Solutions To Band Saw Problems

Chipped Teeth

1. Blade too coarse for material being cut. Use finer tooth blade.
2. Feed pressure too heavy in relation to blade speed. Either decrease feed or increase speed slightly.

Stripped Teeth

1. Blade too coarse for material being cut — chip load is too heavy per tooth. Change to finer tooth blade.
2. Blade too fine — chips loading in gullets. Change to a coarser tooth blade.
3. Irregular feed pressure. Check hydraulic system for air in the lines or dirty oil.
4. Excessive feed pressure, causing loading. Reduce pressure.
5. Not enough speed, causing shock. Increase speed.
6. Hard spots in the material causing shock. Increase feed pressure.

Premature Wear

1. Excessive blade speed or excessive feed pressure. Balance blade speed and feed pressure.
2. Insufficient blade tension causing blade to cock slightly, preventing straight cut. Increase blade tension.
3. Insufficient cutting fluid, wrong type of cutting fluid, or concentration of cutting fluid allows excessive heat to be generated at the tooth tips, reducing wear resistance. Cutting fluid should be the proper type for the material being cut.

Blade Breakage

1. Improper blade tension. Check with pressure gauge or tension measuring device.
2. Worn back-up bearings and/or worn side guides. Replace worn parts and make sure side guides have been accurately ground for parallel position.
3. Excessive blade speed. The faster a blade is run, the sooner it will fatigue. Flexing around the wheels induces fatigue, a common problem to all high speed bands. Reduce blade speed slightly and reset feed pressure to maintain cutting rate.
4. Excessive feed pressure. Reduce pressure.

Crooked Cuts

1. Improper guide adjustment or worn faces on side of guides. Guides should not be too tight. Machines using high performance bands must be equipped with carbide-faced guides to minimize wear and support the blade properly. The thrust bearing should be checked against freezing or grooving. Replace if worn more than .020" or chipped.
2. Chips welding to teeth due to inadequate chip removal or improper cutting fluid. Check chip brush to be sure it is removing chips properly. Check cutting fluid to be sure it is providing adequate lubrication and chip removal.
3. Excessive feed pressure. Reduce pressure.
4. Insufficient blade tension. Check tension with pressure gauge.
5. Improper blade alignment. Check alignment of flange type wheels.

Rough Cutting

1. Improper tooth selection. See Tooth Selection Chart on Page 4.
2. Bad set-up. Support work more firmly.

Blade Edge Swedging

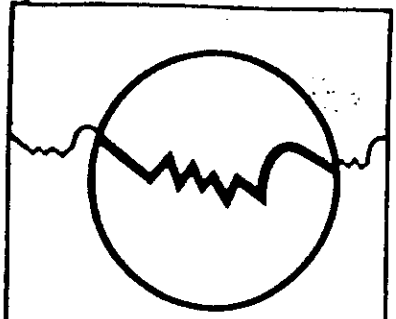
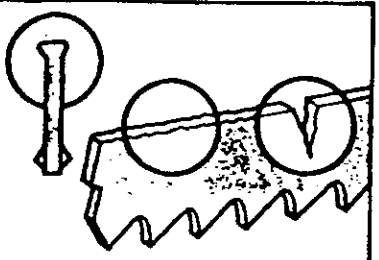
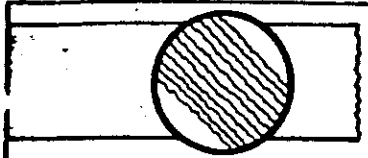
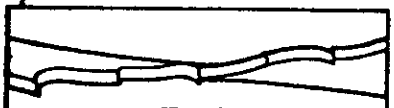
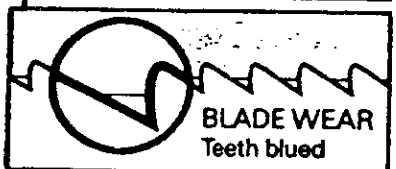
1. Worn back-up guides. Replace.
2. Back-up guide fails to rotate. Replace or clean to allow free rotation.
3. Excessive feed pressure. Reduce.
4. Blade too close to flanges. Adjust.

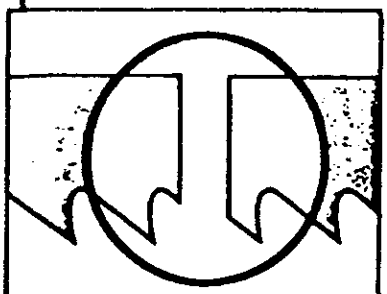
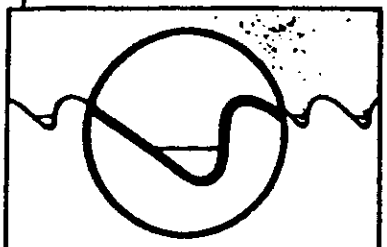
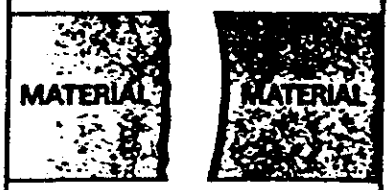
Blade Vibration

1. Harmonics. Change feed, speed or tooth.

Chips Welding To Gullets

1. Brush not operating. Check it closely.
2. Excessive feed. Reduce.
3. Speed too high. Reduce.
4. Improper cutting fluid or insufficient cutting fluid. Increase amount of cutting fluid, increase concentration of cutting fluid or change to the proper cutting fluid.

PROBLEM	PROBABLE CAUSE	SOLUTION
 TEETH STRIPPING	• Feed pressure too high • Tooth stuck in cut • No cutting fluid or incorrect coolant • Hard spots scale, inclusions, etc • Incorrect blade (wrong pitch) • Work spinning in vice; loose "nest" or bundles • Incorrect Break-In • Blade teeth running backwards • Chip Brushes Defective	• Reduce feed pressure see Cutting Chart and or speed • Never enter same (old blade) cut with new blade • Check Coolant Table • Check hardness. Descale and or anneal if necessary • Check Cutting Chart • Check hydraulic pressure; be sure work is firmly held • Use Recommended Break-In • Reverse blade (turn inside out) • Check Chip Brushes
 WEAR ON BACK OF BLADES	• Insufficient blade tension • Incorrect feed (excessive) • Back-up guide frozen in position, damaged, or worn. • Guide arms too far apart, worn or loose • Blade rubbing on wheel flanges • Back/ Rollers Upper	• See Machine Operator's Manual for correct band tension • Reduce feed pressure • Free pressure block and realign. If worn replace (never regrind) • Move arms close to work as possible • Adjust wheel alignment • Replace rollers
 ROUGH CUT washboard surface Vibration and or chatter	• Dull or damaged blade • Incorrect feed and or speed • Lack of band support • Insufficient band tension • Incorrect pitch blade	• Replace with new blade • Check Cutting Chart: Adjust until noise disappears • Set guide arm properly – as close to work as possible • Check Operator's Manual for correct tensions • Check Cutting Chart
 WEAR LINES, LOSS OF SET	• Saw guide inserts or pulley are riding on teeth • Insufficient blade tension • Hard spots • Backing Guide worn	• Check Operator's Manual for correct blade width • Check for correct blade tension • Check material hardness • Replace
 TWISTED BLADE Profile sawing	• Band sticking in cut • Side guides adjusted too tight • Work not held firmly • Incorrect or lack of cutting fluid	• Check for over-feed, damage set, is blade too wide for radii being cut? • Set side guides properly • Check vice and hydraulics • Check Coolant Table
 BLADE WEAR Teeth blued	• Incorrect blade • Incorrect feed or speed • Improper or lack of cutting fluid	• Check Cutting Chart, Pages 8 & 9 • Check Cutting Chart, Pages 8 & 9 • Check Coolant
 BROKEN TEETH Front of tooth indicates work spinning in vice	• Material loose in vice • Incorrect blade (wrong pitch)	• Check hydraulic pressure • Check Cutting Chart

PROBLEM	PROBABLE CAUSE	SOLUTION
 BLADE BREAKAGE Straight Break indicates fatigue	• Incorrect blade - Teeth too coarse • Band tension too high • Excessive feed • Incorrect cutting fluid • Wheel diameter too small for blade being used • Blade rubbing on wheel flanges • Teeth in contact with work before starting saw • Guides too tight	• Use Finer Tooth Pitch • Reduce band tension. See Machine Operator's Manual • Reduce feed pressure • Check Coolant • Use thinner blade and lower speed • Adjust wheel alignment • Allow ½" clearance before starting cut • See Operator's Manual
 PREMATURE DULLING OF TEETH	• Blade teeth inverted (backwards) • Improper break-in period • Hard spots in material (like scale) • Material work hardened (check for hardness and adjust feed) • Improper cutting fluid or mixture • Speed and feed too high	• Install blade correctly • Reduce feeds and speeds during break-in period in accordance with manufacturer's recommendations (See breaking-in procedures for B-metal blades) • Check material for actual hardness – hard spots like scale or flame cut surfaces • Increase feed pressure • Check Coolant • Check Cutting Chart, Pages 8 & 9
 INACCURATE CUT	• Teeth dull • Over or under feed • Improper pitch blade • Cutting fluid not applied evenly • Incorrect blade (too many teeth per inch) • Guides worn or loose	• Use new blade • Check Cutting Chart, Pages 8 & 9 • Check Cutting Chart, Pages 8 & 9 • Adjust coolant nozzeles • Check Cutting Chart, Pages 8 & 9 • Tighten or replace guides
 BAND LEADING IN CUT	• Over feed • Lack of band tension • Tooth set damage • Loose guide arms or set too far from work	• Check Cutting Chart, Pages 8 & 9 • Check Operator's Manual for correct tension • Check material hardness • Adjust arm close to work as possible tighten and align. Check Machine Guide
 CHIP WELDING	• Improper or lack of cutting fluid • Wrong coolant concentration • Excessive speed or pressure • Incorrect blade (wrong pitch) • Chip Brushes Defective	• Check Coolant • Check Coolant • Reduce speed or pressure, Check Cutting Chart, Pages 8 & 9 • Check Cutting Chart, Notes • Check Chip Brushes
 TEETH FRACTURE Back of tooth indicates work spinning in clamps	• Incorrect feed and/or speed • Incorrect blade (wrong pitch) • Saw guides not adjusted properley • Chip Brushes Defective	• Check Cutting Chart, Pages 8 & 9 • Check Cutting Chart, Pages 8 & 9 • Adjust or replace saw guides • Check Chip Brushes
 IRREGULAR BREAK *Indicates material movement*	• Indexing out of sequence • Material loose in vice	• Check for correct indexing sequence (head rise) • Check hydraulic pressure

"The Good Life"
of Band Saw Blades

You've got an important cutting job. The saws are up and running. The best band saw blades and cutting fluid for the job are on hand. You've scheduled all shifts needed to complete the job. Sit back & let the sawing begin! Right?
What if your band saw blade starts cutting out of square? Do you toss the used blade, install a new one and resume cutting? Call the blade manufacturer about the "defective" blade? Check the blade & try to pinpoint the problem?

Check the blade - it will tell you why your cutting went awry. Learn to recognize what the signs on the blade indicate about your machine setup, your blade choice or material positioning. Then make the adjustments dictated by those signs. You'll prevent the problem from recurring with your next blade.

Precision Sawing

Tending your sawing equipment is well worth the effort; once done, the actual sawing takes care of itself. You'll save money on saw blades and machine repairs. What's more, you'll save a lot of effort in trying to recover a blade gone bad.

Sawing performance is measured by:

1) Cutting rate
2) Part accuracy or
3) Blade life.

Unfortunately, these three objectives compete with each other. Decide which of the three is the most important for a particular job. Expensive material might make part accuracy imperative. A tight production schedule might require the fastest possible cutting rate.

Yet every cost-effective sawing operation demands the best possible blade life. No matter what your ultimate goal, improve your sawing results by maximizing your blade life.

What Exactly Is Blade Life?

Usually measured in square inches of material cut, blade life measures the amount of work completed by a blade before losing effectiveness. "Effectiveness" can be measured by pieces cut, time per cut or accuracy of cut. Even when similar materials are being cut, blade demands differ from one operation to another.

Most operators know what constitutes normal blade life for their sawing operation. As with blade life, the meaning of "blade failure" varies from one operator to the next, making it difficult to predict life or failure in general terms. Instead, sawing experts ask an operator, "Why do you change a blade?" The answer reveals the needs of that particular sawing operation.

Read your band saw blade correctly, noting unusual markings and behaviors. Their probable causes are listed below.

Tooth Wear

1) What you see - Heavy, even wear on tips and corners of teeth. Wear is smooth across the tips and the corners of set teeth are rounded.

Probable Cause:
a) Improper break-in procedure.
b) Excessive band speed. Tooth tips reach high heat, accelerating wear.
c) Low feed rate prompts teeth to rub instead of penetrate material. (Common on work hardenable materials, such as stainless steel and tool steels).
d) Hardness of material such as Flame Cut Edge or abrasiveness, as with Fiber Reinforced Composites.
e) Insufficient cutting fluid: inadequate supply, ratio or application.

2) What you see - Discolored tooth tips from excessive frictional heat.

Probable Cause:
a) Inadequate supply, improper application or improper ratio of cutting fluid.
b) Excessive band speed.
c) Improper feeding rate.
d) Band installed backwards.

3) What you see - Chips welded to tip and face of tooth.

Probable Cause:
a) Inadequate supply, improper application or improper ratio of cutting fluid.
b) Worn, missing or improperly positioned chip brush.
c) Improper band speed.
d) Improper feeding rate.

4) What you see - Gullets filling with material.

Probable Cause:
a) Insufficient gullet capacity; too fine a tooth pitch.
b) Excessive feeding rate producing too large of a chip.
c) Worn, missing or improperly positioned chip brush.
d) Inadequate supply, improper application or ratio of cutting fluid.

Tooth Breakage

1) What you see - Section's of teeth broken away from the band backing.

Probable Cause:
a) Improper or lack of blade break-in process.
b) Worn, missing or improperly positioned chip brush.
c) Excessive feeding rate or feed pressure.
d) Movement or vibration of material.
e) Improper tooth pitch to cut size of cross section.
f) Improper positioning of material.
g) Inadequate supply, improper application or ratio of cutting fluid.
h) Hard spots in material.
i) Band speed too slow for material grade.

2) What you see - Scattered tooth breakage on tips or corners of teeth.

Probable Cause:
a) Improper break-in procedure.

b) Improper blade for application.
c) Improper opening of folded band cause.
d) Hitting hard spots on material.

BAND WEAR

1) What you see - Heavy wear markings on both sides of blade teeth.

Probable Cause:
a) Broken, worn or missing back up guides, letting teeth contact side guides.
b) Incorrect side guides for band width.
c) Backing the band out of an incomplete cut.

2) What you see - Heavy wear markings on one side of saw blade teeth.

Probable Cause:
a) One side of teeth contact wheel surface, due to worn wheel flange or improper tracking.
b) Loose or improperly positioned side guides.
c) Blade not perpendicular to cut.
d) Blade is rubbing against cut surface on return stroke of machine head.
e) Teeth are rubbing against machine part; chip brush assembly, guards etc.

3) What you see - Heavy wear markings on both sides of band saw blade.

Probable Cause:
a) Chipped or broken side guides.
b) Side guide adjustment is too tight.
c) Insufficient flow of cutting through the side guides.
d) Inadequate supply, improper application or ratio of cutting fluid.

4) What you see - Uneven wear or scoring on sides of band. On one side, wear patterns border the gullet area; on the opposite side, the back edge.

Probable Cause:
a) Loose side guides.
b) Chipped, worn or defective side guides.
c) Band is rubbing on part of the machine.
d) Guide arms are spread to maximum capacity.
e) Accumulation of chips in side guides.

5) What you see - Heavy wear or swaging on back edge. Polished appearance or abnormal grooves worn into the surface. Swaging of corners also possible.

Probable Cause:
a) Excessive feeding rate.
b) Excessive back-up guide "preload".
c) Improper band tracking-back edge is rubbing heavily on wheel flange.
d) Worn or defective back-up guides.

6) What you see - Used band is "long" on the tooth edge. "Long" on the tooth edge means teeth are on the outside of the arc when the strip is lying on a flat surface.

Probable Cause:
a) Side guides are too light-rubbing near gullets.
b) Excessive "preload"-band riding heavy against back-up guides.
c) Worn band wheels are causing uneven tension.
d) Excessive feeding rate.
e) Guide arms are spread to maximum capacity.
f) Improper band tracking-back edge is rubbing heavily on wheel flange.

7) What you see - Used band is "short" on the tooth edge. "Short" on the tooth edge means the teeth are on the inside of the arc when the strip is lying on a flat surface.

Probable Cause:
a) Side guides are too light-rubbing near the back edge.
b) Worn band wheels are causing uneven tension.
c) Guide arms are spread too far apart.
d) Excessive feeding rate.

8) What you see-Band fails to retain its normal shape when sides of loop are held together, twisting into a "figure 8". Indicates the flatness was altered during use.

Probable Cause:
a) Excessive band tension.
b) Any condition causing the band to be long or short on the tooth edge.
c) Cutting a tight radius.

9) What you see - Heavy wear in the smallest gullets, indicating lack of gullet capacity.

Probable Cause:
a) Excessive feeding rate.
b) Too slow of a band speed.
c) Using too fine a tooth pitch for size of material.

New Ideas for Cutting Structurals

Lenox conducted extensive tests world-wide to pinpoint and resolve common modes of blade failure in the fabricating industries. One point is clear; blades providing the best performance cutting solids do not provide optimum performance cutting structurals.

The findings show the primary reasons fabricators change blades are; increased cut time, blade breakage, cutting out of square, blade pinching, tooth chippage and strippage.

Avert these problems with blades designed specifically for interrupted cutting-like the Lenox Super Plus™, promoting stronger fatigue and wear resistance. Computer-aided design and finite element analysis (identifying where stress occurs in the blade) facilitated the development of a strong Lenox tooth form that resists chippage, strippage and cutting out of square. New blades also feature edge material that stays sharp longer and minimizes the force needed for cutting.

You can vastly improve sawing of some tubing, structural steels and wide flange beams by using an Extra Heavy Set (EHS). "Set" refers to the bending of the teeth to the left or to the right to allow clearance of the back of the blade through the cut. An Extra Heavy Set is most helpful to avoid blade "pinching".

Super Plus far outlasts other blades in general purpose cutting. Moreover, the cutting flexibility of the Super Plus enables machine operators of all levels of experience to successfully control sawing. The blade has a Vari-Tooth® positive tooth form, with varying distances between tooth tips and positive rake teeth.

New Ideas for Cutting Solids

Cutting Solids? LXP™ Band Saw Blade, an acronym for "Lenox Xtreme Production", has new strength and durability. The LXP™ blade is especially beneficial for production operations cutting solid materials of mild to difficult machinability, like stainless steels and inconel.

A bi-metal blade with an M-42 super high speed steel edge is designed for long life. LXP™ is made of two metals - a high speed steel cutting edge for resisting heat and wear, and a flexible spring steel alloy backing material - making the LXP™ extremely durable. Lenox professionally welds the edge and backing together. The result is a strong, heat resistant, long-lasting blade.

For More information contact American Saw and Manufacturing Company, East Longmeadow, Massachusettes.

Reply#528F

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