X 3" angle iron approximately 42 inches apart with L’s facing in, next place the two 42" sections which did not have there corners cut (These sections are the end pieces of the track) on each end of the track L’s facing in, and clamp them in place securely. (See illustration 1A below) Use your square, and tape measurer to ensure the track is completely square, once your satisfied that the track is perfectly square weld the two sections in place. Next place the remaining 42" sections every 4 feet down the track and clamp them in place. (Note Keep L’s all facing one direction. The last section will need to be centered as well as possible. Keep cut corners up.). Check for square on each section and weld when satisfied. This completes the track except for the Log Dogs, which we will address later. (If the track will be exposed to the weather you may consider painting or priming the track at this time.)

**Illustrations**

1A (Not shown to scale)

[Diagram of 42" long 3" X 3" X 3" angle iron with clipped corners]
Building the Yoke and Saw Frame Assembly

Start by cutting 2 sections of 3/16" X 2" X 2" tubing; make each 6 feet 5 and 5/8 inches. Next cut a section of ½ X 2" flat iron. Make the section 2 and ¾ inches long. Using your center punch mark center on this piece then drill and tap to one inch. Next cut a section of 3/16" X 2" X 2" tubing 2 and ¾ inches long. Place the two 6.5 foot sections side by side approximately 2 and ¾ inches apart, insert the 2 and ¾ inch section of flat iron 18 and ½ inches from one end and then insert the 2" tube section 15 and ¾ inches from the other end (Please see illustration 1A.) Using clamps or a strap tie secure the assembly. Check for square, and proper alignment. Once your assembly is square weld the 2 and ¾ inch sections in place. (Ensure a strong weld)

Choose a top and bottom for this assembly, and mark accordingly, also mark left and right and front and back. (Make the end with the 2" section of flat iron left and the other right). Starting on the left side and using your angle grinder with a fresh cutoff wheel cut a 1/2" centered slot starting at 3 inches from the left side and ending at 14 inches on the top and bottom of both of the 6.5' left side tubes. (See illustration 1A) Drilling a 1/2" hole at 3 inches and 14 inches will aid in this process.

Next on the right hand side center punch and drill holes at 3 and 3/8 and 8 and 1/8 inches on both right side tubes through top and bottom (See illustration 1A)

Next starting on the left bottom back. Drill two centered 5/16" holes, first at 12 and 1/2 inch second at 15 and ¾ inch. Tap threads in the holes to 3/8" Repeat the process on the right hand side making the first hole 12 and 1/2 inches and the second at 15 and ¾ inches (Ensure these holes are on the bottom back, The holes need only penetrate the bottom section of the tubes) See illustration 1A
Building the Yoke and Saw Frame Assembly

Next cut two sections of 2 ½” X 2 ½” X 3/16 tubing 16 and ¼ inches long. Then cut a section of the 2 ½” tubing 2 and ¼” inches long securely clamp the sections together in a U shape, check for square and weld. (See illustration 1B) Mark the sections top, bottom and label tubes left and right. Center punch and drill ½” holes at 1 and ¾” and 6 and ¾” (Work from open end of U shape). Next using your angle grinder with cutoff wheel. Starting from the closed end of the assembly cut the right tubes side back 8 and 3/8 inches being sure to take cut away the corner curve from top and bottom. Cut another slot on the bottom side of the right tube. Start 2” inches back and cut 6 and ½” inches. Leaving the bottom inside corner intact. (See illustration 1B) Cut a 2” inch long piece of ½” X 2” flat iron. Center drill and tap to 5/16”. Cut a 2” inch long piece of 3/16” X 2” flat iron. Clamp the ½” X 2” section to the bottom left tube 7” and 7/16” from the closed end, check for square and then weld. Clamp and weld the 3/16” X 2” section to the edge of the cut you made on the bottom of the right side tube, check for square and weld. (See illustration 1B) Cut two 4” inch sections of 2” X 2” X 3/16” tube. Cut two 2” inch sections of ½” X 2” flat iron, center drill and tap both to 5/16”. Cut two 6 and ½” sections of 3/16” X 2” flat iron drill ½” holes in each section first hole should be at ¾” second at 5 and ¾”. Clamp the two ½” X 2” flat iron sections to the right side tubes 9 and ½” inch from right side end, check square and weld. (See illustration 1C) If the Saw Frame will be exposed to the weather paint or prime.
**Band Wheel Axle and Bearing**

Cut two 1" inch sections of 2" inch round tubing, and two 5/8" sections of round tubing.

Using the axles purchased from LinnLumber and your 1 and 7/16" pillow block bearings. Insert the shaft into the first pillow bearing followed by the 1" inch spacer you cut earlier, next insert your 19" sheave and bushing followed by the 5/8" spacer and then the second pillow block bearing. Center everything on the shaft and secure the sheave bushing and pillow block bearings with red lock tight. Repeat the process for the second shaft. If the shafts will be exposed paint or primer.
Blade Guide Construction

The LinnLumber Assembly video shows detailed views of the following blade guides; the video is free with a parts order. Be sure to ask when ordering your parts from LinnLumber.

Start by cutting a 30” inch section of 1.5” X 1.5” X 3/16” square tube. Label the tube front, back, left and right. Next cut a 3 and 3/8” inch section of 2” X 2” X 2” X 3/16” angle iron. Cut a section of ½” X 2” flat iron 1 and ¼” inch long. Cut the height of this piece to 1 and ½”. Center drill a ½” hole in this piece.

Drill and tap a hole to 5/16” inch, into the top left hand side of the 30” inch 1.5” X 1.5” square tube, 1” inch from the end. Make this hole through the top and bottom of the tube.

Next clamp the 3 and 3/8” inch section of 2” angle iron to the left side of the 30” square tube, ensure the L lies across the front of the tube. (See illustration on following page) check for square and weld along top and back side. Center drill a ½” hole ¾” inch from the front bottom of the 2” angle iron and another 1 and ½. Using your angle grinder and cutoff wheel cut a slot from the first hole to the second. (See Illustration on following page)

Assemble the adjustable guide arm, by placing one Linn guide on the front face of the 2” angle iron. Insert the ½” mounting bolt and then place the adjustment block on the back side of the mounting bolt followed by a lock washer and nut. Insert a 3” and 5/16” bolt in the tapped hole to complete the assembly. If this assembly will be exposed to weather paint or prime.

Cut two sections of 3/16” X 1.5” X 1.5” square tubing 7 and ½” inches long. Cut two sections of 3/16” X 2” flat iron 4 and 1/8” inches long. Center drill the flat iron sections ½” from each end with a 5/8” drill bit. (See illustration on next page) Cut a section of 3/16” X 2” X 2” X 2” angle iron 7 inches long, then cut a second piece 3 and 3/8” long. Cut a section of 2” X 2” X 3/16” square tubing 6” inches long.

Weld the 7.5” long inch and a half tubing to the center of the 4 and 1/8“ flat iron pieces. Then following the illustration on the next page drill appropriate holes in the 7” inch section of 2 X 2 angle iron. Use the illustration to ensure proper L alignment. Repeat the process for the 3” section of angle iron, the weld the 3” section to the 6” section of 2 X 2 tubing as shown in illustration.

Choose one of the 7.5” tubing sections that you welded to the flat iron. Drill and tap 2 3/8” holes starting at ½” second at 2 and ¼“. Using the second tube set it into the 3”
section of 2” angle we welded to the 6” piece of tubing. Mark the tube through the holes in the angle iron. Then drill and tap the tube to 3/8” Paint or prime
Rolling Carriage Construction

Start by cutting four 5’ foot sections of 1.5” X 1.5” X 3/16” square tubing. (You can substitute 14 gauge if you wish). Next cut four 42” inch sections and then cut four 43” sections.

Weld the sections into a box configuration pictured in the images on the next page. (Take your time and ensure everything is square and straight)

Cut four 1.5” inch long sections of 3/16” X 1” X 1” X 1” angle, Center drill 5/16” holes in each. See images on next page for mounting instructions

See images on next page to finish carriage construction.

Once you have your carriage finished, mount the saw frame assembly to the 1 and ¼” inch tubes which slide over the 1” up and down using the cable system to hold the weight and clamps to secure the saw frame to the up and down tubes. This completes the Sawmill construction. Since I cannot provide details on mounting all engine types you should see the actual Sawmill photos for engine mounting ideas, as well as cable system setup.
1" X 3/16" angle iron with center drilled 5/16" hole mounted 12.5" from front. Second mounted 13.5"

gap filled with 5/16" washers
Completed Sawmill Images
Parts Suppliers

Linn Lumber:  http://www.linnlumber.com  Phone: 541-367-6900
Ozark Industrial Components Inc.  http://www.ozarkindustrial.com/  Phone: 870-269-8788
Steel should be purchased from a local source as should bolts etc.