

PHOTOS BY JIM PHILIP



# Mighty Mite Generation III

Reviewed by Jim Philip

**L**aurence Kiesman and his wife, Winnie, live in a charming home on a high bluff overlooking a bend in the Saco River in western Maine. Their home site is a place where Larry camped during his boyhood hunting and fishing trips along the river. But that was more than sixty years ago.

When Larry retired from the military, where he was an aircraft mechanic and machinist, he was able to purchase his former campsite. About 200 acres of prime pine-growing woodland came along with it. That put him into the woodlot management busi-

ness. Woodlot management led to timber harvesting, which led to sawmilling. All were things that he was interested in already, but everyone needs an excuse for their toys.

For the last 12 years, Larry has been operating a Mighty Mite Generation III portable bandsaw mill. He drove his pickup from Maine to Oregon, bought it and towed it home. That was the last time that the mill moved.

The mill is permanently parked on four-foot deep concrete piers, all leveled with a transit at the time of

*This sawmill is capable of fine accuracy, a result of good engineering and construction combined with meticulous maintenance and fine-tuning.*

pouring. The tops of the piers are at ground level, so there is nothing to trip over. The machine is still portable if Larry should ever want to move it—all he needs to do is reinstall the axle and wheels, which are stored in his lumber shed.

So what do you get when you combine an aircraft mechanic with a portable sawmill? You get a sawmill

that is literally part airplane. Larry has incorporated aircraft technology and parts into his mill. You also get a sawmill that is meticulously tuned and maintained and is capable of extraordinary sawing accuracy.

The first thing you notice about Larry's sawmill is that it has a house on it. The house is about the size and shape of an ice-fishing shack and it really looks odd perched there on the end of a sawmill. Larry wanted his mill machinery to be under cover, but he did not want to work indoors, so he built the house to shelter the working components.

The roof is fixed in place,

At left: With remote control in hand, Larry Kiesman runs his Mighty Mite through a log.

but the walls are removable. I thought the walls looked heavy and cumbersome, but then I received my first lesson in aircraft technology. Larry made the doors out of lightweight wooden frames, covered them with fabric and painted them. That's how they used to build airplanes. The panels weigh about six pounds each. They hang from hooks under the roof and are secured by a wrap-around shock cord near the bottom.

Removing or installing the walls takes about a minute, which is quicker than using a tarp. Unlike a tarp, the walls can be put into place while the engine is still warm. As soon as the walls were removed, some of Larry's innovations became apparent. The first thing that caught my eye was the air compressor.

Compressed air is great for cleaning up around a mill and for operating air impact tools. Larry has two air hoses, equipped with quick-disconnects, one on each side of the mill. He has a 20-gallon air tank mounted up under the roof, so he has plenty of air in reserve. The air is also used to power his high-pressure saw cleaner, which I will

describe later.

Since this mill is operated at a permanent location, it has been wired for AC electricity. Having power available on a mill is a big plus for running tools, lights or a welder. Larry's air compressor is electric, but he has engineered a way to run one from the mill engine if he ever wants to. The compressor would have an electric clutch that would be locked out whenever the saw was running. This would prevent the compressor from robbing power when the mill is in a cut.

Although Larry's Mighty Mite mill is 12 years old, it is very much the same as current production models. There are two reasons for this. First, Larry has installed most of the company's retrofits as they were offered. Second, Mighty Mite has adopted some of Larry's innovations and made them standard.

Mighty Mite advertises that its Generation III mill weighs 50 percent more than their competition. There is a LOT of steel in this machine. The main frame is made of two side rails and two end members of 2 x 8 inch steel channels. Steel 1 1/2 x 3 inch I-beam cross members are welded flush with the tops of the side rails, on two-foot centers. The bottoms of the



Larry's mill is hand-dogged and he uses a chainsaw debarker to clean his logs.

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side rails are braced with diagonal members made of steel box tubing. With both transverse and diagonal members, there is little chance that this frame will twist, if it is kept reasonably level.

Each side rail is topped with an inverted V track that the saw carriage rides on. The saw carriage is also a husky piece of equipment, built from 4 x 4-inch steel box tubing. It has two legs on the left side of the mill and one on the right. This tricycle arrangement gives excellent stability to the saw head as it moves.

The saw head and engine assembly is constructed from the same rugged materials as the uprights. The assembly rides up and down within the uprights, guided by rollers that prevent actual

physical contact between the components. The motion is very smooth and is powered by a single hydraulic cylinder.

I questioned the stability of the arrangement, should a valve or the hydraulic cylinder leak. Larry said he hasn't had a bit of trouble in 12 years, although he is careful to always index on an upward motion. This is a procedure recommended by the manufacturer and is a good practice on any sawmill. You should always index with positive motion of the machinery.

The big box tubing has been put to other than structural uses. Parts of the frame have been welded into closed spaces and serve as the hydraulic reservoir and gasoline tank. Current Generation III models use a

removable gasoline tank that eliminates the need to pour gasoline into the frame/tank. It's probably an important safety consideration, but I liked the compactness of the earlier design.

A two-cylinder, 18 HP Kohler gasoline engine powers Larry's sawmill. The current models offer power options of 23 HP gasoline, 29 HP diesel or 15 HP electric. Larry believes his mill is adequately powered, but he does not have any optional hydraulic accessories.

The 19-inch band wheels are made from machined cast steel. They are faced with the same material that is used for skateboard wheels. This is a very abrasion-resistant material and saves wear on both the wheels and the blades. It also permits things to

remain in adjustment longer, since deviation due to wear is minimal.

Power transmission to the blade is through an electric clutch on the driven side of the power train. This means the 5/8-inch matched V-belts are constantly in tension and never slip, as is the case where a belt tensioner is used as a clutch. This results in improved belt life and more positive blade starting and stopping. Current Mighty Mites have a hydraulically activated clutch.

A third groove on the engine sheave is used to power a Vickers hydraulic pump. Hydraulics power the saw head up and down, the carriage motion and tension the blade. The blade tensioner is a marvel. Most hydraulic valves tend to



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weep a bit after they are set, but this one didn't. The pressure gauge registered the same at lunch time as it did after breakfast.

While we are on hydraulics, let's look at one of Larry's innovations. The forward/reverse valves on the carriage drive were electrically activated and tended to slam open and shut. This caused severe hydraulic stresses and rather jerky carriage motion.

Larry replaced the valves with soft-shift valves from an airplane. Mighty Mite saw the wisdom of Larry's modification and made the valves standard equipment. The new valves make carriage motion and changes in direction very smooth, rather like an automatic transmission. I told you that this sawmill is part airplane.

But Larry didn't stop there. The mill came without a water system for the blade, so he built his own using an automotive windshield-washer pump and a five-gallon jug. The water is supplied to both the top and the bottom of the blade. It is turned on and off from the operator's console as needed.

Current Mighty Mites do have water on the blade, but nobody but Larry has the next gadget. It requires compressed air and AC electricity to operate.

When sawing fresh white pine during the growing season, long strings of new inner bark get trapped in the saw gullets and build up. Water alone will not remove them. So Larry built a device that will. It consists of a second windshield-washer pump supplying an air over liquid injector from an oil burner. The nozzle is direct-

ed onto the blade and provides a 90-PSI blast of water that clears the gullets immediately. This is also available on demand from the operator's console.

The operator's console is a portable box connected to the mill with an electrical cable. It controls the up and down positioning of the saw, the carriage travel and the saw clutch. It also has an emergency stop button that kills the engine if necessary.

I liked the roller saw guides on the Mighty Mite mill. The bottom rollers are offset about two inches from the top rollers. The blade is precisely positioned with the two top rollers, and then the bottom rollers are moved upward till a slight amount of pressure is exerted on the blade. This actually introduces a very small bend in the blade as it passes between the rollers. The net result is the ability to really fine-tune the blade for exceptionally straight cuts.

Larry's mill is manual for log loading and log dogging, the loading being from a permanent log brow at the same elevation as the mill. He neither needs nor wants the hydraulic options, since he is far more interested in precision than in speed. The mill has completely independent arrangements for holding logs and for holding squared cants. They work very nicely, and it is easy to produce a truly square cant on this machine. The clamps are arranged on a rocker mechanism that allows for sawing tapered clapboards or even shingles. The cant holding clamps allow sawing a 1-inch final board-Hurrah!

This sawmill, tuned and

*(Continued on page 43)*

## MIGHTY MITE SPEC SHEET

### NAME & MODEL NO.

Mighty Mite  
Generation IIIa Bandsaw

### MANUFACTURER & ADDRESS

Mighty Mite Industries  
PO Box 20427  
Portland, OR 97220  
503-288-5923  
mytmite@pacifier.com  
www.pacifier.com/~mytmite

### MILL OVERVIEW

Band or Circle Mill: Band

Stationary or Portable: Portable

Standard Equipment: blade guides, blade sprayer, single/siding table, 20-foot wired remote control

Cutting Capacity (diameter and length): 36-inch diameter and 16-foot length

Weight: 3,300 lbs.

Length & Width: 24' x 8'

### FRAME & CARRIAGE

Size and Construction of Frame: 4x4 heavy wall steel tubing

Tracks are Made of: 8" channel tubing

Are the Tracks Replaceable? Yes

Wheels Made of: Cast steel

Carriage Bearings: Double row sealed bearings

Carriage Support System: 3 post saw head

### SAWING HEAD

Wheel Construction: 6 spoke cast steel

Wheel Diameter: 19 inches

Wheel Face: Reinforced rubber

Wheel Shaft: 2 3/16" 4140 TGP high strength alloy shaft

Wheel Speed (RPM): 910

Saw Speed (SFPM): 4525

Recommended Saw Blade: 13 feet 10 inch x 1 1/4 x .042 inches

### GUIDES AND STRAIN SYSTEM

Type of Guides: Roller guide tensioners

Strain System Used: Hydraulic

### NETWORKS

Method of Setwork Drive: Hydraulic

Set Display: Scale Board

Automatic Sets? Yes

### ALIGNMENT

How is Alignment Done at Factory? Level

### POWER PLANT

Standard: 25 HP Kohler gas

### LOG TURNER

Manual winch wrap around system

### LOG LOADER

Manual winch wrap around system

### LOG DOGS

Manual

### CARRIAGE FEED DRIVE

Type (hydraulic, electrical, mechanical, or manual): Hydraulic

### TOWING

Wheels and Trailer: Single-axle trailer with light, wheels, fenders

Towing Weight: 300 lbs

Tongue Weight: Adjustable

Hitch: 2-inch ball

### GUARANTEE

90 days, 2-5 yrs powerplant and other major components

### OPTIONS AVAILABLE

Frame extensions, second axle and electric brakes, electric or diesel power plants, blade maintenance kit

### BASE PRICE

\$15,995

### MANUFACTURER'S COMMENTS:

We believe the true test of a sawmill is not only how it performs new but also how it performs over time. To this end Mighty Mite is uncompromising in its commitment to quality. Mighty Mite manufactures a full range of high quality portable sawmilling equipment. From our smallest bandsaw mill to our most sophisticated, fully integrated lumber production systems; the commitment is the same. Mighty Mite incorporates the latest technology to manufacture sawmills that are productive, reliable and easy to operate and maintain. For over 30 years Mighty Mite sawmills have been reliably producing lumber throughout the United States and in over 60 foreign countries.

(Continued from page 13)

maintained as it is, operates as a precision machine. Sawing rather large pine, the within-board variation was less than .010 inch. The between-board variation was almost as good, thanks to the good, parallax-compensated set gauge and the smooth operation of the set-works. Larry has one of the soft-shift airplane valves on there too.

The only thing that I disliked about the Mighty Mite mill was the location of its nice set gauge. The sawyer has complete mobility with the console on a cable, but the position of the set gauge requires a trip to the extreme rear of the mill each time a set is made. The gauge would fit just as well on the forward left leg of the

carriage, which would save considerable walking. Better still would be a digital display right on the console.

This sawmill is capable of fine accuracy, a result of good engineering and construction combined with meticulous maintenance and fine-tuning. If you want to keep a mill in top condition, fine-tuning is an always, not a sometimes, thing. It is mostly a matter of attitude. Let me give you an example of this attitude, realizing that it will not work for everyone.

Larry sharpens and sets his own blade. Notice the singular word blade. He only uses one, keeping it in top shape until it is worn out. When his blade needs maintenance, he simply shuts down, removes the blade

(about a minute on the Mighty Mite), walks the short distance to his shop and fixes it.

His reasoning is that each blade is slightly different from every other blade and requires different fine-tuning of the sawmill. This procedure probably would not work for someone who is concentrating on production, but it works well for Larry.

Two blade widths are available for the Mighty Mite mill: 1 1/4-inch or 2-inch. Larry has tried both widths and prefers the 1 1/4-inch blade for his work with pine. Larry uses a .042-inch thick blade, finding that it tends to run straighter than the thinner blades, although setting is a bit trickier. He has not had a problem with blades breaking, and is still

able to use a 1/16-inch kerf.

Larry regards his sawmill as a woodlot management tool. It has paid for itself and has paid his woodland taxes, with a little left over for vacation. He only operates the mill in fair weather from March through September and saws about 20,000 board feet of pine. The rest of the time, this young man of 78 has plenty of other things to keep him occupied.

He likes his Mighty Mite mill, and I think that he has every reason for liking it. ■

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*Jim Philp is an Extension Wood Products Specialist at the University of Maine. He has built and operated a commercial hardwood sawmill, and has "played with" a number of the current crop of portable sawmills.*

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