



Keener Built Sawmills

This unique mill suspends the band saw from an overhead track. According to Keener, this configuration has several advantages. The track is well out of the way of the sawdust. The second advantage is that there is no frame around the band saw to catch wide areas on the log. Third, the track is out of the way of potential damage from forklifts or oversized logs.

Are there downsides? Possibly. The overhead track has to span the length of the mill supported only at the ends, so it has to be stiff enough to support the carriage without sagging, and it is heavier than comparable mills. This also puts the center of gravity higher than most mills, which means no high-speed turns when

towing. Third, the top track must be precisely aligned with the log deck in order to avoid tapered logs. Even a 1/32-inch variation will cause a 1/16-inch taper after turning a log.

The Boyd Sawmill

One of the hardest-working Keener Built mills is the Boyd Sawmill, located in the small town of Boyd, Illinois, in the Mississippi river bottom. The original mill was an old Corley circle mill. In April 2006 a tornado ripped through the town, destroying the mill. Bud Klockenga is one of the growing number of mill owners who see the logic in replacing a circle mill with a band mill. While overall production is down from running the Corley circle mill, Bud believes

Every now and then someone comes up with an idea that sets their product apart.

Frank Keener of Keener Built Sawmills has such a design.

that the production per man hour is about the same. "One man can run this mill, whereas with the circle saw, you had to have one sawyer and two off-bearers."

The solution to replacing the mill was just 15 miles away in Kell, Illinois, home of Keener Built Sawmills. To help the Boyd mill get up and running as quickly as possible, Frank Keener loaned Bud a portable gas-powered mill. Bud and his crew used this mill for three months while they built a new shelter for the mill. After his experience with the gas version, Bud decided on an electric Keener Built mill for the permanent installation. "We knew that there would be a transition going from a circle mill to a band mill, but we could get into this for about a third of what a new Frick mill would have run."

Unfortunately, his sawyer did not agree with the decision. He had run a circle mill all his life, and did his best to destroy the band mill. They finally had to let that sawyer go and promote mill hand David Douthit to the position. Although the mill still shows evidence of the hard use it endured from the first sawyer (more on that later), David runs the machine smoothly, and is satisfied with its operation and production rate. "When you're sawing softwood and straight clear logs, this mill does a good job. When you get some knotty hickory, it is a lot slower.

"We're a blocking mill, so we don't get the good stuff." David continues. "We get white oak, post oak, black oak, hickory. A lot of it is upper cuts. It keeps our material costs down. I guess we're the bottom end of the log supply." The mill's primary product is blocking which is resawn for wood stakes. "I would guess I cut between 400 feet and 800 feet per hour, depending on what we're sawing." When I asked whether they cut pallet lumber, David just laughed and told me, "We can't afford to do pallets. When you're paying 27 cents [a



Opening cut on a black oak log. Note that the track and hydraulic hoses are above the log deck where they are less likely to be damaged. This design also eliminates posts that must clear the log.

board foot] for the log and paying your labor and expenses, there's a cash flow, but it isn't flowing in my direction!"

Bud sells sawdust and slabs to help keep the cash flow going the right way. "We sell slabs for \$5 per pickup load. Once a year, in the spring, we burn what we haven't sold." As for the sawdust, David told me, "We don't generate that much sawdust. That's one of the advantages of this over the Corley.

We've got enough horse people, and people who want mulch. Whatever you make is gravy. Hopefully you've made your money before you sell the sawdust!"

The morning I visited, David was cutting 3 x 12 stock for resaw. After sawing each log, David shuts off the mill, cuts the cants into 4-foot blocks with a chain saw, then stacks the blocking. He is also responsible for sharpening the blades and shoveling sawdust. "Out of an eight hour day, I spend maybe five hours actually cutting lumber." This means a lot of idle time for the mill. "It doesn't cut quite fast enough to justify hiring a second mill hand," he concedes, but it does provide enough blocking to keep the resaw shop busy cutting stakes.

According to Bud, Keener was straightforward in telling him that this mill was not designed for the heavy industrial use that it would experience at this business. In retrospect, Bud said "Well, it's a pretty

KEENER BUILT SAWMILL

Type	band
Portable	yes
Cutting length max	20 ft. 8 in.
Cutting diameter max	36 ft.
Weight	3,400 lbs.
Total mill length	23 ft.
Replaceable tracks	no
Carriage wheel material	steel
Carriage support system	4-post, suspended from overhead track
Band wheel diameter	19 in.
Wheel face	flat
Band wheel material	steel
Recommended saw blade	1-1/2 13 ft. 2 in. 7/8 in. pitch 0.042 min.
Number of clamps	1
Number of stops	4
Minimum board thickness—last cut	3/4 in.
Type of guides	top only, bearing
Strain system	spring
Tracking	manual adjustment

SETWORKS:

Height gauge	sliding scale
Automatic sets	no
Standard power plant	25-hp Kohler
Log turner	claw type, hydraulic
Log loader	standard
Log dogs	hydraulic
Carriage feed	hydraulic

Towing package	standard
Guarantee	2 year on motor 1 year on sawmill
Options	debarker
Track lengths available	16 ft. 8 in., 20 ft. 8 in., 24 ft. 8 in.
Base price	\$19,450 (16 ft. 8 in. track)

MANUFACTURER

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MANUFACTURER'S COMMENTS

The overhead tracks on all Keener Built WH model sawmills are manufactured in specialized jigs and pre-stressed to accommodate the sagging that occurs due to the weight of the carriage. Each machine is tested for straightness and accuracy before it leaves the factory. This guarantees an accurate and consistent cut and has proven to maintain its accuracy even after years of hard use. The center of gravity on the WH models is low enough that towing is never a problem. We have personally delivered many of these machines, towing them at maximum highway speeds and across rough terrain to remote locations and have never encountered a problem with stability. Keener Built provides training at the factory or at the customer's site, and provides phone support to address any questions.



David Douthit uses the drag back to pull a slab off the log. Heavy slab cuts like this one will go to the resaw to be cut into stakes.

decent saw. For the average customer who buys one of these, it's probably all right. I don't know that it's a mill that a commercial operation ought to run." Even so, he has no regrets about selecting this mill for his operation. "As far as the mill and service, he pretty well stood behind everything. That's part of why I bought this mill. He's only about 15 minutes away. There's some merit to doing business locally."

The mill is set up as a stationary unit, and shows signs of its years of hard use. When Frank Keener set up the mill, he welded six 3-inch channel iron legs to the frame, and bolted them to the cement floor. They are now skewed several inches as a result of the force from logs rolling onto the mill from the live deck and hitting the stops. A little cross bracing would definitely be in order to stabilize the mill.

David also pointed out that all but one of the log stops are bent back, so he has to reference off the one straight stop when rotating a log to cut the second face. This may have been the result of the hard use the machine had from the first sawyer. "A lot of it, I think, goes back to the fact that we get some bigger, knottier logs," says David. "When the log rolls onto the bed and a knot hits the stop, it



Keener Built behind the cover. Note that the backing bearing is at the top of the blade.



Log's-eye view of the overhead track. The feed mechanism is a hydraulic motor with a gear that engages in a chain welded to the side of the track.

bends the shaft that the stop pivots on. Those shafts are just a little bit light for the material we saw. For normal use, it probably wouldn't be a problem." Bud agrees that they are hard on the mill. "It takes a lot of punishment in this operation. The live deck drops the log down and it hits the deck and the log stops hard."

The 30-horse 3-phase motor runs all of the hydraulics, which include the carriage feed, blade height, log turner, toe boards, clutch, and clamps (the original Corley mill required 100 hp). Hydraulic solenoids are located under the bed where they are well protected, but easily reached. David noted that the motor tends to drag down a bit when the blade is dull, but otherwise is well suited to the power requirements of the mill.

Seeing the Mill in Action

Bud was anxious for David to stop talking and get back to work, and I was more than ready to see the mill in action. As with any electric mill, the Keener Built machine ran smoothly and quietly. I did notice that each time David throttled up the motor, the entire head rig skewed noticeably from the torque, and he had to wait for a second or two for it to straighten out before starting the cut. This kind of movement puts stress on the carriage support structure, but no problems have appeared yet.

The clutch is a solenoid-controlled hydraulic cylinder that slides the entire motor out and back to tension the drive belt. With no tension adjustment, David has to replace the belt every three months or so, when it stretches out. "I've looked at ways to change it so I could adjust the tension," he explained. "After a while, it gets to where the belts want to jump off, and that's when I put new belts on. It takes maybe five minutes to change them."

The first log was a 16-inch-diameter, 10-foot-long white oak. It took 18 minutes to cut it into blocking. Carriage height adjustment is also hydraulic. There is no computerized networks on the machine, so David uses the traditional sliding scale to determine the height of the blade. "It took a while, but now I can just bump it [the control] to get it where I want it." The log turner is a claw type, attached to a hydraulic cylinder. This gives a positive grip on the log for turning,

but only turns the log in one direction. According to David, "It works well, unless you get a log that has a bend or big knots in it. Then I have to hold it with the clamp, so I can come back and get another bite on it." He says that he does have to use a cant hook at times.

David makes good use of the mill's dragback system to slide slabs and cants to him so that he can put them on the 40-foot roller conveyer. "It does a pretty good job on 1-inch- and 2-inch-thick boards, but dragging back the thicker [3-1/2 inch thick] boards puts a lot of stress on it," he says. Of particular concern to him is the wear that occurs because of the single carriage feed motor on one side of the track. "We've had to replace the drive sprocket after 15 months."

After cutting two more logs, David shut down the mill, and removed the blade for sharpening. "Typically I can cut three logs before changing the blade," he explained. Although the mill came with a debarker, David removed it,

because it got in the way on the crooked logs. While the automatic sharpener worked on the blade, David shoveled sawdust and cleaned up around the mill. "After we sharpen the blades a few times, they break," he explained. This is most likely a result of his sharpening system, rather than a problem with the mill. The sharpener is a straight stone that does not remove material from the gullet. Also, David does not set the blade teeth, so each sharpening reduces the kerf and increases friction against the blade.

Anyone operating a band mill has probably run into problems with cutting straight boards. While David says he is generally happy with the straightness of the boards, he commented that the blade occasionally takes a dive down into the log. The blade guides have top rollers and separate backing rollers, but no bottom rollers. "They [bottom blade guides] might help the stability a little bit in knots," says David. "Hickory is just hard to

cut," he concluded. While he routinely lubricates the roller guide bearings, he has had to replace them every three months.

The Keener Built mill was designed for custom and light production. The Boyd Sawmill has pushed their mill up to the next level. Many of the problems that they have encountered would not show up on mills that get normal use. David is probably correct when he estimated that he cuts more lumber in one month than most people would cut in a year. He also pushes it harder, to keep the people in the resaw shop stocked with cants. He feels that the mill, overall, serves its purpose well. "The way he [Frank Keener] stood behind it, and the way it has run, I feel like it has been a good investment." ■

Dave Boyd 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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