Wood-Mizer® Thin-Kerf Blades

Blade Handbook

A Guide To Understanding Bandsaw Blade Terminology & Optimizing Blade Performance

Safety is our #1 concern! Read and understand all safety information and instructions before operating, setting up or maintaining this machine.

Form #600

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SECTION 1 BLADE INTRODUCTION

Wood-Mizer is the worldwide leader in portable bandmills and other wood-processing equipment. Wood-Mizer is also the only sawmill manufacturer that produces narrow-band thin-kerf blades. When we introduced our first portable bandmill 20 years ago, one thing quickly became clear: We needed better blades than were currently available.

After evaluating the materials and processes others were using to make blades, Wood-Mizer decided the only option was to manufacture its own blades. This decision has led to advancements in blade materials and processing that have revolutionized the industry. Advances in developing bigger and better sawmills, combined with our countless hours and dollars spent on blade technology have resulted in customers being able to saw more lumber faster using less horsepower than traditional sawmills.

The blade can cause the success or failure of a cutting operation. It is important for sawyers to understand definitions and theories about blades. What our research has shown to be the most productive has not always matched what the textbooks say. We believe this is due to the low horsepower and narrow width of our blades as compared to larger production mills. This section explains narrow-band blades used with the Wood-Mizer®.

See also Section 3, Blade Maintenance or the Blade Maintenance Video for blade sharpening techniques and troubleshooting.

Wood-Mizer® blades are available in various widths, thicknesses and tooth profiles to satisfy any cutting application. The following chapters provide information that will help you determine which blade to use. A Customer Service Representative can also help you decide which blade is best for your cutting application (1-800-525-8100).

1.1 Best Blade In The Industry

Wood-Mizer® is the only sawmill manufacturer that makes its own blades.

Wood-Mizer® builds quality into every blade we manufacture. From the selection of the raw materials to the output of the final product, every step of the manufacturing process is controlled and inspected. Over seventy-five separate tests and inspections ensure the quality of every blade that comes to you in a Wood-Mizer® box of blades.

Each Wood-Mizer® blade tooth is individually measured and set by computer-controlled equipment during the manufacturing process.

Wood-Mizer® is the only company that stamps an identification number onto every blade we manufacture. This number allows us to track the blades from the raw material to the end user, YOU. If there's ever a question about performance or quality, we are able to track the blade back through the manufacturing process and identify potential areas of improvement. The identification number assures you of a product that performs well now and will continue to improve as we discover even better ways of producing blades that consistently give maximum performance.

DoubleHard Blades

Wood-Mizer DoubleHard blades are a combination of two different metallurgical techniques that result in superior hardness and toughness not found in other blades. We combine two different metallurgical techniques that result in superior hardness and toughness not found in other blades. The DoubleHard blades use high-quality steel and the teeth are induction hardened (DoubleHard-ened) so they stay sharper longer and can be resharpened often. The performance of these blades means higher productivity and lower cost per board foot.

SilverTip Blades

This blade is made specifically to meet the needs of the resaw industry and is a lower-cost alternative for customers not requiring multiple resharpenings.

The SilverTip features much tighter manufacturing specs than the competition's blades. The SilverTip is made with a higher carbon content than DoubleHard blades, with a high-durability steel suited to high-volume sawing environments.

1.2 Which Blade Should You Use?

See Figure 1-1. Wood-Mizer's blade part numbers are made up of ten or twelve characters. See the table below for a description of what each character of the blade part number represents. Note that Wood-Mizer® blades can be ordered in almost any length. Standard blades are kept in stock and are available for same day shipment. Custom lengths are normally available for shipment within two days of order.

B	HOW SOLD; B=BOX OF BLADES, U=UNIT (SINGLE BLADE)
2	THICKNESS; 1=.035", 2=.042", 3=.045", 4=.055", 5=.050",6=.038"
7	TOOTH SPACING; 7=7/8", 5=5/8"
5	WIDTH; 4, 5, OR 6 QUARTERS OF AN INCH (except 1 1/8" blades)
74	SILVERTIP ONLY
158	LENGTH IN INCHES 158 for LT15/28/30/40, 184 for LT60/70 or 144 for LT10
10	SPECIAL CONDITION; 4=EXTREMELY KNOTTY OR FROZEN WOOD SERIES; 9=HARD OR FROZEN WOOD SERIES; 10=STANDARD SERIES; 13=SOFTWOOD SERIES
S	S = STANDARD LENGTH; C = CUSTOM LENGTH

FIG. 1-1

Three factors should be considered when determining which blade is best suited for your application:

1. Hook Angle

The hook angle (how far the tooth leans forward) should be chosen based on the type of wood you are cutting. Softwoods require higher hook angles (10-13°). Hard, frozen or knotty woods require lower hook angles (4-10°). The 10° hook angle is a good all-purpose profile recommended for most sawing applications.

2. Blade Thickness

Thicker blades provide faster feed rates and better cutting performance but require higher horsepower. Thicker blades also perform better in difficult sawing conditions such as knotty, frozen, dry or extremely hard material. Thinner blades provide longer flex life and are recommended for sawmills with lower horsepower or where production/speed is not a primary factor in your application.

3. Blade Width

As with blade thickness, blade width provides faster feed rates and increased cutting performance, but require higher horsepower. Wide blades can also be resharpened more often, resulting in more production during the life of the blade. Narrow blades perform better on low-horsepower sawmills and in some difficult sawing conditions.

See Table 1-1. See the chart below for blade recommendations for various equipment.

Width	Thickness	Tooth Spacing	Hook Angle	Serial Number	Sawmill Type [1]	Engine/Motor Power	Application
DoubleHard Series							
1 1/4”	.042”	7/8”	10°	B275xxx10	LT10 LT15 LT20 LT40	15-28 Gasoline 10-42 Diesel 10-15 Electric	Sawing medium hardwoods
1,37	.042”	7/8”	10°	B2735xxx10		15-28 Gasoline 40-42 Diesel 15-25 Electric	For sawing very knotty or frozen woods, larger logs and/or for wider cutting
1 1/4”	.045”	7/8”	9°	B375xxx9		15-28 Gasoline 10-42 Diesel 15-25 Electric	Sawing very knotty or frozen woods
1 1/4”	.045”	7/8”	10°	B375xxx10		15-28 Gasoline 10-42 Diesel 15-25 Electric	Sawing medium hardwoods/mixed woods
1 1/4”	.055”	7/8”	4°	B475xxx4	LT70 LT300	42 Diesel 25-30 Electric	For sawing very knotty or frozen woods, larger logs and/or for wider cutting
1 1/4”	.055”	7/8”	9°	B475xxx9		42 Diesel 25-30 Electric	Sawing very knotty or frozen woods
1 1/4”	.055”	7/8”	10°	B475xxx10		42 Diesel 25-30 Electric	Sawing medium hardwoods/mixed woods
1 1/2”	.045”	7/8”	4°	B376xxx4	LT40 LT70 LT300	28 Gasoline 33-42 Diesel 15-25 Electric	For sawing very knotty or frozen woods, larger logs and/or for wider cutting
1 1/2”	.045”	7/8”	9°	B376xxx9		28 Gasoline 33-42 Diesel 15-25 Electric	Sawing very knotty or frozen woods
1 1/2”	.045”	7/8”	10°	B376xxx10		28 Gasoline 33-42 Diesel 15-25 Electric	Sawing medium hardwoods/mixed woods
1 1/2”	.045”	7/8”	13°	B376xxx13		28 Gasoline 33-42 Diesel 15-25 Electric	Sawing softwoods
1 1/2”	.050”	7/8”	10°	B576xxx10	LT70 LT300	42 Diesel 25-30 Electric	Sawing medium hardwoods/mixed woods
1 1/2”	.050”	7/8”	13°	B576xxx13		42 Diesel 25-30 Electric	Sawing softwoods
1 1/2”	.055”	7/8”	10°	B476xxx10		42 Diesel 25-30 Electric	Sawing medium hardwoods/mixed woods
1 1/2”	.055”	7/8”	13°	B476xxx13		42 Diesel 25-30 Electric	Sawing softwoods

TABLE 1-1

[1] LT10, LT15, LT20 and LT40 sawmills are equipped with narrow blade guide rollers with a working width of 25 mm (Part No. **087887)**. LT70 and LT300 sawmills are equipped with wide rollers with a working width of 32 mm (Part No. **087888)**. The wide blade guide rollers are also available for LT40 sawmills (optional equipment).

Width	Thickness	Tooth Spacing	Hook Angle	Serial Number	Sawmill Type [1]	Engine/Motor Power	Application
SilverTip Series							
1 1/4”	.042”	7/8”	10°	B27574xxx10	LT10 LT15 LT20 LT40	15-28 Gasoline 10-42 Diesel 10-15 Electric	Sawing medium hardwoods
1,37”	.039”	7/8”	10°	B173574xxx 10		15-28 Gasoline 40-42 Diesel 15-25 Electric	Sawing medium hardwoods
1,37”	.042”	7/8”	10°	B273574xxx 10		15-28 Gasoline 10-42 Diesel 15-25 Electric	Sawing medium hardwoods
1 1/2”	.045”	7/8”	4°	B37674xxx4	LT40 LT70 LT300	28 Gasoline 33-42 Diesel 15-25 Electric	For sawing very knotty or frozen woods, larger logs and/or for wider cutting
1 1/2”	.045”	7/8”	10°	B37674xxx10		28 Gasoline 33-42 Diesel 15-25 Electric	Sawing medium hardwoods/mixed woods
1 1/2”	.045”	7/8”	7°	B37674xxx7		28 Gasoline 33-42 Diesel 15-25 Electric	Sawing softwoods

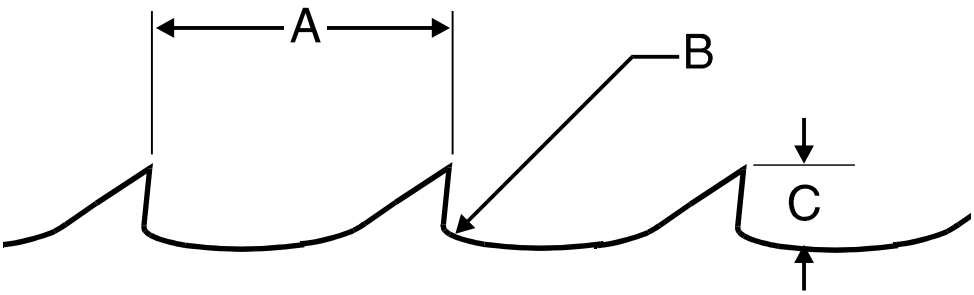
[1] LT10, LT15, LT20 and LT40 sawmills are equipped with narrow blade guide rollers with a working width of 25 mm (Part No. **087887)**. LT70 and LT300 sawmills are equipped with wide rollers with a working width of 32 mm (Part No. **087888)**. The wide blade guide rollers are also available for LT40 sawmills (optional equipment).

Width	Thickness	Tooth Spacing	Hook Angle	Serial Number	Sawmill Type [1]	Engine/Motor Power	Application
Seria RazorTip							
1 1/4”	.042”	7/8”	10°	BS275xxx10	LT10 LT15 LT20 LT40	15-28 Gasoline 10-42 Diesel 10-15 Electric	Sawing very knotty or frozen woods and exotic woods
1,1/4”	.042”	7/8”	7°	BS275xxx7		15-28 Gasoline 10-42 Diesel 10-15 Electric	Sawing very knotty or frozen woods and exotic woods
1 1/4”	.045”	7/8”	10°	BS375xxx10		15-28 Gasoline 10-42 Diesel 15-25 Electric	For sawing very knotty or frozen woods, larger logs and/or for wider cutting and for exotic woods
1 1/4”	.045”	7/8”	7°	BS375xxx7		15-28 Gasoline 10-42 Diesel 15-25 Electric	For sawing very knotty or frozen woods, larger logs and/or for wider cutting and for exotic woods
1 1/2”	.045”	7/8”	10°	BS376xxx10	LT40 LT70 LT300	28 Gasoline 33-42 Diesel 15-25 Electric	For sawing very knotty or frozen woods, larger logs and/or for wider cutting and for exotic woods
1 1/2”	.045”	7/8”	7°	BS376xxx7		28 Gasoline 33-42 Diesel 15-25 Electric	For sawing very knotty or frozen woods, larger logs and/or for wider cutting and for exotic woods

[1] LT10, LT15, LT20 and LT40 sawmills are equipped with narrow blade guide rollers with a working width of 25 mm, (Part No. **087887)**. LT70 and LT300 sawmills are equipped with wide rollers with a working width of 32 mm (Part No. **087888)**. The wide blade guide rollers are also available for LT40 sawmills (optional equipment).

SECTION 2 BLADE GEOMETRY

See Figure 2-1. This illustration is referenced throughout this section.



Wood-Mizer Blade

FIG. 2-1

A = Tooth Spacing
B = Radius
C = Tooth Height (Depth of Gullet)
D = Hook Angle
E = Tooth Set

2.1 Tooth Spacing

See Figure 2-1. Tooth spacing is the distance between each tooth from one tip to another. The tooth spacing of Wood-Mizer® blades is 7/8" (22.0 mm) [1]. Tooth spacing will always remain the same. It is not changed by the sharpening process.

The term "pitch" also is used to in reference to tooth spacing. Pitch refers to the number of teeth per inch on a bandsaw blade. The pitch of Wood-Mizer® blades is 1.14. [1]

[1] 1 1/8” blades have 5/8” tooth spacing (1.60 pitch) beneficial when resawing narrow-width material (up to 6” wide).

2.2 Radius

See Figure *2-1*. The radius captures and removes sawdust while providing strength in the tooth design. A radius set too low on the tooth, or too sharp a radius, will result in increased stress at the base of the tooth and cause possible breakage.

A radius set too high on the tooth causes the tooth to fill up with sawdust too quickly resulting in reduced cutting speeds and wasted overall blade life.

2.3 Tooth Height (Depth Of Gullet)

See Figure 2-1. Tooth height is the distance from the lowest point of the gullet to the tip of the tooth. The gullet is the area between teeth that carries sawdust out of the cut. Tooth height must be tall enough to allow the gullet to carry out all of the sawdust from the cut.

As the blade spins and bends, hairline fractures occur in the bottom of the gullet. Using a blade too long after it has dulled accelerates the forming of fractures. These fractures are too small to see with the naked eye. To prevent premature blade breakage, enough material must be ground from the gullet of the blade to remove any of the fractured material.

Wood-Mizer® blades are supplied with various tooth heights. Blades designed for cutting softwoods have taller teeth. Blades for sawing extremely hard wood or frozen logs have shorter teeth.

With the optional blade sharpener, you can fine tune the tooth height for your specific cutting application. *See Table 2-1* for recommended tooth heights for various blades and types of wood.

As a general rule, tooth height is increased to saw softwoods and decreased for hardwoods.

2.4 Hook Angle

Hook angle, tooth set, sharpness of tooth, and proper tooth height are the most important factors in the cutting ability of a blade. All four have an important effect on cutting quality and production.

See Figure 2-2. The hook angle is the number of degrees that the tooth face leans forward of 90 degrees. The hook angle allows the teeth to "hook" themselves into the wood. The teeth must take out enough wood so that the blade feeds itself into the log. If the hook angle is too large compared to the feed rate, it causes chatter, a rough cut and poor cut quality. If the hook angle is too small, the blade must be forced into the log so that the saw will cut.

Too large or too small a hook angle will cause additional stress to the blade and will result in premature blade breakage.

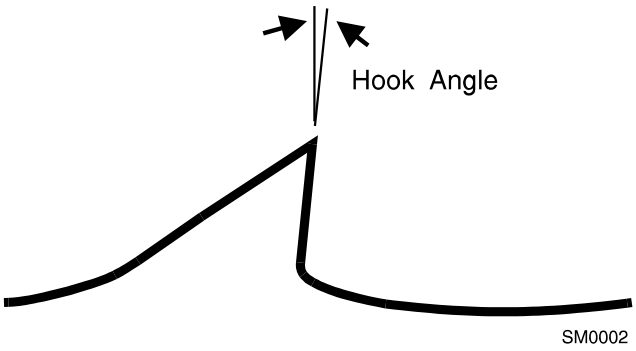


FIG. 2-2

Wood-Mizer® blades are supplied with various hook angles for sawing different types of wood. Blades with 10° hook angle are for cutting softwoods to medium hardwoods. Blades with a 4 or 9° hook angle are also available for sawing very hard or frozen woods. Blades with 13° hook angle are designed for extremely soft softwoods. A blade for resawing narrow width material with 12° hook angle is also available. With the optional blade sharpener, you can fine-tune the blade hook angle. The recommended hook angle for most cutting applications is 10-12.5 degrees. *See Table 2-1* for recommended hook angles for various blades and types of wood. Less hook angle may be used on extremely hard or frozen woods. More hook angle may be used on extremely soft woods.

As a general rule, hook angle is increased to saw softwoods and decreased for hardwoods.

2.5 Face Angle

The face angle is the angle of the tooth face in relation to the body of the blade. The face angle is ground to 90 degrees when the Sharpener is correctly aligned. The setting process bends the teeth a few degrees past 90 degrees.

2.6 Tooth Set

Tooth set is an important factor in the cutting ability of a blade.

See Figure 2-3. The tooth set is the distance that a tooth is bent compared to the body of the blade. The set allows the back of the band to pass through the groove (kerf) which the blade has cut.

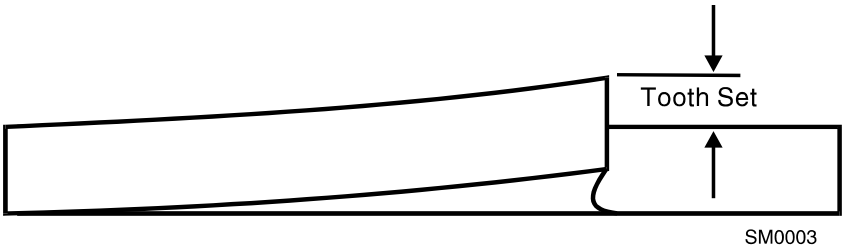


FIG. 2-3

Wood-Mizer® blades are supplied with various amounts of set depending on the thickness of the blade and the type of wood it is designed to cut.

The more a tooth is set, the wider the cutting path of the blade and more horsepower required for maximum cutting rates.

With the optional toothsetter, you can reset the teeth of a blade. You can also specify a custom tooth set for blades you have reworked using the Wood-Mizer ReSharp service. *See Table 2-1* for recommended tooth set for various blades and types of wood.

As a general rule, tooth set is increased to saw softwoods and decreased for hardwoods.

Remember that as you sharpen teeth and decrease tooth height, the set also will decrease and the blade will need resetting.

The location the setting point contacts and bends the tooth is critical to the performance of the blade. Setting too high on the tooth can chip the tooth. Setting too low on the tooth can deform the blade body. Both situations will decrease the performance of the blade.

2.7 Recommended Blade Specifications

See Table 2-1. Recommended blade specifications are provided based on blade thickness and type of wood to be cut. **NOTE:** 1” and 1 1/8” width blades are intended to be disposable; resetting the teeth is not recommended.

		EXTREMELY SOFT WOODS	AVERAGE WOODS	EXTREMELY HARD OR FROZEN WOODS
BLADE PROFILE		**13/29**	**10/30**	**9/29 - 4/32**
HOOK ANGLE [1]		12.5° - 15°	10° - 12.5°	4° - 10°
TOOTH HEIGHT[1]		1/4" (6.4 mm)	3/16"-1/4” (4.8-6.4 mm)	3/16" (4.8 mm)
SET DIMENSION[1]	**.035" (0,9 mm) BLADES**	Not recommended	0.016" - 0.018"	Not recommended
	.042" (1,07 mm) BLADES	0.021" - 0.023"	0.019" - 0.021"	0.016" - 0.018"
	.045" (1,14 mm) BLADES	0.025" - 0.027"	0.023" - 0.025"	0.018" - 0.022"
	.050” (1,27 mm) BLADES	0.027” - 0.029”	0.024” - 0.026”	0.019” - 0.023”
	.055" (1,40 mm) BLADES	0.028" - 0.030"	0.025" - 0.027"	0.020" - 0.024"
Wood-Mizer® RE•SHARP™ service will use factory specifications unless other specifications are requested.				

TABLE 2-1

[1] Hook angle, tooth height and tooth set of new blades is set at the factory. Owners with blade sharpening/setting equipment can alter these specifications.

SECTION 3 BLADE MAINTENANCE

Customers have two options regarding maintenance of their blades: Use the Wood-Mizer® Re-Sharp service or purchase the optional blade sharpener and toothsetter to maintain your own blades.

Using Wood-Mizer's Re-Sharp service is recommended. Using the Re-Sharp service is less expensive for most customers than sharpening and setting the blades themselves. Inspections by qualified Re-Sharp technicians ensure that proper blade geometry is maintained.

3.1 General Blade Maintenance Information

As you use a blade, the teeth of the blade slice away pieces of wood that they contact and carry these pieces in the form of sawdust out the other side of the log.

See Figure 3-1. As the teeth contact the wood (or anything else in their path, such as dirt) the friction begins to wear the teeth down. Specifically, it is the outside corners of the set teeth that wear first.

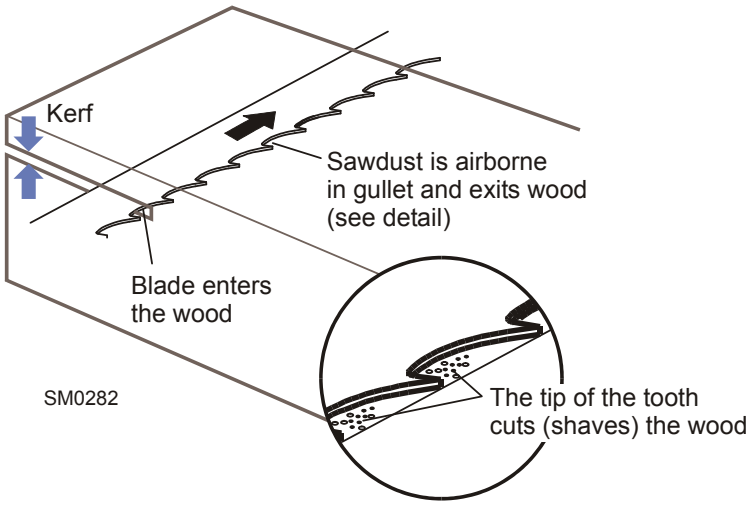


FIG. 3-1

When these corners become round and shiny, it results in a "dull" blade. Dirt, rocks, sand and other foreign materials that may be in the log will wear the teeth considerably faster than the wood you are cutting. Such materials should be removed from the path of the blade (especially the side the blade enters) before you start cutting.

When the tips start to become round and shiny, the blade can not cut as fast as when the tips were sharp and still maintain a straight cut. The wood will not chip away as quickly and the blade will be forced to move up or down, resulting in a wavy cut.

Cutting with a dull blade will also do the following:

- Reduce blade life because cutting speeds are slow.

  Slow cutting speeds use more flex life. **Flex life is the total number of times a blade will bend around the blade wheels before breaking.** A smaller, or thinner, piece of steel will flex, or bend, more than a thick piece of steel. The thin ribbon of steel that Wood-Mizer® uses to

produce their blade is well suited for the task of both supporting the teeth and bending around the wheels.

- Cause lower production output due to slower feed rates.
- Make the blade harder to sharpen, requiring more passes on the sharpener to regain a sharp tip.
- Cause more wear on the grinding wheel.
- Force the blade against the blade guide flange, causing cracks in the back edge and gullet of the blade to form quicker.

To regain a sharp tip on the teeth, you must grind the face and back of the tooth until the tip is square again.

NOTE: Before you resharpen the blade, check it for cracks. Most cracks occur across the band of the blade at the lowest point of the gullet. If you find any cracks, do not resharpen the blade. Install a new blade. To reduce the risk of premature blade fatigue from hairline cracks, it is important to thoroughly cleat the gullet of cracks during resharpening. It may be necessary to lightly grind the blade twice (using a light face, back and gullet grind each time) to thoroughly clear the gullet cracks.

Also, the amount of material you have to grind from the teeth will depend on how rounded the teeth are. If a heavy amount must be removed to regain a sharp tip, it is best to grind the blade lightly twice, rather than grind heavily once.

Tooth height is controlled by how much material you grind from the gullet. For recommended tooth heights for varying cutting applications, See *TABLE 2-1*.

When grinding material from the back of the tooth, the amount of material bent out from the blade becomes smaller. On average, 2 to 3 thousandths set is lost from each side of the blade when it is sharpened. The teeth must be bent back out when the set falls below recommended specifications.

Sharpening leaves tiny metal burrs on the back side of the teeth. New blades also have burrs. These burrs MUST be removed before the set is checked. If they are not removed, they may cause false readings. To remove the burrs: cut with the blade, or invert the blade so that the inside faces out and drag a stick of hardwood across the blade in the opposite direction that the teeth cut. (Use the weld in the blade as a reference point for starting and stopping.) Re-invert the blade before measuring set or cutting.

3.2 Blade Life Expectancy

CAUTION! Due to mechanical properties of a sharpened blade, the optimum time of its work is two hours. (If dirty logs are sawn, this time is shorter.) After two hours of work, the blade should be resharpened. This will allow the user to achieve maximum blade life.

We have identified several areas that greatly affect overall blade performance. Each item listed below contributes to the service life of a blade. These items are not listed in any order of importance. Careful attention to each of these areas will help each Wood-Mizer® blade achieve maximum performance and life.

- Sawyer Capability
  The sawyer has control of many of the cutting conditions that affect the blade. He must carefully monitor wood cleanliness, blade tension, feed rate, blade guide position, etc. to cut as fast as possible while still maintaining a straight cut.

- Log Diameter
  Smaller logs have value and can be cut at a faster rate of speed, but will use more flex life to produce the same volume of wood as a larger log. Logs ranging from 18" to 36" in diameter will increase the total board feet a blade can produce.

- Wood Species
  All trees vary in density. Softwoods have inconsistent densities (growth rings, knots) and require careful monitoring of feed speeds. Hardwoods usually have a more consistent density (except in very low grade logs) and will allow faster and steadier cutting speeds. Some examples of wood densities include:

  Extremely Soft (Balsam, Aspen, Cotton Wood)
  Medium to Hard (Red Oak, Yellow Poplar, Most Pines)
  Extremely Hard (White Oak, Osage Orange, White Ash, Hickory, Sugar Maple)

- Moisture Content
  Wood density changes as the log dries, requiring different cutting speeds. In some species, an extremely soft wood that has dried will cut like an extremely hard wood. Dry wood is more abrasive, too, causing the blade to dull more quickly.

- Wood Cleanliness
  Dirt, rocks, sand and other foreign materials that may be in the log will wear the teeth considerably faster than the wood you are cutting. Dull blades require slower cutting speeds and lead to earlier blade breakage.

- Blade Tension
  Proper tension is critical for maximum blade performance and cutting speeds.

- Blade Wheel Belts
  The blade wheel belts must be in good condition. Worn belts (less than 1/32” of an inch clearance), can allow the blade to contact the metal blade wheel, resulting in early blade breakage.

  The belts also must be of uniform thickness. Non-uniform belt thickness cause additional stress

to a blade resulting in mill vibration and reduced blade life. To promote uniform thickness, keep the belts free from sawdust buildup. Use only Goodyear, Dayco Super II, or Browning belts.

- Feed Rate
  Feed rates should be as fast as possible while still maintaining a straight cut. Cutting at slower speeds reduces overall blade life.

- Blade Guide Position
  The blade guides must be positively aligned to provide blade stability and allow maximum cutting speeds. If the blade guides are tipped upward or downward, they will cause the blade to cut in the same direction. The blade guide flange or back guide should be adjusted so the blade does not continually run against it.

- Lubrication
  Using the LubeMizer lubrication system will reduce friction and heating of the blade, increasing its overall life.

- Maintenance
  Improper blade maintenance will affect blade life. A blade gullet that is not smooth allows stess fractures to occur and cause blades to break prematurely. Sawing with blades that are not maintained for best possible cutting performance causes slow feed rates which waste overall blade life.

See Table 3-1. The average blade life between sharpenings and life before a blade breaks is shown below. Estimates are based on cutting clean logs on a properly aligned sawmill. Remember that overall blade life is measured in the total number of board feet that a single blade can produce. The averages listed are based on reports from our customers with portable sawmills equipped with 19” diameter blade wheels. They are based on actual production, not on a scaled total. Overall blade life is subject to proper blade maintenance.

Blade	Average Life per Sharpening	Expected Average Overall Life
.035" x 7/8" x 1 1/4"	300-500 board feet	3000 board feet
.042" x 7/8" x 1 1/4"	500-700 board feet	2000-2500 board feet
.045" x 7/8" x 1 1/4"* .045" x 7/8" x 1 1/2" .050” x 7/8” x 1 1/2”	800-1000 board feet	2500 board feet
.055" x 7/8" x 1 1/4"* .055" x 7/8" x 1 1/2"	1000-1200 board feet	3000 board feet
* Includes blades with 4°, 9°, 10° and 13° hook angle		

TABLE 3-1

3.3 Automatic Blade Sharpener Option

See Figure 3-2. Wood-Mizer's Automatic Blade Sharpener (LTAGA) quickly and precisely sharpens the teeth of bandsaw blades.

Adjustments can be made to control the material ground from the face, gullet, and back of each tooth. The automatic index allows the operator to load a blade, make the desired adjustments, and turn the sharpener on. The sharpener will move the blade around to grind each tooth automatically.

Use of the Clamp Alignment tool is important to keep the clamp correctly positioned to grind the face at 90°.

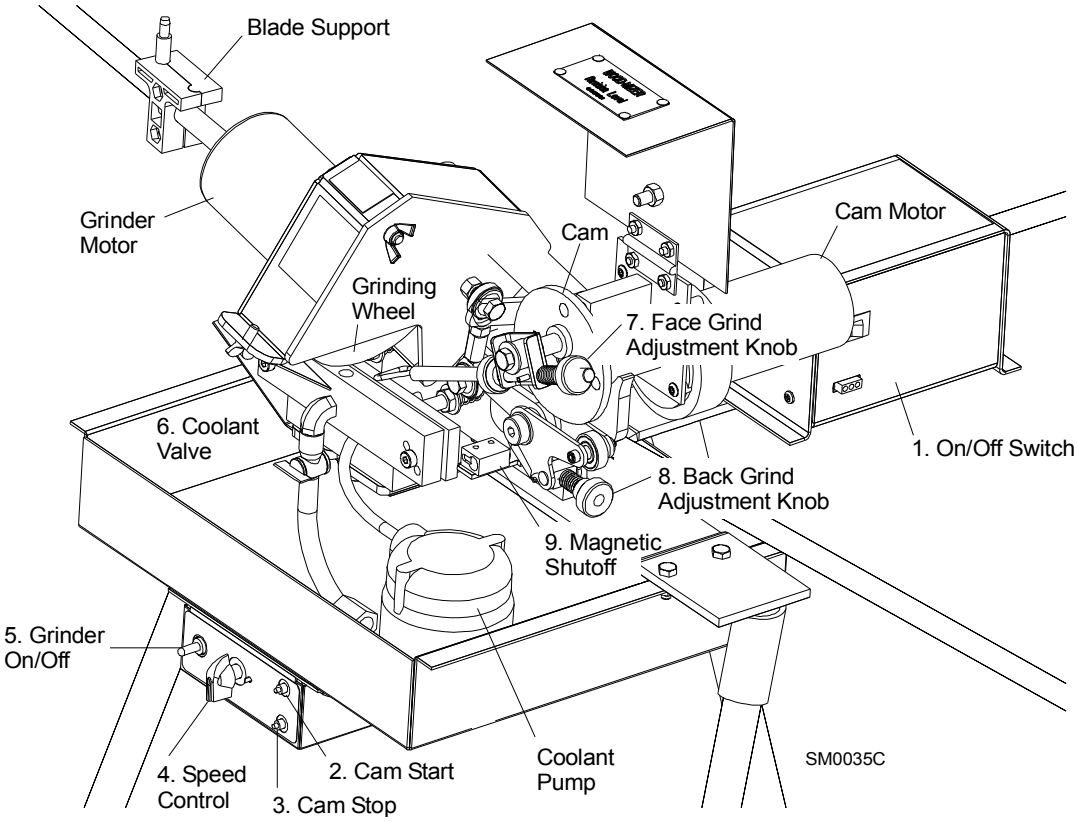


FIG. 3-2

The Automatic Blade Sharpener comes complete with stand, coolant pump and tray, mounting hardware, control box, and magnetic shutoff system. Two indexing cams are also supplied for 10/30 and 9/29 blade profiles. Other cams are available to enable the sharpener to maintain other blade profiles.

3.4 Toothsetter/Gauge Option

See Figure 3-3. The Toothsetter/Gauge Option (LTTSG-C) accurately sets the teeth of the blade. Each tooth is measured with a dial indicator and can be reset with the push of a lever. The manual indexing system allows the operator to set all the teeth on a blade in minutes.

The Toothsetter/Gauge will set the teeth within .001" tolerance to provide faster cutting speeds and smoother board surfaces.

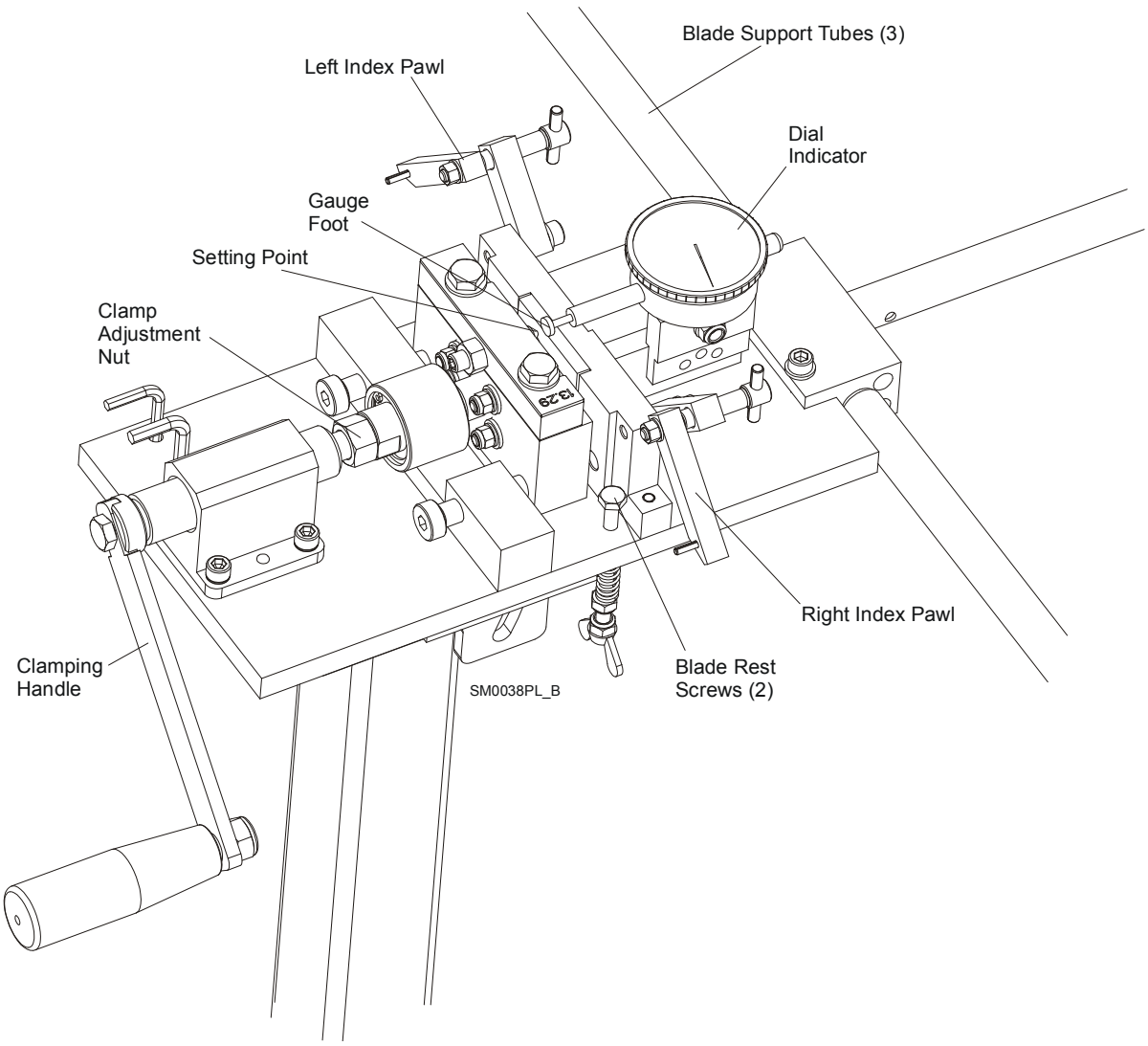


FIG. 3-3

SECTION 4 BLADE HANDLING

This section covers coiling the blade, uncoiling the blade and inverting the blade.

WARNING! Always wear gloves and eye protection when handling bandsaw blades. Keep people away from work area when coiling or moving blades.

4.1 Coiling The Blade

See Figure 4-1. Raise the blade in front of you, with the teeth pointed upward. (About 1/3 to 1/4 of the blade should be between your hands.) Hold your hands about shoulder-width apart. Place your thumbs on the outside of the blade and your fingers on the inside of the blade. Squeeze the blade inward, making it oval-shaped.

FIG. 4-1

See Figure 4-2. Keeping your wrists locked in position, turn your forearms upward and inward. (The teeth will rotate inward and the bottom of the blade will rotate outward.)

FIG. 4-2

See Figure 4-3. Bring your hands together. The blade will form three loops. Snap the bottom loop upward and catch the three-loop coil in your hands.

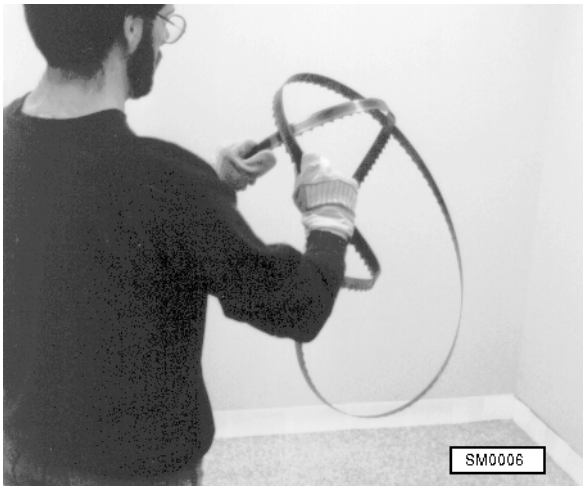


FIG. 4-3

4.2 Uncoiling The Blade

See Figure 4-4. Take the three-loop coil in your right hand. Place the band against your palm with the blade teeth pointing outward toward your fingers. Slide the top loop off and let drop.

FIG. 4-4

See Figure 4-5. The remaining two loops of the blade will form a cross. Hold this crossed section out in front of you with the blade teeth pointing toward you. If the right side is crossed OVER the left, hold the crossed section with your right hand. (If the left side of the blade is crossed OVER the right, hold the crossed section with your left hand.)

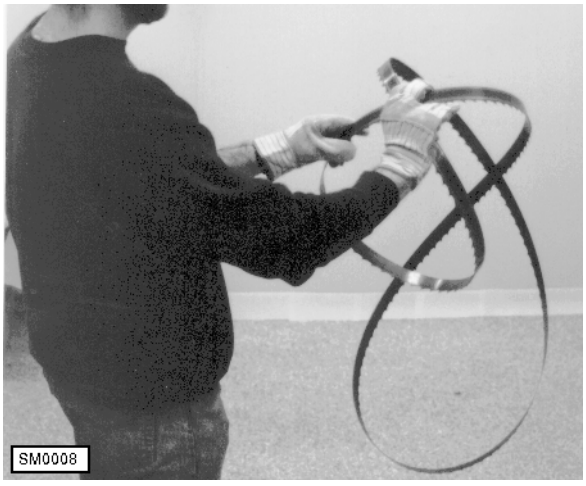


FIG. 4-5

See Figure 4-6. Keeping the blade in its crossed position, take hold of the side crossed UNDER with your other hand. Use your right (or left) hand to hold only the side crossed OVER. Place your thumbs on the top side of the blade. Put your fingers on the underneath side of the blade.

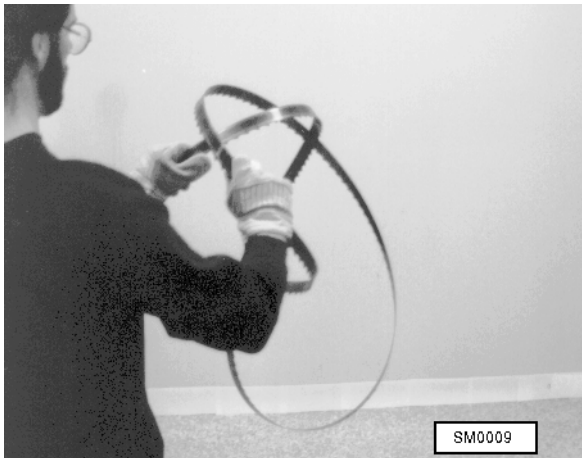


FIG. 4-6

See Figure 4-7. Hold the blade out and away from you. Slowly move your hands apart while rotating your forearms down and outward.

FIG. 4-7

4.3 Inverting The Blade

See Figure 4-8. Hold the blade in front of you. Let one side rest on the ground, teeth pointing toward you. Place you thumbs on the outside of the blade. Put your fingers on the inside of the blade.

FIG. 4-8

See Figure 4-9. Hold the blade with your hands a little farther than shoulder-width apart. Then bring your hands toward each other while rotating your thumbs downward. This causes the middle of the blade to curve downward.

FIG. 4-9

See Figure 4-10. Keeping your hands close together, rotate the curved section of the blade up and away from you. The blade will be in an oval shape, but twisted.

FIG. 4-10

See Figure 4-11. Slowly move your hands apart, allowing the blade to untwist.

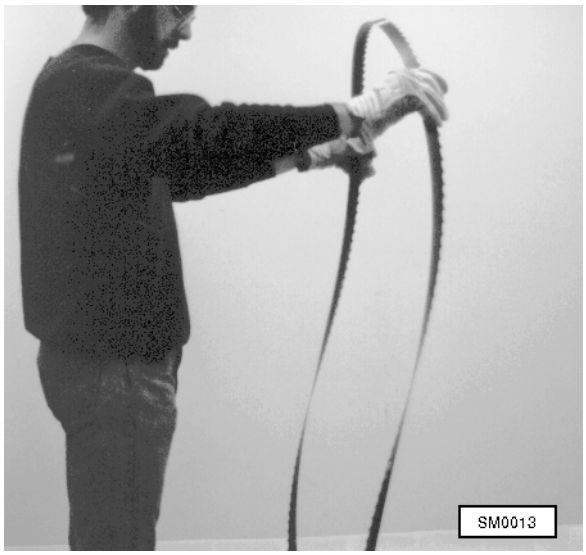


FIG. 4-11

4.4 Storing Blades

Use care when moving, storing, or handling blades. When blades are stacked or thrown together, the tips can be dulled or the set changed.

Stack two blades back-to-back using dividers between each set of blades to prevent the teeth from contacting each other.

If storing blades for long periods of time, be sure the blades are dry then coat with lubricant.

SECTION 5 TROUBLESHOOTING

Our Resharp blade technicians have spent years evaluating blades sent to us by our customers. The advice provided in these sections can help you avoid common mistakes and maximize sawing performance and blade life.

5.1 Blade Breakage

Following is a list of some of the most common preventable causes of premature blade breakage:

Action	Result	Solution
Sawing too long with a dull or damaged blade	Stress in the band	Change the blade at regular intervals.
		Change the blade immediately after striking a foreign object or material.
Flat spots worn on blade guide roller surface	Vibration and heat in blade	Replace blade guide rollers as necessary.
Grooves in blade guide roller flange	Damage to back edge of blade	Replace blade guide rollers as necessary. Adjust for proper clearance between flange and blade.
Frozen or worn blade guide roller bearings	Heat buidup	Lubricate or rebuild roller bearings as necessary.
Chipped/broken blade guide wear pads	Damage to blade surface	Hone or replace wear pads as necessary.
Misaligned blade guides	Damage to blade surface	Check blade guide alignment at regular intervals and adjust as necessary.
Blade guide wear pads adjusted too close to blade	Heat on blade surface	Adjust wear pads for proper clearance.
Worn blade wheel belts	Heat caused by blade contacting blade wheel	Replace blade wheel belts.
Loose or damaged drive belts	Vibration	Adjust or replace drive belts
Sawdust between blade wheel and blade wheel belts	Vibration, blade slippage	Inspect blade wheels for sawdust at regular intervals and remove as necessary.
Improper blade tension	Stress in band	Regularly check blade tension while sawing and adjust to recommended range as necessary.
Dropping a tensioned blade down on a log or cant	Kinks	Replace the blade.
Excessive sap buildup on blade or blade wheel belts	Heat buildup	Use waterlube to prevent buildup. Remove blade and clean if necessary. Scrape buildup from belts.
Ramming blade into end of log or other stationary objects	Kinks in blade	Replace the blade.
Excessive pitch buildup on sides of the teeth	Heat, wavy cuts	Clean or replace blade.

Burning gullet of blade during sharpening	Breakage point	Use coolant during grinding. Use multiple passes through sharpener, removing smaller amounts of material each pass.
Large burrs created during sharpening	Breakage point	Use coolant during grinding. Use multiple passes through sharpener, removing smaller amounts of material each pass.
Too much or too little hook angle in tooth	Vibration and/or stress in the blade and slow cutting speed	Adjust sharpener to provide proper hook angle for material to be sawn.
Incomplete sharpening of tooth profile	Dull blade, breakage point	Sharpen complete profile.
Missing the outside corners (cutting tip) of set teeth	Dull blade	Sharpen complete profile.
Removing too little material from gullet	Fails to remove stress fractures	Adjust sharpener to take more material from gullet of blade.
Worn grinding wheel	Steel buildup in wheel reduces its grinding ability	Replace grinding wheel.
Incorrect grinding wheel shape	Sharp radius at base of tooth is condusive to stress fractures	Redress grinding wheel with proper profile.
Too much or too little set in blade	Vibration and/or stress in the blade and slow cutting speed	Adjust toothsetter to provide proper set for material to be sawn.
Toothsetter setting point strikes tooth too low	Distorts blade body, creating a place for fractures to occur	Adjust toothsetter so setting point contacts tooth properly.
Stored blades allowed to rust		Wipe blades dry before storing.
Storing blades without removing sawdust/sap residue	Oxides and acids can cause mircroscopic damage to the blade surface	Clean blade before storing.

5.2 Blade Performance

Using the appropriate blade for the species and condition of the wood your sawing is crucial to any sawing operation. Using blades with the wrong profile can cause the blade to chatter, too much sawdust, slow feed rates, premature blade breakage and premature dullness. If the appropriate blade is used, sawing performance problems can usually be attributed to the common causes listed below:

Problem	Cause	Solution
Wavy cuts	Sawing too fast	Use slower feed rate.
	Sawing too slow (increases sawdust that isn't cleared from the cut fast enough)	Use faster feed rate.
	Undertensioned blade	Check and adjust blade tension.
	Sawdust or pitch buildup on blade or blade wheels	Clean or replace blade and/or blade wheel belts.
	Blade not properly tracked on blade wheels	Check and adjjust blade tracking.
	Blade guide misalignment	Check and adjust blade guides.
	Incorrect drive belt tension	Check and adjust drive belts.
	Worn/damaged blade wheel belts	Replace blade wheel belts.
	Worn blade wheel crown (beltless steel blade wheels only)	Replace blade wheels.
	Loose or worn blade wheel bearings	Replace blade wheel bearings.
	Improperly adjusted mast pads	Adjust mast pads properly.
	Blade not parallel to sawmill bed	Align sawhead and bed rails.
	Loose blade guide arm	Adjust blade guide arm rollers.

5.3 Special Problem Wood Types or Conditions

Cutting extremely hard wood

- Use the 375 Series (.045 x 1-1/4") blade
- Keep set to a minimum - .017" to .019"
- Use hook angles between 4° and 10°
- After using the blade, measure the set on the tooth setter. If inconsistent, the teeth are flexing (bending) while cutting.
- Sometimes will require large quantities of lube to keep the blade free of sap buildup. This sap buildup will cause a blade to cut inaccurately and break prematurely.

Cutting hardwoods high in *silica*

- Use bi-metal blades or 4° hook angle blades with lubrication.

Cutting extremely pitchy woods

Will sometimes require a chemical agent to be brushed or sprayed on the blade periodically. (Dishwashing detergent and Pine Sol are popular.)

WARNING! Use ONLY water, Wood-Mizer Lube Additive or windshield washer fluid with the water lube accessory. Never use flammable fuels or liquids such as diesel fuel. If these types of liquids are necessary to clean the blade, remove it and clean with a rag. Failure to do so can damage the equipment and may result in serious injury or death.

Cutting extremely dry wood

- Use no water. If water is necessary, use as little as possible because water will cause the wood to swell. You can also try using water between cuts to clean the blade and shutoff the water while making the cut.

Cutting varied density softwood

- Add more hook angle to the blade
- Sharpen so the teeth are a minimum 1/4" tall.
- Use .050" or .055" thick blades.

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