

Reviewed by Joe Denig

With this issue of IS&WM begins a regular series of reviews focused on portable sawmills from different manufacturers. Like our magazine, the reviews are an independent voice aimed to inform, not to sell. We do not attempt to rate the machines on any scale, but rather send our reviewer Joe Denig out to spend a day with an owner/operator in the field to see first hand how the machine operates under real conditions.

Denig will report back with a technical specifications sheet, his observations from the field, and the impressions of the mill from the person who has been running it for awhile.

Denig also calls the manufacturer to talk about any plans they have for the particular model, and each manufacturer is allowed separate space for their own comments about the mill.



TIMBERKING B-20 BANDMILL

William J. Brady, "J" to his friends, is the type of person you enjoy talking equipment with. He is a retired civil engineer with the U.S. Department Of Agriculture's Soil Conservation Service, a tinkerer, woodworker, part-time farmer and, for about 14 months, a proud owner of a TimberKing B-20. J refers to his B-20 as his toy; for him it is a part-time hobby that generates some income. On the day I visited J, he was cutting lumber from trees from his woodlot that were

blown down during Hurricane Fran. He wasn't going to sell the lumber, but just felt it was the right thing to do. He thought he needed to clean up his woodlot so the wood didn't rot, and then someday when he builds another barn, he'd have the lumber on hand. I really enjoyed my visit with J, he constantly analyzes a machine, what it does and how it can be improved. J had used chainsaw sawmills before he purchased his first bandmill, a purchase made after seeing the B-20 demonstrated at a

farm show.

The B-20 is aimed at the upper end of the narrow-blade portable band-saw market. The mill is fully hydraulic, including log loading, log turning, dogging and saw head travel. It uses a 1 1/4-inch wide bandsaw blade with offset teeth and a kerf of approximately 0.080 inch.

The first thing that struck me about the B-20 was the design of the frame of the machine, the tracks and the cross supports of the log deck. TimberKing refers to it as their Quad-beam deck

A Note From Our Reviewer

There are many different types of portable sawmills on the market today, and many different ways in which to use them. There are even more different types of users of those mills. Because of all that, this review will not attempt to "rate" any one sawmill against another. It's up to the purchaser to have a clear idea of what they want the sawmill to do. A farmer cutting wood from his property during the entire winter will have different needs than a hobbyist who only cuts lumber on the occasional weekend. An individual with a profit motive will have different needs than those two users.

Not every portable mill that you read about in these reviews will meet your needs. What I hope to do in every review is give you some insight so that when you do decide to purchase a sawmill you will know what features to consider, the technical specifications of a few sawmills, how they operate in the field and how satisfied the sawmill owner I visited was with the product.



TimberKing designed the B-20 to run a 1 1/4-inch wide bandsaw blade with offset teeth and a kerf of approximately 0.080 inch.

construction. Their basic frame is two 6-inch C-channel beams that run the length of the mill. On top of the C-channels sit box beams that support the log. The carriage rails, which are made from 2 X 4-inch steel box beams, are attached to the cross beams. But because of the difference in size, the tops of the box beams sit below the tops of the cross beams. What this does is prevent the log from ever coming in contact with the carriage tracks, promoting long-term accuracy.

The carriage is also well thought out, using four 2 X 2-inch box beams to form a post box frame that supports the sawhead. This four-point structure gives a lot of stability and structural support to the saw unit. The B-20 uses 18.75-inch steel casting wheels with 1-inch machined faces.

The saw is lubricated through a drip tank. J installed an additional shutoff valve that was closer than the one on the tank. He uses the manufacturer-supplied valve to control the rate of flow of the

coolant to the saw blade, and uses the valve he installed to shut the flow on and off.

The B-20 has a manually adjustable blade guide. For the most accurate cuts, the blade guides should be as close to the cut as possible. J lengthened the original screw clamp that holds the moveable guide in place so he has easier access to change the location of the guide. Saw strain can be adjusted by screwing in a threaded rod that tightens a coil spring. There is a hydraulic pressure gauge connected to the spring tension device that gives a read-out of the strain being applied to the blade. J reports his biggest operating expense is saw blades. He changes blades every four hours, and usually sharpens them once or twice before replacing them. J said saw breakage was a problem, and has loosened up on the amount of strain he loads on the blade, with good results.

Blades break because more stress is on them than the metal can take. The stress in the blade is a com-

bination of the stress from the tension put on the blade and the stress from bending the blade around the wheel. The two types of stresses can be traded around as long as the strength of the metal is not exceeded. Stress generated from bending the blade around the wheel is directly proportional to the thickness of the blade (the thicker the blade the more stress) and inversely proportional to the diameter of the wheel (the bigger the band wheel the less stress).

In large bandsaws, the thickness of the blade is limited to approximately .001 of the blade diameter. For a six-foot mill (72-inch diameter bandwheels) the blade thickness is limited to 0.072 inches. Anything much thicker than this causes stress cracks in the blade. The bandwheels on the B-20, which have a diameter of 18.75 inches, limit the blade to a thickness of 0.019 inches. J was running a blade with a thickness of 0.040 inches and having trouble with blades breaking. He had two choices: increase the diameter of his wheels, which would be difficult to do at this point, or back off on the strain on the blade. He did the latter. As a rule of thumb, in order to extend blade life, you want to run as little strain as possible as long as you are cutting straight.

The B-20 can be supplied with either gas, diesel or electric motors. J's mill was electrically powered, using a three-phase, 220-volt source. The mill has three electric motors, a

PORTABLE SAWMILL

NAME & MODEL NUMBER

TimberKing B-20 Bandmill

MANUFACTURER & ADDRESS

TimberKing, Inc.
1431 N. Topping Ave.
Kansas City, MO 64120
1-800-942-4406
FAX 816-483-7203

MILL OVERVIEW

Band or Circle Mill: Band

Stationary or Portable:
Both Types Available

Options Included: (hydraulic feed, log loader, log turner)
B-20 Pro-Package Includes Complete Hydraulics: Feed, Loader, Turner, Tow Boards, Log Stops, Log Dog and Transport Package.

Cutting Capacity (diameter and length):
34" diameter x 21' 3" length.
Extensions allow cutting lengths up to 45'

Weight: B-20 Pro-Package
Weighs 3840 lbs.

Length & Width:
Total Length 29' 3". Width at Widest Point 6' 4"

FRAME & CARRIAGE

Size and Construction of Frame:
Quad-Beam Deck Construction:
2 23" x 6" C Channel Beam
2 23" x 2" x 4" 3/16 Wall Box Beams

Tracks are Made of:
2" x 4" 3/16 Wall Box Beam

Are Tracks Replaceable?:
Tracks are Permanent

Wheels are Made of:
Milled Steel

Size of Bearings on Carriage
Wheels: Fafnir 208K22G

Carriage Support System:
(Cantilever or box frame, etc.)
4 Post Head Made of
2" x 2" Box Beams

SAWING HEAD

Wheel Diameter: 18 3/4"

Wheel Face Width: 1"

Wheel Construction: Steel
Casting with Machined Face

Wheel Shaft and Bearing Size:
Shaft size: 2 3/16"
Bearing size: 2 3/16"

Wheel Speed (RPM): 1130 RPM

Saw Speed (SFPM): 5547 SFPM

Recommended Saw Blade:
(width, length, band thickness, kerf and pitch for different species) 1 1/4" x .042" or .035"
Kerf: .080"
Pitch: 3/4", 7/8", 1"

DATA SHEET

GUIDES AND STRAIN SYSTEM

Type of Guide: Machined, Hardened Steel Rollers with Sealed Bearings.

Strain System Used: Mechanical Spring Compression.

Wheel Tilting System: 3-point Pivot Adjustment.

SETWORKS

Method of Setwork Drive: (chain drive, hydraulic, etc.)
Electric Driven, Hardened 1 1/4" ACME

Set Display: (electronic, scale boards)
Electronic-In Development, Threaded Rods, Scale Board Standard.

Automatic Sets: in development

ALIGNMENT

How is Alignment Done at Factory?: Laser level

Alignment Guides for User: Torpedo Level

POWER PLANT

Standard: 25 HP Gas Motor
Runs Blade Only, 5.5 HP Gas
Runs Hydraulics
Optional: 28 HP Diesel/6 HP
Diesel, 15 HP Electric/3 HP
Electric

LOG TURNER

Hydraulic

LOG LOADER

Hydraulic

LOG DOGS

Hydraulic

CARRIAGE FEED DRIVE

Type: (hydraulic, electrical, mechanical or manual, independent or driven off the main power source) Independent, Hydraulic

Forward Speed: 165 FPM Max

Reverse Speed: 205 FPM

If Towable, Describe Wheels and Trailer: 15" Wheels, Goodyear Marathon 6-ply Steel-Belted Trailer Radials, Electric Brakes

Towing Weight: 3,840 lbs.
Tongue Weight: 250 lbs.

OPTIONS

(Such as edging, board haulback feature, etc.):

Operator's Seat, Debarker, Automatic and Semi-automatic Sharpeners, TimberKing Talon 900 Conveyor-Feed Edger.

LIST PRICE AS SEEN

TimberKing B-20 Pro-Package (includes transport and comp. hydr.): \$19,995.

15 HP for the saw unit, a 3 HP for the hydraulic unit and a 3/4 HP unit to raise and lower the saw head. Splitting the hydraulic feed from the bandsaw power unit is another good feature on the B-20. That way the mill doesn't rob Peter to pay Paul when you get in a heavy cut and want to maintain hydraulic power for constant feed. TimberKing uses this same power concept on all its engine types.

The setworks, the raising and lowering of the saw head to cut different dimensions of lumber, was accomplished through two 1 1/4-inch Acme threaded rods, one on each side. This is a very sound design if you want to raise



With good help and a long day of sawing, J Brady says he can cut 1,000 board feet of lumber with his B-20.

and lower the head evenly. On J's model, these rods were not hardened. However, on current models, this is one of the improvements TimberKing has made. J experienced sawdust accumulation on the threaded

rods which interfered with their operation. TimberKing sent him a retrofit kit with bellow sleeves that fit over the top of the threaded rods, preventing sawdust from sticking to them. J also built a sleeve to prevent

BAND WHEEL DRIVE

(Gas, diesel, or electric drive options)

SEPARATE POWER UNIT

For raising & lowering saw unit

BAND STRAIN MECHANISM

2" x 4"—3/16"
WALL BOX
BEAM TRACKS
(Sit below cross beam
and log loader)



(Hidden from view)
SEPARATE
HYDRAULIC UNIT
For carriage drive and log loading,
turning and dragging

HYDRAULIC LOG
LOADER



J Brady uses a TimberKing edger to edge boards after sawing.

sawdust accumulation on the bottom of the threaded rods, and sealed the end of a box beam that had allowed sawdust to get to the threaded rod. Also in the setworks, there is a very simple scale board that the sawyer reads to adjust the thickness of the cut. J said he

would like to see some improvements in this area, and TimberKing reports they are working on developing electronic setworks.

The B-20 loads logs with two hydraulic arms. These seemed to function well. Because J's mill is stationary, he shortened the hydraulic hoses to the

log loader's hydraulic cylinders to keep them from possibly interfering with its operation. There are three hydraulically driven log stops supplied with the mill, along with one manual one. J added an additional manual stop and a handle to the supplied manual stop.

A single bi-directional hydraulic log turner is normally supplied with the mill. J ordered an additional log turner for his mill. He also indicated that he had moved the location of the turners so that they would be at either end of a short log. If you only have one turner and it is not located at the log's center of gravity, it will tend to skew the log. A single hydraulically oper-

ated log dog is also supplied with the mill. The log dog is manually retracted or extended, depending on the size of the log. The log dog functioned well. However, often when starting to saw a log the log dog was in the extended mode, then after sawing the log down you would have to walk around and manually place the log dog in the retracted position to cut the last pieces of lumber.

What quick and inexpensive improvements can be made to the mill? J pointed out several places where easier access to lubrication points were needed. Also, when J changed the saw blade I noticed it was a tight fit getting the blade on and off. *Continued on page 37*



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Continued from page 6

According to their current literature, TimberKing has made several improvements since J's mill was built. Stainless steel bed caps are supplied to protect the bed beams. Two hydraulic roller toe boards are supplied so that you can lift the small end of tapered logs for taper sawing. Also, the bellow sleeves for protecting the network's threaded rods from sawdust are now standard equipment.

I asked J what his maximum production per day was. He said around 1,000 board feet a day if he has good help and a long sawing day. The work he said he liked best was custom sawing for customers who

take everything away. His biggest headache is getting rid of the slabs and sawdust, even when giving them away.

J has his mill set up on a permanent foundation. He said concreting his mill yard was one of the best things he did. He has a forklift to unload logs and a homemade log trailer for hauling logs from his

woodlot. He also has a two-saw TimberKing edger which he believes is essential to his operation.

Overall I believe J is very pleased with his TimberKing B-20, and he reports that the company has dealt with him fairly on warranty issues. When asked what he would do differently if he had to do it all over again, J replied

with a smile that he wouldn't change a thing. ■

Joe Denig is a Wood Products Extension Specialist at North Carolina State University's College Of Forest Resources. Annually he organizes and conducts numerous short courses for wood industry personnel. He is the author of "The Small Sawmill Handbook - Doing It Right And Making Money."

MANUFACTURER'S COMMENTS

The TimberKing B-20 Bandmill is the perfect mill for the serious portable sawmiller. It is ruggedly built in the USA to give years of trouble-free sawing. Because the TimberKing is so well built, we can confidently back it with a warranty and guarantee that have become the industry standard. 5-Year Limited Chassis Warranty. 2-Year Limited Mechanical Warranty and 30 Day Money-back Guarantee.

The B-20 is easy to operate and with our exclusive 1-on-1 Training Program, you'll feel at home with the mill in just a few minutes. In a few days, you'll be sawing like a pro. Standard Stationary Command Post lets you survey the sawing area well away from noise, dust and blade. Expect between 1,500 and 3,500 board feet production per day, depending on the species, size of logs and dimension of lumber you're cutting.

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