

DIMAKIN



BANDSAW BLADE GUIDE

Advice for choosing the correct bandsaw blades with your DIMAKIN machine



DIMAKIN LTD
UNIT 6A PILOT DRIVE
PILOT TRADE CENTRE
COVENTRY
CV3 4RS

02476 210 123
SALES@DIMAKIN.CO.UK

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There are three key components to consider during any sawing application, these are;

1. Feed speed
2. Cutting speed
3. Blade TPI count

All three of these components have an impact on cut time, cut quality, and blade life. The key is finding the perfect balance depending on your specific material application. Below you will find information that will help you get a perfect balance of all three.

All decisions should be determined by material hardness and volume of material to be removed. Softer materials require different speeds, feeds, and TPI's than harder materials.

In analysing the chips in your bandsaw bed, you will learn to diagnose the characteristics of your bandsaws performance and adjust accordingly.

(1) Feed speed - (The speed at which the bows declines into the material)

- **Too fast** - If your feed speed is too fast it will decrease blade life. This will be characterised by material chips in the bed being very fine & blued (burned) or if cutting a solid section, big and blue.
- **Too slow** - If your feed speed is too slow, it will increase cut time unnecessarily. This can also cause the blade to rub and not cut, and can be characterised by very thin chips.
- **Optimum** - If your feed speed is just right you will get perfect chips. Perfect chips are tightly curled silver chips. This will maximise blade life, and give the quickest possible cut time.

(2) Cutting speed - (The speed at which the blade moves across the surface of the material)

The speed at which the bandsaw blade moves through the material is usually measured in metres per minute, or MPM.

Determining the correct cutting speed should be used in conjunction with feed speed. Faster cutting speeds will need a faster descent speed, however higher speeds decrease blade life. Again, you can use chip shape and colour to determine the optimal speeds.

Suggested cutting speed ranges based on material being cut:

- Stainless steel: between 30 - 40 mpm
- Mild steel: between 45 - 65 mpm
- Aluminum: between 80 - 85 mpm
- **Too fast** - If your cutting speed is too fast it will decrease blade life. This will be characterised by material chips in the bed being very fine & blued (burned) or if cutting a solid section, big and blue.
- **Too slow** - If your cutting speed is too slow, it will cause premature blade breakages. This can also cause the blade to rub and not cut, and can be characterised by very thin chips, and excessive noise.
- **Optimum** - If your cutting speed is just right you will get perfect chips. Perfect chips are tight and curly, warm but not hot, and uncoloured by blueing.

(3) Blade TPI count - (The blades teeth-per-inch count.)

Blade tooth count is measured as teeth per inch (TPI). A fine blade will have higher numbers in its TPI, and a coarse blade will have smaller numbers in its TPI. The TPI of a bandsaw blade is alternated between two numbers around the band to improve cut quality and harmonics. For example, a 5/8 TPI means the first inch has five teeth, and the second inch will have eight. The third will go back to five teeth, continuing around the entire blade band. Five, eight, five, eight, five, eight.

Toothed blades are designed to collect material and carry it out and away from the area in a part of the blade called the gullet. The gullet is the curved section in front of the point of the blade, and is the part of the blade that contains the material being removed. If the gullet becomes full or clogged the blade cannot remove any further material, and it will jam, break or drag across the surface, increasing the resistance on the motor and risking serious damage to your machine.

The idea is to have just the right amount of teeth in the cutting area at any one time.

- A fine blade has many TPI, with smaller gullets
- A coarse blade has few TPI, but each individual gullet is larger

Determining the optimal TPI

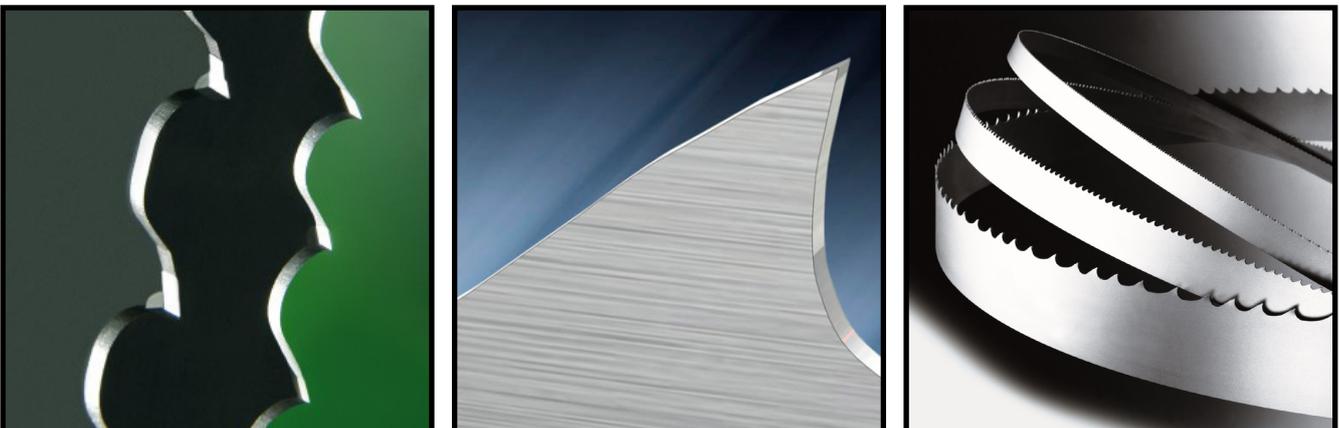
A large section with a thin wall has a relatively small amount of material to remove from the cut therefore requires a fine pitch, small gullet, higher TPI.

A solid section will have a relatively large amount of material to remove from the cut and this will require a coarser blade, larger gullet, lower TPI.

Use the below as a rough guide only, for illustrative purposes:

- Solid section (Eg. 100mm OD) - 4/6 TPI
- General fabrication (Eg. 100mm x 8mm) - 5/8 TPI
- Large section with a thin wall (Eg. 100mm x 2mm) - 10/14 TPI

[For more information on tube and pipe - see last page]



Coolant

Using water based flood coolant to the correct mixture ratio will keep both the blade and material cool during cutting, improving the quality of the cut and the life of the blade.

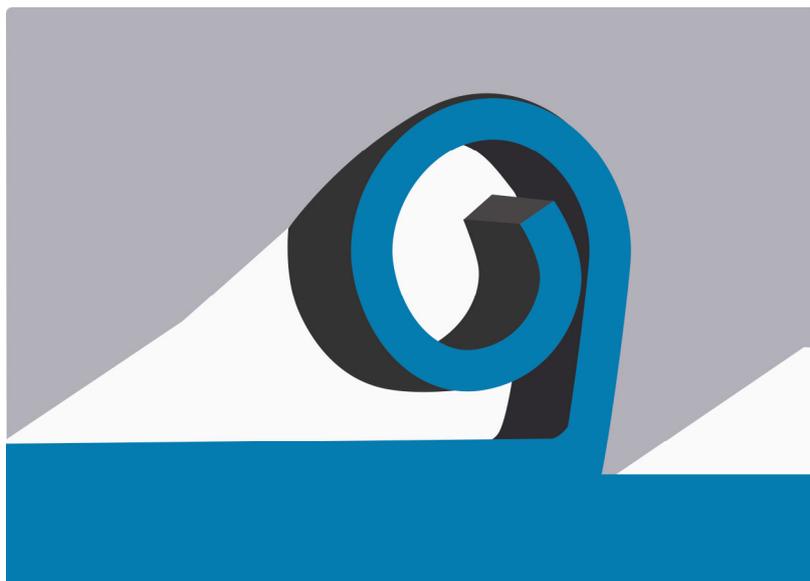
Coolant tips

- Change coolant at least every 2 months regardless of how much the bandsaw is used.
- 1. **High use saws** - coolant will become thin and lose lubricating and cooling qualities
- 2. **Low use saws** - coolant will start to curdle and block coolant pipes and add increased pressure on coolant pump.

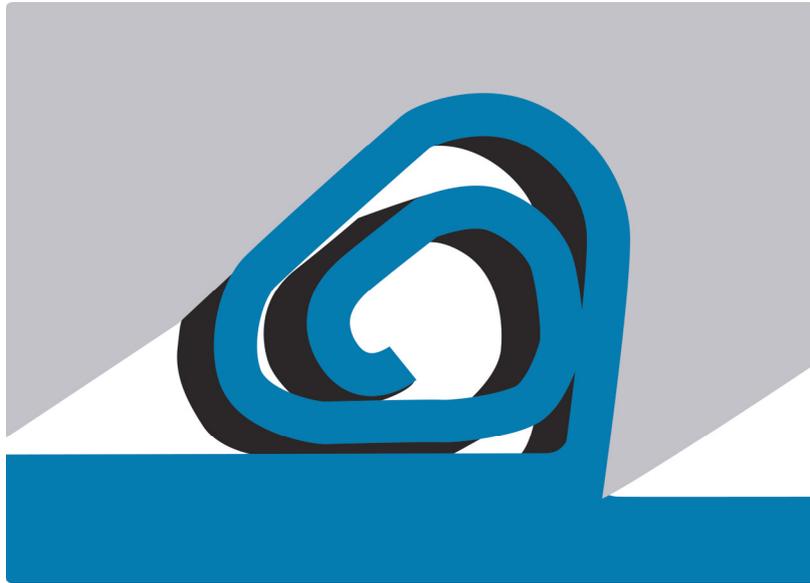
Troubleshooting and illustrations

Common causes of reduced blade life, inaccurate cut or blade breakage are commonly down to:

- Wrong descent speed
- Wrong cut speed
- Wrong TPI
- Worn (dull) blade
- Blade tension too low
- Guide arms too far apart
- Poorly mounted blade
- Poor maintenance - blade guides clogged, blade wheels clogged
- Cutting without coolant



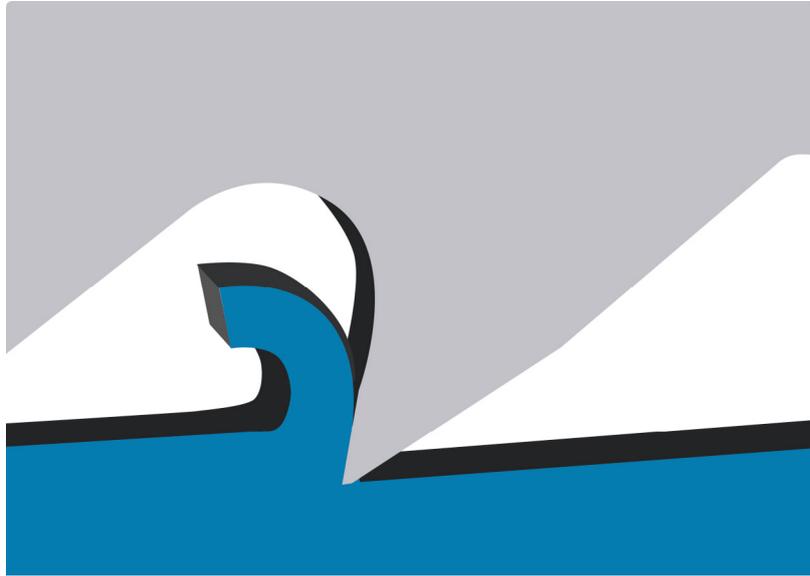
The gullet carrying the correct amount of material and creating a tightly curled, uniform chip.



The gullet carrying the too much material and creating a large distorted chip. Possible feed speed too fast, or cutting speed too slow.



A thin cut, removing a small amount of material. Possible descent speed too slow, or blade speed too fast. Inefficient sawing.



A thick cut, removing far too much material in one pass. Adds strain to motor and reduces blade life. Possible cutting speed too slow or descent speed too fast.

NO MORE INFORMATION ON THIS PAGE

SEE NEXT PAGE



Tooth pitch recommendation for tubes and pipes

Wall Thickness S [mm]	Outer Diameter D [mm]									
	20	40	60	80	100	120	150	200	300	500
2	14	10/14	10/14	10/14	10/14	8/12	8/12	8/12	8/12	5/8
3	14	10/14	10/14	8/12	8/12	8/12	8/12	6/10	6/10	5/8
4	10/14	10/14	8/12	8/12	8/12	6/10	6/10	5/8	5/8	4/6
5	10/14	10/14	8/12	8/12	6/10	6/10	5/8	4/6	4/6	4/6
6	10/14	8/12	8/12	6/10	6/10	5/8	5/8	4/6	4/6	4/6
8	10/14	8/12	8/12	6/10	5/8	5/8	4/6	4/6	4/6	4/6
10	-	8/12	6/10	5/8	4/6	4/6	4/6	4/6	4/6	4/5
12	-	8/12	6/10	4/6	4/6	4/6	4/6	4/6	4/6	4/5
15	-	8/12	6/10	4/6	4/6	4/6	4/6	4/5	4/5	4/5
20	-	-	4/6	4/6	4/6	4/6	4/5	4/5	4/5	3/4
30	-	-	-	4/6	4/6	4/5	4/5	4/5	4/5	2/3
50	-	-	-	-	-	-	4/5	3/4	2/3	2/3
80	-	-	-	-	-	-	-	3/4	2/3	2/3
>100	-	-	-	-	-	-	-	-	2/3	1,5/2

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