

Technology Profile

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Troubleshooting Band Resaws

Bandsaws are versatile tools for ripping or resizing lumber and as a result, are one of the most common machines used in wood products manufacturing. Bandsaws have the advantage of being able to process deep depths of cut with a small kerf (tooth width). Bandsaws also have the option for splitting boards into two or producing bevel siding products for example.

Bandsaws are much more complicated machines than circular saws. They have more parts, so more can go wrong and blade maintenance is more complicated. Unless all aspects of the machine and saw blades are maintained to a fairly high level, production and product quality will suffer.

This Technology Profile focuses on commonly seen problems with band resaws and offers a guide on how to rectify these problems.

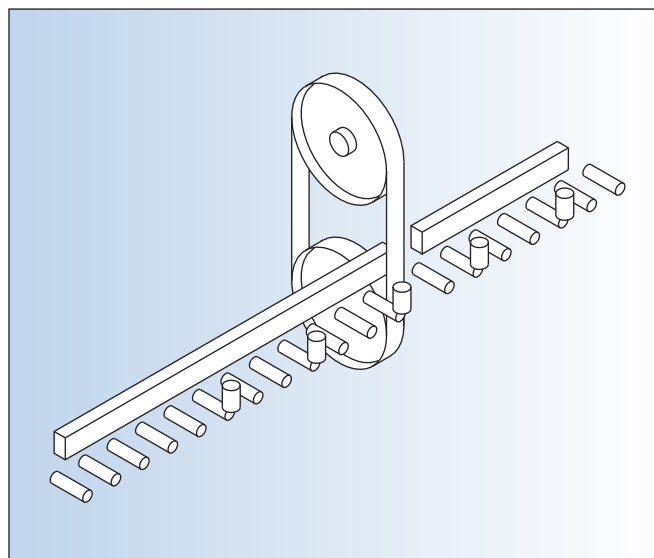
Machine & Maintenance Issues

Before discussing sawing performance, the capability of the whole machine needs to be considered. Having a solid, well-maintained machine is critical for consistent production. A machine that does not control the wood or support the saw will force the use of thicker saws or slower feed speeds.

Mechanical Issues:

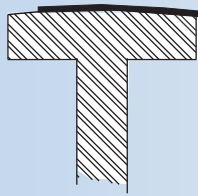
- Wheel crossline (wheels not parallel) will twist the blade, reducing blade life.
- Good guide alignment and condition ensures adequate support for the blade.
- Poor wheel condition (not round, excessive crown due to wear) affects blade life and blade tracking.
- A strain system that “sticks” and worn wheel bearings cause blade cracking.

Excellent control of the wood is needed because blades will easily break from binding.

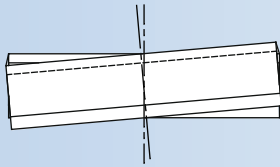


Typical band resaw.

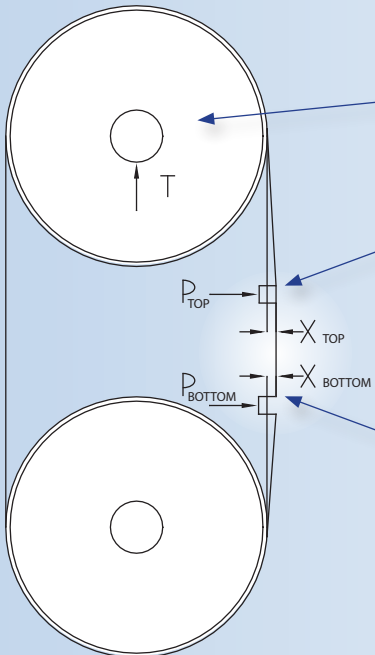
Key Mechanical Issues



Wheels must be round – Check with a dial indicator. The most common wear pattern of the wheel surfaces is for the front edge to wear away, resulting in too much crown. This leads to blade cracking and snaking.



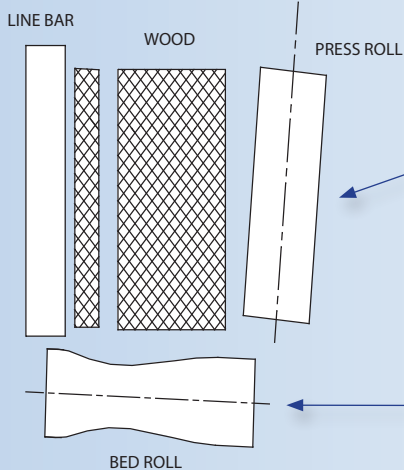
The wheels should be parallel to each other. This diagram shows “crossline”, which will cause blade cracking and snaking.



Use as much strain on the blade as possible without causing the blade to crack.

If the top guide moves, make sure the guide travels parallel to the blade. Otherwise board sizes will change when the guide moves.

The guides should solidly support the saw. The best option is to use “pressure guides” that push the blade outward slightly. This applies to roller-type guides as well. However, too much pressure will cause blade cracks.



Keep the feed system in good shape and properly aligned. All surfaces and rolls must be straight.

This diagram shows possible problems that would allow the top of the board to move away from the linebar.

Worn or sloped bed rolls cause wide pieces to fall away from the linebar.

Common Issues

PROBLEM	SOLUTIONS
Marking teeth	Clean the wood (no rocks or sand)
	Pay more attention when straightening teeth
	Control the wood better (wood movement can bend teeth)
Torn Grain	Low wood moisture content. Green wood tears less
	Dull teeth
Cracking	Correct machine alignment (possible wheel cross-line)
	Correct gullet grinding (high grinding wheel speed can 'burn' the steel gullets and a rough finish creates grooves for cracks to start)
	Ensure the strain system is active and moves easily (not sticking)
	Check and replace wheel bearings
	Reduce guide pressure
	Using a thinner blade (reduce the bending stress over the wheels)
Snaking	Match the feed speed with the saw design
	Increase the tooth pitch and gullet depth
	Replace dull saws
	Keep guides close to the cut
	Ensure better control of wood
	Straighten movement of the wood at the infeed (feed alignment)
	Adjust the saw tension
Bevelled Boards	Saw and line bar (fence) are not parallel
	Board is not firmly against the linebar
Sniped/Flared Boards	Inadequate support for boards after leaving saw
	Outfeed linebar not aligned to the infeed linebar
	Press roll coming in late (leading edge snipe)
Slow Feed Speed	Use a wider blade
	Increase the hook and back clearance angles of the tooth
	Increase the strain
	Check that the top wheel tilts towards the infeed
	Check that there is adequate wheel crown
What are NOT saw problems	Wedged, tapered or sniped boards
	Boards that are consistently off-size or, boards that are have a uniform thickness, but are off-size.
	A step-change in thickness along the board



Feed Speeds

One or more of the following factors limits the feed speed:

- The bite is as large as it can be for an acceptable surface finish.
- The gullets are overloading with sawdust, resulting in heat in the saw and a wandering cut. Deeper depths of cut require slower feed speeds because more sawdust is produced.
- Excessive feed force is buckling the saw, causing the blade to wander. This problem increases for deep cuts and when the teeth are dull. Consider increasing the tooth pitch to reduce the feed pressure.
- The cutting forces on the teeth are bending the saw, producing a wandering cut, and perhaps saw damage.

On the other hand, feeding too slow results in rapid dulling of the teeth.

Maximum Feed Speed for each Depth of Cut

For a given tooth shape (gullet area) and blade speed the value of depth times feed speed should be constant. Generally, if the depth of cut is doubled, the feed halved. However, there is a limit to this relationship.

For more information on this topic, please call Bruce Lehmann at (604) 222-5643, bruce.lehmann@fpinnovations.ca

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