

Bandsawing Guide

For Metalworking



Excision®
Dependable Precision

Confidence In Every Cut

Excision is a manufacturer and importer of premium consumables and machinery for the metal processing industry.

The cutting of steel is in our veins and we live to help steel manufacturing and distribution companies increase output and improve margins by reducing processing costs.

Our expertise is in cutting consumables and machinery, including but not limited to: bandsaw blades, circular metal cutting blades, metal working fluids, machinery and custom manufacturing of material handling.

And we're serious about our role of making your job easier. That's why we've prepared this handy reference guide for you to access when you've got a query about how to get the best from your bandsaw machine.



Bandsawing Guide

Run-In Procedure

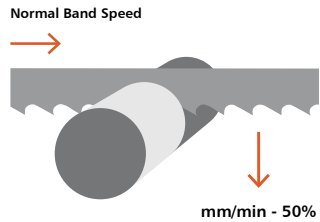
We recommend to improve your blade life by running in the blade prior to normal cutting by honing the edge of the tooth. This reduces premature fractures and can improve life by 30-50%.

Normal Band Speed

Reduced Feed Pressure by 50%

After 5000cm2 of cross sectional area or 15 minutes has been sawn, feed rate should be gradually increased to maximum

For best results use round mild steel bar, ~80mm diameter (depending on tooth pitch). If not possible use the piece the blade will be cutting throughout it's life.



Band Speeds

Recommended speeds based on metal types.

Structural Steel / Machining Steel	80 - 90 m/min
Case Hardened Steels / Steels for hardening and tempering	45 - 75 m/min
Non-Alloy, Tool Steels / Roller Bearing Steels	40 - 60 m/min
Alloyed Tool Steels / High Speed Steels	30 - 40 m/min
Stainless Steels	20 - 35 m/min
Heat Resistant Steels / High Temp, Alloy Steels	15 - 25 m/min

Swarf Types Feed Rate Check

Check your feed rates by swarf types. Note different metals produce different chips.

Swarf								
Shape of Swarf	Thick, hard & short	Thick, hard & brittle	Thick, hard & curled	Thin, hard and curled	Thin, spiral and curled	Thin, spiral and curled	Like dust	Thin and very curled
Colour of the Swarf	Blue or brown	Blue or brown	Silver or yellow	Silver	Silver	Silver	Silver	Silver
Bandsaw Speed	Decrease	Decrease	Suitable	Ideal	Suitable	Suitable	Decrease	Suitable
Feed Rate	Decrease	Decrease	Decrease a little	Ideal	Suitable	Increase	Increase	Decrease
Other	Check coolant level	Check coolant level	Check number of teeth					Use coarser tooth pitch

Top 7 Common Bandsaw Blade Issues

1. Blade Tension Too Low



Blade Tension Solves 90% Of All Bandsaw Blade Problems



Blade tension should be 250mpa. A poorly tensioned blade leads to premature wear, blade fatigue, and blade breakage. To check manually:

1. With the machine turned off, place the palm of your hand on the back edge of the blade between the guides
2. Try to push the blade vertically out of the guides, pushing as hard as you can
3. You should get no more than 1-2mm of movement. Anything more than this and you need to increase the tension

Solution:

- Increase the tension (as close as possible to 250mpa)
- Reduce blade length

To tension using tension meter gauge, watch the video →



Watch Video

2. Tooth Pitch Too Coarse

There is too much strain on individual teeth, resulting in an overload on the tooth. The result is fractures, breakages and microcracks.

Solution:

- Use a finer tooth pitch
- Optimal TPI is 5-7 teeth in the cut



Watch Video



3. Tooth Pitch Too Fine

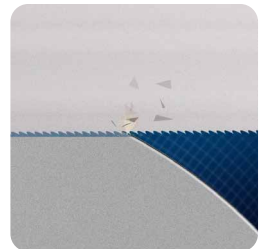
Tooth gullet is too small, meaning chips will overflow and lift the blade. Blade is forced back into the cut resulting in a shock on the tooth.

Solution:

- Use a coarser tooth pitch
- Optimal TPI is 5-7 teeth in the cut



Watch Video



Bandsawing Guide | Common Issues

4. Worn Out Brush

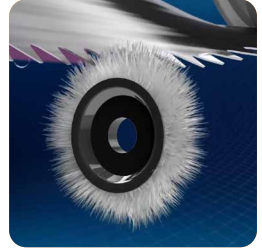
Due to the brush not cleaning out the gullet, the tooth can re-enter the cut with swarf which overloads the tooth.

Solution:

- Adjust brushes regularly
- Replace brushes when worn



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5. Misaligned Wheels

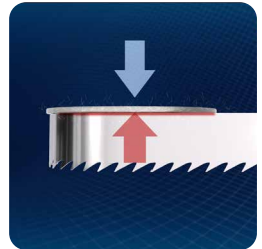
Incorrect alignment causes burrs at the band back edge, followed by microcracks. This results in blade breakage.

Solution:

- Adjust wheels
- Keep a clearance between band back edge and flange of the wheels. Recommended Clearance: 0.5 to 1.5mm



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6. Worn Side Guides or Rollers

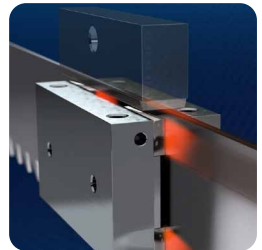
Damaged or tight side guides result in microcracks and blade breakages.

Solution:

- Replace guides / rollers
- Clean guides
- Calibrate regularly



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7. Worn Back Guides

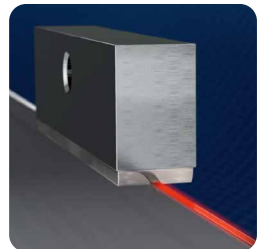
The constant rubbing along the bandsaw back edge causes brittleness, with microcracks and blade breakages.

Solution:

- Adjust wheels
- Replace back guides



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Bandsawing Guide | Issues Chart

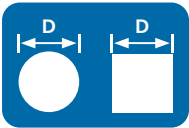
	Band Speed	Band Wheels	Break-In Proceed	Chip Brush	Sawing Fluid	Feeding Rate	Side Guide	Backup Guides	Preload Condition	Band Tension	Band Tracking	Tooth Pitch
Heavy even wear on tips and corners of teeth	●		●		●	●				●		
Wear on both sides of teeth							●	●		●		
Wear on one side of teeth		●					●			●		
Chipped or broken teeth			●			●				●		●
Discolored tips of teeth due to excessive frictional heat	●				●							
Tooth strippage	●		●	●	●	●				●		●
Chips welded to tooth tips	●			●	●	●						
Gullets loading up with material				●	●	●						●
Heavy wear on both sides of band					●		●					
Uneven wear or scoring on sides of the band							●					
Body breakage or cracks from gullets							●		●	●		
Body breakage—fracture traveling in angular direction							●		●			
Body breakage or cracks from back edge						●		●	●	●	●	
Heavy wear and/or swaging on back edge						●		●	●		●	
Butt weld breakage						●	●	●	●	●	●	
Used band is "long" on the tooth edge		●				●	●		●		●	
Used band is "short" on the tooth edge		●				●	●					
Band is twisted into figure "8" configuration		●				●	●	●	●	●	●	
Broken band shows a twist in band length		●				●	●	●	●	●	●	
Heavy wear in only the smallest gullets	●					●						●

Bandsawing Guide | Blade Comparison Chart

Legend: Good + Better ++ Best +++

Bandsaw Type	Material						Profile		
	Aluminium	Mild Steel	Stainless Steel	Over 50HRC	Copper or Brass	Structural Steel	Tube / Pipe	Solids	Pack Cutting
Bi-Alfa Cobalt M42	++	+++	++	+	++	++	+++	+++	++
Profile M42	++	+++	+	+	+	+++	+++	+	+++
Bi-Alfa WS Alu	+++	+	++		+++		++	+++	+
Bi-Alfa RP	+	++	+++	++	+++	+	+	+++	+
Cobalt Extreme	++	++	+++	++	+++	+	+	+++	
Master Supreme	++	+++	+++	++	+++	+	+	+++	
TCT Alu	+++				+++		++	+++	+
TCT B0	+	++	+++	+++	+	+	++	+++	+
TCT MU	++	+++	+++	++	++	++	+++	+++	++

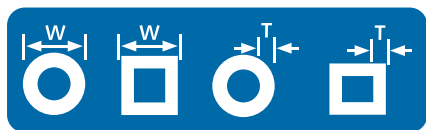
Tooth Selection | Solids



Vari-Pitch Toothings 		TCT Toothings (Materials over 50 HRc) 	
Material Diameter (D) mm	Teeth Per Inch	Material Diameter (D) mm	Teeth Per Inch
0-5	18	50-120	3/4
4-8	14	100-250	2/3
2-15	10/14	150-400	1.5/2
8-20	8/12	350-600	1.1/1.6
16-30	6/10	500+	0.85/1.15
25-40	5/8		
35-70	4/6		
60-120	3/4		
80-200	2/3		
120-400	1.5/2		
250+	1.1/1.6		
400+	0.75/1.25		

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Tooth Selection | Tubes & RHS



Tube Width	Wall Thickness (T)															
	1	1.6	2	2.5	3	4	5	6	7	8	9	10	12	15	20	50
10	14	10/14	10/14													
	12/16	8/11	8/11													
20	14	10/14	10/14	10/14	8/12											
	12/16	8/11	8/11	8/11	8/11											
25	14	10/14	10/14	10/14	8/12	8/12										
	12/16	8/11	8/11	8/11	8/11	8/11										
30	14	10/14	10/14	10/14	8/12	8/12	6/10									
	12/16	8/11	8/11	8/11	8/11	5/7	5/7									
40	14	10/14	10/14	10/14	8/12	8/12	6/10	5/8	5/8	5/8						
		8/11	8/11	8/11	8/11	5/7	5/7	5/7	4/6	4/6						
50	14	10/14	10/14	8/12	8/12	6/10	6/10	5/8	5/8	5/8						
		8/11	8/11	8/11	5/7	5/7	5/7	5/7	4/6	4/6						
60-120	14	10/14	10/14	8/12	8/12	6/10	6/10	5/8	5/8	4/6	4/6	4/6	4/6	3/4	3/4	
		8/11	8/11	8/11	5/7	5/7	5/7	4/6	4/6	4/6	3/4	3/4	3/4	3/4	3/4	
130-150		10/14	10/14	8/12	8/12	6/10	6/10	5/8	5/8	4/6	4/6	4/6	4/6	3/4	3/4	3/4
			8/11	8/11	5/7	5/7	4/6	4/6	4/6	4/6	3/4	3/4	3/4	3/4	2/3	2/3
150-180			10/14	8/12	6/10	6/10	5/8	4/6	4/6	4/6	4/6	4/6	4/6	3/4	3/4	3/4
			8/11	8/11	5/7	5/7	4/6	4/6	4/6	3/4	3/4	3/4	3/4	2/3	2/3	2/3
190-300					6/10	6/10	5/8	4/6	4/6	4/6	4/6	4/6	4/6	3/4	3/4	2/3
							4/6	4/6	4/6	3/4	3/4	3/4	3/4	2/3	2/3	1.5/2
350-400										4/6	4/6	3/4	3/4	3/4	3/4	2/3
									4/6	3/4	3/4	3/4	2/3	2/3	2/3	1.5/2
450-500										4/6	4/6	3/4	3/4	3/4	3/4	2/3
										3/4	3/4	3/4	2/3	2/3	2/3	1.5/2

Bandsawing Guide

Why Should I Use Coolant On My Bandsaw ?

Coolants are essential when working with metals. They serve four crucial purposes: cooling, washing, lubricating, and protecting.

Cooling: Metalworking generates intense heat that can damage tools and workpieces. Coolants combat this heat ensuring longer tool life.

Washing: They also clear away metal chips to keep the cutting edge effective.

Lubrication: Reduces friction, further extending tool life. While oil is a traditional lubricant, newer options are emerging.

Protecting: Moreover, coolants safeguard against rust, benefiting both workpieces and machinery.



The Difference Between Mineral & Semi-Synthetic Coolants

1. **Chemical Composition:** XDP1000 is a soluble oil primarily made from mineral oil, while XDP2000 is semi-synthetic and contains only a small amount of mineral oil.
2. **Visual Appearance:** When mixed with water, XDP1000 becomes milky white due to its high oil content, whereas XDP2000 is slightly yellowish and opaque because it has less oil content.
3. **Application and Benefits:** Both coolants work well for a wide range of machining applications, covering all metals from non-ferrous to stainless steel. XDP1000 excels in lubrication, making it ideal for non-ferrous metals, while XDP2000 offers better cooling properties, making it perfect for ferrous metals.
4. **Dragout:** XDP2000 is a cleaner product due to its lower lubricity, resulting in less coolant wastage when removing workpieces from the machine.



Mineral
XDP1000



Semi-Synthetic
XDP2000



See packaging for details on how to correctly mix coolants.

Bandsawing Guide

When Should I Use an MQL Unit?

MQL refers to “Minimum Quantity Lubrication”.

Why MQL?

MQL systems, provides numerous benefits to the users such as productivity, product quality, human and environment health.

Advantages:

MQL systems lubricate (and cool) the cutting tool in the most economical and productive way. The lubricant is applied directly to the required point more efficiently, which provides a long-term period of usage of the tool without changing.

MQL systems use vegetable-based oil which is completely harmless to human and environment health. It is developed to apply the lubricants at minimum quantities, as needed. In addition to a perfect finish, it leaves almost no residue and is free of chlorinated compounds.

When to use:

- Aluminium - all profiles
- Ferrous materials - thin tubes and profiles

When not to use:

- Materials thicker than 25mm
- Ferrous solids
- Hi-Tensile materials



Recommended Misting Oils:
XDP116 and XDP120

Magnetic Swarf Removers

It is important to remove swarf from the blade and from around the bandsaw machine.

A build up of swarf can result in overfilling the gullet of the blade and cause the blade to 'jump', resulting in broken teeth.

Available in 400mm and 700mm lengths.



Get In Touch

We'd love to have a discussion to learn more about you and your business.



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Interested in
Bandsaw Blades?



Want to Talk to
Someone?

