

WOODLAND Model K-4

A well-designed mill that saws with the greatest of ease.

By Bob Romig

The weather was spectacular as I traveled to interview sawyer David Miller about his Woodland sawmill. It was late November, but the temperature was 72 degrees in southern Ohio. Readers of this magazine know that sawmill reviewers often become involved in pulling boards and stacking lumber. As I approached David's home, I realized this could become a hot, sweaty November day.

After meeting David, we walked across the road to the building housing his mill. His father, David Sr., joined us. After a brief conversation and an opportunity for me to inspect the mill, David asked, "Do you want to see it run?"

"Absolutely," I replied.

David powered up the diesel and gasoline engines. A smile passed over his lips. But my concerns about getting hot and sweaty were unfounded, as I watched David and his father saw approximately 500 board feet of

yellow poplar lumber with ease.

The Woodland mill is a vertical band saw that pushes the board back to the operator when the saw returns for the next cut. David or his father pulled the boards from the waist-



high roller table and stacked the lumber as the band saw cut the next board. No sweat involved!

David decided to buy the Woodland based on his interest in having a mill that could be operated by one person. He first saw the Woodland mill in



From the operator's station, David Miller saws a log on his Woodland bandmill. The mill at left is a vertical bandsaw that pushes the board back to the operator.

October of 1997 at the Paul Bunyan Show sponsored by the Ohio Forestry Association in Nelsonville, Ohio. Approximately one year later, David drove to Poplar Bluff, Missouri, purchased his Woodland mill, and towed it home. He has been operating his mill on

a part-time basis for about one year.

David buys red oak, yellow poplar, yellow pine, and cherry logs from local loggers. He has markets for rail ties, pallet lumber, siding, and grade lumber, and sells the grade cherry lumber to a distribution yard.

WOODLAND Model K-6

NAME & MODEL NUMBER

Woodland Model K-6

MANUFACTURER & ADDRESS

Woodland Equipment
HCR02, Box 2278
Van Buren, MO 63965
(573) 323-8960

MILL OVERVIEW

Band or Circle Mill: Band

Stationary or Portable:
Both

Weight: 10,000 pounds

Cutting Capacity: 36 inch diameter x 16 foot to 24 foot length

Length & Width: 28 to 32 feet long, 8 feet wide

FRAME & CARRIAGE

Frame & Carriage: 3 x 8 inch rectangular beams with 3 x 8 inch cross members

Tracks are Made of:
Hardened 1 x 2 inch solid steel rails

Are the Tracks Replaceable? Adjustable and replaceable

Wheels are Made of:
Aluminum alloy, neoprene cap

SAWING HEAD

Wheel Diameter:
30 inches

Wheel Face: 2 inches

Wheel Construction:
Machined alloy

Wheel Shaft: 2 3/16 inches hardened steel

Saw Speed (SFPM):
6,250

GUIDES AND STRAIN SYSTEM

Type of Guides: Carbide

Strain System Used:
Cantilever straining system

NETWORKS

Method: Computerized or manual

Set Display: 1, 4/4, 5/4, 6/4

Automatic Sets? Yes

ALIGNMENT

How is Alignment Done at Factory?: Everything is preset and test run at the factory.

POWER PLANT

Standard: 30 HP electric or diesel

LOG TURNER

Hydraulic

LOG LOADER

Hydraulic, capable of lifting over 5 tons

LOG DOGS

Log Dog and Log Roller Combination

CARRIAGE FEED DRIVE

Type: Hydraulic

Forward speed: 160 feet per minute

Return speed: 160 feet per minute

TOWING

Optional portable unit includes hitch, safety chains, lights, axles, tires and wheels, and lifting device.

GUARANTEE

1 year on workmanship

OPTIONS AVAILABLE


Debarker, extra head block, computer set, built-in edger, gang ripping blades

BASE PRICE

\$60,000

Editor's Note:

The Woodland K-6 is a recently updated version of the K-4.



He does custom sawing for individuals who deliver logs to the mill location, since his mill is not portable. In addition, his father dries some grade lumber in a small, home-made dehumidification kiln to produce moulding and dimension products. The sawdust is used as bedding on the family's 70-head beef cattle farm, and the slabs are given to neighbors for fuel.

After David began sawing, I immediately realized that a great deal of work

has gone into the design of the material handling systems for this mill. The log holding and positioning capacity of the Woodland mill looks similar to a traditional upright carriage with headblocks, knees, and hydraulic dogs. The "carriage" is stationary while the band saw moves to make the cut. While the carriage remains stationary in relation to the band saw, it does rotate away from the saw to accept logs from the log

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David and his dad edge some boards on the Woodland.

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loader. The mill is equipped with a hydraulic log loader as standard equipment. The head-blocks rotate back toward the log deck and the hydraulic loader places the log on the knees and head-blocks of the "stationary" carriage.

The log is dogged in position as it rotates into position for sawing. The ability to tilt the carriage allows sawyers to produce beveled lap siding on the saw. David has produced beveled lap siding for a local market and said the system works very well.

David uses gravity to help hold the larger logs in position as he makes the first cut with the carriage tilted slightly back. He then rotates the log to the flat surface using the log turners and continues sawing. He tilts the log away from the saw because he believes the log is easier to hold when he makes his first cut. When sawing grade logs, he plans the second pass 90 degrees to the initial pass. This plan-

ning process is critical when opening grade logs since the first cut is so important.

David wants to equip the mill with a set of "master dogs" which could be used to hold larger logs in position. In fact, this was the only feature of the mill that David would like to see changed—an option to have longer dogs for holding large logs during initial breakdown.

As the initial cut was made, slabs dropped onto a set of arms that used transfer chains to offload the material onto a pile. Occasionally, David or his father had to retrieve smaller slabs that refused to fall freely, but the system worked very well.

With the current off-loading system, it would be a simple matter to build racks that would hold the slabs for banding and later handling with a front-end loader. The arms also supported the boards as they were returned to the sawyer. The dust was blown away from the mill toward the slab pile. When

David increases production, I believe he will want to add a system that directs the dust away from the slab pile.

Power for the band saw and debarker is provided by a 38.5 horsepower Kubota diesel engine, mounted on the saw carriage. A stationary 20-horsepower Honda gasoline engine supplies power to the hydraulic components and the edger. The operator controls all machine functions at the workstation located at one end of the mill. Since the cut board is pushed back to the operator by the returning saw, this machine can be operated by one person at the workstation.

The obvious advantage of this arrangement is the ease of mill operation and product material handling. David had to leave his position at the workstation only to load logs and move an occasional slab. An additional advantage of the operator's position is the opportunity to quickly spot any problems with sawing variation.

The only disadvantage

that I could see with the arrangement is that it limits the operator's view of the cant, and his ability to evaluate quality when sawing grade lumber. Since David's mill is placed in a building, stationary mirrors could be mounted to help him get a better view of grade logs for evaluating log position and lumber quality as cants are sawn.

In addition to the standard Woodland mill, David purchased the debarker, the extra log turner, taper cylinders, the automatic quick set, edger, and saw sharpening equipment. The debarker is a "mud wheel" that removes bark and debris in front of the band saw. The extra log turner provides additional support when sawing larger logs. The taper cylinders enable him to improve quality and maximize yield by taper sawing larger logs. The automatic quick set re-positions the band saw to a specific predetermined thickness with a single lever. For example, when sawing 4/4 lumber, the quick set can be adjusted to automatically move the band saw 1 1/8



The father and son team get a log ready for sawing.

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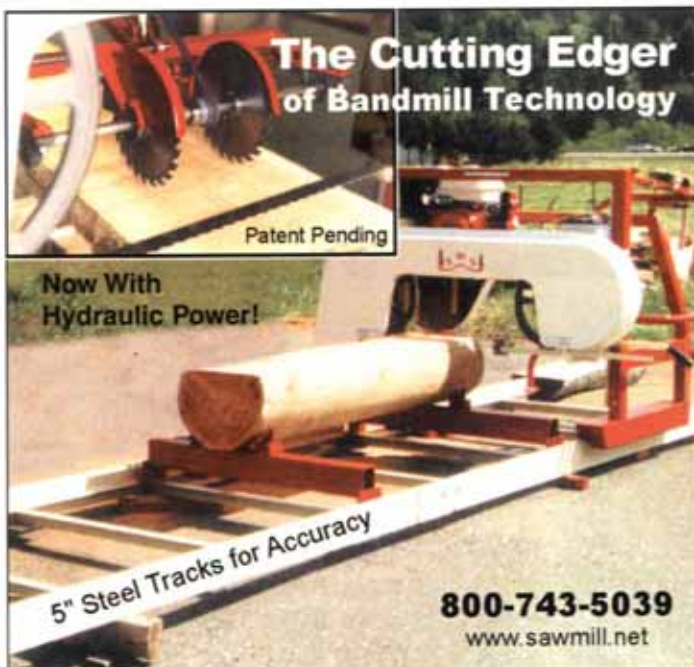
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inch for the next board rather than using the setworks to position the blade. Purchasing an edger makes a lot of (dollars and) sense. This option reduces the material handling and processing time of the operator and band headsaw. The obvious benefit is achieved when sawing random width grade hardwood lumber. A sawyer can control the twin arbors to maximize the yield of each board.

The Woodland mill uses a 2 inch band saw blade mounted on 25.5 inch wheels. David said that he can re-sharpen each blade about 10 times before discarding it. He estimates he saws 800 to 1,200 board feet of lumber (depending on species) before sharpening. The blades are lubricated by a system that wipes one side of the blade with a mixture of chain saw bar oil and diesel fuel.

The lumber thickness variation I observed during the sawing was in the dog board. During the afternoon, I noticed that he only took two "shim" cuts to re-square the cant. David reported that he has not run specific tests to measure lumber thickness variation.

With all mills, even the high production units, it is important to periodically check variation. There are several different sawing procedures that can be used to determine thickness variation that will indicate mill alignment problems. However, at least four measurements should be made with a micrometer on both edges of a 10-foot board. It is

important to mark the top-leading end of the board to determine where and when any variation occurs. (See the Feb./March 1999 issue of IS&WM for an article on how to determine if your mill is sawing square.)

The frame of the Woodland K-4 mill is 2 x 6 inches of tube steel, which provides a substantial foundation. The newer K-6, which replaces the K-4, features a 3 x 8 inch steel frame. The bandsaw carriage ran smoothly on roller bearings supported by two beams. Power is supplied to the band saw by "V" belts from the Kubota diesel. Overhead cables support the hydraulic lines used for the setworks. David has the saw mounted on wooden beams directly on the ground.

The log capacity advertised by the manufacturer is listed as 32 inches in diameter and up to 21 feet in length. The machine easily handled the logs I watched being sawn, with the largest being 19 inches in diameter and 14 feet in length.

After David and his father had finished sawing, the conversation turned to marketing lumber products. David and his father plan to expand the value-added side of the business. The small dry kiln is simply a well-insulated box (like all kilns regardless of size) using a dehumidifier to "pull" moisture from the lumber. They dry the lumber slowly and report they can keep degrade to a minimum. They plan to build at least one more kiln. The moulding they produce is



David saws while his father stacks boards.

processed on a Wood Master combination planer-moulder. Their system of dry lumber storage, however, is unique. They built storage racks in an old school bus, and recently purchased two more busses for additional storage. A very simple solution to protect the investment in hard work they made to produce the lumber.

David's interest in sawmilling comes naturally, since his father has owned a circle mill for years. David said he has been working around a sawmill for about 15 years. His decision to buy the Woodland mill was grounded in a firm understanding

of the hard work involved in the manufacture and marketing of lumber products. In addition to the sawmill and the family farm, David works as an Emergency Medical Technician (EMT).

So there is little idle time in this family. David has sawdust in his veins and a dream in his head. He plans to grow his part-time sawmill business into something bigger in the future. The Woodland mill is the foundation of his dream. ■

Bob Romig is a Forest Industries Extension Specialist with the Ohio State University School of Natural Resources.

MANUFACTURER'S COMMENTS

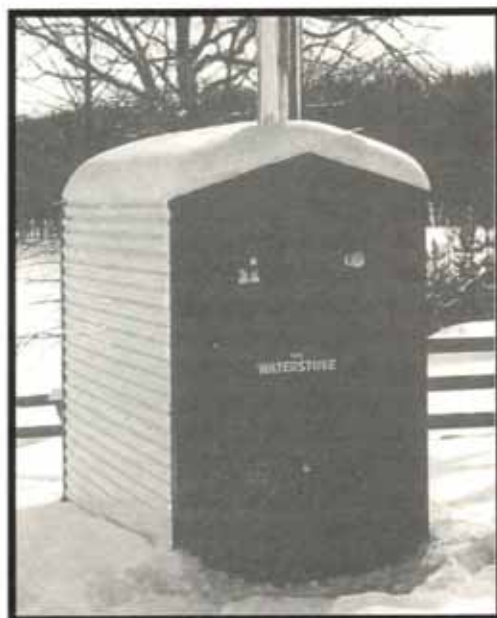
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