SAWMILL REVIEW
“Personal Experience”
BY JIM PHILP

A SMALL DOG
biG WITH A
BITE!

There is more to choosing a sawmill than a mere listing of strengths and weaknesses. You need to consider the mill’s capabilities, limitations, and operating characteristics too—which leads to an explanation of how we established a relationship with this little Wood-Mizer.

Since Independent Sawmill & Woodlot Management magazine began publication in the fall of 1997, I have written perhaps a dozen sawmill reviews. All were based upon a day’s visit to a mill in operation and a rather intensive interview with the owner/operator. That, combined with many years’ experience with sawmills, gave me a pretty fair overall impression of the mill and enabled me to write articles that hopefully have been useful to you, the reader.

This review is different because it is based upon six months of hands-on experience with a mill. During that time, I operated the mill, moved the mill from place to place, did the periodic maintenance on the mill, and trained about 20 others to operate and maintain it. This is an in-depth review and any strengths (many) or weaknesses (a few) of the Wood-Mizer LT-15 sawmill will be revealed.

A Specialized Need
The University of Maine School of Forest Resources has a three-week summer program that is mandatory for all forestry undergraduates. The course is an intensive hands-on exercise, where the students learn to operate a variety of equipment, including chain saws, excavators, skidders, other logging equipment, and, yes, sawmills.

Since the course takes place on Mount Desert Island and on another island several miles out in the Gulf of Maine, we needed a sawmill that was extremely portable. Specifically, we needed to be able to easily break it down into modules that could be loaded onto a lobster boat and then be easily reassembled on the island.

While it was obvious that one of the chain saw mills or one of the swing blade mills met the portability requirement admirably, the faculty consensus
was that we would prefer a mill with more nearly generic operating procedures. We wanted the skills that our students learned to be applicable over as broad a range of sawmills as practicable. Another consideration was that a band mill was more appropriate for the smaller size of the spruce trees on the island.

A review of the sawmills available, including ads and Shoot-Out results in this magazine, along with manufacturers’ specifications, confirmed that the LT-15 would meet our requirements. When Wood-Mizer agreed to lend us a mill for six months, we were more than willing to accept their offer.

Note: Because of some logistical problems, at the last minute, we were not able to move the mill onto the offshore island, and had to stay on Mount Desert Island, which has road access. Still, we are confident that it is entirely feasible to take the mill offshore; maybe next year.

The Mill
The Wood-Mizer LT-15 mill is a no-frills manual band saw mill. The engine provides all the energy for sawing the log and you provide all the energy for everything else.

Note: A labeled drawing of the sawmill, from the excellent operator's manual, is reproduced here for your convenience. Also, left and right designations are from the point of view of the sawyer, standing at, and facing, the mill’s controls.

As delivered, the basic mill consists of the sawhead, mounted on a carriage, and two 6-foot-8-inch-long bed sections. This is long enough to saw 11-foot (3.3-meter) logs. Longer logs require the addition of bed sections (as many as you want). Three sections are enough for three 6-foot-8-inch-long bed sections, which this mill can accommodate. Longer logs require the addition of bed sections (as many as you want). Three sections are enough for three 6-foot-8-inch-long bed sections, which this mill can accommodate.

Wood-Mizer's drawing of the LT-15, from the operator's manual.
tirely adequate for 16-foot (5-meter) logs. The whole basic mill arrives on a single pallet and weighs only 944 pounds (428 kilograms).

The 6-foot-8-inch-long bed sections are made from 2 x 6 x 0.200 inch steel box tubing, with 1 1/2 x 5 1/2 x 0.200 inch fabricated steel-channel cross members that the logs rest upon. The cross members are built with integral vertical stops to help hold square-sided cants during sawing. Each bed section contains two log side-supports that rotate into position. The log clamps ride on the cross members, more about the clamps later.

A 3/8 x 2 inch plated-steel guide rail is bolted to the outboard side of the left bed rail, with the bolts providing adjustability. The saw carriage rides on three ball-bearing wheels (two on the left, one on the right) atop the 2 x 6 members of the bed sections. Four additional ball-bearing wheels, two on each side of the guide rail provide lateral stabili-

Above: The driven band wheel, showing the belt clutch and the blade brake. Both saw-guide rollers are also visible.

Left: We liked edging with the boards clamped beside a four-sided cant.

ty for the saw carriage.

The saw carriage consists of two vertical steel posts which are bridged at their tops by a horizontal member. The left post is made of larger (2 x 4 inch) steel box tubing. As you will see below, it is larger because it is subjected to more stress.

At first glance, it appears that the saw head is supported by the two posts of the carriage. It is in fact supported—by a cantilevered arrangement—entirely by the larger left post. The right post’s function is to provide stability for the left post. Wood-Mizer calls the design “semi-cantilevered.” Assigning the task of supporting the stresses of cantilevering to the movable carriage allows the bed sections to be made of lighter materials. It’s what makes the modular construction of the bed possible.

The saw head is fabricated around a backbone of 2 x 3 inch steel box tubing, which gains additional rigidity from the welded steel wheel enclosure. The band wheels
are 19-inch (483-millimeter) V-sheaves that use loosely fitted B-section V-belts for tires. Both the driven wheel and the idler wheel turn on twin sealed bearings that are fitted into the hubs of the wheels.

Saw tension is adjusted by a simple T-handled turn bolt that compresses a rubber “spring” that should prove more durable than a coil spring. Saw tracking is adjusted by a single captive bolt that regulates the cant of the idler wheel. The saw is guided by two flanged rollers that position the blade with a 1/4-inch (6-millimeter) downward deflection from the common tangent between the band wheels. The left saw guide is fixed and the right guide is movable by a simple adjustment lever.

The LT-15 uses standard Wood-Mizer blades. We used the 1.25 x 0.045 x 158 x 10° (inch designations) blades. I will comment more on the blades later.

The height of the saw above the bed is variable between 1 inch (25 millimeters) and 27 inches (68 centimeters), and is adjusted by means of a simple hand crank that raises the saw head 4 inches (~10 centimeters) per revolution. The effort required to raise the saw is substantially reduced by a pair of enclosed gas cylinders that maintain an upward force on the saw head, effectively reducing its perceived weight.

There are four power options for the LT-15. For gasoline power, Kohler engines in either 13 or 15 horsepower (9.7 or 11.2 kW) are available. You can also choose a 10-hp (7.5-kW) electric motor, in either single- or three-phase configuration, or a 10-hp Yanmar diesel engine. The electric power option would seem to be ideally suited for permanent installations where electricity is available, and I would really like to try one, but we opted for the diesel engine. More about the engine later.

The engine is located on a mount that is welded to the main tube of the saw head. Power is transmitted to the band wheel through a single B-section V-belt. The manual clutch is a simple roller that bears against the flat side of the belt when the clutch lever is moved to the engaged position. Disengaging the clutch activates a braking mechanism that will stop the blade within five seconds.

Feeding, and returning the carriage on the LT-15 is, of course, done manually. You can choose between using a push/pull handle or a hand crank that works upon a 3/8-inch nylon rope that is secured at both ends of the bed. I found myself using the crank for feeding (it has a good feel to it), and the handle for returning, the carriage.
Above: A view of all the operating controls, and the Yanmar diesel engine.
Notice the yellow bottomed inch-scale and the incremental hand-cranked setworks. The auxiliary water valve that we installed is just to the left of the decal on the engine’s fuel tank.
Inset: The incremental set sprocket enhanced with inch numbers and red index lines. Both scales are indicating six inches.

By now, you’ve probably had enough about the specifications and descriptions; I know that I have. Let’s move along.

Comments, Observations and Opinions
The Wood-Mizer LT-15 sawmill is designed to be operated while sitting directly upon the ground. This makes for easy log loading, but it also means that you need to bend over to pick up every slab, board, or edging that you make. It only required some trial and error, we settled upon 14 inches as being an acceptable height increase and we built some lightweight, portable 14 x 14’s for the mill to rest upon (see photograph).

Four of the fabricated timbers proved to be more than adequate to support the mill. An additional, unexpected benefit was easier leveling of the mill when setting up—probably because of the increased bearing area in contact with the ground. We did notice a tendency for the mill to shift upon the wooden supports, but a lag bolt into the wood through each adjusting foot cured the problem. Loading logs with the mill elevated became more labor intensive, but we always had enough help—and peavies—available to do the job easily and safely.

Before loading a log, it is important to rotate at least two of the side supports to their vertical positions to avoid rolling the log off the mill. I’m happy to report that in six months of running the mill, we remembered to do this every single time. After the log is loaded, it can be rolled in place against the side support to position it for sawing. If you want to raise one end of a tapered log, it is simply levered up and a shim of appropriate thickness is placed between a bed cross member and the log. After adjusting the height of the side supports, the log is clamped in place.
Two clamps are supplied with the mill; three would be better, and I would prefer four. That’s not to say that you would use more than two at one time very often—the extras would just give more flexibility in log positioning and accommodate the occasional weirdly shaped log.

The clamps are mounted on bed cross members, where they slide horizontally for positioning. The “post” portion of the clamp is easily adjustable for height by way of a spring-loaded lock. When the post is at the proper height, the clamp is slid into position and a hand lever cams the post into the log, providing very positive support. The clamps work by binding upon the bed rail, a design that requires rather close tolerances.

Wood-Mizer got so much right on this mill that I hate to complain about the clamps, but I’m going to. Because of the close clearance between the bed rail and the clamp, the clamps are difficult to move. Once set, they can be very hard to release, sometimes requiring some impact from a mallet, etc. After a couple of months, the clamps became easier to move, but they started twisting enough, that when the cam was rotated, they sometimes slid under the edge of a cant, raising one edge about 1/4 inch. This, of course, would lead to miscut lumber if you failed to notice the condition. It also required attention when edging.

On the positive side, the clamps are extremely effective at holding a log in position for sawing. We never had a log move once it was clamped. Still, the clamp design needs to be tweaked. OK, enough whining—on to the good stuff.

The setworks used to position the saw are one of the most positive and easy-to-use that I’ve seen on any mill. It is a roller chain driven by a hand crank. The outstanding feature
is the indexing device, which is nothing more than a spring-loaded pin on the crank handle that engages a large roller chain sprocket. The beauty is in the engineering. Each turn of the crank moves the saw head exactly 4 inches. Wood-Mizer chose a 64-tooth sprocket, so there is a positive stop at 1/16-inch intervals. This is very convenient for those of us sawing in inches—USA and Canada (depending upon markets).

Once the indexing sprocket is adjusted, it is easy to set the saw in 1/16-inch increments. There is a decal applied to the sprocket that has index marks, but no numbers. The intention was clearly that the sawyer would use the inch-scale, located on the left carriage mast, for coarse adjustment, and the indexing pin for the final adjustment. We took the concept a step further and added numbers to the sprocket (see photograph) and only used the inch scale to locate the saw, within 4 inches, for the initial set. After that we relied entirely on the sprocket scale.

The inch scale has one very nice feature. The scale is silver in color, except for the bottom 10-inch section, which is yellow. When you are sawing in the yellow zone, it is possible to hit something other than wood—a clamp or a side support. This is a good reminder to pay attention to the side supports and to the clamps.

Since the setworks are incremental, you need to adjust your sawing technique accordingly. The kerf of the saws that we were using is 0.089 inch, a bit less than 3/32 inch. If you call the kerf 1/16 inch, a real temptation, you will saw boards that are theoretically 0.026-inch scant. If you call the kerf 1/8 inch, you will saw 0.036-inch oversize.

After just a little experience with the mill/blade combination, I concluded that the accuracy and the repeatability allowed me to consider the kerf 1/16 inch. I yielded to temptation, called the kerf 1/16 inch, and never looked back. One-inch boards were consistently within tolerances for the nominal dimension.

This seems like a good time to address the blades. The 1.25 x 0.045 x 158 x 10° Wood-Mizer blades were very well suited for everything that we sawed with them—I cannot say ideally suited because it was the only blade we tried. We sawed white pine, hemlock, inland spruce, coastal spruce, and various hardwoods (mostly maple and birch). We had no problems.

Let’s talk about the coastal spruce. This is notoriously hard to saw and when I want to test a band saw blade, I look for some coastal spruce. Quite often the saw will try to dodge the hard, encased knots. Once the saw deviates, it often does not recover properly and begins to produce a wavy cut. Problems may occur with a fresh blade, but you can usually expect them to increase as the blade dulls.

We had no problems sawing the coastal spruce—none whatsoever—and we saved a lot of it. When a blade began to dull, we would hear the difference in the engine and in the sound of the saw before the blade began to misbehave. We typically saved 2,000 to 3,000 feet of spruce before we needed to change the blade. Yes, we had very clean logs—they were not skidded, but were brought out of the woods on a forwarder.

I cannot comment on how the blades work in frozen timber. We never had any cold weather; indeed, we still haven’t and it is mid-January.

I really liked the 10-hp Yanmar diesel engine. It has more than enough torque, and we could not cause it to lug—when the blade was sharp—on the size logs that we were sawing—up to about 20 inches. One enormous old hemlock did make us slow the feed, but just a bit. Best of all is that the fuel consumption rate is only 0.2 gallon per hour. A tankful lasts about seven hours.

Although the engine can be started manually (I had each student start it once with the struggle string just to prove that it’s possible), the electric starter is very welcome. The engine always started very easily. I would like to tell you how it starts in winter, but we haven’t had any.

Like most diesel engines, this one can run backwards; it happened twice for us. The first time, we didn’t know what was going on until we tried engaging the clutch and saw the blade going the wrong direction. The second time, we recognized the
unusual sound of the engine in reverse immediately.

As much as I like the engine, I have a complaint: There is no good way to turn it off. If you turn off the fuel (the recommended procedure), it will stop after about three minutes of the most profound sputtering, false stopping, and immediate restarting imaginable. You can kill it with the compression release (recommended for emergencies only), but the release is almost unreachable from the operator’s position. Actually it’s on the other side of the engine—just where you don’t want to be in case of an emergency.

I discovered that you can stop it immediately by forcing the throttle closed, against the governor’s resistance, but this is neither easy nor easy to get to. I had a hard time explaining the task to the students. This engine needs a stop handle!

The LT-15 uses a water/detergent solution for blade cleaning and lubrication. The water tank is a five-gallon, removable jug inconveniently located atop the right hand mast. The sawyer cannot reach the tank valve from the operating position, with the result that the water runs constantly once it is turned on. This uses a lot of water, especially on an island where there isn’t any, except saltwater.

We extended the water supply tube to the sawyer’s position, located a second valve there, and routed the tube back to the movable saw guide. Then we used the valve on the tank as a flow control and the sawyer turned the water off whenever not in a cut. That reduced the water consumption from more than 10 gallons per day to less than three. You can see our extra valve in one of the photographs.

The moveable saw guide was a bit of an annoyance in that it would not stay put. It always wanted to creep toward the log until it made contact, sometimes stopping the feed. I finally started sawing with my right hand on the positioning lever making constant adjustments while sawing. When I think about it, I have to conclude that that’s the proper way to operate it anyway—keep the guide as close to the log as possible.

Wood-Mizer claims a production rate of 75 to 125 board feet per hour for the LT-15. I had two students, both possessed of exceptional mechanical aptitude, who sawed a little over 1,000 BF in slightly over 3½ hours (about 285 BF per hour), after only two hours of introductory instruction. Even the most reserved of my
students were able to saw over 125 BF per hour. Note: Wood-Mizer's production estimates were probably based on a single operator, while our students were working two-at-a-time as a team. Still, they did quite well for novice sawyers.

I noticed that the students were much more comfortable with the LT-15 than previous classes had been with borrowed hydraulic mills. With a manual mill nothing happens until you physically make it happen; you cannot accidentally push the wrong button with possible catastrophic results. This may be a consideration for anyone pondering a first-time mill purchase.

We did all of our edging on the sawmill, saving unedged boards on the log-loading ramps. While it is entirely possible to edge the boards between the side supports and the log clamps, we found it easier and more accurate to clamp the boards against a four-sided cant.

Wood-Mizer supplies complete documentation with its mills. We received a safety, setup, operation, and maintenance manual; a parts manual; an engine manual; a blade handbook; a trailer manual; and a general information book—all neatly assembled in a three-ring binder. Wood-Mizer also gives the customer an 800 telephone number—and it is posted prominently right on the mill. If you have a problem, they want you to call them.

The LT-15 is easily maintained. Daily maintenance consists of setting the saw tension, checking the engine oil, confirming alignment, and filling the water jug and the fuel tank. All of the bearings are sealed and require no lubrication. There are a few lubrication points that must be attended on a periodic basis (roller chains, saw tensioning screw, and the screw jack on the trailer). Other maintenance consists of a regular inspection of components to confirm proper adjustment and alignment. Everything is clearly explained in the manual.

**In Summary**

The Wood-Mizer LT-15 is a small, very portable, manual band saw mill. We found it to saw very accurately and it was easy and intuitive to operate. The setworks are outstanding and exhibit excellent repeatability. While we were not entirely satisfied with the log clamps, they were very positive and never lost their grip on the log. The LT-15 is not designed as a production mill, but we found that it will consistently outproduce the manufacturer's published estimates.

All in all the LT-15 did everything we asked of it, without any fuss or bother. If you are looking for a small portable mill, be sure that you consider this one.

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