

# SANBORN MIN-MAX

**This is a big, stable sawmill that produces high-quality lumber with little sawing variation.**



PHOTOS BY JIM PHILP

BY JIM PHILP

I thought that the 250-mile drive to Warren, New Hampshire to look at a Sanborn sawmill would be a hoot in fall foliage season. I got started late in the day, and it was raining and foggy. Then it got dark! I drove through Franconia Notch in the White Mountains knowing only that I went uphill for a long time. Then I went downhill for an even longer time.

But the next day, while I was looking at sawmills, the weather was fair and the people were fine.

Sawmill people have to be some of the friendliest folks on Earth. As I was looking at the mill that I had come to see, I was informed that there was another Sanborn mill right across the road and since I had come so far, I might as well look at that one, too.

I did, of course, so the day became longer than anticipated. Then rain and fog settled in again when I started home. Then it got dark! So I repeated the driving ordeal of the previous day in reverse order. So much for subsidized leaf peeping.

But I got to look at two

Sanborn Min-Max sawmills in the same day. I'm glad I did, because they are operated by two very different companies who have entirely different reasons for owning them. While the mills are similar, they are far from identical. The Sanborn mills seem to be almost custom-designed.

I arrived at Witcher Lumber Company rather early in the morning and found Dave Witcher gulping a bit of breakfast. He was already in the midst of a long day. The main sawmill was shorthanded, so Dave was piling lumber. Boy, can I identify with that!

Dave pointed to where the Sanborn mill was located and told me that everyone was expecting me and would be glad to talk. If, and when, I wanted to talk to Dave, he would be on the green chain at the main mill.

The Witcher complex is centered on a rather large conventional double-cut

*Above left: The Sanborn saw carriage moves toward the sawyer while milling boards.*

*Above right: Dennis, the sawyer at Witcher Lumber Company, loads a log onto the Sanborn Min-Max.*

band sawmill, also a Sanborn. They saw mostly hardwood logs with an occasional run of eastern white pine. The Sanborn Min-Max is an "extra" mill that was purchased to produce long hardwood timbers, up to 22 feet, for the post and beam construction market. When the Sanborn is not producing timbers, it saws high-grade hardwood sawlogs. The day that I visited, it was producing 4/4 ash and 4x4 pallet cants.

Right across the road, known locally as Sawmill Alley, from Witcher lumber is R. A. Berg, Inc., another family-owned sawmill. The Bergs also run a Sanborn Min-Max, but in their case, the Sanborn is the primary, and only, log breakdown machine. This is also a hardwood mill. They were sawing 4/4 red oak and 4x4 pallet cants when I visited.

Deane Berg, the sawyer, is a National Hardwood Lumber Association (NHLA) Certified Lumber Inspector. He takes grade recovery and quality control very seriously.

Both of these mills are permanent indoor installations, there being nothing portable about them. Both are welded to steel frameworks that place them at about six feet above the mill floor. The elevation allows sawed material to be transferred by gravity. Both mills also have freestanding board edgers so there is no edging on the head saw.

I was pleasantly surprised to discover that each mill was equipped with Silva-Tech Computerized Networks. This not only provides excellent log posi-

tioning accuracy, but has a memory to allow repositioning to a previous setting when sawing "around and around a cant," which is essential when grade-sawing hardwoods. Since the computers must be kept happy, the sawyers had enclosed, climate-controlled workstations.

Two men, the sawyer and the edgerman, operate both of these mills. At the Berg mill, Deane's father helps out part-time to supply logs and remove lumber from the mill. Since the Witcher mill is a satellite of a larger mill, with an abundance of lift-trucks, the log supply and lumber removal is handled on a contingency basis as the lift-trucks pass by.

If you have never seen a Sanborn Min-Max sawmill, you've probably not seen anything quite like it. It's unique.

Basically, the Sanborn is a rather large (for a portable) bandsaw mill. It uses 36-inch cast iron band

*(Continued on page 28)*



The sawyer's work station, showing all the handles and buttons along with the display for the computerized networks.

## Sanborn Min-Max Specs

### NAME & MODEL NUMBER

Sanborn Min-Max 636

### MANUFACTURER & ADDRESS

Sanborn Machine Co.  
P.O. Box 245, Route 37  
Waterford, ME 04088  
(207) 583-4669

### MILL OVERVIEW

**Band or Circle Mill:** Band

**Stationary or Portable:**  
Both

**Weight:** Approximately 5 tons

**Length & Width:** 35 feet long, 8 feet wide

### FRAME & CARRIAGE

**Frame & Carriage:** 4 x 4 x 1/4-inch box tubing

**Size and Construction of Frame:** 8-inch S beam 18.4#

**Tracks are Made of:** Hot rolled steel, flat and V tracks

**Are the Tracks Replaceable?** V track is replaceable

**Wheels are Made of:** Class 30 cast iron

**Carriage Bearings:** Roller bearing & ball bearings

### Carriage Support

**System:** Osborn roller

### SAWING HEAD

**Wheel Diameter:** 36 inches

**Wheel Face:** 5 1/4 inches

**Wheel shaft:** 2 7/16 turn, ground, and polished shafting

**Wheel Speed (RPM):** 650

**Saw Speed:** 6,000 feet per minute

**Recommended Saw Blade:** 6-inch silver tooth, 19 gauge, 21 foot, 5 1/4 inches

### GUIDES AND STRAIN SYSTEM

**Type of Guides:** Cartridge type with dressing machine, canvas phenolic, pressure guide system

**Strain System Used:** Spring and eccentric shaft, 4,500 pounds

**Wheel Tilting System:** Manual, hydraulic-computer or electric cam

### NETWORKS

**Set Display:** Scale

**Automatic Sets?** Gemco Cam or computer set-works optional

### ALIGNMENT

**How is Alignment Done at Factory?** Machinist level, string and plumb bobs

### POWER PLANT

**Standard:** Electric, diesel or gas

### LOG TURNER

Hydraulic, reverse turn

### LOG LOADER

Hydraulic, box tube frame

### LOG DOGS

Hydraulic, hook dog

### CARRIAGE FEED DRIVE

**Type:** Hydraulic

**Forward speed:** 50 to 100 feet per minute

### TOWING

**Towing Weight/Tongue Weight:** Varies to placement of saw carriage on frame

### GUARANTEE

90 days on workmanship and materials

### OPTIONS AVAILABLE

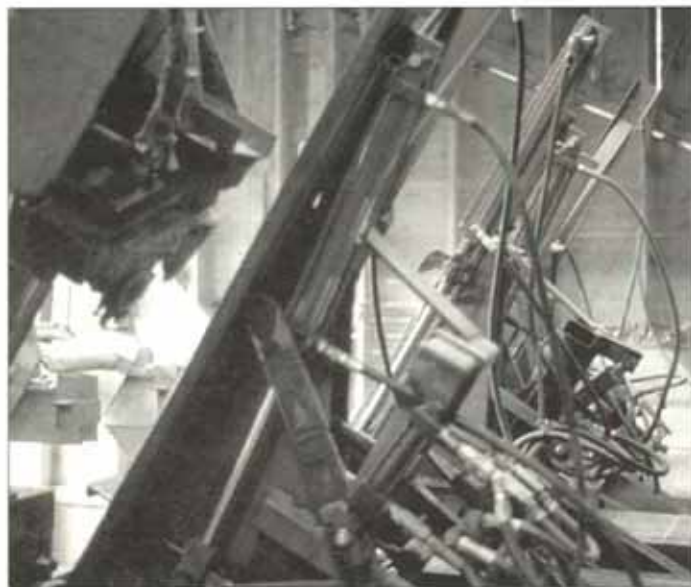
Log loader, hydraulic out-feed rollcase, and edger

### BASE PRICE

\$30,388 less saws and motor

(Continued from page 5)

wheels, weighing 600 pounds each, and a 6-inch wide blade. Saw kerf is 0.080 inches, slightly over 1/16 inch. Current models are available with double cutting capability. This means that the blade has teeth on each edge and can cut in either or both directions. I did not see the double-cut mill, but did look at a video of the mill in action, and it seems to work.



The Sanborn mill operates at a 30-degree tilt. In this photo, you can see the saw carriage and headblock/knee assembly. The sawyer's work station is in the background.

Like almost all of the current portable sawmills, the Sanborn uses a moving saw with the log remaining stationary. There the similarities end. Most of the portables use a narrow horizontal band saw. The stationary band mills usually use a wide band saw in a vertical position.

The Sanborn mill uses a medium-width saw that is tilted at 30 degrees from the vertical.

Since the saw is tilted,

the log holding mechanism is similarly tilted, at 30 degrees from the horizontal to keep everything at the proper alignment. Headblocks and knees, similar to those on a conventional log carriage, hold the log. They are fixed, rather than mobile, and tilted.

So what is the purpose of the tilt? In a nutshell, it puts gravity on your side. When the log is loaded, it rests at the bottom of a 90-

degree V formed by the headblocks and the knees. The headblocks are stationary and the knees slide up and down the slope on the headblocks.

The natural tendency of a log or a cant is to slide to the bottom of the V. This really helps keep the log or cant where it belongs. The tilted design is a patented feature of Sanborn's mill.

The headblocks and knees are equipped with both top and bottom dogs

to hold the log. The bottom dogs also function as the log turner, flipping upward to turn the log down onto the last-sawn face. Each headblock and knee is also equipped with a variable taper attachment, which is indispensable for grade sawing. Despite the double dogging, however, both sawyers reported problems holding onto frozen logs in the winter. My guess is that the bottom dogs need a bigger tooth.

Apparently, you can order as many headblocks as you think you need. One mill had four, the other had six. If you order a mill capable of sawing the full optional 40-foot length, you will probably need a bunch.

The sawhead on the Sanborn mill travels on two parallel tracks that are something over three feet apart. The area between the tracks is decked over and all of the sawdust falls onto this deck. A sweeper on the bottom of the sawhead moves the sawdust ahead and right off the end of the mill. A really neat feature.

When a slab or board is sawed on the tilted Sanborn mill, it positively plummets onto the off-bearing live-rolls and is conveyed to the green-chain and/or edger.

Both of the mills that I looked at had the \$2,800 log cleaner option. This is almost essential for a band mill. The log cleaners seemed to do an adequate, if somewhat bumpy, job. Each of the two sawyers I talked to reported that frozen logs with dirt on the

bottom wreaked havoc with their saws. They would have liked having debarked logs in the winter.

The log loader on the Sanborn mill is a free-standing unit. While it does an exemplary job loading logs onto the mill, I can't help wondering how it would be moved in a portable mill situation. An extra truck or an extra trip? Maybe it could be moved along with the edger.

My first take on the Sanborn Min-Max sawmill was that for a machine this big and this sophisticated it was dreadfully slow. Then I started to look at the numbers. One mill was averaging 3,000 board feet per day with two men. The other was getting 1,600 board feet per day, also with two men but only running for five hours; the rest of the day they worked in the big sawmill.

The accepted industry standard for sawmill production is 1,000 board feet per person per eight-hour day. Both mills exceeded that figure—one by 50 percent and the other by 28 percent. So I guess that they are doing well. Still, I know that either of these mills can do half again as much production with a few modifications, some of which should be provided by the manufacturer.

Sanborn reports that some of their mills are achieving 10,000 board feet per day production. They must be talking about the double cuts. I think that all of the Sanborns could be retrofitted for double cutting capability for zing-zing production. If you don't do

that, you should, at least, triple the speed of the carriage return—it runs the same speed in both directions and is not instantly variable by the sawyer. Actually, the sawyer should do both.

The sawyer's positioning on this mill is really poor. The sawyer cannot see the face of the log that he has just sawed. I noticed this on the first mill that I looked at and was dismayed. As a hardwood sawyer, I have to be able to see the log to make grade-sawing decisions.

When I looked at the second mill, I found that Deane Berg, the hardwood lumber grader and sawyer, had mirrors positioned all over the place. This allowed him to see what was happening, even



The headblock/knee assembly on the Min-Max shows the top and bottom dogs. The taper adjustments are on the opposite side of the knees.

though it was backwards. He claimed to be able to think backwards—a valuable skill for anyone driving a sawmill.

Both of the mills that I looked at were achieving exemplary sawing accuracy. I could not detect 1/32-inch variation within boards. The between board variation was spot-

on, thanks to the Silva-Tech computerized setworks. Deane Berg tells me that 1/32-inch accuracy is easy. If quality control drops below that level, his edgerman, Jesse Bushaw, alerts him immediately and they fix it.

Across the road at Witcher lumber, the sawyer Dennis and the edgerman

Barry said that they do not have to worry too much about quality control. They just install a newly fitted saw every day and keep up with mill alignment every day. Some might think that amounts to worrying about it. I think that it is a proper approach to mill maintenance.

I was very impressed by the smooth operation of the Sanborn Min-Max sawmills. Some of the smoothness is, of course, attributable to the sheer mass of the machine and its balanced 600-pound wheels. That smoothness of operation contributes to a very smooth cut with minimal scoring by the saw teeth. Excellent saw fitting was also a big factor in achieving smooth lumber.

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The power sources were also important to the smooth operation. Both mills were powered by three-phase electric motors, which are inherently vibration-free when compared to internal combustion engines.

Electric motors are also quiet. Sanborn offers four power options: two electric motors and either diesel or gasoline engines.

The Sanborn mill is advertised as a portable sawmill. I don't know about that since I've never seen one operated as a portable. I'm absolutely sure that the mill is moveable, because you can move almost anything.

The mill can be ordered with wheels, but it weighs four tons. I'm pretty sure that my Ford pickup isn't going to drag that down the highway very far. It certainly isn't going to back it up in someone's woodlot.

Then there is the log loader to consider. And the

edger has to come along, too. The edger is an option that the owners have to pick up on their own.

The videos that I saw of the Min-Max being used as a portable, showed it with the wheels removed and the mill supported by wooden cribbing.

I don't really think that you would enjoy moving this mill more than a few times a year.

The Sanborn mill is a big piece of iron. It is very stable and produces high-quality lumber with very little sawing variation. The purchase price is high and the options increase the price substantially.

The production of the mill meets industry standards. You can increase production significantly if you select the double-cut option. ■

*Jim Philp is an Extension Wood Products Specialist at the University of Maine and a frequent contributor to this magazine.*

### MANUFACTURER'S COMMENTS

The Min-Max Sawmill was designed to saw between 5,000 and 10,000 board feet of lumber per 8-hour day. The machine was designed as a high yield headrig with a saw kerf of .090 inches. With this kerf, mills report lumber over-runs of 25 to 40 percent over the international log scale.

The mill is a slant band design with the headblocks set at a 30-degree angle. The design is far superior to vertical and horizontal designs. The log is cradled on the 30-degree skids and automatically slides back against the headblocks after being turned.

This design makes log and cant holding much easier. It also allows for very fast turning of logs and cants. And the slant design allows the sawn board to slide onto a return roll conveyor automatically. This patented mill design has been very successful for the past 15 years.

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