

The background of the entire page is a high-contrast, black and white image of wood grain. The grain runs vertically. There are two prominent vertical white lines: one on the left side and one on the right side, which appear to be the joints between wooden planks. The wood grain is detailed, showing the natural texture and variations in tone.

LOSS CONTROL MANUAL  
FOR THE

*Wood Products  
Manufacturing  
& Handling Industry*

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**NOVASCOTIA**

Department of Labour  
Occupational Health and Safety Division

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This manual has been produced by the Occupational Health and Safety Division, Nova Scotia Department of Labour, adapted from material prepared by the Safety and Training Committee, Nova Scotia Forest Products Association.

Pursuant to section 41(1) of the Occupational Health and Safety Act the Executive Director adopts the contents of this manual as a code of Practice for the forest industry of Nova Scotia

### **Canadian Cataloguing in Publication Data**

Main entry under title:

Loss control manual for the wood products  
manufacturing & handling industry

Includes index.

ISBN 0-88871-314-2

1. Sawmills—Nova Scotia—Safety measures—  
Handbooks, manuals, etc. 2. Lumber trade—Nova  
Scotia—Safety measures—Handbooks, manuals, etc.

I. Nova Scotia. Occupational Health and Safety  
Division

HD7269.S32C3 1995 674.2'028'9 C95-966003-8

Printed in Canada

© Crown copyright Province of Nova Scotia, 1995

Published under the authority of the Minister of Labour

Produced by the Department of Supply and Services,  
Publishing Section

Designed by Jim Edwards, Dexter Art & Design Associates

Printed on papers that contain recycled fibre.

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The application of this code of practice  
may be modified with the approval of the industry  
where it is evident that a particular industrial establishment  
does not lend itself to a strict interpretation of this code.

Through the use of a continuing health and safety program,  
that is actively supported by management  
and provides employee training, existing unsafe acts or  
conditions should become apparent.

For many of these there may not be specific standards.  
Nevertheless, it is important to find a solution for these problems.

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## Personal Protective Equipment

Because of varying situations in our sawmills and planing mills, the following list may not be conclusive. However, it is generally suggested that personal protective equipment (PPE) be worn as identified in the chart below. In certain situations the PPE indicated is required under the occupational health and safety act. Contractors on site must comply with the occupational health and safety act.

Management shall set examples by wearing personal protective equipment. Canadian Standards Association (CSA) or equivalent approved equipment shall be worn whenever possible. Safety boots are standard equipment on site. Working in an office or a controlled booth does not require head, hand, eye or hearing protection. Hearing protection is required in areas over 85 decibels regardless of exposure time.

REQUIRED PPE					
JOB / ACTIVITY	HEAD & FEET	HAND	EYE	RESPIRATORY	OTHER
BABBING	•	•	•		
CANTERMAN	•	•	•		
CHAINSAW OPERATOR	•	•	•		LEG
CHEMICAL HANDLING	•	MANUFACTURER SPECIFIED PROTECTION			
CHIPPER OPERATOR	•	•	•		
DEBARKER OPERATOR	•	•	•		
DRY KILN OPERATOR	•				
EDGERMAN	•	•	•		
FORKLIFT OPERATOR	•				
HANDLING SAWS & KNIVES	•	•			APRON
HANDLING WET CHEMICALLY TREATED MATERIAL	•	MANUFACTURER SPECIFIED PROTECTION			
LUMBER GREEN CHAIN	•	•			
MANAGERS, SUPERVISORS	•		•		
MILLWRIGHT	•	•	•		
PAINT SPRAYER	•	•	•	ORGANIC FILTER*	
PLANER OUTFEED	•	•	•		
POND OPERATOR	•	•			FLOTATION DEVICE
RESAW OPERATOR	•	•	•		
SAW FILER	•	•	•	PARTICULATE FILTER*	
SAWYER	•	•	•		
SHAVING BALER OPERATOR	•	•	•		
STRAPPING / PACKAGING	•	•	•		
TAIL SAWYER	•	•	•		
TAIL EDGERMAN	•	•	•		
TALLYMAN	•		•		
TRIMMERMAN	•	•	•		
WIDTH / LENGTH SORTER	•	•			
YARD LUMBER GRADER	•				
YARD LUMBER PILER	•	•			
YARD LOG SCALER	•				

\* Some applications require specific filters.

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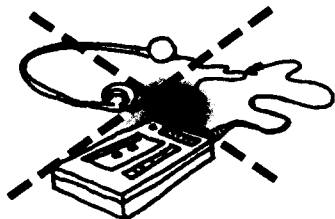
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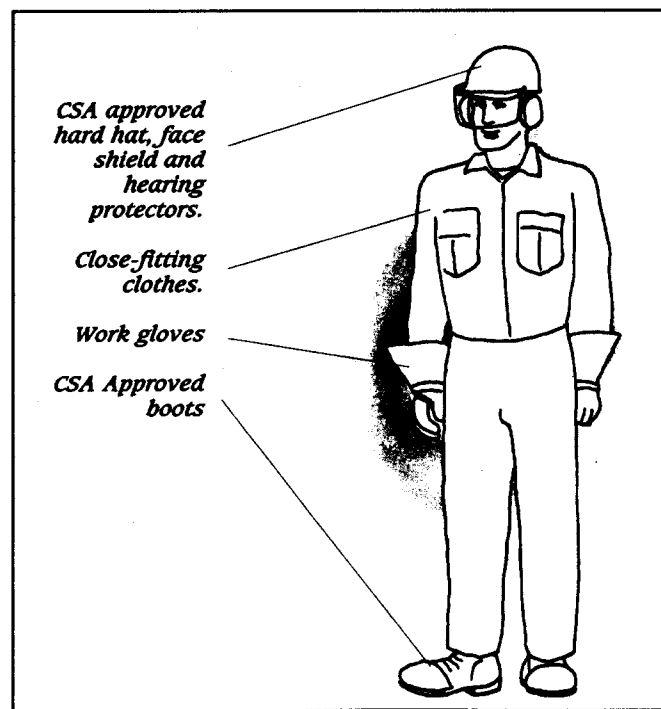
## SECTION 1- GENERAL

- 1.0 People under the influence of alcohol, drugs or any other substance that affects their ability to work safely shall not be allowed to enter or remain on the work site.
- 1.1 Radios or cassette players with headphones for entertainment shall not be used on the job site.



- 1.2 All work areas, and travel lanes shall be provided with adequate lighting and shall be kept clean, free from debris and hazards.
- 1.3 Pits and floor openings shall be guarded or covered.
- 1.4 Gears, sprockets, chaindrives, shear points and other exposed parts of machinery shall be guarded.
- 1.5 Every person shall refrain from any irresponsible act or horseplay that may endanger their health or the health and safety of other persons.
- 1.56 Loose clothing jewellery or long hair shall not be worn in production areas.
- 1.7 When sawmills/planing mills or related buildings are being constructed or renovated, or equipment is being installed, remodelled or repaired, all additions, repairs, and alterations shall conform to all codes, acts and regulations as listed in Appendix A.
- 1.8 Smoking shall not be permitted except in areas designated.
- 1.9 Unauthorized personnel shall not be permitted to enter the work area. Appropriate signs shall be posted.
- 1.10 Only qualified persons shall operate equipment.

- 1.11 Persons assigned to handle material shall be instructed how to lift and carry material properly. Hooks or pickeroons should be used where there is a danger that the hands may be caught between falling and moving material.
- 1.12 Buildings should be equipped with rain gutters at all entrances and exits. Doors leading to unsafe areas shall be marked.
- 1.13 Doors shall be of adequate size and swing in the direction of egress. (exit)
- 1.14 Permanent and portable ladders shall be built according to applicable standards.
- 1.15 Working with wood chips or sawdust that has been undisturbed for an extended period of time in a confined space requires respiratory protection.
- 1.16 W.H.M.I.S. (Workplace Hazardous Material Information Systems) require that all controlled products must be labelled, workers must be trained on how to handle them and MSDS (Material Safety Data Sheets) be available for them.





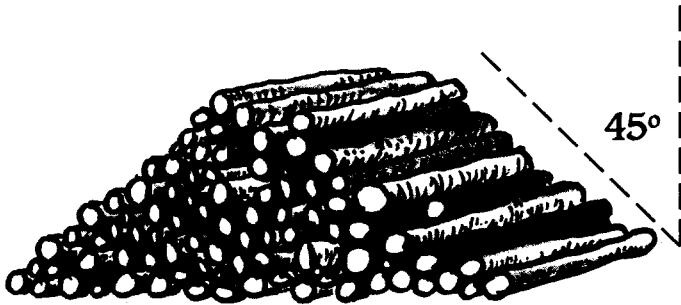
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## SECTION 2

### ROUNDWOOD UNLOADING, STORAGE AND SLASHING

#### UNLOADING & STORAGE

- 2.1 Signs prohibiting unauthorized persons and traffic should be posted.
- 2.2 Stakes, binders, and chocks shall be arranged in such a manner that release mechanisms are activated from a safe location. Binders shall not be released until the vehicle is in position for unloading.
- 2.3 Roundwood shall not be piled with a slope greater than a ratio of 1:1.5 ie: 1 m. high x 1.5 m. long (3.28 ft. x 4.92 ft.) and to a height not greater than available equipment is capable of handling safely.



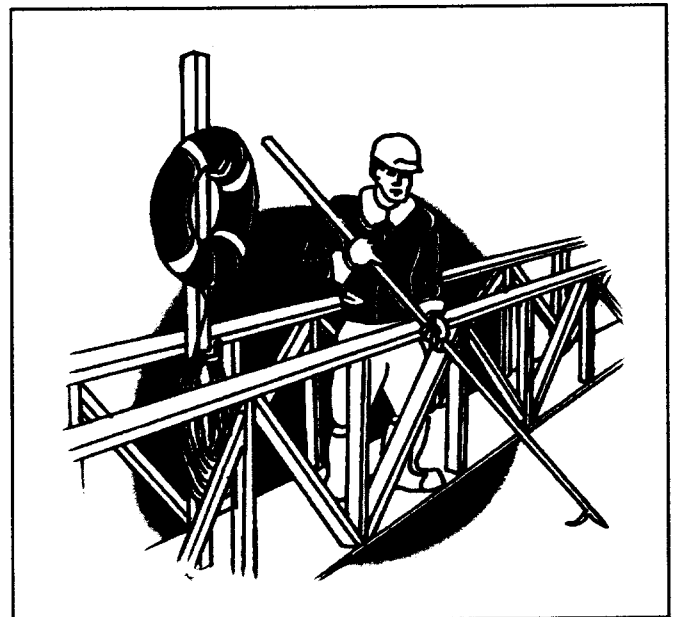
#### LOG SLASHING

- 2.4 The operator shall not attempt to clear blockage or release holding device while saws are running.
- 2.5 Slasher decks shall not be used as walkways.
- 2.6 Mobile slasher working areas shall be restricted to authorized personnel only.

## SECTION 3 - SAWMILLS

#### LOG PONDS AND HOLDING TANKS

- 3.1 Persons employed to feed logs from a pond onto a log haul-up shall wear Department of transportation (D.O.T.) approved personal floatation devices.
- 3.2 Working stations and floating catwalks for the log pond operator shall be equipped with adequate guard rails.
- 3.3 An adequate means of retrieving a person who has fallen into the water shall be available at the work site and shall be in good condition. e.g. life ring, boat etc.



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## LOG HAUL-UPS AND LIFTING DEVICES

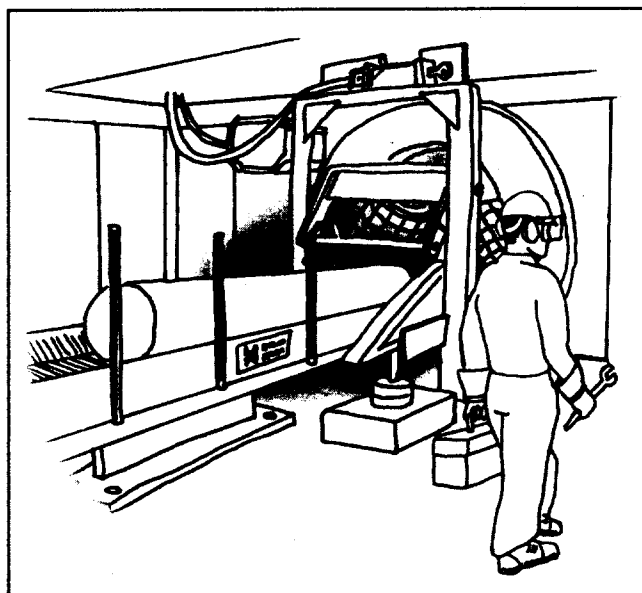
- 3.4 Catwalks with handrails shall be provided along all types of haul-ups where there is danger of falling.
- 3.5 No one shall be permitted under a log haul-up while it is in operation.
- 3.6 The operator of a chain or cable haul-up, shall stay clear of the cable or chain while hauling up logs. Operators while winching logs, shall be protected from flying objects by an adequate screen or barrier.
- 3.7 Where knuckleboom loaders are used, the operator shall be positioned higher than the immediate log deck or debarker infeed or any other log supporting device.

## LOG DECKS

- 3.8 Only authorized personnel are allowed to work or walk on the log deck.
- 3.9 Canterman controlled log decks shall have a hold down switch (momentary) and not a push start, push stop type switch.
- 3.10 Where a canterman is used on a live deck with no log stop device, a dead level skidway of at least 2.44 m (8 ft.) in length shall be used.
- 3.11 Where a canterman is used, the first and centre skid shall be made so the last 0.30 to 0.91 m (1 to 3 ft.) of the skid will pivot sideways in order to minimize the risk of injuries.
- 3.12 Logs shall not be piled on a log deck to a height higher than 1.22 m (4 ft.).
- 3.13 All manual decks shall not have a slope greater than 1.5 degrees (7.62 cm in 3.05 m or 3" in 10' ).
- 3.14 Walking or working underneath any log deck while it is in operation shall be prohibited unless the deck is properly guarded

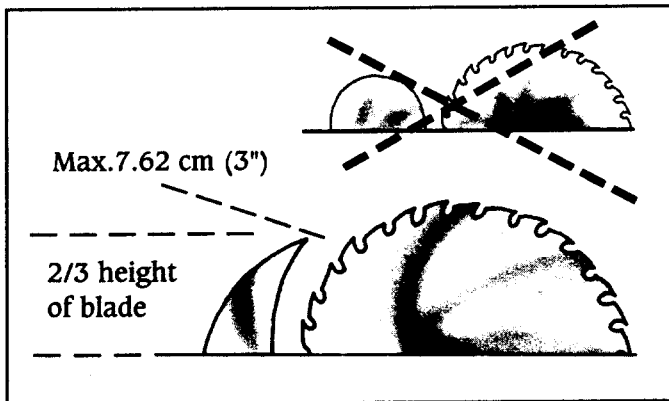
## DEBARKER

- 3.15 All debarkers shall be properly guarded. Hold down rolls shall be installed at the infeed section on ring type debarker.
- 3.16 Debarker operators shall be protected against whipping logs, all flying debris or broken knives.
- 3.17 If the air pressure adjustment on the knives is done manually on the drum, all motors on the debarker shall be locked out during adjustment procedures.



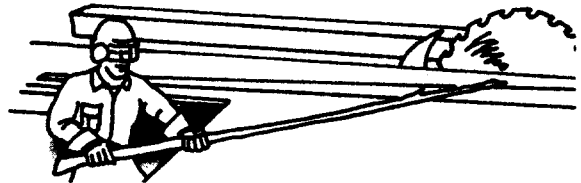
## HEAD SAW

- 3.18 All carriage or feed controls shall be provided with a locking device for the neutral position. This is to be engaged when working with the headrig, carriage or any other related function of the sawyer.
- 3.19 The carriage shall be at the far end of the track behind the saw or cutting device while making any adjustment to guides.
- 3.20 A knife splitter shall be used on circular head saws in carriage operations. The splitter should follow the contour of the saw, be a maximum of 7.62 cm. (3 in.) behind the saw and a minimum of 2/3 of the height of the cutting portion of the saw blade.

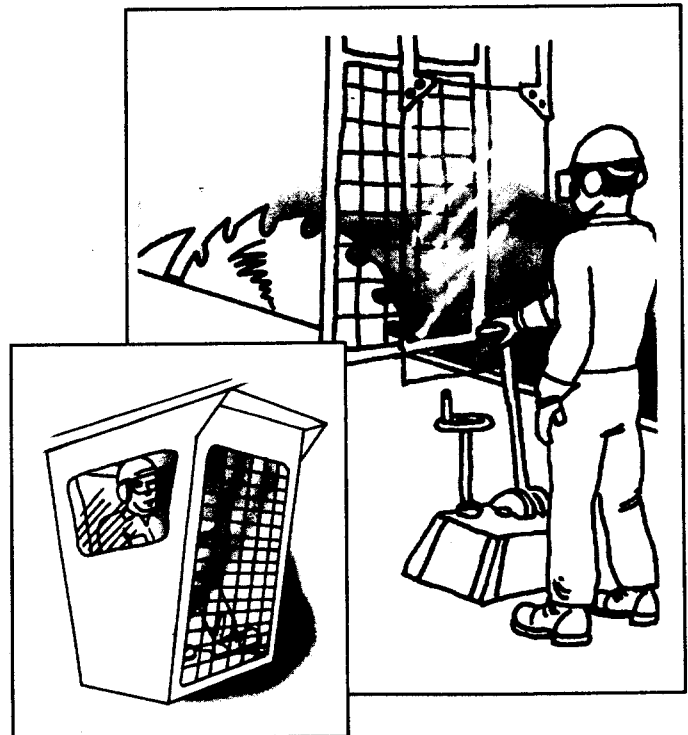


- 3.21 The passageway shall be adequately guarded from the path of a moving carriage.
- 3.22 The tail sawyer shall be in full view of the sawyer at all times.
- 3.23 Overhead saws, if powered separately from the headsaw, shall be stopped if not required for extended periods of time.
- 3.24 Limit devices shall be placed on the carriage to provide adequate clearance between the dogs and the saw. Dangerous situations could occur if final setting is less than 3.81cm (1 1/2 in.).

- 3.25 Refer to Section 5 on Bandsaws used as Headrigs.
- 3.26 The canterman and tail sawyer must always be alert and watch the sawyer for any signals.
- 3.27 The sawyer or tail sawyer shall use a safety stick and not his hand to remove any debris laying against the saw.



- 3.28 The tail sawyer shall not jump or reach over rolls to clear obstructions from the track unless the rolls are stopped and the sawyer signals to do so.
- 3.29 The sawyer/twin saw operator shall be adequately protected from flying debris by the use of screens and/or protective glass shields.



## RESAW

3.30 The resaw tailer and resaw operator shall be visible to one another at all times. If direct visibility is not possible, then mirrors or other devices shall be installed.

## EDGER

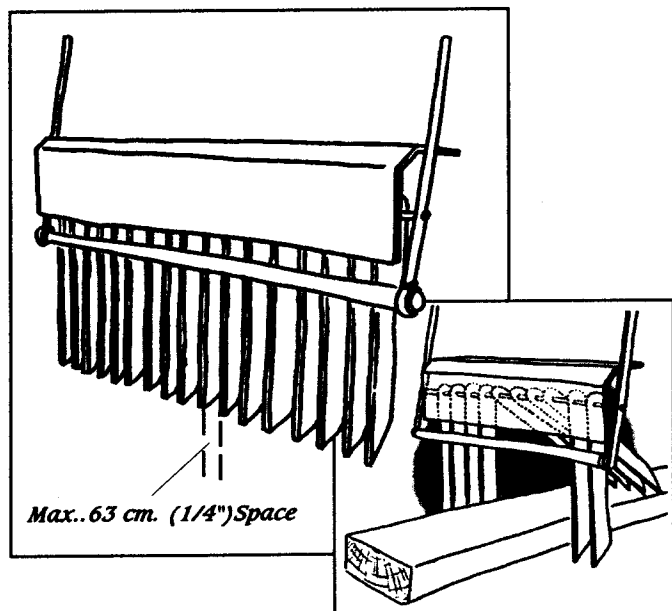
3.31 When the feed rolls must be lifted for maintenance, a block and tackle or come-a-long or other such device shall be used in order to reduce injuries.

## ANTI KICKBACK DEVICES

3.32 Anti kickback fingers should be made of 0.95 cm to 1.27 cm (3/8 to 1/2 in.) thick mild steel or equivalent. The finger points shall be kept sharp to be effective.

3.33 When fingers are near vertical, points shall not be more than 1.27 cm (1/2 in.) above the uppermost point of the lower feed roll. The maximum elevated finger operating position shall not be less than 45 degrees with the top surface of the thickest piece of lumber that will be processed.

3.34 Fingers of alternate length are recommended for edgers on which lumber of varying thickness is to be run.



3.35 Unprotected space between fingers or along side of material passing through edger shall be limited as much as possible and shall never exceed a 0.63 cm (1/4 in.) (closely spaced fingers will aid in trapping slivers).

3.36 On edgers used as gang saws, all fingers shall be the same length. The spacing between them shall not exceed 0.63 cm (1/4 in.).

3.37 To prevent reversal of fingers, a stop bar shall be installed horizontally across the face of the fingers. The bar shall be adequately secured to the side plates.

3.38 The edger must be stopped or a long safety stick used when removing any slivers or short slabs out of the saws.

3.39 Wherever possible the tail edgerman shall be continuously visible to the edgerman if not possible then a mirror or other means of visible contact shall be positioned to ensure continuous visibility.

3.40 When possible, the edgerman shall always stand to the side of the lumber being fed.

3.41 When lumber jams, the edgerman shall not try to pull it back from the infeed side while the machine is running, but shall stop the machine and remove the lumber.

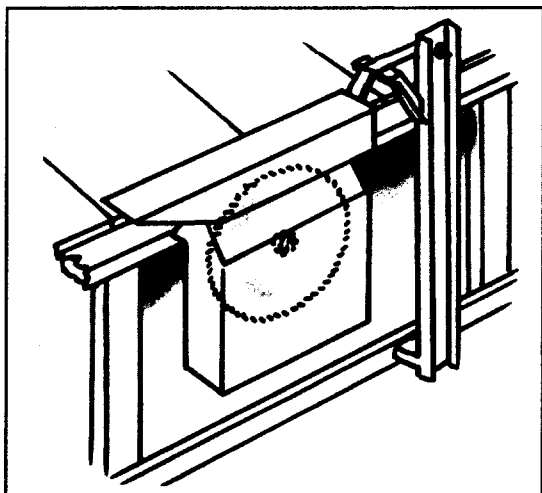
3.42 The edgerman shall not try to adjust any part of the machine while it is running, except any adjustments that have provision to do so safely.

3.43 The edgerman shall not feed one board on top of another.

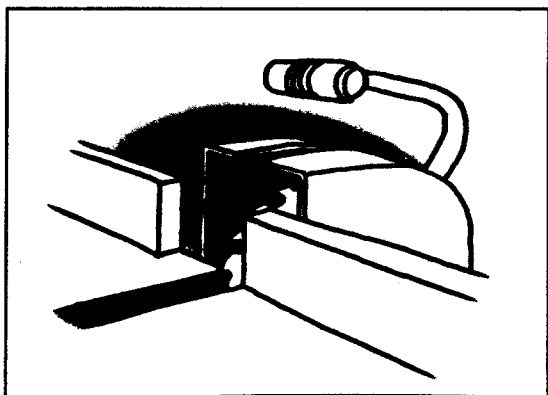
3.44 When a board is passing through the edger a piece of greater thickness shall not be passed through the free side if both sides are using the same rollers.

## TRIMSAWS AND SWING CUT-OFF SAWS

- 3.45 On a Canadian style double end trim saw there shall be a minimum of 1.22 m (4 ft.) of level chain work station preceding the trim saw and the saw blade shall be properly guarded.



- 3.46 Swing cut-off saws shall be provided with:
- (a) a hood that will enclose the unused portion of the saw and the arbour end at all positions of the saw.
  - (b) a device to return the saw automatically to the back of the table when released at any point in its travel.
  - (c) Limit devices to prevent the saw from swinging forward beyond the maximum distance required to cut off the lumber and backward to the point where no portion of the saw projects into the path of lumber moving past the saw.



## CHIPPERS

- 3.47 The cover on any chipper shall not be opened before the disk/drum is at a standstill.
- 3.48 A safety stick shall be used if any material must be pushed into the chipper.
- 3.49 The chipper area shall be properly guarded and screened to protect the operator from flying objects.
- 3.50 Knives shall be stored in a carrying case to prevent accidental contact with cutting edges.

## GREENCHAINS

- 3.51 Greenchains shall be at a comfortable working height.
- 3.52 Where computerized lumber stacking or similar systems are used, employees shall not enter hazardous areas when the system is in operation.

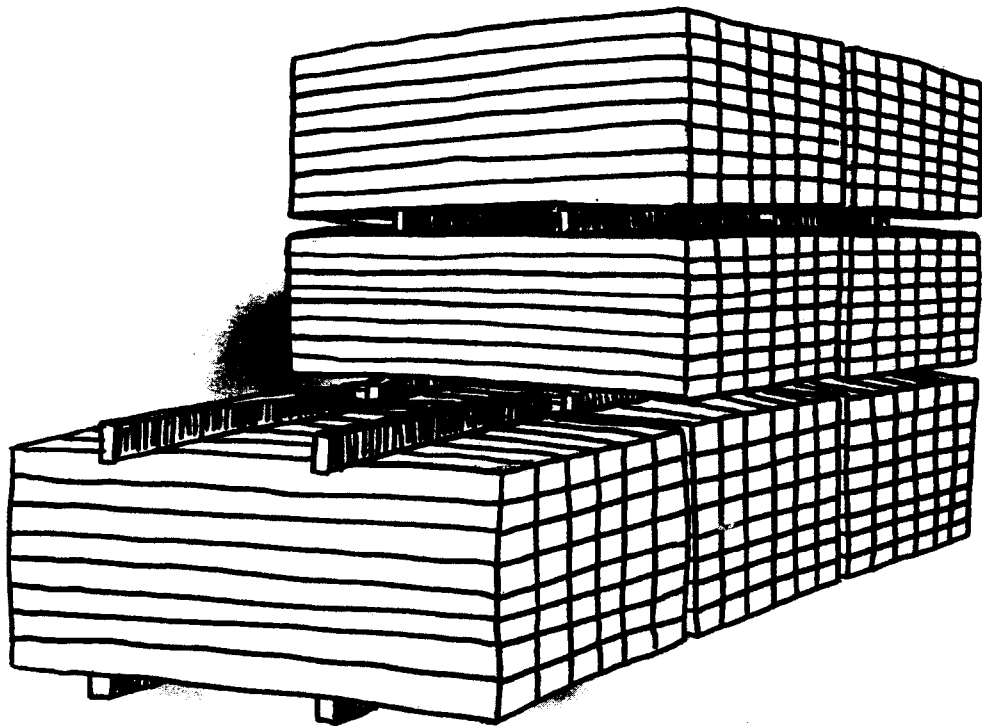
## WIDTH OR LENGTH EDGE SORTER

- 3.53 Maximum height between conveying chain or belt and the lumber supports shall not exceed 1.52 m. (5 ft.) unless there is a means of controlling the drop rate of the lumber.

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## LUMBER PILING AND STORAGE

- 17.1 In stacking units of lumber, pile foundations shall be designed and arranged to support maximum loads without sinking, sagging or permitting the piles to topple. In unit package piles, substantial unit separators shall be placed between each package.
- 17.2 Long units of lumber shall not be stacked upon shorter packages.
- 17.3 Piles of lumber which have become unstable and hazardous shall be immediately made safe, or the area into which they might fall shall be fenced or barricaded and employees prohibited from entering it.
- 17.4 Lumber shall not be stacked higher than 1.07 m (3.5 ft.) high for each 30.48 cm (1 ft.) of package width. Unit separators shall be placed directly over and under stickers.



## SECTION 4

### PLANER / MATCHER / MOULDER

- 4.1 When jointing cutterheads, eye protection shall be worn. Jointing is not to be done when lumber is moving through machine. Before jointing, turn heads by hand to ensure proper clearance between jointing stone and knives.
- 4.2 Knives narrower than the full width of the gib which do not provide adequate holding power shall be discarded.
- 4.3 Cutterheads should be regularly inspected for cracks, stripped threads, or other defects. Cutterheads with defects shall be discarded or repaired.
- 4.4 All dust hoods shall be kept in place and secured. Systems shall be of adequate size to remove as much residue as possible to keep working area clear. Sharp corners and square ends greatly reduce blower efficiency causing blockages. Joints should be secured with fasteners.
- 4.5 Makeshift devices shall not be used to brake or slow down cutterheads.
- 4.6 Before starting machine, ensure that head cartridges are locked in place and there is proper clearance between cutterheads and guides, guards, chip breakers and bed plates.
- 4.7 Before starting, ensure that all hand tools are removed and all guards are properly replaced and secured.
- 4.8 Wear cut resistant gloves when tightening or loosening knife gibs or bolts.
- 4.9 Unused cutterheads or knives shall be stored on shelves or racks to prevent accidental contact with cutting edges.
- 4.10 Carrying cases shall be used for transporting assembled heads and knives.
- 4.11 A safety stick shall be used to remove debris from a machine while it is running.

### PULLEYS AND IDLERS

- 4.12 Pulleys shall be kept in balance according to r.p.m. required.

- 4.13 Pulleys that are cracked or broken shall be replaced.
- 4.14 Wooden pulleys showing sign of rot shall be replaced. Balancing weights shall be well secured.
- 4.15 Pulleys can only be safely rotated at specified r.p.m. providing that the pulley is in good condition. The following rim speeds shall not be exceeded.

#### SAFE RPM RATINGS FOR PULLEYS

$$SFPM = \frac{RPM \times Dia'' \times 3.1415}{12}$$

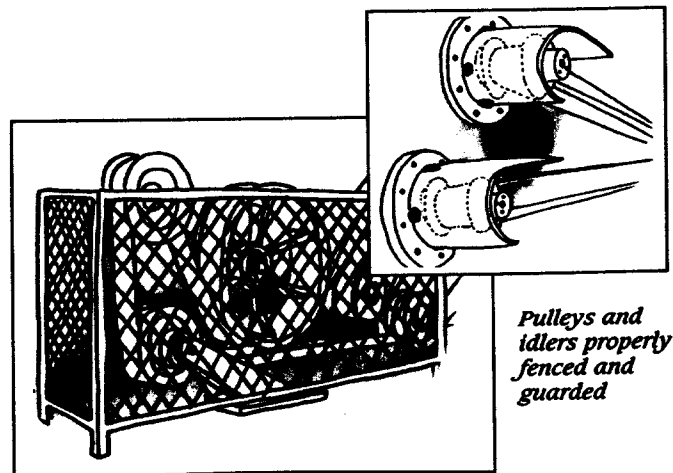
$$OR \text{ RPM} = \frac{SFPM \times 12}{Dia'' \times 3.1416}$$

#### MAXIMUM PULLEY RPM

Pulley diameter (inches)	Cast iron 6500	Ductile iron 8000	Steel 10000 <-max SFPM
6	4138	5093	6366
8	3104	3820	4775
10	2483	3056	3820
12	2069	2546	3183
14	1773	2183	2728
16	1552	1910	2387
18	1379	1698	2122
20	1241	1528	1910
22	1129	1389	1736
24	1035	1273	1592
26	955	1175	1469
28	887	1091	1364

*Ref.: Dodge Bearing Book*

- 4.16 Where counterweights are installed, these weights shall be fastened securely.
- 4.17 Pulleys, flywheels and other exposed parts constituting a hazard to the operator or other persons shall be guarded.



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## SECTION 5 - SAWS & KNIVES

### MAINTENANCE / STORAGE / HANDLING

5.1 Saw maintenance shops shall be kept clean and used only as a saw shop, not as a lunch room. Filing rooms must have an adequate exhaust system to remove the dust (cobalt dust has been found in sufficient airborne amounts during grinding of carbide saw blade tips to warrant concern). Maximum cobalt level is 0.05 mg./m<sup>3</sup> of air. (a wet grinding system aids in reducing dust) Any dust containing cobalt not captured by the exhaust system should be cleaned by wet wiping not sweeping or vacuuming with a shop vacuum.

5.2 Knives and saws must be stored to eliminate teeth and sharp edges from protruding into travel and work areas. Single cut band saws shall be stored with the teeth facing in or up if stored overhead. Overhead storage must be a minimum of 2.1 m (7ft.). Sets of knives shall be put in wooden boxes or cases.

5.3 That portion of a grinding wheel not used must be guarded to protect the operator in case the wheel explodes (mis-matched stone and grinder rpm may result in wheel explosion).

5.4 The saws shall have the proper tooth design for the work intended. e.g. Saws cutting above the arbour or the arbour below the cutting table shall have the "L" style tooth. Saws cutting below the arbour or the arbour above the cutting table shall have the "M" style tooth.

5.5 The saws shall be kept gummed out to ensure the proper gullet capacity.

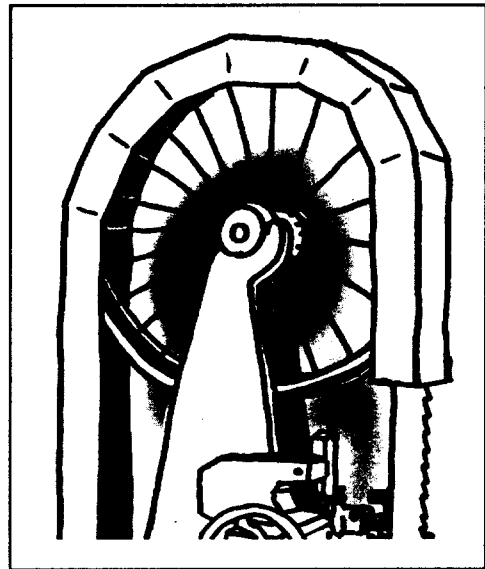
5.6 Saws shall be kept properly swaged to ensure adequate side clearance.

5.7 Saws containing cracks shall not be put in service until they have been repaired.

5.8 Saws shall not be stopped by thrusting a piece of wood or other objects against the cutting edge of the teeth

### BANDSAWS AND BAND RESAWS

5.9 All but the working portion of the saw blade shall be enclosed or guarded. The periphery and the front and back of the band wheels shall have guards adequate to contain saw blade fragments in the event of breakage.



5.10 Feed rolls on resaws shall be guarded when necessary to prevent the hands of the operator from coming in contact with the rolls.



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## WELDING/CUTTING.

- 5.11 When welding and cutting operations are taking place, care shall be taken to prevent sparks from falling on combustible material. During and after work is finished, a close check shall be maintained on the work area until there is no danger of fire. Work areas shall be wetted down prior to, during and after welding and cutting operations. All welding and cutting operations in confined spaces shall be adequately ventilated to prevent the accumulation of toxic fumes and gases.
- 5.12 Welding should be conducted in association with local exhaust. However, where ventilation is insufficient to maintain contaminants to within safe levels, respiratory protection must be provided suitable for the vapours and gasses produced.



## MELTING BABBITT

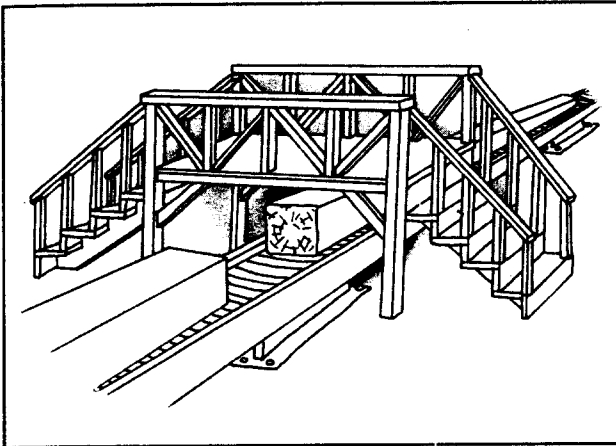
- 5.13 Work areas should be cleaned to prevent danger of fires. Care shall be taken that babbitt is not poured on any wet or moist area or exposed to water. It must be melted carefully to prevent overheating that causes emission of dangerous fumes). Ventilate as much as possible.
- 5.14 Where lead babbitt is used, precautions should be taken to minimize dust or vapour exposure. Temperature controlled babbitt pots are ideal but where these do not exist special care must be taken to have controlled melting (650° - 700° F or 330° C) otherwise lead vapours will form when babbitt is overheated.
- 5.15 Grinding and shaping babbitt can produce high lead levels and contaminate clothing as well as the shop area. Grinding should be conducted in association with local exhaust. Any dust not captured by the exhaust should be wet wiped, not swept or vacuumed with a shop vacuum.
- 5.16 Workers using babbitt must be educated about the possible health effects of lead and the importance of proper hygiene when dealing with lead (for example-washing face and hands before eating or smoking, storing contaminated work clothes separately and washing them separately from other clothes).
- 5.17 Companies conducting babbitt work involving more than the usual few hours per week (ie. > 1 day/wk) should follow the Code of Practice for working with lead, produced by the Nova Scotia Department of Labour.
- 5.18 Where adequate ventilation is not provided, respiratory protection must be worn by workers.
- 5.19 Consideration should be given to using lead free babbitt.

## SECTION 6

### CONVEYORS, CHAINS, AND BELTS

#### CONVEYORS

- 6.1 Stairs or catwalks with rails shall be provided to cross over all conveyors in normal travel areas.



- 6.2 Where the lumber or other material is moving in a linear direction and there are walkways through the material path, gates or other devices shall be installed.
- 6.3 Conveyors shall not be used as walkways when the mill is in operation.

#### CHAINS

- 6.4 Proper splicing links shall be used with proper cotter pin. Nails, wire, etc. shall not be used as a replacement for cotter pins. Defective links shall be replaced.

#### BELTS

- 6.5 Belt ply separations and broken lacing shall be repaired immediately.
- 6.6 Belting shall be laced with an approved type of lacing. e.g. leather lacing, steel lacing, gluing.
- 6.7 When applying belt dressings, a safety device shall be used if necessary, to maintain safe distance between hands and moving equipment.

## SECTION 7

### DRY KILNS AND OTHER FACILITIES

#### DRY KILNS

- 7.1 A passageway shall be provided to give adequate clearance on at least one side or in the centre of end-piled kilns and on two sides of cross-piled kilns. All entrance and exit doors must open to the outside and be capable of being unlocked from the inside.
- 7.2 Main kiln doors shall be provided with a method of holding them open while kiln is being loaded.
- 7.3 Counterweights on vertical lift doors shall be boxed in or otherwise guarded.
- 7.4 Adequate means shall be provided to firmly secure main doors, when they are disengaged from carriers and hangers, to prevent toppling.
- 7.5 If operating procedures require access to kilns, the kilns shall be provided with escape doors that can not be locked or obstructed from the outside, operate easily from the inside and swing in the direction of exit.
- 7.6 Escape doors shall be a minimum of 198.12 cm x 81.28 cm (6 ft. 6 in. x 32 in.). Other persons should be made aware any time anyone enters a hot kiln.
- 7.7 All high-pressure steam mains located in or adjacent to an operating area shall be covered with heat-insulating material.
- 7.8 Where controls and machinery are mounted on a roof, a permanent ladder or a permanent stairway with a standard handrail shall be installed.

#### BINS AND HOPPERS

- 7.9 Workers shall not enter bins or hoppers where hazards exist unless equipped with a safety-belt and life line and is at all times in communication with other workers.

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## INCINERATORS

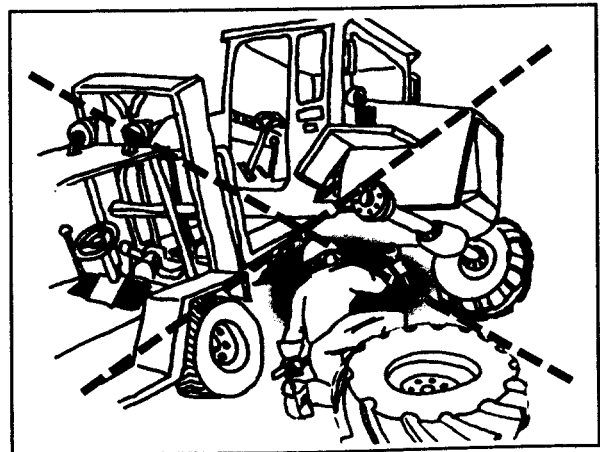
- 7.10 All incinerators shall be equipped with a screen to prevent sparks and burning debris from escaping. This screen shall be cleaned daily. On teepee burners this shall be done by using a chain, wire rope or other similar device.
- 7.11 When cleaning out ashes that are not thoroughly wetted down, employees shall wear goggles and respirators.

## DIP TANKS / SPLASH TANKS ETC.

- 7.12 Vats or other liquid holding containers which have top edges less than 106.68 cm (42 in.) above the working area shall be fenced to a height of 106.68 cm (42 in.) above the working area to prevent accidental falls. When not in use, vats and holding tanks shall be covered.
- 7.13 Adequate ventilation shall be provided for employees.
- 7.14 Where practicable, mechanical lifting devices shall be provided.
- 7.15 Workers assigned to handle material by hand shall be instructed on the proper technique.

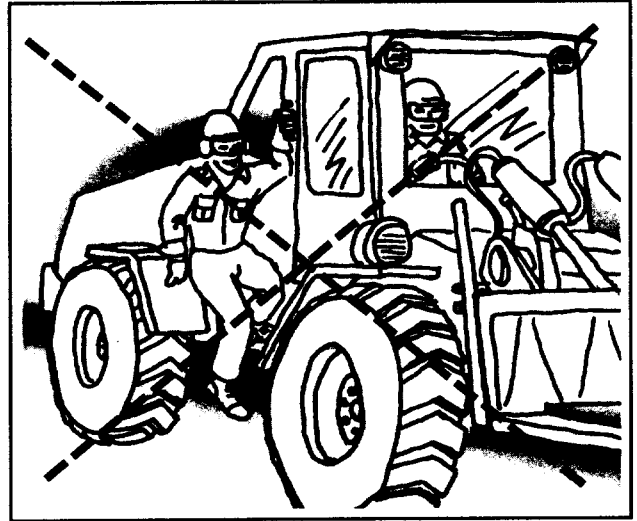
## SECTION 8- VEHICLES

- 8.1 Vehicles shall include all powered mobile equipment normally used in sawmill, planing mill, storage, shipping, and yard operations.
- 8.2 All vehicles operated in the dark or in poorly lighted areas shall be equipped with adequate head, tail, and back-up lights.
- 8.3 All vehicles operated in areas where overhead hazards exist shall be equipped with an approved overhead guard.
- 8.4 Vehicles powered by internal combustion engines shall not operate in buildings unless buildings are adequately ventilated.
- 8.5 No powered vehicles shall be operated with loads exceeding the unit manufacturer's posted load capacity unless upgraded and approved by an appropriate agency.
- 8.6 All modifications, extensions, replacement of parts, and repairs made to a vehicle must maintain at least the same safety factor used in the original design of the equipment.
- 8.7 Secure blocking shall be used when a vehicle is being dismantled, altered or repaired. The blade, bucket, boom, forks, or any moveable part of the vehicle shall not be used as a substitute for secure blocking.



- 8.8 Servicing, maintenance or repairs should only be done when the vehicle is not being operated. Inspection, operation, repair, maintenance and modification of a vehicle shall be carried out according to the manufacturer's instructions or according to good safety practices if there are no such instructions.
- 8.9 All vehicles shall be equipped with brakes and parking brakes capable of holding and controlling the vehicle and capacity load upon any incline or grade over which they may be operated.
- 8.10 The steering mechanism shall enable the operator to have full control over the direction in which the vehicle is moving.
- 8.11 The operator of any piece of mobile equipment shall be responsible for maintaining the safe, full control of that equipment.
- 8.12 Vehicles shall be examined before each shift begins and at other regular intervals. Any defects or conditions that affect its safe operation shall be reported to the supervisor or employer.
- 8.13 Fuel tanks in vehicles, other than diesel, shall not be filled when the engine is running or if anyone is smoking in or around the vehicle or when there is a source of ignition nearby. Diesel fuel may be dispensed into a vehicle left running if there is no source of ignition, including a gasoline dispenser, within 7.5 m (25 feet) of the running vehicle.
- 8.14 Operators shall not leave the controls of a vehicle unattended unless the machine cannot move accidentally. Set parking brakes and transmission locks, lower any blades, buckets or forks to the ground and grapples to the deck, chock the wheels if necessary.
- 8.15 The swinging movement of a cab, load, arms counterweight or other part of a vehicle can be a hazard to other workers in the area. Operators shall not move a vehicle when it will pose a hazard to another worker. No worker shall be allowed on the load, truck platform or trailer during loading or unloading of pulpwood, sawlogs, fuel wood or similar products.

- 8.16 The operator shall remove any unnecessary loose material, tools, or equipment from a vehicle that could cause a worker to slip, trip or that could be a fire hazard or a danger if the machine upsets.
- 8.17 Only the operator of a vehicle shall ride in it, unless seats or other safe, secure facilities have been provided for passengers.



- 8.18 Climbing, walking and working surfaces of vehicles shall be nonskid. There shall also be hand holds on each side of steps or ladders.
- 8.19 All vehicles shall be equipped with a fire extinguisher capable of extinguishing Class A, B or C fires.
- 8.20 Vehicle operators should be alert to the danger of being jammed between the lifting arms and the side of the cab on machines where this hazard exists.
- 8.21 If the load being carried totally obstructs forward view, the operator shall travel with the load trailing.
- 8.22 Where forward movement of the load could endanger the operator, the vehicle shall be equipped with a substantial bulkhead extending to the top of the operator's compartment behind the seat.

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## SECTION 9 - INDUSTRIAL HYGIENE

### ILLUMINATION

- 9.1 Effective provisions shall be made for securing and maintaining sufficient and suitable lighting whether natural or artificial, in every part of a mill in which persons are working or passing.
- 9.2 Adequate measures shall be taken to prevent glare or the formation of shadows which cause eyestrain and increase the risk of accident to any person employed.

### VENTILATION

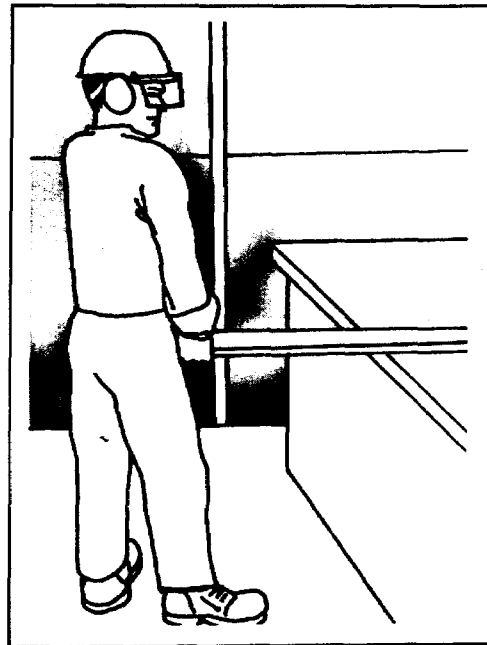
- 9.3 All gases, vapours, dusts shall be removed where possible. Respirators shall be worn where this is not possible.
- 9.4 When spray painting lumber local exhaust systems shall be installed when necessary. Adequate exhaust ventilation shall be provided to control exposure. Systems and filter pads shall be cleaned regularly and tested for deterioration. Proper hygiene habits shall be understood and practised by employees.

### EMPLOYEE TRAINING

- 9.5 Every employer shall ensure that no person works without supervision at any machine unless the person:
- (a) has received adequate training and instruction in the operation of the machine and any dangers connected therewith.
  - (b) has received adequate supervision by a person having thorough knowledge and experience with the machine.
  - (c) is capable of safely operating the machine without supervision.

### ERGONOMICS

- 9.6 Consideration shall be given to ergonomics within the workplace. Ergonomic controls may range from workstation and job design, to purchasing ergonomically designed equipment and tools.
- 9.7 Where possible, repetitive lifts should be kept between waist and shoulder height.
- 9.8 Where possible, avoid lifting and twisting movements at the same time.
- 9.9 If controls as stated are not feasible, the time performing these tasks should be limited by job rotation. Jobs among which the workers are to be rotated should require different movements and the use of different muscles.

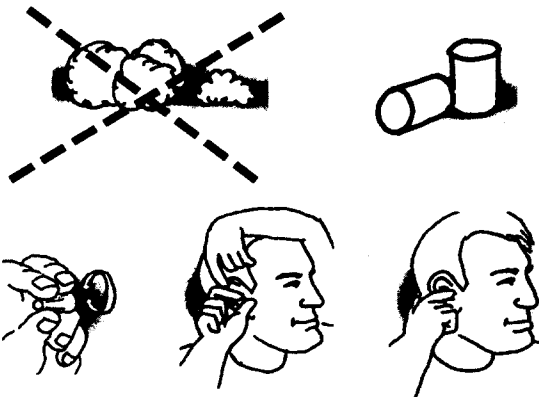


### LASERS

- 9.10 Never look directly into a laser light. Read all instructions supplied with the light by the manufacturer and make certain that all workers in the sawmill are aware of any hazards that these lights may have. Laser lights should be carefully positioned to ensure that the beams do not enter the eyes of workers.

## NOISE

- 23.1 Sawmills in general produce high noise levels. Exposure to high noise levels can produce many health effects such as increased heart rate and blood pressure and after prolonged exposure, will cause loss of hearing.
- 23.2 High noise levels are those which are above the maximum acceptable limits as defined by the Threshold Limit Values (ie. 85 dBA for an 8 hour day). A hearing conservation program shall be developed where high noise levels exist.
- 23.3 A hearing conservation program should include:
- a) reducing noise levels at the source or by enclosures or isolation where practical
  - b) providing adequate hearing protection to employees where levels are excessive.
  - c) providing education and training so employees understand the importance, limitation, care and maintenance of the protection.
  - d) conducting audio metric testing to verify the program is protecting the workers from hearing loss.



*This is a suggested method for the proper installation of foam earplugs. Check package of various types for specific instructions.*

## SECTION 10

### FLAMMABLE & COMBUSTIBLE PRODUCTS

#### STORAGE AND HANDLING

- 10.1 When handling flammable and combustible products, employers and employees shall ensure there are no sources of ignition. The category of flammable and combustible liquids is determined by how easily they ignite (the flash point). Flammable liquids ignite at lower temperatures, below 100 degrees F, while combustible liquids ignite at temperatures above 100 degrees F. Examples of flammables are gasoline, tanner gas; examples of combustibles are kerosene, fuel oil, and solvents.
- 10.2 Containers of more than 205 l. (45 gal.) of flammable liquids shall be stored in isolated storehouses of fire resistant construction. The floor shall be sloped to a drain pipe leading outside to a catch-basin which shall not be connected to a sewer. Fuel, hydraulic oil, motor oil, etc. shall not be stored inside a mill.
- 10.3 Connections on oil drums and piped systems of flammable and combustible liquids shall be vapour and liquid tight.
- 10.4 When flammable liquids are transferred from one container to another (e.g. from a bulk container to a portable container), the containers shall be effectively bonded and grounded. This practice prevents electrical discharge (i.e. sparks) from the accumulation of static charge because of the transfer process.

#### PROPANE

- 10.5 Work on a propane system or system component may only be performed by licensed personnel.
- 10.6 All propane cylinders shall be stored outdoors in a location protected from vehicle traffic.
- 10.7 Propane installation over 200,000 BTUs per hour in size shall have plans submitted to the office of the Fire Marshal for approval prior to the commencement of work.

## FIRE PROTECTION

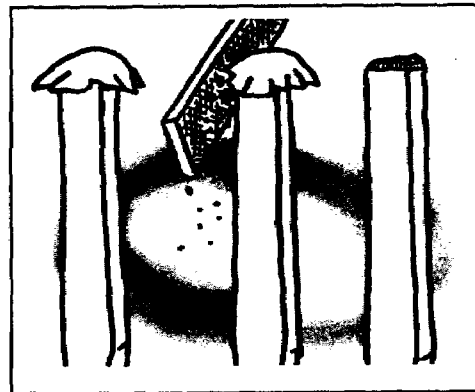
- 10.8 Every employer shall provide and properly maintain an adequate number of A, B, C, type extinguishers.
- 10.9 Every employee shall be trained in the use of these extinguishers.
- 10.10 Water hoses and water pump tanks shall never be used on fires around electrical equipment.
- 10.11 Fire extinguishing equipment shall be located in an area that is protected from mechanical equipment with easy access to suitably marked stations. Precautions shall be taken to prevent solutions from freezing.



## SECTION 11 - TOOLS AND EQUIPMENT

### TOOLS

- 11.1 All hand tools shall be kept in good condition, used only for jobs for which they are intended, and only by workers who know how to use them properly.
- 11.2 Cutting tools should be kept sharp. Tools that are broken and worn out shall be discarded. Cracked handles shall not be used. Mushroom heads shall be removed.



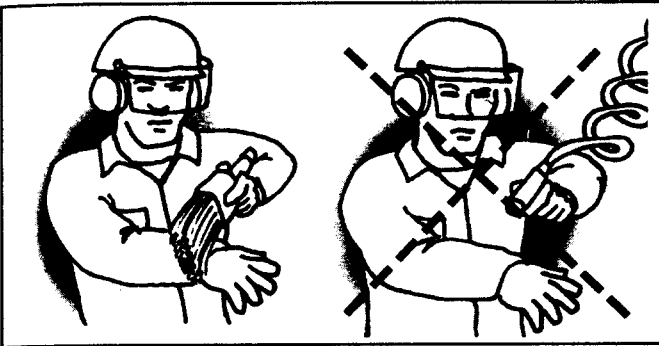
- 11.3 Tools shall be stored in an organized manner or hung in a convenient place after being used.
- 11.4 Chainsaws - All chainsaws must be completely equipped with safety devices and properly maintained according to "The Forest Professional" code of practice.

### HYDRAULIC

- 11.5 The maximum working pressure in any hydraulic system shall not exceed the safe working pressure rating of any component used in the system. Pressure gauges should be installed on all pump units.
- 11.6 Any oil spill shall be cleaned immediately.

## COMPRESSED AIR

- 11.7 All compressors and tanks above 15 psi (104 kilopascals) shall be checked by the Department of Labour, Pressure Vessel and Boiler Inspectorate, to ensure relief valves, pressure gauges, etc. are working properly.
- 11.8 Compressed air can kill by injecting air into the bloodstream and shall never be used to blow dust off individuals. Use a vacuum system or brush.



- 11.9 De-icing:
- (a) use only recommended gas.
  - (b) Do not mix de-icing products.
  - (c) Adequate ventilation shall be provided when de-icing products are used.
- 11.10 Compressed air shall not be used for spinning bearings while cleaning. Excessive speed can cause bearings to explode.

## SECURING STATIONARY MACHINERY

- 22.19 All stationary machinery shall be properly anchored.

## LIFTING DEVICES

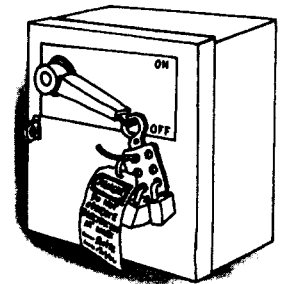
- 22.20 All chainfalls, jacks and other lifting devices shall be used where required and their capacity shall not be exceeded. All lifting devices shall be checked for defects before use.

## SECTION 12 ELECTRICAL AND LOCK OUT SYSTEMS

- 12.1 Electrical construction and or renovations shall be performed by a qualified electrician and conform to the Canadian Electrical Code.
- 12.2 When changing fuses pullers of a non-conductive nature shall be used along with approved rubber gloves.
- 12.3 Means of access to all main electrical panels and switches shall be clear of obstruction at all times.
- 12.4 All outlets in an industrial environment should be protected with metal covers.
- 12.5 All extension cords shall be of an approved type for operation of portable power tools or lights and shall not be used in place of permanent wiring.
- 12.6 All portable power tools shall be inspected regularly for damaged wire and faulty switches. If any problems are discovered, the tool shall not be used until the problem is corrected.

## LOCK OUT SYSTEMS

- 12.1 Any maintenance or operational work on machinery and equipment shall require that all electric, hydraulic and pneumatic power sources be safely isolated to prevent accidental start or movement of machinery or equipment.
- 12.2 The electrical lock out system shall consist of Identification tag(s) and padlock(s) which shall be affixed to the power source(s) by each person performing the work. The tags and locks shall only be removed by that person or by a person authorized by that person.





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## GLOSSARY

### ARBOUR

*See saw arbour.*

### BINDER

A chain, cable, rope or other approved material used for binding loads.

### CANADIAN STYLE TRIMMER

Double end trimmer using offset saws with operator working beside the saw.

### CANT

A log that has been slabbed on one or more sides.

### CANTERMAN

A person who manually rolls or turns logs on a carriage.

### CANT HOOK

A tool like a peavey, but having a toe ring and lip at the end instead of a spike.

### CARRIAGE

A framework on wheels, that runs parallel to the saw on a track and supports the log while it is being cut into cants or lumber.

### CARRIAGE DOG

A device that holds a log steady while it is being sawn.

### CATWALK

Narrow elevated walk or platform.

### CHIP BREAKER

A pressure bar used in conjunction with some planing or moulding machines to hold the lumber in place during the finishing process.

### CHIPPER

A machine that cuts material into pulp or fuel chips.

### CHIPPER KNIFE

The knives used in a chipper that reduce wood to chips.

### CHOCK

A wedge shape block used to prevent movement.

### CONVEYOR

A belt, chain, vibrator, rollers or similar device used for moving materials cut from logs.

### DEBARKER

A machine used to remove bark. Examples: Ring Debarker - Rosser Head Debarker Drum Debarker - Air Jet Debarker.

### DIP TANK

A vat holding wood preservative, into which wood is briefly dipped to provide a superficial treatment.

### DRY KILN

A chamber in which wood products are seasoned by withdrawing moisture.

### EDGER

A machine used to square edged rough lumber Examples: Single Arbour Edger - Double Arbour Edger - Vertical Edger - Gang - Bull edger.

### EDGERMAN

The operator of the edger.

### ERGONOMICS

The applied science of workplace conditions including but not limited to:

- (a) work station layout
- (b) tools
- (c) job design
- (d) work / rest regimens

### FILER

A person who sharpens and maintains saws and knives.

### FORKLIFT

Mechanized equipment using steel blades or "forks" to slip under the load, which is then lifted, moved and lowered into place.

### GIB

A metal bar used to clamp in knives in cutting heads.

### GREENCHAIN

A moving chain on which lumber is transported and sorted.

---

**GUIDE**

*See saw guides*

**HAUL UPS**

Chains or cable used to haul logs into the mill from a lower level.

**HUSK**

The frame supporting the arbour and other working parts of a circular saw.

**HYGIENE**

Conditions and practices that serve to promote or preserve health.

**KEY**

A square piece of metal inserted in a joint to limit movement.

**KICK**

(kick back) - The throwing back of wood from machinery caused by abnormal wood or careless handling.

**KNUCKLEBOOM LOADER**

Grapple loader

**LIVE ROLL**

Cylinders mounted on axles and rotated by power.

**LOG**

(sawlog-bolt) - The raw material from which lumber, and other wood products are processed.

**LOG DECK**

(Mill Deck) - A platform in the sawmill on which the logs remain until needed for sawing or debarking.

**LOG TURNER**

A device used in turning logs on a carriage.

**LUMBER**

A wood product of specific dimensions.

**MATCHER**

A machine used in milling lumber.

**MILLING**

(planing) - The act of processing lumber to specific sizes and shapes.

**MOULDER**

A machine used to manufacture mouldings.

**OPERATOR**

The actual operator of a piece of equipment.

**PERIPHERY**

The outer surface of a circular object.

**PICKAROON**

A short, sharp tool used to move logs or timbers.

**PLANER**

A machine used to size rough lumber.

**PLANER HEADS**

Sets of cutting knives mounted on cylindrical heads which revolve at high speed to dress lumber fed past them.

**PLANER KNIFE**

Blade used in a planer head.

**POND**

(Mill Pond - Log Pond) - A body of water at a mill in which logs are stored.

**PRESSURE TREATING**

A process of impregnating lumber or other wood products with various chemicals, such as preservatives and fire retardants, by forcing the chemicals into the structure of the wood using high pressure.

**PULLEY**

A flat or vee wheel on which a belt can run.

**RESAW**

A machine used to saw a piece of lumber, cant or slab along its horizontal axis.

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## RIM SPEED

The rate at which the rim of a circular object revolves, usually in FPM. (feet per minutes)

## SAWS

Devices, with steel teeth used to cut wood. The principal saws used in wood products production include:

- (a) **Band** - (endless saw) A saw consisting of a continuous piece of flexible steel, with teeth on one or both sides.
- (b) **Chain** - powered saw utilizing an articulated chain with cutting teeth running around a bar of flat steel.
- (c) **Circular** - A circular steel blade fitted with cutting teeth and mounted on an arbour.
- (d) **Slashers** - A cutting device used to cut long logs to shorter lengths.
- (e) **Swing** - a circular saw suspended on a pendulum
- (f) **Trim** - one or more saws, usually circular, used to cut lumber to various lengths.
- (g) **Head** - a combination of an arbour, saw and log carriage used for initial breakdown of logs into lumber or cants.

## SAWYER

A worker in a sawmill who operates the head rig, or main saw.

**SAFETY STICK** A stick of adequate length to safely remove debris from saws and other moving parts of equipment.

## SAW GUIDE

A device for steadying a circular/band saw.

## SAW ARBOUR

The shaft and bearings which hold a power driven saw.

## SFPM

Surface feet per minute.

## STICKERS

A narrow strip of wood placed at right angles between layers of lumber to facilitate air circulation in drying the lumber.

## SLAB

The exterior portion of a log removed by the saw, having one flat and one curved surface.

## SORTER

A mechanical device that sorts lumber or logs for thickness, width, or length by dropping or ejecting pieces into separate compartments.

## SPLITTER, KNIFE

A device mounted behind a saw to prevent cants from coming in contact on the saw, or to prevent the saw from binding on abnormal wood.

## STAKES

Poles or posts used to help hold the load in place while in transit.

## STRAPPING

Flexible bands used to bind lumber or other products into units for ease of handling and storage.

## SWAGE

A method of shaping a saw tooth to provide side clearance on both sides of each tooth.

## TAIL EDGERMAN

A person who separates lumber from edging.

## WET WIPE

Using a damp or wet cloth to wipe away metal filings.

## YARD

A place where wood products are stored or made available for sale.

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## Appendix A

### List of Acts and Regulations:

#### 1. Nova Scotia Department of Labour

- (a) Stationery Engineers Act and Regulations
- (b) Steam Boiler Pressure Vessel Act and Regulations
- (c) Construction Safety and Industrial Safety Regulations
- (d) Occupational Health and Safety Act
- (e) Disclosure of Information Regulations
- (f) Workplace Hazardous Materials Information System Regulations
- (g) Adjudication Committee Regulations
- (h) First Aid Regulations
- (i) Managing Asbestos in Buildings (Code of Practice)
- (j) The Professional at Work in Nova Scotia Forests (Code of Practice)

#### 2. Transportation of Dangerous Goods Regulations

#### 3. Canadian Electrical Code

#### 4. National Fire Code

#### 5. National Building Code

#### 6. Liquefied Petroleum Gas Regulations

#### 7. Nova Scotia Fire Prevention Act

#### 8. Environmental Assessment Act

#### 9. Propane Installation Code

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