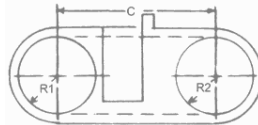


General How-To's for all Band Saw Blades

How to choose the correct blade length

If the Operator's Manual for your bandsaw does not specify the proper blade length, use the following procedure to determine the blade length:

1. Fix pulleys or wheels in working position.
2. Determine distance from center of hub on



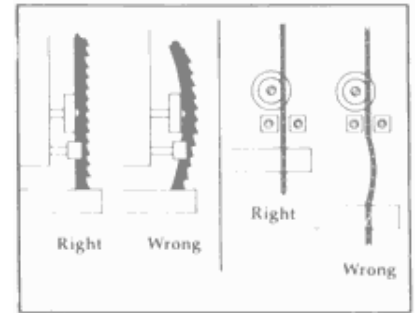
upper and lower wheels (C).

3. Determine radius of the upper (R1) and of the lower (R2) wheel.
4. Apply formula as follows: $(R1 \times 3.1416) + (R2 \times 3.1416) + (2 \times C) = \text{length}$

How to install your blade

Unplug the saw, then loosen the tension on the upper wheel. With all the blade guides backed off, slip the new blade around the wheels and then tension it. When you have tensioned the blade enough to keep it on the wheels, track it by turning the upper wheel with one hand while adjusting the tilt of the wheel's axis with the other hand. The blade should ride in the middle of the rim. Next, adjust the blade guides; first the thrust bearings; upper and lower; then the

left hand side guides. Use a square to make sure you are not pushing the blade out of line and place a piece of white paper between the blade guide and the blade with the motor running and the cover open.



How to diagnose problems

1. Premature and Excessive Tooth Wear

- Feed pressure too light - increase it.
- Lower band velocity
- Improper tooth selection, use finer pitch.
- Improper break-in with new band. Velocity and feeding should be reduced the first few cuts.
- Teeth are running the wrong direction - Be sure teeth are pointing in the proper direction.
- Incorrect saw guide insert size for the band, allowing them to strike teeth.



2. Blade Vibration

- Increase or decrease band velocity.
- Increase tension of band.
- Teeth are too coarse for work piece.
- Increase feed pressure.
- Material not securely held.

3. Tooth Strippage

- Teeth are too coarse for workpiece
- Material not securely held.
- Too much feed pressure - reduce for good chip curl.
- Band velocity too low - increase speed.



4. Finished Cut Surface too Rough

- Improper tooth selection - choose finer pitch.
- Increase band velocity.
- Decrease feed rate.



5. Premature Blade Breakage

- Thickness of blade too heavy for diameter of wheels and speed of machine.
- Increase or decrease velocity.
- Check wheels for defects.
- Teeth too coarse for work piece - use a finer pitch.
- Decrease blade tension.
- Decrease feeding force.
- Brittle weld - increase annealing period, decreasing heat gradually.
- Check for proper adjustment of band guides arms, saw guide inserts and back-up bearings.



6. Blade Making Belly-shaped Cuts

- Increase tension.
- Adjust guides closer to work piece
- Teeth too fine - use a coarse pitch.
- Decrease feed force.
- Teeth dull.

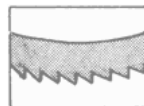


7. Gullets Loading

- Teeth too fine for work piece - use a coarse pitch.
- Decrease band velocity.

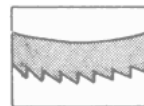
8. Band Develops Negative Camber

- Band is riding on saw guide backup bearing too heavily. Adjust band for alignment on top and bottom wheels.
- Check band wheel alignment.



9. Blade Not Running True Against Saw Guide Backup Bearing

- If clicking noise against saw guide backup bearing, remove burr on band.
- Check band wheel alignment.
- Check saw guide backup bearing for wear - replace if necessary.
- Weld not in proper alignment - re-weld blade straight and true.



10. Cutting Rate Too Slow

- Increase band velocity.
- Increase feed pressure.
- Use coarser pitch.

11. Blade Leading In Cut

- Reduce feed pressure or rate.
- Check adjustments and wear of saw guides or rollers.
- Lack of band tension.
- Tooth set damage.

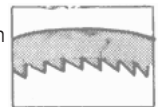


12. Premature Loss of Set

- * Improper width selection - check chart for correct width for radius cutting.
- * Reduce band velocity.

13. Band Develops Positive Camber

- Decrease feeding force.
- Use coarse pitch to increase tooth penetration.
- Adjust saw guides closer to work.



14. Band Develops Twist

- * Wrong width for radius being cut - choose a narrower blade.
- * Binding in cut - decrease feed pressure.
- * Decrease band tension.
- * Adjust saw guides further from work piece.



15. Band Stalls In Work

- Feed pressure too great - decrease feed.
- Teeth too coarse - use finer tooth blade.

16. Band Scoring (side wear or grooving)

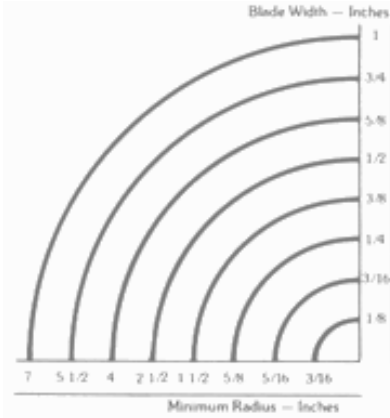
- Check for wear on saw guide inserts.
- Too much pressure on saw guide inserts.
- Check alignment of saw guides - be sure they are square to front vise. Replace or clean guides.



17. Burring or Mushrooming Of Blade Back Edge

- Increase tension and adjust guides.
- Check contact between blade and back edge rollers.
- Reduce feed pressure.
- Use coarser pitch blade.





If no such instructions are provided, blade width should be determined with the following guidelines:

Minimum dimensions for different cutting radii

- For cut-off sawing.
The blade should be as wide as the machine will allow. The wider the band is, the straighter the cut will be. Faster feeding can be achieved.
- For contour sawing.
the blade should be as wide as the machine allows, but still narrow enough so that it can cut the desired shape (radius). Minimum dimensions for different cutting radii are shown in the chart to the right.



Blade width is measured from the tips of the teeth to the back edge of the blade as shown above. The instructions for the particular machine being used should be followed when selecting blade width.

How To Choose The Correct Tooth Style and Set

Regular Tooth



The most commonly used tooth shape. Ideally suited for both cut-off and contour sawing of most materials. For cutting thin materials where a fine cut edge is required.

Skip Tooth



Widely spaced teeth with 0° rake angle to prevent clogging when cutting soft, non-ferrous materials, plastics and wood.

Hook Tooth



Positive 10° rake angle helps to 'dig-in', resulting in a higher cutting rate. Recommended for long cuts into thicker wood, plastics and metal.

Raker Set



The raker tooth set consists of one to the left, one to the right and one tooth (raker) is unset. This set is used for cutting thick, solid metal sections on horizontal cut-off machines. It is also used for contour cutting and re-sawing wood on vertical band machines.

Alternate Set



Alternate set or double alternate plus raker set blades are designed for cutting wood. Provides faster, smoother cuts.

Wavy Set



This set pattern has groups of teeth set to the left and to the right, separated by unset raker teeth. It is made primarily with small teeth and is recommended for cutting thinner sections - tubes, pipes, thin sheets and other small shapes. 32 TPI only.

The number of teeth per inch (TPI) is important in obtaining the finish desired and the proper feed rate. A coarse tooth blade (2, 3 TPI) should be used for re-sawing wood and cutting thicker stock up to 8". A fine toothed blade (18 to 32 TPI) should be used for thinner metals, plastics, under 1/4". For general cutting of 3/4" wood 4 TPI will provide a fast cut and 14 TPI will cut slow but leave a smoother finish.

When selecting TPI remember:

- * More TPI give a smoother but slower cut.
- * Fewer TPI allow a faster cut with a slightly rougher finish.
- * At least three teeth must be in the work piece - the chart to the right will help you decide.

TPI	Minimum Material Thickness
32	3/32"
24	1/8"
18	5/32"
14	1/4"
10	5/16"
8	3/8"
6	1/2"
4	3/4"
3	1"
2	1 1/2"

Hobby Bandsaws

To promote blade life on 3 wheel Bench Top Bandsaws follow these helpful tips that we've learned through testing and experience.

- Use the least amount of tension possible - just enough to keep the blade tracking properly without slippage during cutting. Bandsaw blades are difficult to tension on three wheel bandsaws due to limitations and restrictions imposed by machine design. Instead of remaining rigid the machine will flex as you tension the blade thereby creating a false impression or 'feel' for the proper tension. The resulting over tensioning will cause stress and promote rapid blade fatigue.
- Use the widest blade possible for the you need. Very simply, the wider the blade the greater the greater the cross sectional strength. Both at the weld and body.
- Set your guides properly. Many bandsaw blades break because they are twisted or forced off the wheels due to improperly set guides. Upper and lower side guides and thrust bearings must be set according to your Owner's Manual.
- Let the blade do the cutting. Do not force the work into the blade - this is especially true when making radius cuts. The tooth set allows you to make turns and the blade guides, if properly set, will prevent the blade from twisting.