

Training Guide: Band Saw

INTRODUCTION:

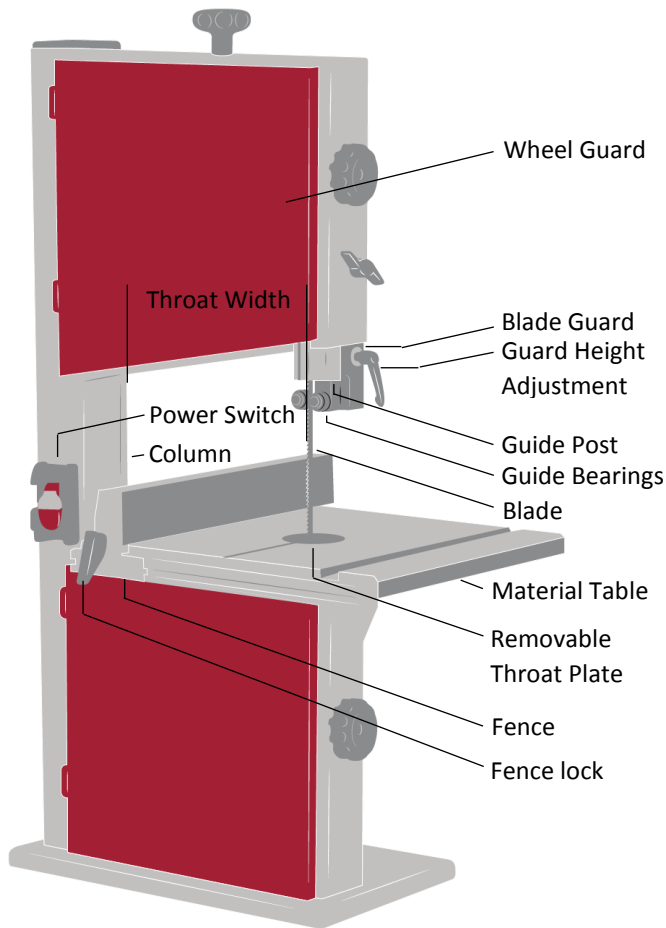
A band saw is typically used to make straight or slightly curved cuts through a variety of materials. A band saw has a continuous looped blade that is driven in one direction by a motor and flywheel. The cutting edge is a vertical length of the blade that is exposed in the gap between the material table and the blade guide. Material is fed in the gap slowly for consistent cutting. Blades with larger teeth are used to cut softer materials like wood and plastic; blades with smaller teeth are used to cut harder materials like aluminum and steel.

A band saw can be safely used by a person who is tall enough to comfortably reach the material table, and is able to physically support and control the material as it is fed through the machine. The motor provides the power to cut the material, not the operator. Though some strength is required, good technique and proper set up are the keys to using a band saw safely and effectively.

AFTER COMPLETING THIS TRAINING, STUDENTS WILL BE ABLE TO:

- Check that the material will fit in the machine and that the size of the blade tooth is appropriate for material
- Set the guide to the proper height
- Hold and feed material through the machine appropriately
- Cut straight lines at appropriate speed
- Make relief cuts and cut curved lines safely at appropriate speed
- Clean up any mess

HOW TO USE:



1. Mark intended cut on the material.
2. For your material, confirm that the band saw has:
 - a. An appropriate blade width and tooth size for chosen material.
 - b. Enough height to pass the material under the guard.
 - c. Enough throat width to fit the material through.
3. Adjust height of blade guard to 1/4 inch above stock. Adjust the fence to use as a guide for straight cut if necessary. Secure round stock with a small vise.
4. Double check that the fence, blade guard, and/or vise are tightened and secure.
5. Check that you have secured clothing, jewelry, hair, etc. that will get close to the machine.
6. Turn on machine.
7. Hold part firmly against the table and gently feed material through the blade letting the machine do the cutting. Use scrap wood to push stock near the end. See that material will be supported after cut.
8. Turn off blade and wait for it to stop completely before moving.
9. Clean up dust and scraps with dust pan or vacuum.

SAFETY GUIDELINES FOR OPERATING A BAND SAW:

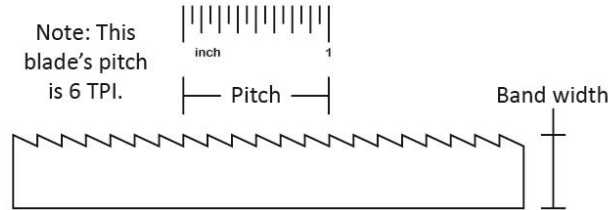
- Always use safety goggles
- Never place hands near active blade. Instead, user should use a piece of scrap wood to push stock through when it reaches end of the material
- Never wear gloves near the blade
- Wear ear plugs when cutting metal or plastic
- Wear a mask when operating for long periods of time or working with harmful material
- Support the material such that it does not fall off the table when the cut is finished

PRACTICE APPLICATIONS FOR STUDENTS:

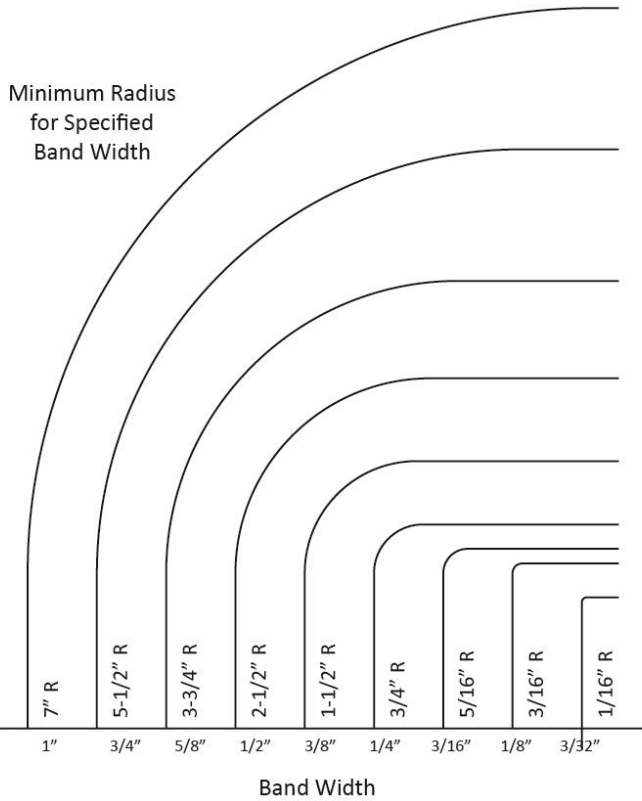
- Straight cut
- Slightly curved cut
- Sharper curved cut with relief cuts
- Cutting on multiple axes for more complicated geometries

Bandsaw Blade Guide

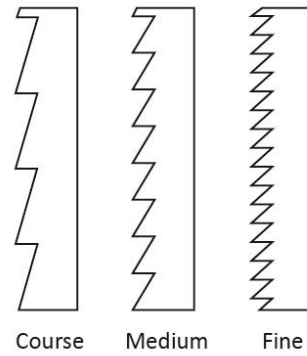
There are many factors to consider when choosing a bandsaw blade, but the most important are the **pitch** (number of teeth per inch, indicated as TPI) and the **band width**. The **tooth shape** is somewhat important as well.



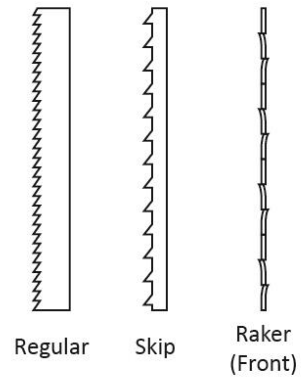
Radius Guide



Blade Types



Tooth Shapes



Tips for Choosing the Proper Blade

Band Width

- Wide bands can be used for straight cuts, while curves require a thinner band (see Radius Guide)

Pitch

- Typically, thinner materials call for a higher pitch, and thicker materials call for lower
- A higher pitch is used for a slower, finer cut; lower pitch produces a quicker, rougher cut
- During operation there should be at least 3 teeth in the workpiece at any given time, and no more than 24; 6-12 is ideal

Tooth Shape

- Raker pattern blades (with teeth that bend to either side) are used for cutting metal

Other Tips

- When a very fine finish is desired, a cutting fluid can be added during operation
- Pushing materials through the blade too quickly or using too fine a blade will dull the blade more quickly than proper use
- How to tell when a blade is dull:
It's difficult to follow a straight cut line
The blade cuts slowly or not at all
The edges do not feel sharp in off position

Material	Pitch (Teeth Per Inch)	Blade Type
Low Density: Wood, Lightweight Plastics, Foam, etc.	Coarser Pitch 6-14 TPI	Regular Tooth Skip Tooth
Medium Density: Heavier Plastics, Lightweight Metals (aluminum, brass), etc.	Medium Pitch 12-22 TPI	Regular Tooth Skip Tooth
High Density: Workable Metals (steel) *Not Brittle Metals (like stainless steel)*	Finer Pitch 20-32 TPI	Regular Tooth Raker Pattern