simsen 西姆森
BI-METAL BAND SAW BLADE

PRECISION, STRENGTH AND DURABILITY

GERMAN TECHNOLOGY

Index

The Company

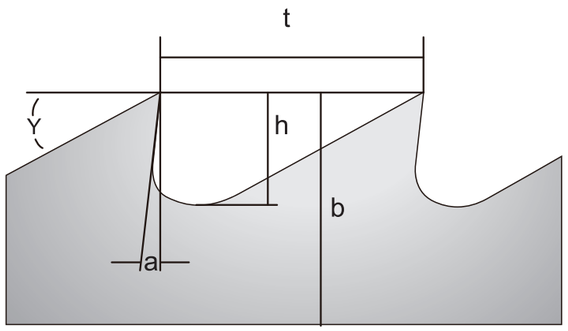
PRECISION, STRENGTH AND DRUABILITY

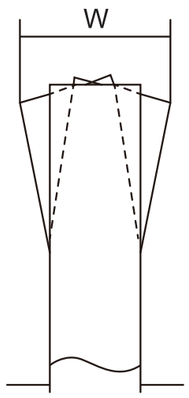
Top 5 supplier to the bi-metal bandsaw blade industry in China. SIMSEN was established in 2011, and includes teams of R&D (Research and development), Q&A, Manufacture, Technology and Business. Our people all have 5-20 years experience in the industry.

The Company not only introduces the German production technology and facilities, but also using premium materials around world for reaching the best quality of our products. Our products are sold to the international market, including Russia, USA, Mexico, UAE, Korea, Japan, Thailand, Vietnam etc.,

BANDSAW BLADE TERMINOLOGY

Basic Phrases





- b Band Width
- s Band Thickness
- h Tooth Height
- t Tooth Pitch (TPI)
- α Rake Angle
- Y Relief Angle
- W Set Width

Tooth Style

We can supply four specifications of tooth

Regular Tooth

Regular tooth blades are most commonly used for all general purpose metal sawing. The face of the tooth is straight (0, 3, 7 & 10 rake angle).

Turtle Back Tooth (Profile Tooth):

Reinforced back reduces the risk of broken teeth. It is designed for steel construction and industrial profile cuts. It has good strength with powerful cutting ability, which increase productivity.

Tensile teeth/Pulling resistant tooth:

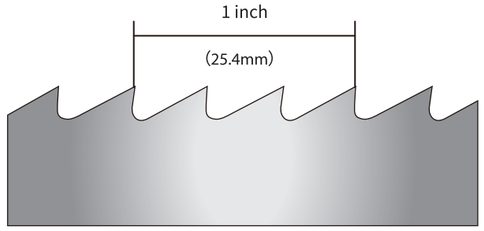
Back teeth extremely heaved,which increases the tensile strength. It is especially developed for cutting profiles and tubes.

Bi-clearance angle tooth:

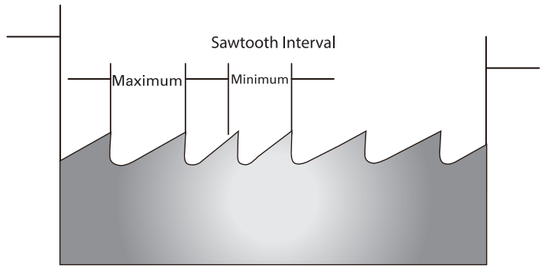
Double back angle, which enhances the strength of the tooth. It is designed for cutting big solid materials.

The distance from the tip of one tooth to the tip of the next tooth. There are two kinds of tooth pitch, constant tooth pitch and variable tooth pitch.

$$TPI = \frac{25.4}{\text{The distance between two adjacent teeth (mm)}}$$



Example 3tpi(8.47mm pitch)



Example 3/4tpi(8.47mm and 6.35mm pitch)

Constant tooth:

blades have a tooth distance which is equally spaced. Number of teeth per inch denotes the tooth of the saw blade. If the distance of two adjacent teeth is 6.35mm, the pitch is 4 TPI.

Variable tooth:

Variable tooth spacing and gullet capacity of this design reduces noise and vibration, while allowing faster cutting rates, long blade life and smooth cuts.

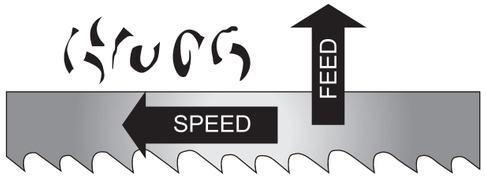
Band Speed

Band speed refers to the rate at which the blade cuts across the face of the material being worked. A faster band speed achieves a higher, more desirable shear plane angle and hence more efficient cutting. This is usually stated as FPM (feet per minute) or MPM (meters per minute).

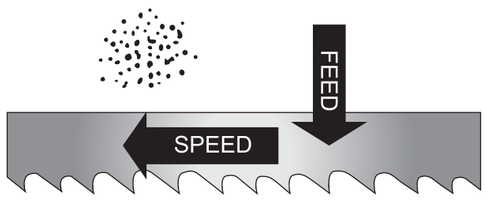
How do you know if you are using the right band speed?

Telltale Chips

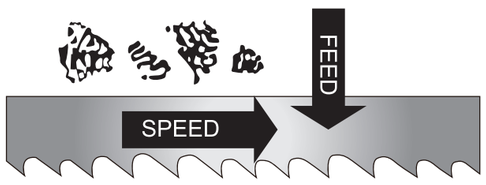
Chips are the best indicator of correct feed force. Monitor chip formation and adjust accordingly.



Burned hedvy chips-reduce feed/speed.



Thin or powdered chips-increase feed.

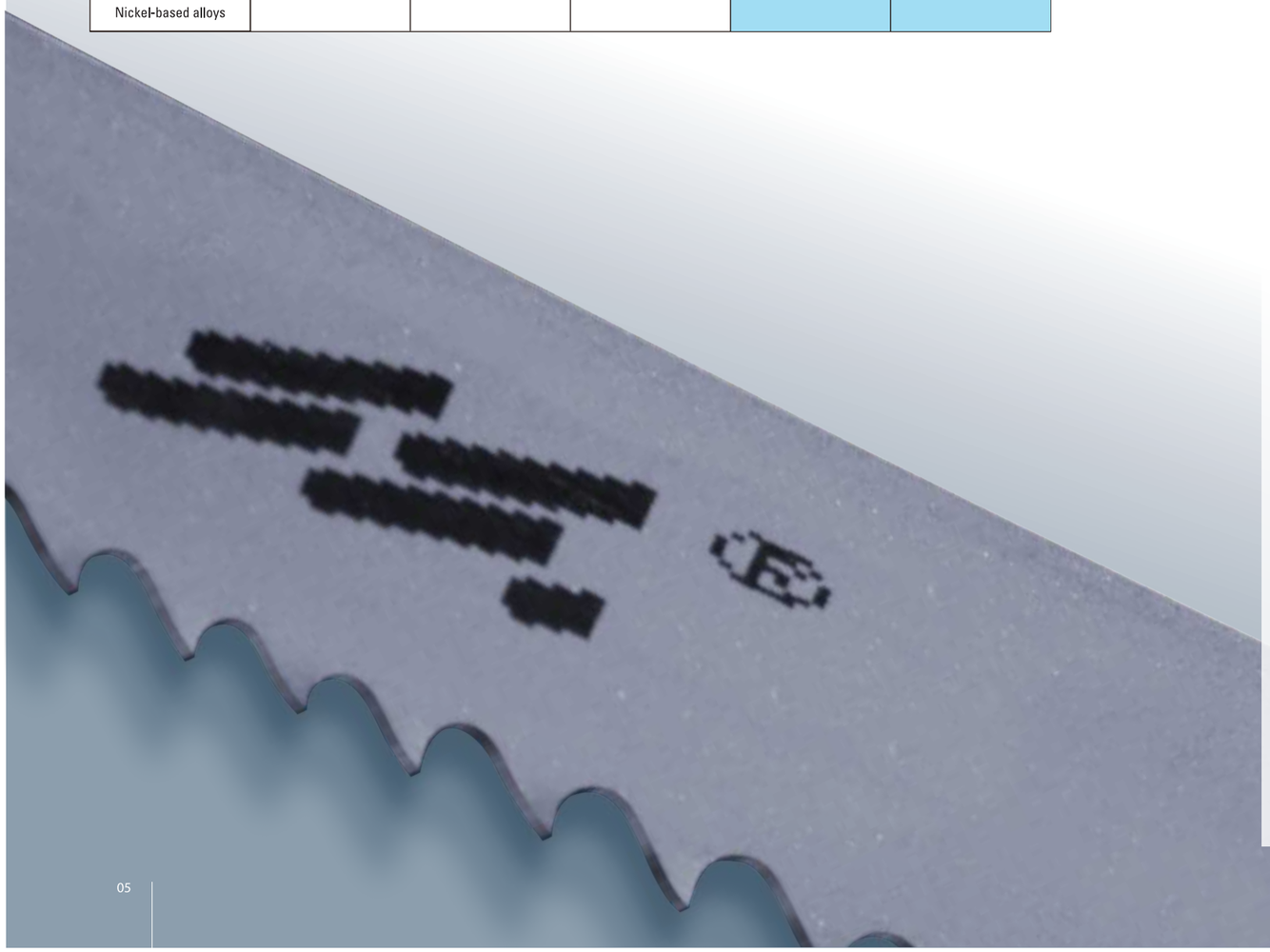


Curled silvery and warm chips-optimum feed.

SIMSEN BIMETAL BANDSAW BLADES SELECTIONS

Fit Very suitable

	Kijaro	Edith	Arbets M42	Arbets M51	Harrdinjet
Normal hard wood					
cast iron					
Aluminum/ Non-ferrous					
Copper					
Wood pallet					
Mild Steels					
Carboon steels					
Structural Steels					
Alloy Steels					
Bearing Steels					
Stainless Steels					
Mold/Die Steels					
Titanium alloys					
Nickel-based alloys					



harrdinjet™ Harrdinjet M51 (HIGH PERFORMANCE & DURABILITY)

Advantages:
Welding with RM80/B318 and M51 HSS PM;
The longest operation life;
High speed cutting and smooth section;
The best wear resistance;
Greatest fatigue resistance;

Applications:
All kinds of high alloy and other metal materials cutting

Width*Thickness (mm)	Width*Thickness (Inches)	TPI					
		0.75/1.25	1.4/2	2/3	3/4	4/6	5/8
27*0.90	1*.035			▼	▼	▼	
34*1.10	1-1/4*.042			▼	▼	▼	
41*1.30	1-1/2*.052			▼	▼		▼
54*1.60	2*.063	▼	▼	▼			
67*1.60	2-5/8*.063	▼				▼	
80*1.60	3*.063	▼					

▼ : this is not regular prodution specification,Please pre-order

Arbets™ Arbets M42 (HIGH PERFORMANCE AND LONG SERVICE LIFE)

Advantages:
Welding with 4% Cr and M42 HSS;
High cutting accuracy;
Strong wear and fatigue resistance;
Best cutting performance in high vibration;

Applications:
1.For cutting hardness under HRC46 medium carbon alloy steel
2.Stainless steel
3.Die steel
4.Nonferrous metals

Width*Thickness (mm)	Width*Thickness (Inches)	TPI					
		0.75/1.25	1.4/2	2/3	3/4	4/6	5/8
27*0.90	1*.035			▼	▼	▼	▼
34*1.10	1-1/4*.042			▼	▼	▼	▼
41*1.30	1-1/2*.052		▼	▼	▼	▼	▼

▼ : this is not regular prodution specification,Please pre-order

Arbets™ Arbets M51 (GENERAL PURPOSE)

Advantages:
Welding with 4% Cr and M51 HSS;
Higher cutting accuracy;
Better wear and fatigue resistance;
Longer operation life;

Applications:
1.For cutting hardness under HRC46 medium carbon alloy steel
2.Stainless steel
3.Die steel
4.Nonferrous metals
5.Alloy Steel

Width*Thickness (mm)	Width*Thickness (Inches)	TPI					
		0.75/1.25	1.4/2	2/3	3/4	4/6	5/8
54*1.60	2*.063	▼	▼	▼	▼	▼	
67*1.60	2-5/8*.063	▼	▼				

▼ : this is not regular prodution specification,Please pre-order

edith™ Edith M42 (BETTER CUTTING)

Advantages:
Good cutting performance
Strong wear resistance

Applications:
1.For cutting hardness under HRC46 medium carbon alloy steel
2.Stainless steel
3.Die steel
4.Nonferrous metals
5.Alloy Steel

Width*Thickness (mm)	Width*Thickness (Inches)	TPI					
		0.75/1.25	1.4/2	2/3	3/4	4/6	5/8
27*0.90	1*.035			▼	▼	▼	▼
34*1.10	1-1/4*.042			▼	▼	▼	▼
41*1.30	1-1/2*.052		▼	▼	▼	▼	▼

▼ : this is not regular prodution specification,Please pre-order

KIJARO™ Kijaro M42 (THE MOST VALUABLE)

Advantages:
Good cutting performance
Strong wear resistance
Cost-effective

Applications:
1.Carbon steel
2.Gear steel
3.Bearing steel
4.Adjusting steel
5.General die steel
6.Alloy steel
7.Nonferrous metal
8.Dismantle wood pallet
9.Cutting hard wood

Width*Thickness (mm)	Width*Thickness (Inches)	TPI								
		0.75/1.25	1.4/2	2/3	3/4	4/6	5/8	6/10	8/12	10/14
13*0.65	1/2*.025					▼	▼	▼	▼	▼
20*0.90	3/4*.035				▼	▼	▼	▼	▼	▼
27*0.90	1*.035			▼	▼	▼	▼	▼	▼	▼
34*1.10	1-1/4*.042			▼	▼	▼	▼	▼		
41*1.30	1-1/2*.052		▼	▼	▼	▼	▼			

▼ : this is not regular prodution specification,Please pre-order

BANDSAW BLADE SPEED CHART

Materials	type of steels of China	USA SAE/AISI	German DIN	Japan JIS	Band Speed M/Min
Aluminum Alloys	**5052**	**2052**	**3.1355**	**5052**	**70-105**
Copper Alloys	GB H96	CDA 220	2.023	C2200	65
	HPB36-3	CDA 360	2.0375	C3601	90
	B30	Cu Ni(30%)	2.0835	-	65
	QBE2,QBE1.7	Be Cu	-	C1700	50
Bronze Alloys	耐磨铝青铜	AMPCO 18	-	-	55
	耐磨青铜含13%铝	AMPCO 21	-	-	50
	深拉铝青铜	AMPCO 25	-	-	35
	低铅锡青铜		2.1177	-	90
	CuAl10Ni	Al Bronze 865	2.0976	AlBCln1	50
	CuZn35AL1		2.0602	-	65
	CuSn7Zn4Pb7	932	-	-	85
	CuSn10Pb10	937	-	-	80
Brass Alloys	弹壳黄铜(85%Cu)	Red Brass(85%)	-	BC6	70
	铜锌锡合金	Naval Brass	-	YCuZnSn	65
Free Machining Steels,Low Carbon Steels	Y45	1145	-	-	85
	Y08MnS	1215	1.0736	SUM 25	100
	Y15Pb	12L14	1.0718	SUM 24L	110
Structural Steels	Q255	A36	1.0132	-	80
Low Carbon Steels	10号钢	1008	1.031	S9CK	85
Medium Carbon Steels	30	1030	1.1178	S 30 C	80
	35	1035	1.0501	S 35 C	75
	45	1045	1.1191	S 45 C	70
High Carbon Steels	60	1060	1.0601	S 58 C	65
	80	1080	1.1259	1080	60
	C92D2B	1095	1.0618	SUP 4	60
Mn Steels	40MnB	1541	1.1167	SMn 438(H)	65
	20Mn2	1524	1.0499	SCMn1	55
Cr-Mo Steels	40CrMnMo	4140	1.7225	SCM 440(H)	70
	40CrMnMo	41L50	-	-	75
	50CrMo4	4150H	-	-	65
Cr-Alloy Steels	50CrVA	6150	1.8159	SUP 10	60
	GCr15	52100	1.3505	SUJ 2	50
	60CrMnA	5160	1.7176	SUP 9(A)5	60
Ni-Cr-Mo Steels	45CrNiMoVA	4340	1.6565	SNCM 439	60
	20CrNiMo	8620	1.6523	SNCM 220H	65
	40CrNiMoA	8640	1.6546	SNCM 240	60
	12CrNi3	E9310	1.6657	-	50
Low Alloy Tool Steels	5CrNiMo	L-6	1.2714	SKT 4	45
Water-Hardening Tool Steels	T13	W-1	1.1673	SK 1	45
Cold-Work Tool Steels	Cr12Mo1V1	D-2	1.2379	SKD 11	30
Air-Hardening Tool Steels	Cr5Mo1V	A-2	1.2363	SHD 12	50
	-	A-6	-	-	45
	5CrNiMo	A-10	-	-	30
Hot-Work Tool Steels	4Cr5MoSiV1	H-13	1.2344	SKD 61	45
		H-25	-	-	30
Oil-Hardening Tool Steels	9CrWMn	O-1	1.251	SKS 3	45
	9Cr2V	O-2	1.2842		45
High Speed Steels	W6Mo5Cr4V2	M-2,M-10	1.3343	SKH9	35
	W6Mo5Cr4V4	M-4	1.3348	SKH54	30
	W18Cr4V	T-1	1.3355	SKH2	30
	W12Cr4V5Co5	T-15	1.3202	SKH10	20
Die Steels	-	P-3	-	-	55
	3Cr2Mo	P-20	1.2328	-	50
Impact-resistant tool steel	5CrW2Si	S-1	1.2542	SKS41	45
	5Cr3Mn1SiMo1V	S-5,S-7	1.2823	-	40
Stainless Steels	0Cr18Ni9	304	1.4301	SUS 304	25
	0Cr17Ni12Mo2	316	1.4401	SUS 316	30
	1Cr13,2Cr13	410	1.4006	SUS 410	45
	7Cr17	440A	1.4109	SUS 440 A	25
	8Cr18	440C	1.4125	SUS 440 C	25
Precipitation Hardening Stainless Steels	0Cr17Ni4Cu4Nb	17-4PH	1.4542,1.4568	SUS 630,SUS 631	25
	0Cr15Ni5Cu4Nb	15-5PH	1.4545	-	25
Free Machining Stainless Steels	Y3Cr13	420F	-	-	50
	1Cr17Ni7	301	1.431	-	40
Nickel Alloys	镍铜合金	Monel®K-500	2.4375	-	25
	镍铬合金	Duranickel 301	-	-	20
High-Temperature Alloys	GH2132,NS142	A286	1.498	SUH 660	25
	-	Incoloy®600	-	-	20
	镍钴合金	Pyromet X-15	-	-	25
NI ZN	GH600,GH4169,GH169,GH90	Incoloy®600	2.4816,2.4668	NCF-600	20
	GH141	RENE41	2.4973		20
	0Cr20Ni65Mo10Nb4	Incoloy®625	2.4831	-	25
	0Ni65Mo28Fe5V	Hastalloy B	2.4800	Ni-Mo28	20
	-	RENE88	2.4951	-	20
Titanium Alloys	工业纯钛TA0	-	3.7025	-	25
	TC4	Ti-6Al-4V	3.7615	-	20
Cast Iron	QT400-18	A536(60-40-18)	0.704	FCD 40	70
	QT800-2	A536(120-90-02)	0.708	-	35
	HT150	A48(20级)	0.601	FC 10	50
	HT250	A48(40级)	0.6025	FC 25	25
	-	A48(60级)	0.604	-	30

HOW TO SELECTYOUR BANDSAW BLADES

The Following information needs to be specified when a bandsaw blade is ordered:

For Example:	Product Name	Length X Width X Thickness	TPI
	Kijaro	3505mm X 27mm X 0.90mm	3/4
		11′ X 1″ X 0.35″	

THESE STEPS ARE A GUIDE TO SELECTING THE APPROPRIATE PRODUCT FOR EACH APPPLICATION:

STEP 1: ANALYZE THE SAWING APPLICATION

MACHINE: For most situations, knowing the blade dimensions (length x width x thickness) is all that is necessary.

MATERIAL: Find out the following characteristics of the material to be cut.

- Grade
- Hardness (if heat treated or hardened)
- Shape
- Size
- Is the material to be stacked (bundled) or cut one at a time?

OTHER CUSTOMER NEEDS: The specifics of the application should be considered.

- Production or utility/general purpose sawing operation?
- What is more important, fast cutting or tool life?
- Is material finish important?

STEP 2: DETERMINE WHICH PRODUCT TO USE

- Use the chart on the booklet to decide which product is fitted to your needs.
- For further assistance, contact SIMSEN support at internationalsales@simsencn.com

STEP 3: DETEMINE THE PROPER NUMBER OF TEETH PER INCH (TPI)

- Go to the detailed product page to find the specifications ofTPI the product has. If having difficulty choosing between two pitches, the finer of the two will generally give better performance.
- When compromise is necessary, choose the correctTPI first.

STEP 4: ORDER SIMSEN BI-METAL BANDSAW BLADES for better performance and longer life on any blade.

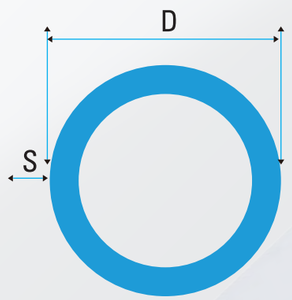
TOOTH SELECTION CHART

FOR ROUND SOLID BAR										
Diameter in mm	5 10 15 20 25 30 50 75 100	150	250 300	500	700 800 900 1000 1100 1200					
TEETH PER INCH/25 MM	10/14	8/12	6/10	5/8	4/6	3/4	2/3	1.4/2	1.25	0.75/1.25

FOR SQUARE / RECTANGLE SOLID										
Width in mm	5 10 15 20 25 30 50 75 100	150 200 250 300	400 500 700	800 900 1000 1100 1200						
TEETH PER INCH/25 MM	10/14	8/12	6/10	5/8	4/6	3/4	2/3	1.4/2	1.25	0.75/1.25

FOR STRUCTURALS																					
Wall Thickness in mm	1 2 3 4 5 6 7 8 9 10 11 12 13 14 15															20		25		30	40 50
TEETH PER INCH/25 MM	10/14			8/12		6/10		5/6			4/6					3/4				2/3	

TOOTH SELECTION CHART FOR CUTTING OF PIPES / TUBES



D = Diameter
S = Wall Thickness

D(mm)	20	40	60	80	100	120	150	200	300	400	500	600	700
S(mm)	Tooth pitch （TPI）												
2	14	14	14	14	14	14	10-14	10-14	8-12	8-12	6-10	6-10	5-8
3	14	14	10-14	10-14	10-14	10-14	8-12	8-12	6-10	6-10	5-8	5-8	5-8
4	14	14	10-14	10-14	8-12	8-12	8-12	8-12	5-8	5-8	4-6	4-6	4-6
5	14	10-14	10-14	10-14	8-12	8-12	8-12	6-10	5-8	5-8	4-6	4-6	3-4
6	14	10-14	10-14	8-12	8-12	8-12	8-12	5-8	5-8	4-6	4-6	4-6	3-4
8	14	10-14	10-14	8-12	8-12	6-10	6-10	5-8	4-6	4-6	4-6	3-4	3-4
10		8-12	6-10	6-10	6-10	5-8	5-8	4-6	4-6	4-6	3-4	3-4	3-4
12		8-12	6-10	6-10	5-8	5-8	4-6	4-6	4-6	3-4	3-4	3-4	3-4
15		8-12	6-10	5-8	5-8	4-6	4-6	4-6	3-4	3-4	3-4	2-3	2-3
20			6-10	5-8	4-6	4-6	4-6	3-4	3-4	3-4	2-3	2-3	2-3
30				4-6	4-6	4-6	3-4	3-4	3-4	2-3	2-3	2-3	2-3
50						3-4	3-4	3-4	3-4	3-4	2-3	2-3	2-3
75								2-3	2-3	2-3	2-3	2-3	1.4-2
100									2-3	2-3	1.4-2	1.4-2	1.4-2
150									2-3	1.4-2	1.4-2	1.4-2	
200										1.4-2	1.4-2	1.4-2	

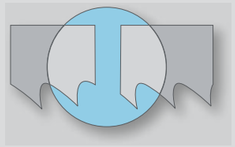
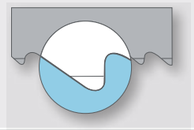
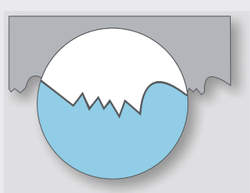
BLADE BREAK-IN EXTREMELY IMPORTANT

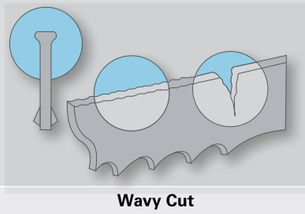
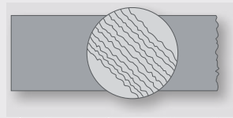
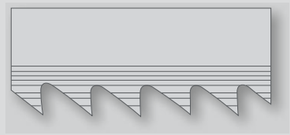
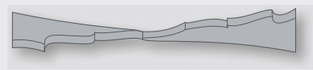
The extremely sharp tooth tip and edges of new blades must be broken-in before applying full feed pressure to the blade.
A good analogy is that of writing with a freshly sharpened wooden pencil.

RECOMENDED PROCEDURE

- Maintain proper blade speed for the material to be cut.
- Reduce blade feed pressure or feed rate by 50%for the first 300 to 500 square cm of material cut
- Gradually increase feed pressure or feed rate after break-in to full pressure or rate.

TROUBLE SHOOTING

Blade Effect	Probable Cause	Solution
Blade Breakage  (straight break indicates fatigue)	Incorrect blade. Incorrect blade tension. Excessive feed. Incorrect cutting fluid. Pressure blocks too tight. Blade rubbing on wheel flange. Guide arms too far apart. Side guides too tight.	Check tooth selection. Adjust the blade tension, refer to operator's manual. Reduce feed pressure. Check coolant recommendations. Adjust the guides. Adjust wheel alignment. Adjust guide arms closer to material. Adjust guides.
Premature Wear of the Teeth 	Blade on machine backwards. Improper blade break-in procedure. Hard Material or heavy surface scale. Hard Material. Improper cutting fluid or mix ratio. Speed or feed too high.	Install blade correctly. Refer to recommended procedures. Check material hardness and surface conditions. Increase feed pressure. Follow coolant mixing procedures. Check cutting recommendations.
Cut Unspecified 	Guide arms too far apart. Blade worn out. Over or under feeding. Improper tooth pitch. Cutting fluid not applied properly. Guides worn or loose.	Adjust guide arms closer to material. Replace blade. Check cutting recommendations. Use proper tooth selection. Adjust coolant nozzles. Tighten or replace guides.
Cutting Deviation 	Over feeding. Low band tension. Tooth set damaged. Guide arms loose or space too wide.	Check cutting recommendations. Refer to operator's manual. Check material hardness, replace blade. Adjust guides and guide arms.
Chips Residues in the Teeth 	Worn or missing chip brush. Improper or lack of cutting fluid. Wrong coolant rate. Excessive feed or speed. Incorrect blade pitch.	Replace or adjust chip brush. Check coolant flow and fluid type. Check coolant type and ratio. Reduce speed or feed. Use proper tooth selection.
Tooth - Breaking Away 	Saw guides not properly adjusted. Incorrect feed or speed. Incorrect blade. Material moved in vise.	Align or adjust saw guides. Refer to cutting recommendations. Use proper blade type and pitch. Inspect and adjust vise.
Wear Only on One Side of the Teeth 	Material with impurities. Wheel with worn flange and band rising out of the track. Guide rubbing on set. Chipping teeth and embedding within the material.	Replace material. Align or replace wheel. Adjust and align guide. Replace blade and apply correct break-in.
Breaks of the Teeth 	Improper blade break-in procedure. Speed too slow. Feed pressure too high. Tooth jammed in cut. Poor cutting fluid application or ratio. Hard material or heavy scale. Wrong blade pitch. Work spinning or loose nested bundles. Cut beginning over the corner of the materia	Follow proper break-in procedure. Refer to cutting recommendations. Reduce feed pressure. Low speed and high cutting pressure. Adjust coolant flow and ratio. Check material or surface hardness. Use proper tooth selection. Tighten vise or use nesting clamps. Start the cut slowly.

Blade Effect	Probable Cause	Solution
Wear on the Back of the Blade 	Excessive back-up guide preload. Low blade tension. Blade worn out. Excessive feed rate or pressure. Damaged or worn pressure block. Guide arms spaced too far apart or too tight. Blade rubbing band wheel flanges. Incorrect guide alignment.	Adjust pressure block. Refer to operator's manual. Replace blade. Reduce feed rate or pressure. Replace pressure block. Adjust guides. Adjust wheel alignment. Align guides.
Wavy Cut  (cardboard surface, vibration and/or risks)	Dull or damaged blade. Incorrect feed or speed. Blade not supported properly. Low blade tension. Incorrect tooth pitch. Guide arms too far apart.	Install new blade. Refet to cutting recommendations. Adjust or tighten guide arms. Refer to operator's manual. Use proper tooth selection. Adjust guide arms closer to material.
Frayed Lines of Loss Hangs 	Saw side guides too tight. Blade riding too high in guide. Blade teeth riding on band wheel surface. Wrong blade width for machine. Chips being carried back into cut. Worn or damaged guides. Insufficient cooling flow.	Adjust guides properly. Adjust rollers or pressure blocks. Adjusting tracking or replace wheel. Refer to operator's manual. Replace or adjust chip brush. Replace guides. Adjust coolant flow.
Blade Twisted 	Blade binding in cut. Guides misaligned. Side guides are too tight. Work loose in vise. Feed too heavy. High blade tension. Worn wheels. Guides arms too far apart.	Adjust feed. Adjust and align guides. Adjust guides. Adjust vise. Reduce feed pressure. Refer to operator's manual. Machine or replace wheels. Adjust guide arms closer to material.