LENOX BANDSAW GUIDE

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Lenox Recommended Machine Maintenance Schedule

	Daily	Weekly	Monthly	6 Monthly	Yearly
Clean chips from vise jaws, band wheels, guides, blade wipers, chip brush, chip pans, machine surfaces.					
Inspect the blade, blade wipers, blade guides and chip brushes for wear-replace worn parts.					
Check all fluid and lubricant levels.					
Clean the coolant reservoir and screen.					
Change the hydraulic fluid filters.					
Clean the hydraulic fluid reservoir magnetic plug.					
Lubricate saw column pivot point.					
Drain hydraulic fluid tank and change fluid.					
Change transmission oil.					
Inspect and adjust blade guides.					

Lenox Bandsaw Machine Service Check List

Date:	
Machine:	
Blade:	

1. BAND WHEEL		
A. Condition of surfaces		
B. Condition of flanges		
C. Condition of fluid grooves		
D. Replacement recommended	☐ Idler	☐ Drive
2. BAND WHEEL BEARINGS		
A. Replacement recommended	☐ Idler	☐ Drive
3. BAND GUIDES		
A. Condition of side guides		
B. Condition of backup guides		
C. Proper installation	☐ Yes	☐ No
D. Condition of fluid grooves		
4. BLADE TENSION		
A. Tension reading (PSI)		
B. Hydraulic pressure		
C. Tums past taut		
5. BLADE TRACKING		
A. Condition of side guides	☐ Idler	☐ Drive
6. HYDRAULIC SYSTEM		
A. Oil level		
B. Condition of filter		
C. System pressure		
7. DRIVES		
A. Condition of bearings		
B. Condition of shafts		
C. Condition of gears		
D. Condition of pulley		
8. BELTS		
A. Condition of drive belts		
B. Condition of driven belts		
C. Condition of chip brush belt		
9. GUIDE ALIGNMENT		
A. Guide arm positioning		
B. Band parallel to head travel		
C. Guide preload		
D. Guide offset		
10. GUIDE ALIGNMENT		
A. Condition of vises		
B. Alignment of vises to blade		
C. Hydraulic vise pressure		

11. BAND SPEED	
A. Speed range min.	
B. Speed range max.	
C. Indicator calibration	
D. Step pulley speeds available	
12. FEED SYSTEM	
A. System type (A,B,C,D)	
B. Feed traverse rate	
C. Feed force calibration	
13. CHIP REMOVAL SYSTEM	
A. Condition of brush or wipers	
B. Condition of brush drive	
C. Condition of auger or conveyor	
14. CUTTING FLUID	
A. Type used	
B. Condition of fluid	
C. Fluid ratio	
D. Fluid level	
E. Fluid flow	
15. WORK HEIGHT CONTROL	
A. Work height calibration	
B. Slow approach calibration	
16. MACHINE LUBRICATION	
A. Points requiring lubrication	
B. Condition of equipment	
17. SAFETY EQUIPMENT	
A. Condition of guards	
B. Condition of safety switches	
TEST INFORMATION	
1. Material Cut	
2. Material Size & Shape	
3. Band Speed Setting	
4. Cutting Rate	
5. Cutting Time	

Comments

I have read and understand the findings on this LENOX SERVICE REPORT

Signature of Inspector	
Date	

Bandsaw Operator's Guide

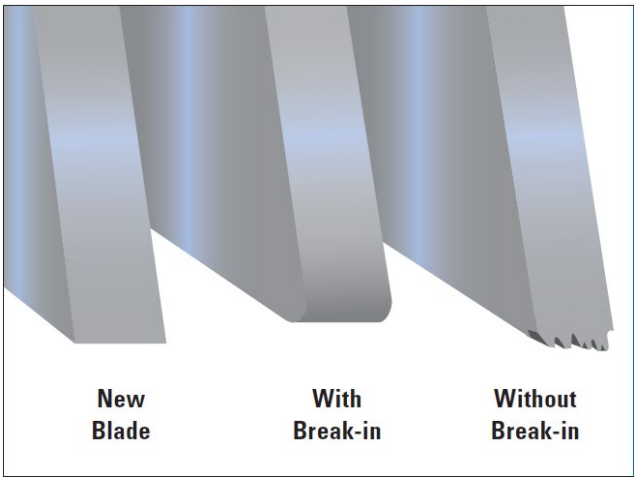
1. BLADE BREAK-IN

What is Blade Break-In?

A new bandsaw blade has razor sharp tooth tips as a result of the forming of the teeth. In order to withstand the cutting pressures used in band sawing, the tooth tip should be honed to form a micro-fine radius. Cutting with high pressure without performing this honing will cause microscopic damage to the tips of the teeth, resulting in loss of blade life.

Why Break-In a Bandsaw Blade?

Completing a proper break-in on a new bandsaw blade will dramatically increase its blade life.



How To Break In a Blade

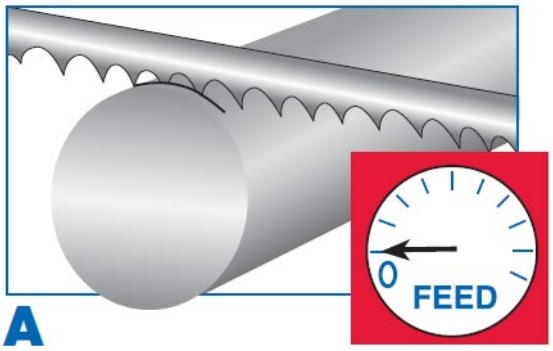
1. Use the appropriate band speed for the material to be cut (see bi-metal band speed chart on Appendix A).

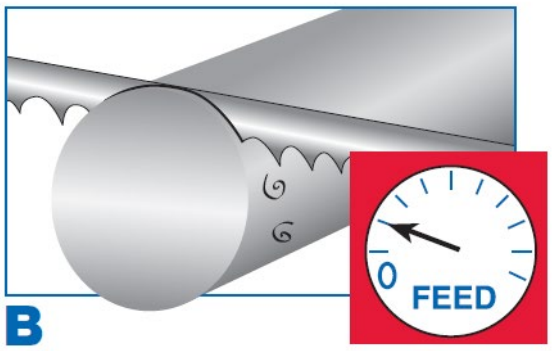
2. Reduce the feed rate/force control on the saw to achieve a cutting rate approximately 20% to 50% of the normal cutting rate. Mild steels require a larger reduction in cutting rate than more difficult to machine materials.

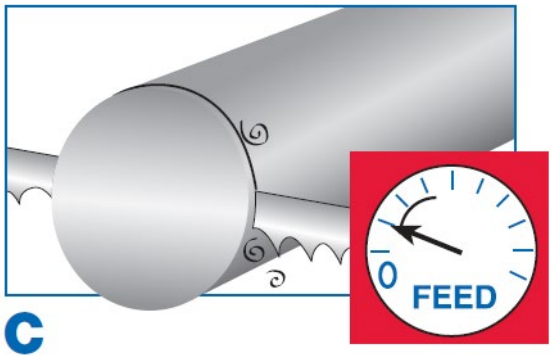
3. Begin the first cut at the reduced rate **(A)**, making sure that the teeth are forming a chip. Once the blade fully enters the workpiece, the feed rate can be slightly increased **(B)**.

4. Make gradual increases in feed rate/force over several cuts until the normal cutting rate is established (cutting a total of 60 to 118 inches^2 / 150 to 300 cm^2) **(C).**

Note: During break-in, slight adjustments to band speed may be made in the event of excessive noise or vibration. Once the blade is broken in, the recommended band speed should be used.

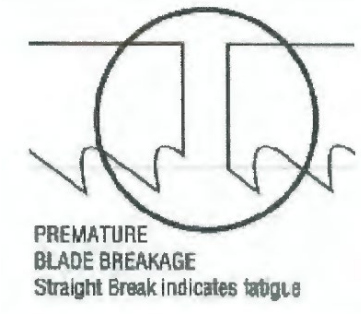
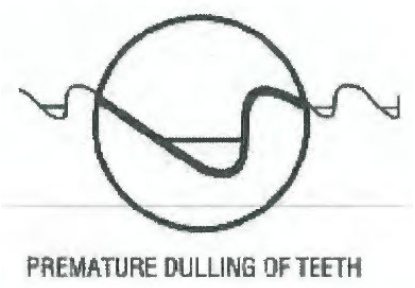
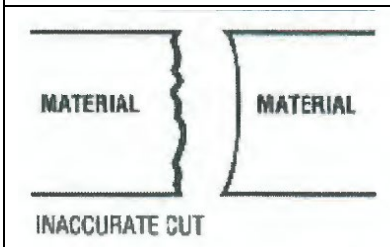
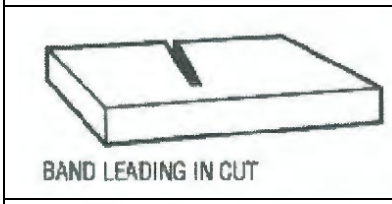
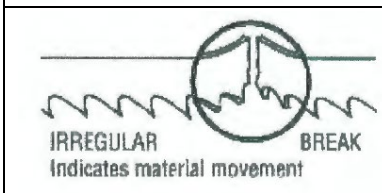
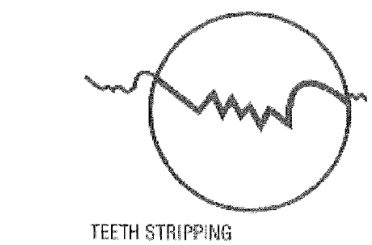


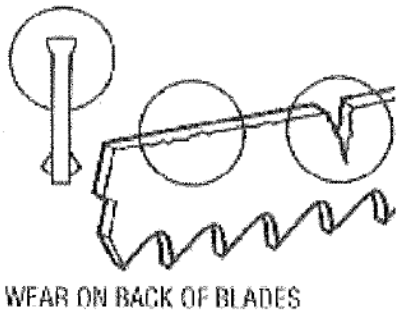
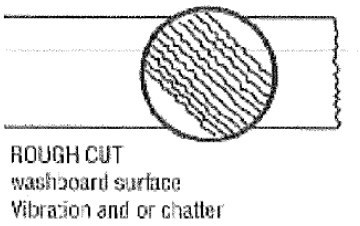
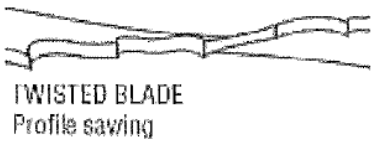
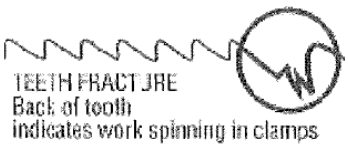




2. **FLUIDS**
   A. Check cutting fluid for lubricity - should be able to rub fingers together for at least 60 seconds without losing lubricity.
   B. Bad smelling cutting fluid is a sign that the fluid is off and needs to be replaced. Be sure to clean system thoroughly between changes to prevent contamination (Lenox Machine Cleaner). Tip: Place a aquarium air pump in tank if machine is not going to be used for a sustained period of time. A regular air flow is required to keep Arabic bacteria alive - which prevents the fluid from 'dieing'.
   C. Do not place foreign materials in fluid reservoir (e.g. rubbish, hydraulic fluid, food scraps).
   D. Regularly check fluid ratio with refractometer to ensure correct mixture.
3. **QUICK CHECKS**
   A. Guides - check placement and clean out all chips. You should be able to tum bearings with bare hands.
   B. Covers - brush out all chips from under wheel covers.
   C. Tension - check blade for correct tension.
   D. Speed & Feed - ensure that correct band speed and feed settings are being used for material.

Bandsaw Troubleshooting

Blade Effect	Probable Cause	Solution
	• Incorrect Blade • Band tension too high • Excessive feed • Incorrect cutting fluid • Wheel diameter too small for blade width • Worn or chipped pressure block • Blade rubbing on wheel flange • Teeth in contact with work before starting sawing • Side guides too tight	• Check tooth selection • Reduce band tension, refer to operators manual • Reduce feed pressure • Check coolant recommendations • Use narrower blade • Replace worn pressure blocks • Adjust wheel alignment • Allow blade clearance above work • Refer to operators manual
	• Blade on machine backwards • Improper blade break-in procedure • Hard material or heavy surface scale • Material is work hardening • Improper cutting fluid or mix ratio • Speed or feed too high	• Install blade correctly • Refer to recommended procedures • Check material hardness and surface condition • Increase feed pressure • Follow coolant mixing procedures • Check cutting recommendations
	• Guide arms too far apart • Blade worn out • Over or under feeding • Improper tooth pitch • Curing fluid not applied properly • Too many teeth for material cross-section • Guides worn or loose	• Adjust guide arms closer to material • Replace blade • Check cutting recommendations • Use proper tooth selection • Adjust coolant nozzles • Use proper tooth selection • Tighten or replace guides
	• Over feeding • Low band tension • Tooth set damaged • Guide arms loose or space too wide	• Check cutting recommendations • Refer to operators manual • Check material hardness • Adjust guides and guide anns
	• Worn or missing chip brush • Improper or lack of cutting fluid • Wrong coolant ratio • Excessive feed or speed • Incorrect blade pitch	• Replace or adjust chip brush • Check coolant flow and fluid type • Check coolant type and ratio • Reduce feed or speed • Use proper tooth selection
	• Indexing while blade in work • Blade not high enough before index • Saw head drifts into work while neutral	• Adjust index sequence • Adjust height selector • Check hydraulic cylinder
	• Improper blade break-in procedure • Speed too slow • Feed pressure to high • Tooth jammed in cut • Poor cutting fluid application or ratio • Hard material or heavy scale • Wrong blade pitch • Work spinning or loose nested bundles • Blade on backwards	• Follow proper break-in procedure • Refer to cutting recommendations • Reduce feed pressure • Do not enter new blade in that cut • Adjust coolant flow and ration • Check material or surface hardness • Use proper tooth selection • Tighten vises or use nesting clamps • Install blade correctly

Blade Effect	Probable Cause	Solution
	• Saw guides not properly adjusted • Incorrect feed or speed • Incorrect blade • Material moved in vise	• Align or adjust saw guides • Refer to cutting recommendations • Use proper blade type and pitch • Inspect and adjust vises
	• Excessive back-up guide preload • Low blade tension • Incorrect blade (carbon steel type) • Excessive feed rate or pressure • Damaged or worn pressure block • Guide arms spaced too far apart • Blade rubbing band wheel flanges	• Adjust pressure blocks • Refer to operators manual • Switch to a Bimetal blade • Reduce feed rate or pressure • Replace pressure block • Adjust guide arms closer to work • Adjust wheel alignment
	• Dull or damaged blade • Incorrect feed or speed • Blade not supported properly • Low blade tension • Incorrect tooth pitch • Guide arms too far apart	• Install new blade • Refer to cutting recommendations • Adjust or tighten guide arms • Refer to operators manual • Use proper tooth selection • Adjust guide arms closer to material
	• Saw side guides too tight • Blade riding too high in guide • Blade teeth riding on band wheel surface • Wrong blade width for machine • Chips be carried back into cut • Worn or damaged pressure block • Insufficient coolant flow	• Adjust guides properly • Adjust rollers or pressure blocks • Adjust tracking or replace wheel • Refer to operators manual • Replace or adjust chip brush • Replace pressure block • Adjust coolant flow
	• Blade binding in cut • Side guides are too tight • Work loose in vise • Feed to heavy • Guide arms too far apart	• Adjust feed or use heavy set blades • Adjust guides • Adjust vises • Reduce feed pressure • Adjust guide arms closer to material
	• Incorrect blade • Heavy feed or too fast speed Lack of cutting fluid • Blade installed backwards	• Use proper tooth selection • Refer to cutting recommendations • Adjust coolant flow or ratio • Install blade correctly
	• Material loose in vise • Incorrect tooth pitch • Feed too fast • Speed too fast	• Adjust vises • Use proper tooth selection • Reduce feed rate • Refer to cutting recommendations

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FOR CUSTOMIZED BAND SAW RECOMMENDATIONS

	MATERIALS		BAND SPEED	
	TYPE	GRADE	FEET/ MIN	METER/ MIN
ALUMINUM / NON-FERROUS	Aluminum Alloys	2024, 5052, 6061, 7075	300+	85+
	Copper Alloys	CDA 220 CDA 360 Cu Ni (30%) Be Cu	210 295 200 160	65 90 60 50
	Bronze Alloys	AMPCO 18 AMPCO 21 AMPCO 25 Leaded Tin Bronze Al Bronze 865 Mn Bronze 932 937	180 160 110 290 150 215 280 250	55 50 35 90 45 65 85 75
	Brass Alloys	Cartridge Brass, Red Brass (85%) Naval Brass	220 200	65 60
CARBON STEELS	Leaded, Free Machining Low Carbon Steels	1145 1215 12L14	270 325 350	80 100 105
	Low Carbon Steels	1008, 1018 1030	270 250	80 75
	Medium Carbon Steels	1035 1045	240 230	75 70
	High Carbon Steels	1060 1080 1095	200 195 185	60 60 55
STRUCTURAL STEEL	Structural Steel	A36	250	75
ALLOY STEEL	Mn Steels	1541 1524	200 170	60 50
	Cr-Mo Steels	4140 41L50 4150H	225 235 200	70 70 60
	Cr Alloy Steels	6150 5160	190 195	60 60
	Ni-Cr-Mo Steels	4340 8620 8640 E9310	195 215 185 160	60 65 55 50
BEARING STEEL	Cr Alloy Steels	52100	160	50
MOLD STEEL	Mold Steels	P-3 P-20	180 165	55 50
STAINLESS STEEL	Stainless Steels	304 316 410, 420 440A 440C	115 90 135 80 70	35 25 40 25 20
	Precipitation Hardening Stainless Steels	17-4 PH 15-5 PH	70 70	20 20
	Free Machining Stainless Steels	420F 301	150 125	45 40
TOOL STEEL	Low Alloy Tool Steel	L-6	145	45
	Water-Hardening Tool Steel	W-1	145	45
	Cold-Work Tool Steel	D-2	90	25
	Air-Hardening Tool Steels	A-2 A-6 A-10	150 135 100	45 40 30
	Hot Work Tool Steels	H-13 H-25	140 90	40 25
	Oil-Hardening Tool Steels	O-1 O-2	140 135	40 40
	High Speed Tool Steels	M-2, M-10 M-4, M-42 T-1 T-15	105 95 90 60	30 30 25 20
	Shock Resistant Tool Steels	S-1 S-5, S-7	140 125	40 40
TITANIUM ALLOY	Titanium Alloys	CP Titanium Ti-6Al-4V	85 65	25 20
NICKEL BASED ALLOY	Nickel Alloys	Monel® K-500 Duranickel 301	70 55	20 15
	Iron-Based Super Alloys	A286, Incoloy® 825 Incoloy® 600 Pyromet X-15	80 55 70	25 15 20
	Nickel-Based Alloys	Inconel® 600, Inconel® 718, Nimonic 90, NI-SPAN-C 902, RENE 41 Inconel® 625 Hastalloy B, Waspalloy Nimonic 75, RENE 88	60 60 80 55 50	20 20 25 15 15
OTHER	Cast Irons	A536 (60-40-18) A536 (120-90-02) A48 (Class 20) A48 (Class 40) A48 (Class 60)	225 110 160 115 95	70 35 50 35 30

The Speed Chart recommendations apply when cutting 4" wide (100mm), annealed material with a bi-metal blade and flood sawing fluid:

ADJUST BAND SPEED FOR DIFFERENT SIZED MATERIALS

MATERIAL	BAND SPEED
1/4" (6mm)	Chart Speed + 15%
3/4" (19mm)	Chart Speed + 12%
1-1/4" (32mm)	Chart Speed + 10%
2-1/2" (64mm)	Chart Speed + 5%
4" (100mm)	Chart Speed - 0%
8" (200mm)	Chart Speed - 12%

ADJUST BAND SPEED FOR DIFFERENT FLUID TYPES

FLUID TYPES	BAND SPEED
Spray lube	Chart Speed - 15%
No fluid	Chart Speed - 30–50%

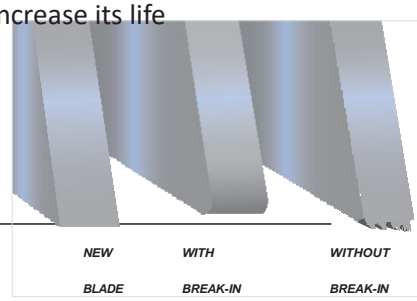
ADJUST BAND SPEED FOR HEAT TREATED MATERIALS

ROCKWELL	BRINELL	DECREASE BAND SPEED
Up to 20	226	-0%
22	237	-5%
24	247	-10%
26	258	-15%
28	271	-20%
30	286	-25%
32	301	-30%
36	336	-35%
38	353	-40%
40	371	-45%

Reduce band speed 50% when sawing with carbon blades

BLADE BREAK-IN

Completing a proper break-in on a new band saw blade will dramatically increase its life



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