



LOGOSOL'S **Big Mill Basic**

Chain saw mills provide an interesting combination of trade-offs and sawing options. They offer the ultimate in portability for remote locations, and low-cost milling for occasional use. Since the sawyer can use the same saw power head to both cut and mill the lumber, the initial investment is low. But so is production.

Chain saw mills have found niches as specialty mills for wide slabs and quartering big logs so that they can be cut on a sawmill. Milling these large logs is precisely what I had in mind when I ordered a Logosol Big Mill Basic.

Working with big logs is often a challenge for sawmill operators. One sawyer I know uses black powder to blow them apart (you can see videos of this on youtube.com). Even though this wastes a lot of wood, it allows most of the log to be converted to lumber. Chain saw mills offer a more efficient, albeit slow and less entertaining, option for paring down the size of these logs.

Logosol's Big Mill Basic is different from other chain saw mills, in that it uses a guide rail to the

side of the log for the chain saw, with no support for the tip of the bar. The good news is that this allows the sawyer to bury the tip of the bar in the log, and then come back from the other side to finish the cut. This makes it possible to slab out a 60-inch-diameter log with a 36-inch bar. This feature also makes it possible to quarter the log and finish cutting it on a conventional sawmill, reaching only halfway through the log for each cut. The bad news is that the tip of the bar can flex during a cut. This is a serious problem if the saw is not properly sharpened or it nicks a nail or hits a stone. Using the shortest possible bar minimizes tip deflection.

Logosol offers 16-inch, 20-inch, or 24-inch thin kerf "pico" bars and ripping chains, sharpened at a

Left: Cutting with the Big Mill requires a big saw, a long blade, and plenty of persistence.

10-degree angle. The pico bars and chains require less power and cut much faster than conventional equipment, though they are not heavy duty enough for bars longer than 24 inches. If you need to reach through a 6-foot-diameter log, you'll need a full-kerf bar and chain. In addition to a 24-inch pico, I keep a 42-inch bar with a semi-chisel skip tooth ripping chain ready to cut custom wide slabs for customers who have tabletops and other furniture in mind.

Either way, the saw needs to be on the high end of the power range. Charlie Griffin, customer service representative for Logosol, recommends that the saw be no smaller than 6 hp, and bigger is definitely better. My 5.3-hp Husqvarna 372 is underpowered, but with time and patience, will chew through anything I have. As more customers request wide slabs, I will likely find a more powerful cutter head.

Setting Up the Big Mill Basic

Logosol combined its Timberjig mill with the guide rail from the Woodworker's mill, and added a bracket that screws to the ends of the logs to hold everything in place. Assembly instructions are mostly in the form of break-apart drawings. It took the better part of an afternoon to put it together, but all the parts were there, and everything fit perfectly.

The kit also included bolts that adapt the chain saw to a bracket that rides on the track. Conversion is quick and easy, requiring only a chain saw wrench. Remove the two nuts that hold on the side plate of the chain saw, and put the adapting bolts in their place. At this point, it is a good idea to check the chain tension, since you need to remove the bracket to adjust the tension.

Logosol Big Mill Basic

- Max log diameter**depends on chain saw bar size
- Max width of cut (throat)**depends on chain saw bar size
- Track length**9 ft.
- Track extensions**1.5 ft., 3 ft., 9 ft. sections
- Track material**2 in. x 5 in. anodized aluminum box beam
- Setworks**manual, adjusted at each end in 1/4 in. increments
- Lubricant tank**.....chain saw bar lubricant
- Power**.....chain saw (5 hp recommended minimum)
- Base price**.....\$885 (chain saw not included)
- Options**additional rail supports, extension arms for processing bigger logs, upgrade to Big Mill Pro., for larger diameter logs and precision slabbing, upgrade to M7 or Woodworkers Mill

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The nuts from the chain saw hold the saw to the bracket. The most cumbersome part of converting a saw from logging to milling is changing the bar and chain. If you think the chain for a 22-inch bar can get tangled, wait till you try to work the kinks out of a 42-inch chain! Once you get that mastered, it is a 10-minute process.

Operating the Big Mill Basic

For a test cut, I attached the guide rail to a catalpa log that had been lying in my yard—one of those projects I intended to get around to. The log was 4-1/2 feet long, and 34 inches in diameter—just the sort of oddball that I had in mind when I purchased the Big Mill. Slabbing it might yield some nice tabletops. The first order of business was to screw a bracket onto each end of the log. This required a reasonably square cut on both ends of the log. The first step is to determine where to mount the brackets on the log. The bracket mounts so that

when the track is on the highest setting, it is an inch below the line of the first cut. For a straight cut, the brackets must be lined up with each other. To do this, Logosol recommends the user put in one 3-inch deck screw (a good cordless drill saves a lot of time and effort with the deck screws), then level the bracket with a spirit level. Once level has been established, drive in the remaining three deck screws to hold it in place, and then repeat to attach the bracket to the other end of the log. These then line up the two brackets for a straight cut.

The height adjustment, which determines the width of the boards, is a notched shaft on each bracket. Notches are a 1/4 inch apart, so you can only adjust the thickness of the boards to the nearest 1/4 inch, unless you use shims. With the track in place and all adjustments tightened down, it was time for a test run. The track, I found, provided several advantages. This is a true one-person mill, with no need

for a second person to help control the tip of the bar. Another advantage is that the track holds the saw far enough away from the log that the exhaust gasses from the saw are not blocked. The saw is held on the track by the sawyer. It can be pulled out at any place in the cut—handy if you hit a nail, or need to tension the chain.

The instructions and video indicate that the log should be rotated about 30 degrees. This allows each slab to slide off, and puts the sawyer in a more comfortable position. However, for larger logs that are too big to turn, cutting in a horizontal position is a perfectly acceptable solution, provided you put in a wedge or two when the saw is about 2/3 through the log so that the board does not pinch the saw. This technique keeps the cut level so that if you need to reattach the guide rail for a subsequent cut, you can do so and keep the cuts parallel. It also makes it possible to align the track to the other side of the log to make slabbing cuts wider than the length of the bar.

Cutting with a chain saw mill is more demanding on the machine than felling and limbing. It does not take long to understand the importance of a well-sharpened chain. This includes both the sharpness of the teeth and filing the rakers. I would have preferred a slightly more aggressive cut than the file guide provided so that less pressure would be necessary, but that little 372 was using all it had to gnaw its way through. When milling with the chain saw, the chain needs to be sharpened at the first sign of dulling. This might mean touching up the chain after each cut, or even stopping in the middle of the cut, if it is not cutting right. Otherwise, you'll waste time and put unnecessary wear on the equipment.

The first slabbing cut produced a clean, straight cut. To lower the track for the next cut, each end of the track has to be adjusted independently. With practice, this takes



Two advantages of the guide rail system are that one person can easily use the mill, and that the bar does not need to reach all the way through the log. A sharp chain is critical for any chain saw milling.



Attaching the bracket to the end of the log. The Big Mill uses a bracket bolted on to each end of the log to hold the guide rail. These must be leveled at both ends so that the chain saw cuts a straight line.

a couple of minutes. The notched height guide is positive, and the slotted keepers held it securely. For a 2-1/2-inch slab, place the keeper in the notch that corresponds to 2-3/4 inches (to allow for the 1/4-inch kerf), loosen the bolt, and the track drops into its new height. Repeat for the other end, tighten down the set bolts, and start the next cut.

Once the track has been lowered as far as it will go on the bracket (12 inches total travel), you must remove the track, unscrew the brackets from the log, and either move them down or flip over the



Adjusting the height of the cut. The bracket allows 12 inches of vertical travel. The slots allow movement in 1/4-inch increments, and must be adjusted on both ends after each cut.

log to work from the other side. Either way, the leveling and attachment process must be repeated—for a good 10 minutes. When the log is cut to the center, it is necessary to turn the log 180 degrees and cut from the other side. The brackets also require a 3-inch minimum thickness on the last cut, though I would recommend keeping it to 3-1/4 inches, to give a little extra clearance. This means one thick slab will be left.

Since the tip of the bar is not held in place, the flex in the bar, added to the flex in the bracket

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itself allows considerable movement. This was a serious problem in one cut, when the saw decided to dive down; however this was cured by resharping the chain, and I did not have this problem again. As with any kind of sawing, the sawyer needs to pay attention and learn the warning signs that this mill provides when things are not quite right.

Conclusion

The ability to cut large logs in place is appealing. According to Logosol's representative, the Big Mill works best for high-value logs that come down in places where you can't take the log out. For example, quartering a massive walnut log in a yard so that you can remove it without damaging the lawn may open up new sources of lumber.

The Logosol representative also emphasizes that many sawyers modify the mill to meet their

needs. Track extensions are available for longer logs, and the website provides plans for building a work stand that holds logs securely at a comfortable height.

Logosol has some other products that might prove useful, depending on the application. Their Big Mill Pro allows the option of putting a track on both sides of the log so that the tip of the bar is also constrained. The Big Mill LSG eliminates the track. The saw follows



The Big Mill Basic setup, ready to start cutting. The Husqvarna 372 is a little on the small size, but managed to cut the catalpa log with no problem.

the flat created by the first cut so that there is no need to reset the track height. This saves time in setting up for subsequent cuts, and keeps all cuts parallel. The Timberjig is a useful companion to the Big Mill, allowing quick setup for making vertical cuts when quartersawing the large logs.

The Logosol Big Mill Basic described here is a simple device which fills a need in many sawmill operations. Do not expect high production, or precisely machined lumber. What you can expect is the capability to work with logs that you may have otherwise passed by, and to produce wide slabs for markets that would not be possible with a conventional mill. ■

Dave Boyt has a BS degree in Forest Management and an MS in Wood Technology. He manages a tree farm (2006 Missouri Tree Farm of the Year), and operates a band saw sawmill.

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