PROFESSIONAL GRADE SAW BLADES

SIMONDS®

Bandsawing Facts

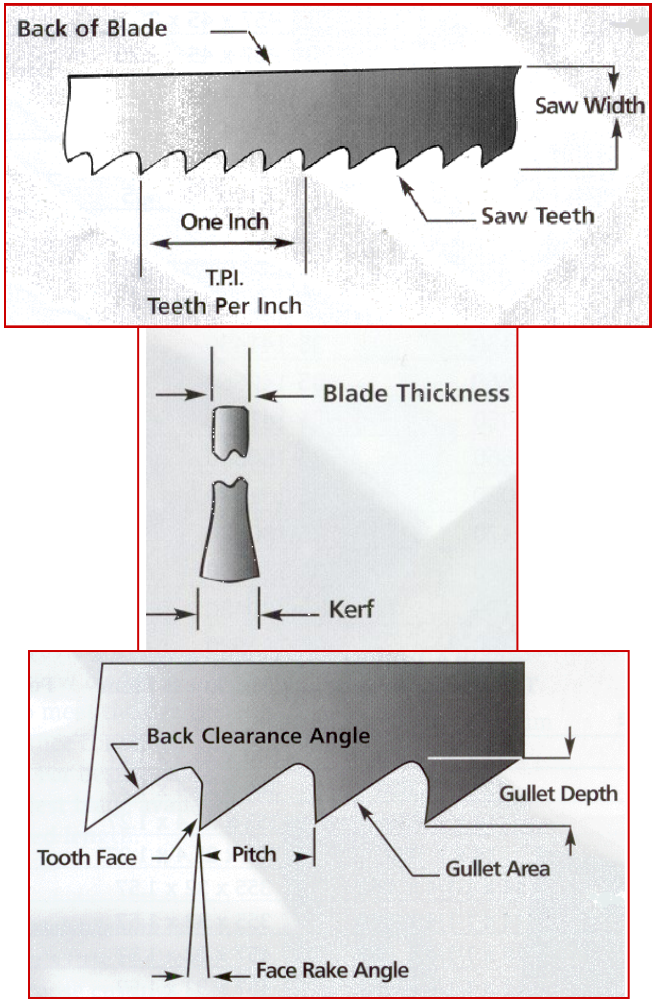
The Professionals' Edge™

CARBIDE

BI-METAL

CARBON

Basic Blade Terminology



What do we mean by "The Professionals' Edge™"?

It all comes down to confidence in quality products. With Simonds products you have the peace of mind of knowing that the designs and innovations present in every Simonds blade and cutting tool have stood the test of time in the harshest environments under the scrutiny of some very tough customers. And that quality comes at a fair price. We offer tremendous value for products made to exacting standards from the longest-lasting alloys and other state-of-the-art materials, resulting from time-tested research and design.

"The Professionals' Edge" also means you have access to Simonds' superior product support. We offer comprehensive customer service backed up by our highly skilled and trained field technicians. We offer training, partnerships to increase business productivity, and money-back guarantees. You can also look to us for other product lines including files, power tool accessories, and other industrial products. "The Professionals' Edge" simply delivers our promise—the best blades and the best people to back them up.

Selecting the Correct Type of Blade

What is the best blade to use? Band quality varies widely depending upon the blade type - carbon, bi-metal, or carbide tipped. They differ in their ability to resist the heat generated while cutting and in their ability to resist the “shock” of entering and exiting the cut (a prime consideration when cutting structurals, pipe and tubing).

Carbide Tipped bandsaw blades - excel cutting the super alloys and in applications where high production rates and/or good surface finish is a requirement. Simonds offers four families of carbide tipped bandsaw blades in addition to carbide grit edge blades.

Bi-Metal bandsaw blades - are the “everyday workhorse”, handling everything from simple metal cutting to production cutting of the super alloys. Simonds offers seven families of bi-metal bandsaw blades.

Carbon bandsaw blades - are good for maintenance shops, general purpose low volume cutting, or for cutting wood, plastics, and other non-ferrous materials. Simonds offers six families of carbon bandsaw blades.

Selecting the Correct Blade Width

For horizontal bandsaw machines, the correct band width is normally recommended by the machine manufacturer.

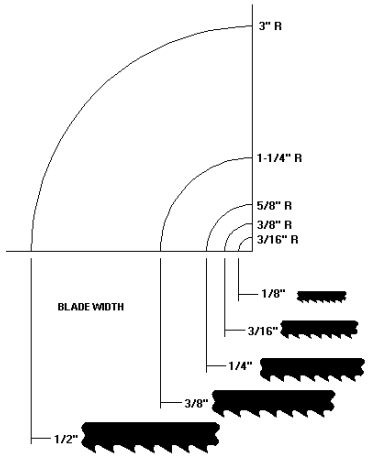
Vertical machines often can accommodate different band widths, to accomplish different objectives.

Straight and accurate cutting is very often the first requirement. To achieve this aim, use the widest band your machine will accommodate (this information is usually provided by the machine manufacturer).

Profile and Radius Cutting

Profile cutting is a fast, accurate and efficient method of producing intricate internal or external contours in almost any machineable material. It is usually carried out on a vertical bandsaw machine. With correct band width selection (see chart), a radius as small as 1/8” can be cut.

If internal contours are to be produced, it is first necessary to drill a pilot hole within the contour’s area to admit the bandsaw blade. Cut the band at a convenient place, thread it through the pilot hole and then re-weld the band. Be sure you have the ability to re-weld the blade before trying this type of cutting!



Selecting the Correct Tooth Pitch

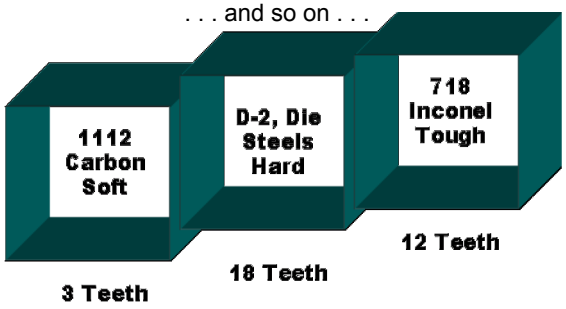
Do you cut mostly one dimension on a regular basis? Or a wide variety of dimensions? Choose your most common dimension is, then select the proper tooth pitch, or TPI (teeth per inch) for your bandsaw blade. Remember - “one blade fits all” is not always the case - sometimes it is optimal to use more than one blade to cut a wide range of materials and/or dimensions.

The general rule of thumb is to aim for a minimum of 3 teeth and a maximum of 24 teeth in the workpiece, with 6 to 12 teeth in the workpiece optimum for most applications. Some things to note:

- Too few teeth may straddle the work and break teeth.
- Too many teeth can cause gullet overload and strip teeth.
- Softer materials require fewer teeth and more gullet capacity to clear the larger chips they generate.
- Hard materials require more teeth to share in the work.

For Variable Pitch blades, use the average of the coarse and fine pitches to determine the “average” TPI, as follows:

3-4TPI averages 3.5 teeth per inch
4-6TPI averages 5 teeth per inch
5-8TPI averages 6.5 teeth per inch
6-10TPI averages 8 teeth per inch
. . . and so on . . .



Selecting the Proper Machine Feed and Speed

As with most machining operations, speed and feed, or pressure are closely interrelated. It is possible to select the optimum cutting speed and pressure for each different job.

In general terms:

- For softer materials - fast speed, light feed - 300SFPM (surface feet per minute) is a good rule of thumb.
- For harder materials - slower speed, heavier feed - 100SFPM is a good rule of thumb.

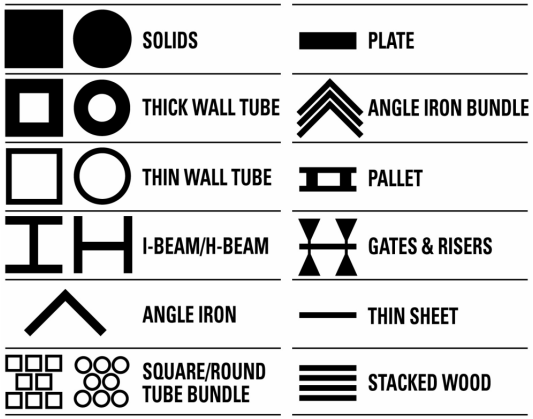
Avoid too high a cutting speed. If the speed is excessive, the teeth cannot bite into the material; they rub the surface, cause friction and dull the band. Bands run too slowly are uneconomical. The recommended speeds shown in the Speed & Feed Charts at the back of this booklet will generally give the best results.

The chips generated by the blade can give a good indication if the proper feed has been achieved:

- A free cut curly chip indicates ideal feed pressure with optimum cutting time and longest blade life.
- Discolored chips indicate too heavy a feed pressure, causing teeth to chip or break and the band to wear out rapidly, due to overheating. Overfeeding will cause the machine to chatter and vibrate, making a noisy cut.
- Fine powdery chips indicate that the feed is too light, resulting in the teeth rubbing the surface of the work instead of cutting.

What Shape is the Material?

Work piece shape can affect cutting performance - structural materials and small solids tend to be harder on a bandsaw blade. Work piece positioning on the saw is another variable - try to position the material so there is as little cross-section dimensional variance as possible across the blade's path.



The Use of Cutting Fluids

Cutting fluids or coolants are recommended for most materials - they help reduce the frictional heat generated at the cutting edge of the blade and they help wash chips from the blade. Don't use cutting fluids on materials that produce a powder, such as gray iron

Coolants can either be cutting oils, with a petroleum base, soluble oils, which are a suspension of natural oil droplets in water, and semi-synthetic or synthetic oils, which depend more heavily on chemicals for cooling and lubricating.

The following practices must be maintained to maximize performance:

- The specified concentration must be maintained - typically it is a higher concentration for band sawing than for drilling or turning operations.
- Proper application is essential - a flood of cutting fluid from several directions is desirable.
- Good housekeeping is important. Chip filters and sump oil separators should be cleaned and cutting fluid changed regularly.

Cutting fluids/lubricants can be applied to the cut by either a flood-type system or a spray-type system. We recommend flood-type systems for longest blade life.

Breaking In the Blade

Proper break-in of a bandsaw blade can extend blade life by up to 30%. Brand new, sharp teeth are more fragile than lightly honed teeth and, much like a freshly sharpened pencil, break-in helps condition the teeth for longer life.

To break in a new bandsaw blade:

- Set the band speed to the normal recommended SFPM for the material to be cut.
- Set the feed at 50% of the normal cutting rate (25% if you are using Simonds SineWave blades).
- Gradually increase the feed rate to normal over the total break-in period.

Caution: during break-in, it is very important that the band always produces chips, to avoid “rubbing’ the tooth tips dull. Increase the feed if needed to produce chips.

Machine Basics

Blade Speed

Various types of speed controls are available on bandsaw machines, including fixed, variable pulley, infinitely variable and electronic drive. The speed of the band is something that can and should be optimized for the material being cut in order to maximize cutting performance and blade life.

Hint: machine speed gauges are not always accurate! It's best to set/check blade speeds regularly.

To check speeds up to 600 SFPM, use the weld or mark the band and count the number of times it comes around in one minute, then multiply by the length of the band in feet and inches.

Example: a 12' 6" blade, the weld came around 14 times.
12.5 x 14 = 175 SFPM

Feed Rate

There are various types of feed controls on bandsaw machines, including cylinder bleed off, hydraulic feed, constant feed, and air over hydraulic. Feed should not be erratic; it should be smooth and steady. It should be set for the application.

Hint: use targeted cut-off times to set feed rates.

Material Clamping Vices

Make sure they clamp material tightly. If the work piece moves, the blade may strip teeth. Make sure vice is square to the blade, to ensure a square cut.

Machine Basics

Guide Types

There are various types of guides on bandsaw machines, including roller guides, fixed guides, and pressure guides. It is important that guides are set properly. Replace worn or damaged guides, as these can greatly reduce blade life and performance.

Wheels

Proper wheel alignment is critical to blade performance. Worn bearings can cause gullet cracks. Wheels that are out of alignment or with worn bearings should be serviced. Make sure the wheel flange does not rub the blade back, as this can cause back cracks to occur.

Blade Tracking Procedure

When installing a new blade, track it properly on the wheels to ensure it does not rub against the wheel flange.

To track a blade, first remove the back-up guides. Then remove or loosen side guides. Bring the blade to it's proper tension. Turn the machine on and watch the blade track, adjusting until it is close to the flange without touching it. Turn the machine off and adjust the back-up guides until they touch the blade back evenly. Re-adjust the side guides. Check the tension one more time.

Blade Tension

Bandsaw blades must be properly tensioned, or tightened, to ensure straight cuts and reduce fatigue. Proper tension is normally recommended by the machine manufacturer. Use a Simometer, or tensionometer, to check for proper tension.

Problems & Solutions

Problem	Cause	Remedy
1. Premature Dulling of Teeth	Saw idling through cut	Increase tooth load by increasing feed or reducing speed
	Teeth too coarse	Select finer pitch
	Incorrect coolant or coolant improperly applied	Check amount, type and mixture of coolant
	Band teeth running in wrong direction	Reinstall band correctly
	Excessive speed for material being cut	Reduce speed accordingly
	Wrong type of blade	Select carbon, bi-metal or carbide tipped
2. Band Vibrating in the Cut	Unsuitable speed for material and thickness	Increase or decrease according to section, size and type of material
	Excessive feed/pressure	Decrease feed/pressure
	Work not held firmly	Reclamp work firmly
	Teeth too coarse	Select finer pitch
	Insufficient blade tension	Reset tension using a tensiometer
3. Tooth Strippage	Teeth too coarse	Select finer pitch
	Work not held firmly	Reclamp work firmly
	Sawing dry	Apply coolant
	Gullets of teeth loaded with chips/swarf	Use coarser pitch
	Excessive feed/pressure	Decrease feed/pressure
	Band teeth encountering sharp corner on material being cut	Reset a flat surface to the band when starting the cut
4. Band Cutting Out of Square	Band guides not properly adjusted	Realign band guides - replace if worn
	Excessive feed/pressure	Decrease feed/pressure
	Uneven wear of tooth set caused by hard inclusion in material being cut	Decrease tooth load by reducing feed pressure or using finer pitch
	Band nearing end of life	Replace with new band
	Work not held firmly	Reclamp work firmly

Problems & Solutions

Problem	Cause	Remedy
5. Slow Cutting Rate	Band speed too slow	Increase band speed
	Insufficient feed/pressure	Increase feed/pressure
	Teeth too fine	Select coarser pitch
	Lack of coolant	Increase supply of coolant
	Band nearing end of life	Replace with new band
	Wrong type of blade	Select carbon, bi-metal or carbide tipped
6. Premature Band Breakage	Cracking at the weld	Check welding technique
	Band guides not properly adjusted	Realign band guides - replace if worn
	Excessive blade tension	Reset tension using a tensiometer
	Wrong type of blade	Select carbon, bi-metal or carbide tipped
	In profile sawing band width too great for radius being cut	Select narrower band width
	Teeth too coarse	Select finer pitch
	Excessive feed/pressure	Decrease feed/pressure
	Excessive speed for material being cut	Reduce speed accordingly
	Band too thick for diameter of drive wheels, or wheels defective	Use thinner band and check periphery of drive wheels
7. Bad Surface Finish on Workpiece	Teeth too coarse	Select finer pitch
	Band speed too slow	Increase band speed
	Feed rate too great	Decrease feed rate
	Machine defect	Stop machine and examine functional components
	Lack of coolant	Increase supply of coolant
8. Premature Loss of Tooth Set	In profile sawing band width too great for radius being cut	Select narrower band width
	Excessive speed for material being cut	Reduce speed accordingly
	Band running too deep in guides	Adjust guides
	Lack of coolant	Increase supply of coolant
	Wrong type of blade	Select carbon, bi-metal or carbide tipped

Problems & Solutions

Problem	Cause	Remedy
9. Bandsaw Teeth Choked with Chips	Teeth too fine	Select coarser pitch
	Lack of coolant	Increase supply of coolant
	Feed rate too great	Decrease feed rate
10. Band Not Running True in Guides	Misaligned weld	Check welding equipment and reweld
	Drive wheels misaligned	Check alignment of drive wheels and adjust
	Band guide back support bearing worn	Adjust or replace
	Side guides misaligned	Adjust correctly
11. Saw Making Bow-Shaped Cut	Insufficient blade tension	Reset tension using a tensiometer
	Teeth too fine	Select coarser pitch
	Band guides worn or misaligned	Adjust or replace
	Feed rate too great	Decrease feed rate
12. Band Jamming in Cut	Back edge of band flattened by guides	Readjust guides and/or reduce feed rate
	Insufficient blade tension	Reset tension using a tensiometer
	Loss of tooth set on band	Examine under #8
	Movement of work piece	Reclamp work firmly
	In profile sawing band width too great for radius being cut	Select narrower band width
	Cutting out of square	Examine under #4

22 Variables - A Preview

- **The Operators** - The largest single variable.
- **The Number of Teeth in the Band** - 3 minimum, 6 - 12 optimum, 24 maximum.
- **Tooth Style** - Standard, Skip, Sabre, or Variable Pitch.
- **Tooth Set** - Regular, Wavy, ETS, or Variable Pitch.
- **Band Tension** - Measured with a tensiometer.
- **Band Speed** - Set using Speed & Feed charts.
- **Break-In Procedure** - Reduce normal feed rate by 50%.
- **Feed Rate** - Set using Speed & Feed charts.
- **Band Quality** - Carbon vs. Bimetal vs. Carbide Tipped.
- **Machine Type** - Different makes and models, horsepower of motor.
- **Wheels** - Check alignment, bearings, flanges.
- **Machine Condition** - Old, new, well-maintained.
- **Proper Vises** - Set to hold the work firmly.
- **Guides** - Should support the band, roller guides should barely turn by hand.
- **Guide Arms** - Set as close to the work as possible for support.
- **Brushes** - Aid in cleaning chips off the blade.
- **Coolant** - Should wash, cool and lubricate.
- **Material Machineability** - The toughness of a metal can reduce tool life.
- **Material Hardness** - An Rc of 40 has a machineability approaching 0.
- **Material Shape** - Structurals and small solids tend to be harder on the band.
- **Production Requirement** - Continuous use vs. intermittent use.
- **Room Temperature** - Affects hydraulic fluids in the machine.

Any one variable or any combination of the above variables can affect bandsaw life!

Uncoiling a Blade

To Uncoil

- Take the band in one hand and remove twist ties.
- With the band hanging vertically (Fig 1.1), rotate in both hands, separating the three loops to find the ‘loose’ middle loop (Fig 1.2).
- Using the hand holding only one loop, also grasp the ‘loose’ middle loop (Fig 1.3).
- Retain the hold on these two loops, and holding away from the body, remove the other hand (Fig 1.4).
- Separate the band by taking one loop in each hand and allow the band to spring open under controlled pressure.

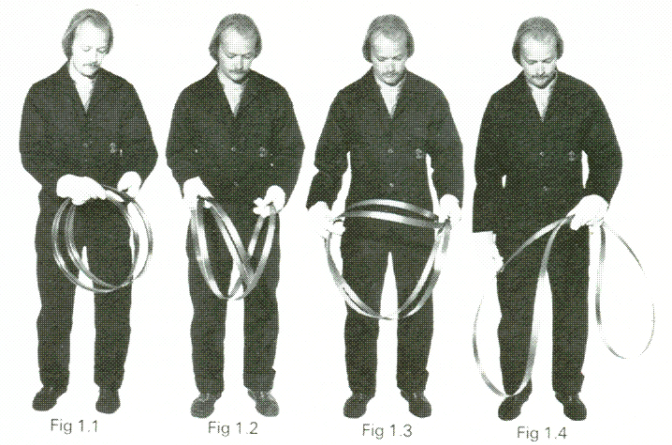


Fig 1.1 Fig 1.2 Fig 1.3 Fig 1.4

Recoiling a Blade

To Recoil

- Hold the band firmly with both hands, and with the teeth facing away from the body (Fig 1.5).
- The lower part of the band should be placed forward of the operator and be pressing against a fixed object.
- The band should then be pushed forward while turning the hands inward.
- This operation will cause the band to overlap immediately in front of the hands (Fig 1.6).
- The band can be held at this point by one hand allowing the free hand to lift the lower part of the band (Fig 1.7).
- The spring nature of the bandsaw will cause it to form a coil (Fig 1.8).

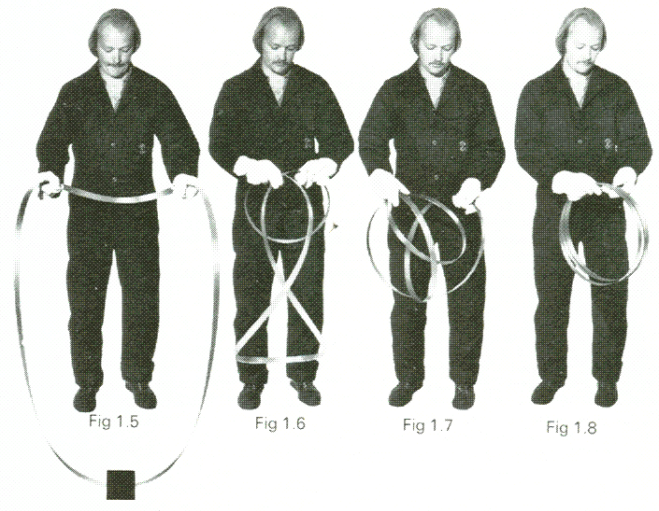


Fig 1.5 Fig 1.6 Fig 1.7 Fig 1.8

RECOMMENDED SPEEDS & CUTTING RATES — BI-METAL BANDSAW BLADES

Stock Dimensions Tooth Pitch	Up to 1" 10-14, 8-12		From 1" - 3" 6/10,8/12,5/8		From 3" - 6" 5-8,4-6,3-4,2-3		Over 6" 3-4,2-3,1.5-1.9,1.1-1.4 3/4" T.S.	
Material (Annealed)	**Speed (SFPM)**	**Cutting Rate (SIPM)**	**Speed (SFPM)**	**Cutting Rate (SIPM)**	**Speed (SFPM)**	**Cutting Rate (SIPM)**	**Speed (SFPM)**	**Cutting Rate (SIPM)**
Carbon Steels:								
1008-1013	250	8 - 10	275	9 - 12	280	12 - 15	250	9 - 12
1015-1018	250	8 - 10	275	9 - 12	250	12 - 15	230	9 - 12
1048-1065	200	5 - 7	200	5 - 7	175	8 - 10	150	6 - 8
1065-1095	200	4 - 6	200	5 - 7	150	6 - 8	120	6 - 8
Free Machining Steels:								
1108-1111	300	9 - 11	330	12 - 14	275	13 - 15	220	11 - 14
1112-1113	300	8 - 11	330	11 - 13	275	12 - 15	220	12 - 15
1115-1132	300	7 - 10	330	10 - 13	275	13 - 16	220	11 - 14
1137-1151	275	6 - 8	250	8 - 10	250	8 - 11	200	7 - 10
1212-1213	300	8 - 10	320	11 - 13	300	13 - 15	255	11 - 14
Manganese Steels:								
1320-1330	250	5 - 7	250	5 - 8	200	8 - 11	175	7 - 10
1335-1345	250	5 - 7	225	5 - 7	200	7 - 9	175	5 - 8
Nickel Steels:								
2317	270	4 - 5	270	4 - 6	250	5 - 7	230	4 - 6
2330-2345	220	2 - 3	220	3 - 5	190	3 - 5	170	3 - 5
2512-2517	200	2 - 3	200	3 - 5	160	4 - 6	150	4 - 6
Nickel Chrome Steels:								

2342-2517	200	2	-	3	200	3	-	5	180	4	-	6	180	4	-	6
Nickel Chrome Steels:																
3115-3130	260	4	-	6	260	5	-	7	230	5	-	7	225	5	-	7
3135-3150	220	4	-	6	200	4	-	7	180	6	-	8	150	5	-	8
3310-3315	200	3	-	4	180	4	-	5	180	5	-	7	160	4	-	6
Molybdenum Steels:																
4017-4024	300	3	-	5	270	4	-	7	250	6	-	8	220	5	-	8
4032-4042	300	3	-	5	270	4	-	7	250	6	-	8	230	5	-	8
4047-4068	250	3	-	5	220	4	-	6	200	5	-	7	180	3	-	5
Chrome Moly Steels:																
4130-4140	280	4	-	6	250	5	-	8	250	8	-	10	220	6	-	8
4142-4150	230	3	-	5	200	4	-	6	200	5	-	7	170	4	-	6
Nickel Chrome Moly Steels:																
4317-4320	250	3	-	5	225	4	-	6	200	5	-	7	170	4	-	6
4337-4340	230	3	-	4	200	4	-	5	200	4	-	6	170	4	-	5
8615-8627	250	4	-	5	230	6	-	7	230	6	-	8	200	6	-	7
8630-8645	250	3	-	5	230	4	-	6	230	5	-	7	180	4	-	6
8647-8660	220	2	-	4	200	3	-	5	200	4	-	6	150	3	-	5
8715-8750	250	3	-	5	220	4	-	6	220	5	-	7	180	4	-	6
9310-9317	200	1	-	3	160	2	-	3	160	2	-	4	150	2	-	3
9437-9445	250	4	-	5	230	4	-	5	230	5	-	6	180	4	-	5
9747-9763	250	2	-	4	230	3	-	5	200	4	-	6	180	3	-	5
9840-9850	240	4	-	5	220	4	-	6	200	5	-	7	180	4	-	6
Nickel Moly Steels:																
4608-4621	250	3	-	5	220	5	-	6	220	6	-	7	200	5	-	6
4640	220	3	-	5	200	4	-	6	200	5	-	7	170	4	-	6
4812-4820	200	3	-	5	180	3	-	5	180	4	-	6	160	4	-	5

RECOMMENDED SPEEDS & CUTTING RATES — BI-METAL BANDSAW BLADES

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Material (Annealed)	**Speed (SFPM)**	**Cutting Rate (SIPM)**	**Speed (SFPM)**	**Cutting Rate (SIPM)**	**Speed (SFPM)**	**Cutting Rate (SIPM)**	**Speed (SFPM)**	**Cutting Rate (SIPM)**
Chrome Steels:								
5045-5046	280	4 - 6	250	5 - 7	250	8 - 10	200	7 - 8
5120-5135	280	4 - 6	250	6 - 7	240	7 - 8	180	5 - 8
5140-5160	250	3 - 5	230	4 - 6	230	5 - 7	200	4 - 6
50100-52100	180	2 - 4	160	3 - 5	150	4 - 6	100	3 - 5
Chrome Vanadium Steels:								
6117-6210	225	4 - 5	225	5 - 7	200	6 - 8	170	5 - 7
6145-6152	225	3 - 4	200	4 - 5	200	5 - 6	150	4 - 5
Silicon Steels:								
9255-9260	200	2 - 4	180	3 - 5	180	3 - 5	150	3 - 5
9261-9262	200	1 - 3	160	2 - 3	160	2 - 4	150	2 - 3
High Speed Tool Steels:								
T-1, T-2	130	1 - 2	110	2 - 3	100	2 - 4	90	2 - 3
T-4, T-5	110	1 - 2	100	1 - 2	90	2 - 3	80	1 - 2
T-6, T-8	110	1 - 2	100	1 - 2	80	1 - 2	70	1 - 2
T-15	80	1	80	1	70	1	50	1
M-1	150	1 - 3	140	2 - 4	130	3 - 5	110	2 - 4
M-2, M-3	120	1 - 2	110	2 - 3	100	3 - 4	80	2 - 3
M-4, M-10	100	1 - 2	90	1 - 2	80	1 - 3	60	1 - 2
Die Steels:								

M-4, M-10	100	1	-	2	90	1	-	2	80	1	-	2

Die Steels:												
A-2,	210	2	-	3	200	3	-	4	190	3	-	4	180	2	-	3
D-2, D-3	110	1	-	2	100	1	-	2	90	1	-	2	80	1	-	2
D-7	90		1		80		1		70		1		70		1	
O-1, O-2	240	3	-	4	210	4	-	5	190	5	-	6	170	4	-	5
O-6	230	3	-	4	200	4	-	6	180	5	-	7	150	4	-	6
Hot Work Steels:												
H-12, H-13, H-21	150	2	-	4	125	3	-	5	125	2	-	4	125	2	-	4
H-22, H-24, H-25	150	1	-	3	125	1	-	3	125	1	-	3	125	1	-	3
Shock Resisting Tool Steels:												
S-1	220	2	-	4	180	3	-	5	165	3	-	5	150	2	-	4
S-2, S-5	170	1	-	3	150	2	-	4	120	2	-	4	100	1	-	3
Special Purpose Tool Steels:												
L-6	200	2	-	4	180	3	-	5	170	3	-	5	150	2	-	4
L-7	200	2	-	4	180	3	-	5	150	3	-	5	100	2	-	4
Stainless Steels:												
201, 202, 302, 304	120	2	-	4	100	2	-	4	100	2	-	4	100	1	-	3
303, 303F	140	2	-	4	120	2	-	4	100	3	-	5	100	2	-	4
308, 309, 310, 330	90		1		70		1		60		2		60		1	
314, 316, 317	90		1		80		1		70		2		60		1	
321, 347	130	1	-	3	110	1	-	3	100	2	-	4	80	1	-	3
410, 420, 420F	150	1	-	3	130	1	-	3	120	2	-	4	100	1	-	3

RECOMMENDED SPEEDS & CUTTING RATES — BI-METAL BANDSAW BLADES

Stock Dimensions Tooth Pitch	Up to 1" 10-14, 8-12		From 1" - 3" 6/10,8/12,5/8		From 3" - 6" 5-8,4-6,3-4,2-3		Over 6" 3-4,2-3,1.5-1.9,1.1-1.4 3/4" T.S.	
Material (Annealed)	**Speed (SFPM)**	**Cutting Rate (SIPM)**	**Speed (SFPM)**	**Cutting Rate (SIPM)**	**Speed (SFPM)**	**Cutting Rate (SIPM)**	**Speed (SFPM)**	**Cutting Rate (SIPM)**
Stainless Steels: (con't)								
416,430F	200	3 - 5	180	4 - 6	170	5 - 7	150	4 - 6
430, 446	100	1 - 3	90	2 - 4	80	2 - 4	80	1 - 3
440 A,B,C	120	1 - 3	10	1 - 3	90	2 - 4	70	1 - 3
440F, 443	150	1 - 3	130	1 - 3	120	2 - 4	100	1 - 3
17-4PH, 17-7PH	100	2 - 3	90	2 - 4	80	3 - 4	80	2 - 3
A-7	100	1 - 2	100	1 - 2	100	2 - 3	100	2 - 3
Beryllium Copper #25								
BHN 100-120	350	4 - 6	300	5 - 7	275	6 - 8	225	5 - 7
BHN 220-250	250	2 - 4	225	3 - 5	200	4 - 6	175	3 - 5
BHN 310-340	200	1 - 2	160	1 - 2	140	2 - 3	100	1 - 2
Nickel Base Alloys:								
Monel	100	1 - 2	100	1 - 2	80	1 - 2	60	1
R Monel	140	2 - 3	140	2 - 4	125	2 - 4	75	2 - 3
K Monel	100	1	80	1	60	1	60	1
KR Monel	100	1 - 3	90	1 - 3	80	1 - 3	60	1 - 2
Inconel	110	1 - 2	100	1 - 3	80	1 - 3	80	1 - 2
Inconel X	90	1	80	1	70	1	60	1

Nickel Base Alloys:								

Inconel X	90		1	90		1	70		1	60		1
Nickel Base Alloys:												
Hastelloy A	120	1	- 2	100	1	- 2	85	2	- 3	75	1	- 2
Hastelloy B	110	0	- 1	100	1	- 2	90	1	- 2	75	0	- 1
Hastelloy C	100	0	- 1	90	0	- 1	70	0	- 1	60	0	- 1
Rene 41	90		1	90		1	90	1	- 2	90	1	- 2
Udimit	100		1	90	1	- 2	90	1	- 2	90	1	- 2
Waspalloy	90		1	90	1	- 2	90	1	- 2	90	1	- 2
Titanium	100	1	- 2	100	2	- 3	100	2	- 3	100	2	- 3
Titanium Alloys:												
TI-4AL-4MO Alpha Beta												
Alloy	100	0	- 1	90	0	- 1	80	0	- 1	70	0	- 1
TI-140A 2CR-2MO	100	0	- 1	90	0	- 1	80	0	- 1	60	0	- 1
TI-150A	100	0	- 1	90	0	- 1	80	0	- 1	60	0	- 1
MST-6AL-4V	100	0	- 1	90	0	- 1	80	0	- 1	60	0	- 1
99% Pure Titanium	100	0	- 1	90	0	- 1	80	0	- 1	60	0	- 1

CUTTING RATE CHART
FOR HIGH SPEED METAL BANDSAWS

Bar Dia.	Approx. Area (Sq In)	SQUARE INCHES PER MINUTE (RATE) 2	3	4	5	6	7	8	9	10	11	12	13	14	15
		MINUTES AND SECONDS - APPROXIMATE TIME PER CUT													
1"	.79	:25	:15	:12	:10	:08	:07	:06	:05	:05					
1-5/8"	.99	:30	:20	:15	:12	:10	:08	:07	:06	:06	:05				
1-5/8"	1.22	:37	:25	:18	:15	:12	:10	:10	:08	:07	:07	:06	:06	:05	
1-3/8"	1.49	:45	:30	:22	:18	:15	:13	:11	:10	:09	:08	:07	:07	:06	:06
1-1/2"	1.76	:53	:35	:26	:21	:18	:15	:13	:12	:11	:10	:09	:08	:08	:07
1-5/8"	2.07	1:00	:45	:30	:24	:20	:17	:15	:13	:12	:11	:10	:09	:09	:08
1-3/4"	2.40	1:12	:50	:34	:27	:22	:19	:17	:14	:13	:13	:11	:11	:10	:09
1-7/8"	2.76	1:23	:55	:41	:33	:28	:24	:21	:18	:17	:15	:14	:13	:12	:11
2"	3.14	1:34	1:00	:47	:38	:30	:27	:24	:21	:19	:17	:16	:14	:13	:13
2-1/8"	3.55	1:45	1:10	:53	:45	:35	:30	:26	:23	:21	:19	:17	:16	:15	:14
2-1/4"	3.97	2:00	1:20	:60	:48	:45	:34	:30	:26	:25	:22	:20	:18	:17	:16
2-3/8"	4.43	2:15	1:30	1:08	:54	:48	:39	:34	:30	:27	:25	:23	:21	:19	:18
2-1/2"	4.90	2:30	1:40	1:15	:60	:51	:43	:38	:33	:30	:27	:25	:23	:21	:20
2-5/8"	5.41	2:45	1:50	1:22	1:06	:56	:47	:42	:36	:33	:30	:27	:25	:23	:22
2-3/4"	5.93	3:00	2:00	1:30	1:12	:60	:51	:45	:40	:36	:33	:30	:28	:26	:24
2-7/8"	6.49	3:15	2:10	1:37	1:18	1:05	:55	:49	:43	:39	:35	:33	:30	:28	:26
3"	7.06	3:30	2:20	1:45	1:24	1:10	:60	:53	:46	:42	:38	:35	:32	:30	:28

3"	7.06	3:30	2:20	1:45	1:24	1:10	:60	:53	:46	:42	:38	:35	:32	:30	:28
3-/18"	7.76	3:50	2:33	1:55	1:32	1:17	1:08	:58	:51	:46	:42	:38	:35	:33	:31
3-1/4"	8.25	4:08	2:45	2:04	1:39	1:23	1:11	1:02	:55	:50	:45	:41	:38	:35	:33
3-3/8"	8.95	4:30	3:00	2:16	1:52	1:30	1:20	1:08	:60	:54	:49	:46	:42	:38	:36
3-1/2"	9.62	4:45	3:10	2:23	1:57	1:35	1:24	1:12	1:03	:57	:52	:48	:43	:41	:38
3-5/8'	10.32	5:10	3:26	2:35	2:04	1:43	1:28	1:17	1:09	1:02	:56	:52	:48	:44	:41
3-3/4"	11.04	5:30	3:40	2:45	2:06	1:50	1:36	1:24	1:12	1:06	:60	:54	:50	:47	:44
3-7/8"	11.79	5:54	3:54	2:57	2:21	1:58	1:41	1:28	1:19	1:11	1:04	:60	:54	:50	:47
4"	12.56	6:15	4:10	3:08	2:31	2:05	1:49	1:33	1:24	1:15	1:09	1:03	:57	:54	:50
4-1/8"	13.36	6:41	4:27	3:20	2:40	2:14	1:54	1:40	1:30	1:20	1:13	1:08	1:02	:57	:53
4-1/4"	14.18	7:00	4:40	3:28	2:50	2:20	2:00	1:42	1:36	1:24	1:18	1:12	1:03	1:02	:56
4-3/8"	15.03	7:30	5:00	3:36	3:00	2:30	2:06	1:48	1:42	1:30	1:24	1:16	1:07	1:06	:60
4-1/2"	15.90	8:00	5:20	4:00	3:12	2:40	2:17	2:00	1:47	1:36	1:27	1:20	1:14	1:09	1:04
4-5/8"	16.80	8:30	5:40	4:15	3:24	2:50	2:26	2:08	1:53	1:42	1:33	1:25	1:18	1:13	1:08
4-3/4"	17.72	8:45	5:50	4:23	3:30	2:55	2:30	2:12	1:57	1:45	1:35	1:27	1:20	1:15	1:10
4-7/8"	18.67	9:15	6:10	4:38	3:42	3:05	2:39	2:20	2:03	1:51	1:41	1:32	1:24	1:19	1:14
5"	19.63	9:45	6:30	4:53	3:54	3:15	2:47	2:28	2:10	1:57	1:46	1:38	1:28	1:24	1:18
5-1/8"	20.63	10:15	6:50	5:08	4:06	3:25	2:56	2:36	2:17	2:03	1:52	1:42	1:32	1:28	1:22
5-1/4"	21.64	10:50	7:13	5:25	4:20	3:36	3:05	2:42	2:24	2:09	1:57	1:47	1:36	1:32	1:26
5-3/8"	22.69	11:21	7:34	5:40	4:30	3:47	3:13	2:49	2:30	2:16	2:03	1:53	1:44	1:36	1:30
5-1/2"	23.75	11:50	7:55	5:55	4:45	3:59	3:24	2:58	2:37	2:21	2:10	1:59	1:50	1:42	1:35
5-5/8"	24.85	12:30	8:20	6:15	5:00	4:10	3:34	3:08	2:46	2:29	2:16	2:04	1:55	1:47	1:40
5-3/4"	25.96	13:00	8:40	6:30	5:12	4:20	3:42	3:16	2:52	2:36	2:23	2:10	2:00	1:51	1:44
5-7/8"	27.11	13:30	9:00	6:45	5:24	4:30	3:50	3:24	3:00	2:43	2:29	2:16	2:04	1:55	1:48

Safety

- Always wear gloves and safety glasses when handling bandsaw blades.
- Keep hands safely away from a blade in motion.
- Maximum safe blade operating speeds are:
    - Carbon FlexBack - 10,000 SFPM
    - Carbon HardBack - 4,000 SFPM
    - Bimetal - 2,000 SFPM
    - Carbide Tipped - ???
- Be sure the blade is installed so the teeth are leading in the direction of the cut.
- Be sure guides are in good condition and are set properly.
- Be sure the material to be cut is securely clamped in the vising system.
- Be sure the blade is tensioned properly.
- Do not drop a stationary blade onto the work piece.
- Do not start a cut on a corner or sharp edge.
- Never stop or re-start a machine with the blade in a cut.
- Never use a new blade in a cut started with another blade; turn the work piece over and begin cutting with the new blade at the point opposite the unfinished cut.
- If ever in doubt concerning a bandsaw application, contact the Simonds Product Support Team.

Notes

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SIMONDS INTERNATIONAL
135 Intervale Road, P.O. Box 500, Fitchburg, MA 01420
(978) 424-0100 • (800) 343-1616 • fax (800) 541-6224
www.simondsinternational.com

1-800-343-1616

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