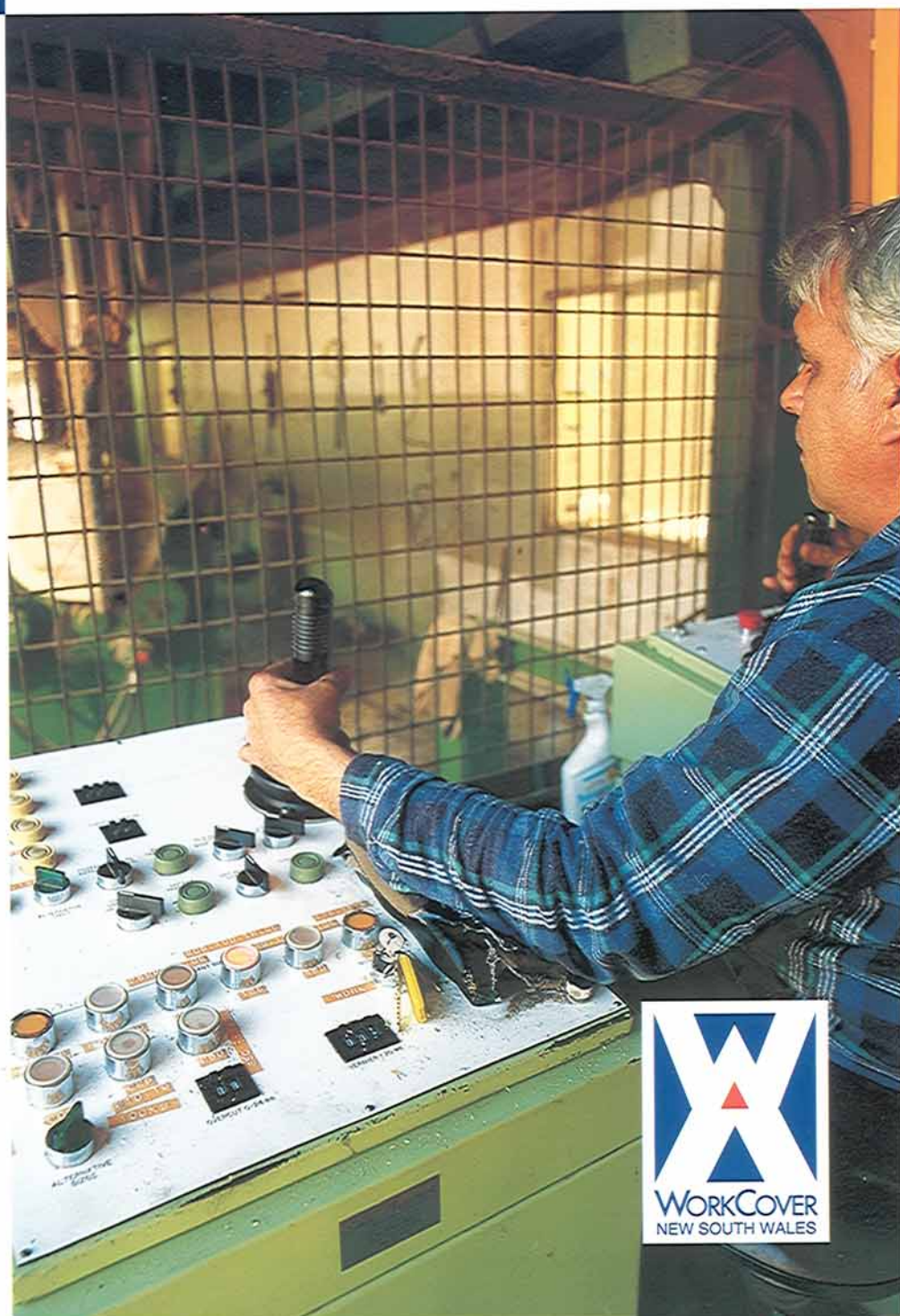


# Code of practice

for the  
sawmilling  
industry

1 July 1997



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*ISBN 0 7310 8633 3  
Order no. 613*



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WorkCover Authority of NSW  
Locked Bag 10  
Clarence St  
Sydney, NSW 2000

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## **Foreword**

This code of practice is designed as an aid in the prevention of injury to persons employed in NSW sawmills. The code covers the sawmilling process of all timber species used in the NSW timber industry including softwood, hardwood, red gum and cypress pine. It applies to all sizes of timber sawmills ranging from small bush mills to large, fully automated mills.

The code should be used in conjunction with a risk management approach to determine which safety features and work systems are required to make a sawmill free from risks to health and safety as far as is practicable.

## **What is an INDUSTRY CODE OF PRACTICE?**

An approved industry code of practice is a practical guide to achieving the standard of health, safety and welfare required by the *Occupational Health and Safety Act, 1983* and Regulations for a particular area of work.

An approved industry code of practice should be followed, unless there is an alternative course of action which achieves the same or a better standard of health and safety in the workplace.

An industry code of practice is approved by the Minister for Industrial Relations. It comes into effect on the day the notice of this approval is published in the NSW Government Gazette or on the day specified in the Gazette notice.

An approved industry code of practice is designed to be used in conjunction with the Act or Regulations but does not have the same legal force. A person or company cannot be prosecuted for failing to comply with an approved industry code of practice.

However, in proceedings under the Act or Regulations, failure to observe a relevant approved industry code of practice can be used as evidence that a person or company has contravened or failed to comply with the provisions of the Act or Regulations.

A WorkCover Authority Inspector may cite an approved industry code of practice in a direction in an Improvement Notice or Prohibition Notice, indicating the measures that should be taken to remedy an alleged contravention or non-compliance. Failure to comply with a requirement in an Improvement or Prohibition Notice is an offence.

### **In summary an approved INDUSTRY CODE OF PRACTICE:**

- ✓ gives practical guidance on how the required standard of health, safety and welfare can be achieved in an area of work.
- ✓ should be followed, unless there is an alternative course of action which achieves the same or better standard of health and safety in the workplace.
- ✓ can be used in support of the preventive enforcement provisions of the *Occupational Health and Safety Act 1983*.
- ✓ can be used to support prosecution for failing to comply with or contravening the Act or Regulations.

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# **1. Introduction**

## **1.1 Title**

This code of practice may be cited as the *Code of practice for the sawmilling industry, 1997*.

## **1.2 Purpose**

This code sets out guidelines to prevent injury to persons engaged in the operation of plant and systems of work found in a sawmill and sawmill yard.

## **1.3 Scope**

This code applies to all sawmills engaged in the sawing of round logs and flitches of all timber species, into sawn timber. It applies to all processes conducted within such sawmills and sawmill yards, including handling round logs, sawing round logs into sawn timber, handling sawn timber as well as the management of sawmill waste within the boundaries of a sawmill yard.

## **1.4 Commencement date**

This code commences on 1 July 1997.

## **1.5 Authority**

This code of practice is approved as an Industry Code of Practice pursuant to Section 44A of the *Occupational Health and Safety Act 1983*, by the Minister for Industrial Relations on the recommendation of the WorkCover Authority of NSW.

## **2. Consultation**

The employer, employees and their representatives should consult with each other when observing the recommendations of the code and determining the provision of safeguards.

The consultation process should be used to determine safe systems of work based on an assessment of the risk. The consultation process should include consideration of the following:

- nature of work
- workplace access
- workstation access
- appropriate machine guarding
- manual handling
- personal protective equipment (PPE)
- fire safety and emergency procedures
- establishment of a workplace health and safety committee
- appropriate training.

### **3. Planning and preparation**

Careful planning and preparation is the first essential step in ensuring that work is done safely. Planning and preparation for safe systems of work and risk control measures should involve consultation with all those engaged in the work and include a risk assessment and control process.

#### **3.1 Planning by the employer or person in control**

The employer, or the person in control of the workplace, has a statutory duty imposed by the *Occupational Health and Safety Act 1983* (OHS Act). This duty is to provide and maintain, in relation to those matters over which he or she has control, a workplace that is safe and without risks to health for their employees and other persons present at the workplace or affected by the work. To fulfil these obligations the employer should plan for the work to be done safely.

Before operations start, the employer or person in control should at least consider:

- a. an assessment of the risks involved in carrying out the work (see section 3.2).
- b. the most appropriate methods to control any risk of injury (see section 3.3).
- c. instructions for the saw operator regarding any site safety requirements to be observed.
- d. providing suitable safe access to and from the workplace including the work area.
- e. an assessment of manual handling tasks which could cause back strains and other injuries and providing systems of work which comply with the provisions of the *Occupational Health and Safety (Manual Handling) Regulation 1991*.
- f. the use of PPE such as safety footwear, eye protection and hearing protection (see section 14.).
- g. preventing persons entering the area where cutting operations are being carried out where there is a risk of injury.
- h. that all persons carrying out the work are provided with the appropriate training and instruction (see section 15.).

### **3.2 Risk assessment and control**

Use this code to assist in identifying and controlling common hazards and risks associated with sawmilling work.

A hazard identification and risk assessment process should be carried out by the employer or person in control to determine if persons are at risk. Safe systems should then be put in place to control the risk.

The process of risk assessment and control is made up of the following steps:

1. Identify the hazards.
2. Assess the risk(s) from the hazards.
3. Use appropriate control measures to eliminate or reduce the risk.

### **3.3 Hierarchy of control measures**

Use the following hierarchy of control in order to develop each control measure:

1. Eliminate the risk (eg. discontinue the activity or not use the plant).
2. Minimise the risk by:
  - substituting the system of work or plant (with something safer).
  - modifying the system of work or plant (to make it safer).
  - isolating the hazard (eg. introduce a restricted work area).
  - introducing engineering controls (eg. guarding, fencing).
3. Other controls:
  - using PPE (eg. eye, respiratory and hearing protection).
  - adopting administrative controls such as hazard warning signs and specific training and work instructions.

The control measures at Level 1 give the best results and should be adopted. The measures at the lower levels are less effective and they require more frequent reviews of the hazards and systems of work. In some situations a combination of control measures may need to be used.

Any new control measures should be evaluated to ensure that they are effective and safe and that no new hazards are created by them.

## **4. Work systems and control measures**

Employers or the person in control should provide or maintain plant and systems of work that are safe and without risks to the health of workers. For guidance regarding control measures for specific plant and work systems refer to sections 5 to 13.

### **4.1 Guarding general**

All sawmill machinery should be designed or guarded to prevent the risk of injury by contact or entanglement with moving parts or being struck by projectiles being ejected from the machinery. Machine guarding in sawmills should comply with *AS 4024.1 Safeguarding of Machinery - General Principles*.

Fixed guards should be securely fixed in place and should not be able to be removed without the use of engineering tools. Protection should be in-built wherever possible.

Machinery guards should be constructed to withstand the conditions of normal usage. They may be fixed guards, adjustable or controlled by mechanical or electrical interlocking systems. In certain circumstances, photo-electric systems or combinations of various forms of guarding may be used. The system used to adjust heavy or frequently adjusted guards should incorporate a system of pneumatics, electrics or some other mechanical means in preference to manual operation.

A system of colour coding machinery guards assists in identifying and maintaining guarding in position. All guarding should be secured and correctly adjusted before the machinery is operated. All machinery guarding should be maintained in good working order and employees should be adequately instructed, trained and supervised to ensure proper usage.

Where plant, such as moulders, is located in sound proof booths, the general provisions for machine guarding should still be applied where access for adjustment purposes is required.

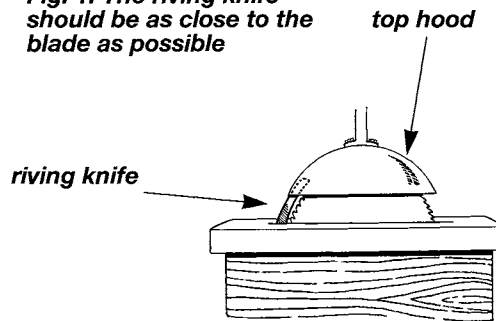
#### **a. Riving knives**

A riving knife is designed to prevent the saw blade from being pinched by the timber as it passes the blade and also to prevent a flitch of timber coming into contact with the rear of the saw blade.

Where riving knives are required they should be constructed from high grade steel shaped to follow the edge of the saw blade.

The thickness of a riving knife should be the same as that of the kerf. The leading edge of a riving knife should be tapered. The riving knife should be adjusted as close to the blade as possible. It should also be adjusted to a height just below the top of the saw blade.

**Fig. 1. The riving knife should be as close to the blade as possible**



## **4.2 Inspection and maintenance of plant**

Regular planned inspection and routine maintenance should be carried out to ensure the safe and efficient operation of saws and associated plant. Employers or persons in control should implement the following procedures:

a. Daily

General condition and maintenance of the plant should be checked daily by the person doing the cutting.

b. Monthly

The plant should be inspected and maintained by an appropriately qualified person at least every month.

c. Repairs

Repairs should be carried out by an appropriately qualified person.

d. Reporting defects

Any defects to equipment should be reported immediately.

Staff are a good source of information about defects in plant because of their day to day experience and they should be encouraged to be involved in reporting such defects.

e. Record keeping

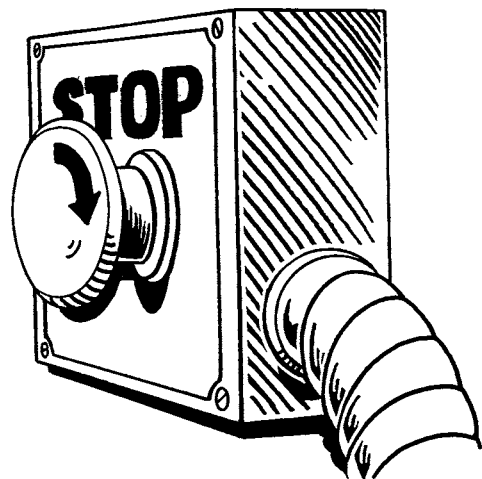
Employers should develop and maintain a record system to ensure that maintenance procedures are documented.

### 4.3 Machine control devices and systems

Operational controls should be:

- suitably identified on the plant to indicate their nature and function.
- located in order to be readily and conveniently operated by each person using the plant.
- located or guarded in order to prevent unintentional activation.
- located so that the operator is free from risk to health and safety, particularly from moving machine parts, moving timber and flying timber particles or pieces.
- laid out to be consistent with good ergonomic requirements and allow the operator a clear view of the machine's operational areas.

*Fig. 2. Mushroom head emergency stop*



#### a. Emergency stops

An emergency stop is a device which requires deliberate action to bring a machine to rest when danger is recognised. An emergency stop should stop the machine as quickly as possible and apply a brake where provided. The emergency stop should not be used for normal stopping. Emergency stops should not be used as a means of isolation or immobilisation or as an alternative to guarding.

Where there is more than one control or work station, an emergency stop push button should be positioned at each station and should be within easy reach.

Handles, bars, push buttons and so on, used for actuating the emergency stop, should be coloured red and suitably marked, prominently located and readily accessible.

The emergency stop device should be constructed so that when it is released it does not cause the machine to operate. Restarting should only be possible by operation of the normal starting control.

The Construction Safety Regulations require that all switches comply with *AS1755 Conveyors - Design, Construction, Installation and Operation - Safety Requirements*. Emergency stops must be installed so that they are not affected by electrical or electronic circuit malfunction. Push buttons must be mushroom head latch-in or lock-in manual reset type.

Switches should also comply with *AS4024 Safeguarding of machinery*.

b. Machinery isolation systems

*AS1755 Conveyors - Design, Construction, Installation and Operation - Safety Requirements* requires the following:

- all machinery must have a main isolator capable of being locked in the open circuit position only.
- all machinery must be locked out and tagged out to prevent any accidental machine start before any service or maintenance is carried out on any machinery.

Machinery that contains any system of accumulating energy should be de-activated and isolated from the power source. For example, hydraulic or pneumatic equipment with a pressure storage system should be isolated or de-energised. Any stored or accumulated energy should be dissipated.

c. Tagout and lock-out systems

A tagout system should be used to indicate a temporary stoppage where the machine is not disconnected from the power.

A tag is usually a large easily identified label that is attached to the main isolator of the machine when it is shut down. It should contain the date, name of person invoking the tag and the reason for shutdown.

Tags and lock-out devices should only be removed by the person who placed it, or an authorised supervisor, after assessing whether the machine is safe to use.

*AS1755 Conveyors - Design, Construction, Installation and Operation - Safety Requirements* requires that a lock-out system must be used during machine maintenance or servicing and must include a locking device which locks the master control isolating switch in the off position.

d. Interlock systems

Interlock systems should be connected to the operation of the machine when required. Interlocked guards can be electrical, mechanical, pneumatic or hydraulic and should be connected to the operation of a machine so that:

- the machine will not operate until the guard is closed.
- the guard will not close until any body part is removed from the danger zone.
- either the guard remains locked until all dangerous movements have ceased, or opening the guard disengages the machine drive and stops all movement.

#### **4.4 Conveyors**

All sawmills contain a number of different types of conveyor systems. These range from the chain conveyor commonly known as the 'green chain' used for sorting timber, to belt or augur conveyors used for transporting waste products. All conveyors should display an identification/plant number and safe working load (SWL).

The Construction Safety Regulations require that all conveyors comply with *AS 1755 Conveyors - Design, Construction, Installation and Operation - Safety Requirements* which includes the following:

a. Isolation switches

Lockable drive power isolation switches must be located near and adjacent to each drive and must be capable of being secured in the off position. This includes electric conveyor motor drive isolation switches and hydraulic or air shut-off valves.

b. Means of stopping the conveyor:

- Emergency stops must be located:
  - at each end of the conveyor
  - at each transfer point (loading/unloading)
  - every 30 metres
  - at all workstations.
- A lanyard switch/pull wire may be located at any point as an emergency stop.
- All control switches such as 'motor isolation switches' and 'emergency stops' must be identified according to their functions (eg. 'motor isolation' or 'emergency stop').
- A pull wire must be identified at each end of the conveyor and at 30 metre intervals.
- Emergency stop mechanisms must be designed so that when they are activated, they must stop all up stream conveyors in the line thus preventing a build-up of timber.
- All emergency stops must be wired outside any electronic circuitry including computerised controls.

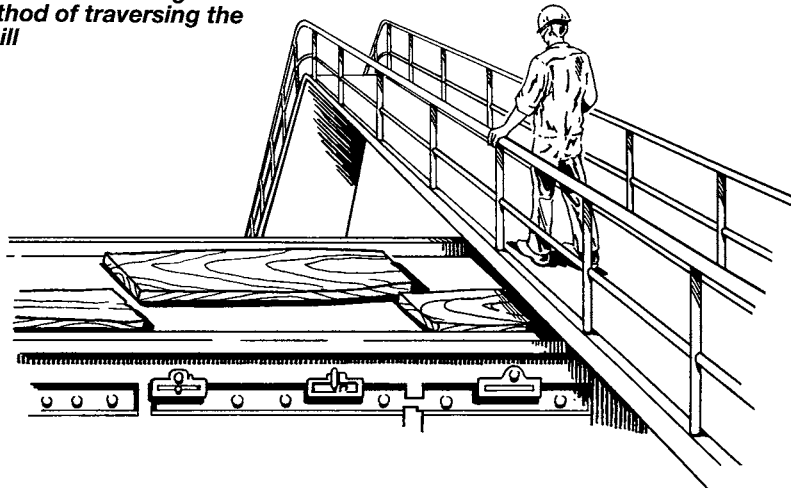
c. Conveyor guards

Nip and pinch points must be guarded so that rollers cannot cause injury.

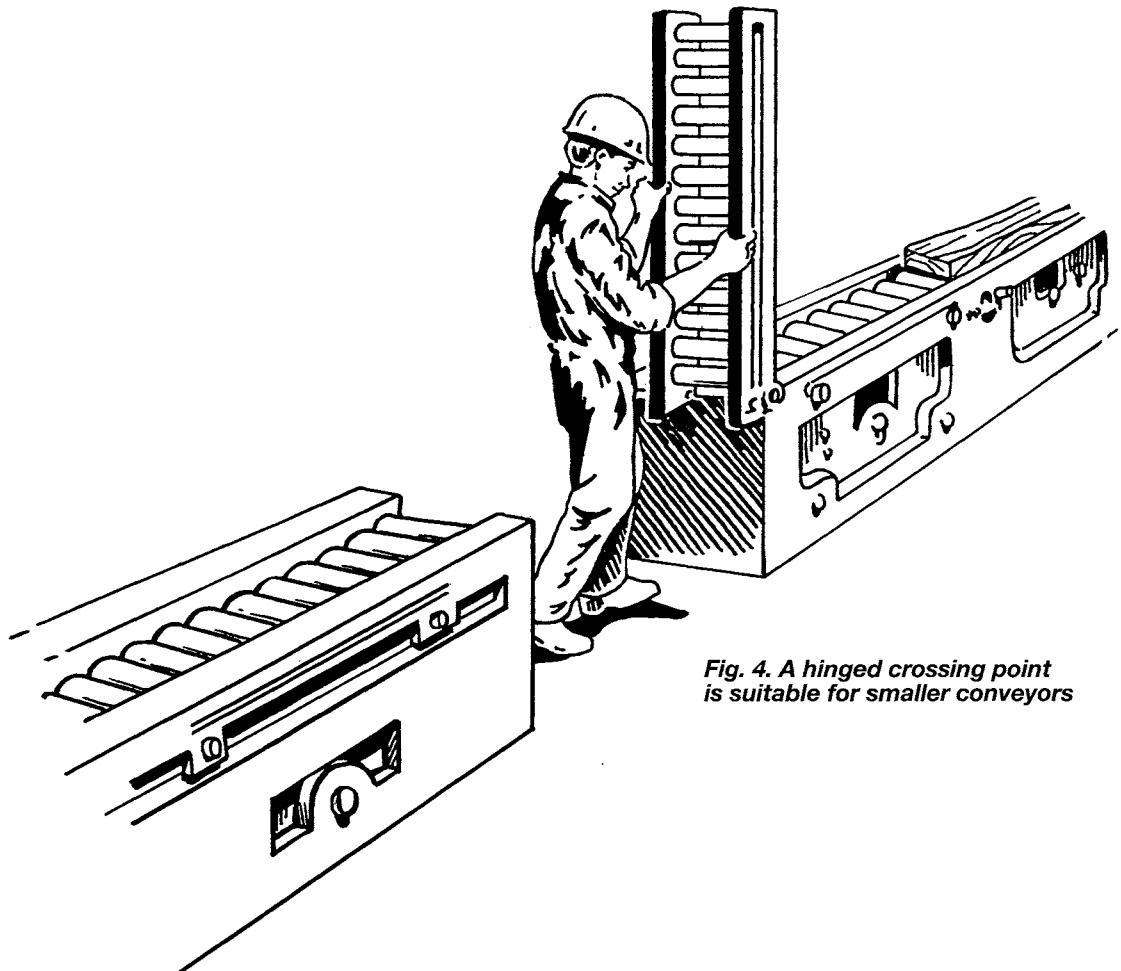
d. Designated crossing points:

- Persons must only cross a conveyor at designated crossing points.
- Persons must not ride on a conveyor.
- Crossing points must be either by underpass, a bridge or a hinged section of conveyor.

**Fig. 3. The use of a bridge is a safe method of traversing the entire mill**



- Where a conveyor is crossed by a footbridge adequate protection must be provided so that persons may cross over a conveyor without risk of being struck by timber on the moving conveyor or other injury. The interlock must operate a stop on the upstream.



*Fig. 4. A hinged crossing point is suitable for smaller conveyors*

- Underpasses must be provided with a roof over the top of sufficient strength to withstand the likely impact loads.

## 5. Breakdown saw

Breakdown saws may include:

- single circular saw
- Canadian circular saw - two blades - upper and lower
- twin edger circular saw
- single band saw
- twin band saw
- frame saw - power ripping saw
- swing saw - individual or tractor mounted
- trolley mounted circular saw.

### 5.1 General safety

#### a. Safe access to infeed and outfeed decks

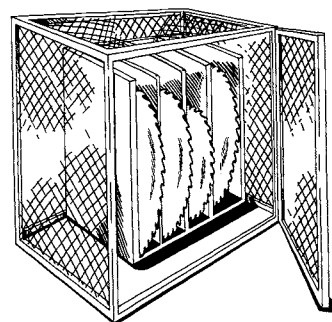
Safe access should be provided to allow misaligned or caught logs/flitches to be released or manoeuvred by manual means.

#### b. Placing logs on infeed deck

All logs should be placed on the infeed deck of a breakdown saw by mechanical means such as log loaders, chain block and tackles and wire rope 'come-a-long'.

#### c. Handling circular saw blades

The manual handling risks associated with the transportation of saw blades should be assessed and appropriate control measures should be implemented (see section 13.). Safe systems should be used to transport large diameter circular saw blades between the saw doctor's workshop, storage area and the saw and may include the use of mechanical lifting aids. When not in use, all circular saws should be stored in suitable storage racks located away from passageways or walkways.

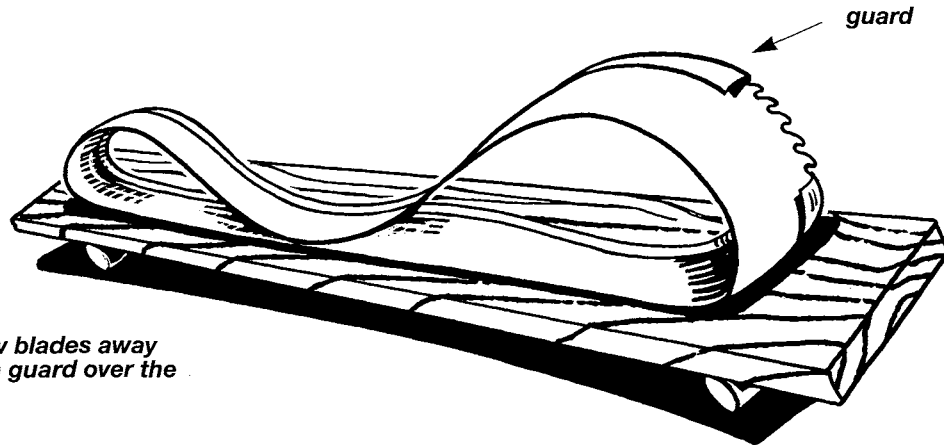


**Fig. 5. Correct storage for saw blades**

#### d. Band saw blades

When not in use or when being transported band saw blades should have a guard placed over the cutting teeth and be stored away from walkways.

Floor trolley and mechanical lifting aids should be used to transport band saw blades between the saw doctor's workshop, the storage area and the saw. A band saw blade should be handled (placed on and off a saw) by at least two people.



**Fig. 6. Store band saw blades away from walkways with a guard over the teeth**

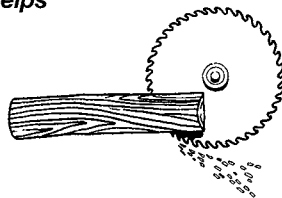
The cutting teeth guard should not be removed until the band saw blade is being fitted to the saw.

e. Cutting action

Downward cutting actions should be used wherever practicable. This is because:

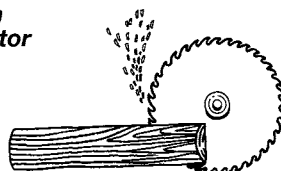
- the downward force of the cut tends to assist the security of the log on the carriage.
- sawdust and water spray are directed towards the ground.
- dislodged pieces of timber are directed to the rear of the cut.

**Fig. 7. A downward cutting action helps to secure the log on the cradle**



In the event of the saw blade jamming, the machine should be stopped before appropriate remedial action is undertaken.

**Fig. 8. An upward cutting action can cause instability and puts the operator at risk from flying debris**



## **5.2 Log carriage (cradle)**

The majority of breakdown saw carriages are mounted on rails and are powered by means of wire cable and winch drum. Some older breakdown saws use a rail mounted carriage which is manually pulled/pushed past the revolving saw. This is an extremely dangerous work practice which should not be used.

The employer or person in control should ensure that the log carriage and associated fittings are maintained in a safe working condition at all times. At least two full turns of wire rope should remain on the winch drum when the carriage is fully extended.

Suitable brush guards should be fitted to all wheels on log carriages. Both the winch drum and winch cable return pulley should be fully guarded.

The traverse of a log carriage should be achieved by mechanical means such as a winch.

All logs should be dogged (secured) to the carriage before the log is passed through the saw.

## **5.3 Operator's location**

### **a. Risk assessment**

Where an operator is located adjacent to a breakdown saw or log carriage, a risk assessment should be conducted to implement appropriate control measures and should consider at least the following:

- constant flying sawdust and water spray.
- prolonged noise frequently above 85 dB(A) (see section 13.1).
- risk of being struck by flying slivers of timber.
- risk of being struck by heavy flitches.
- constant fatigue due to an uncomfortable and dangerous workplace.
- greater risk of soft tissue injury if required to physically handle each flitch such as pulling a flitch off the vertical.

b. Remote operation

The operator should be located in an enclosed workstation clear of the breakdown and saw log carriages. A remote enclosure provides the following advantages for the operator:

- reduced risk from noise, flying sawdust and water spray and injury from flying pieces of timber.
- protection from the weather conditions.
- less fatigue.
- improved view of personnel in the immediate area.

c. Alarm

The activated interlock switches should be constructed to alert the operator by a warning device such as a flashing light or audible alarm, located in the cabin.

d. Vision

The operator located in a cabin should be able to see any person that enters the floor area around the saw and transfer decks. This can be assisted by the use of suitably located mirrors.

## **5.4 Guarding**

The following provisions are in addition to those outlined in 4.1.

a. Work area

The working area should be effectively fenced to prevent access while the saw and carriage are operating. The area should be kept clear of all obstructions.

The area around and under an elevated breakdown saw, including infeed and outfeed decks/rollcases, should be effectively fenced to prevent access. Fence gates should be fitted with fail-safe interlocks that will locally stop the drive of the rollcase and where appropriate, the carriage traverse. The drives should be reset from the operator's control panel.

b. Saw blade(s) transmission drive:

All power transmission shafting, vee and flat belts, chain and gear drives and so on should be fully guarded in accordance with *AS 4024.1 Safeguarding of machinery - General Principles*.

c. Saw blade

Single circular saw blades should be fitted with a robust, adjustable top hood which should be adjusted to suit the log being sawn. The upper saw blade of a Canadian saw should be fitted with a robust top hood.

d. Riving knife

To reduce the likelihood of the flitch coming into contact with the back of the sawblade, a riving knife or some other system of work such as a power operated wedge, should be used with breakdown saws (see section 4.1a).

## 6. Bench saw

### 6.1 Non-powered infeed

The manual handling problems associated with the use of breast benches should be assessed and appropriate control measures such as mechanical infeed systems should be implemented (see section 13.2).

### 6.2 Guarding

The following provisions should be implemented in addition to those outlined in 4.1.

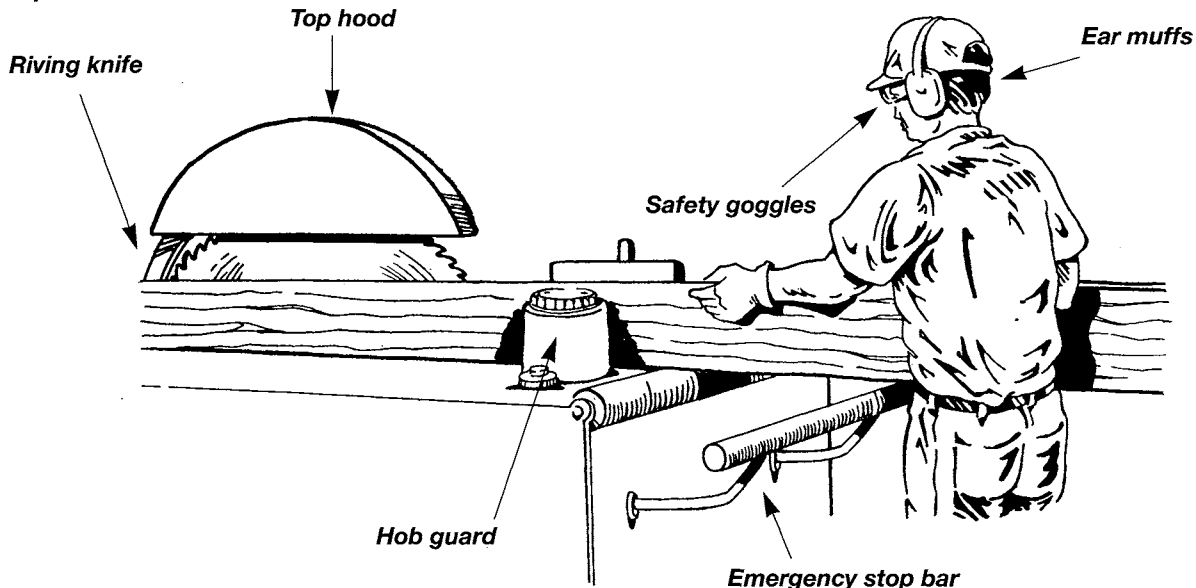
#### a. Saw blade top hood

A top hood should be designed and positioned to prevent sawdust and small pieces of wood flying back towards the sawyer.

All saw benches should be fitted with a strongly constructed top hood with the height fully adjustable and the adjustment easily accessible. The guard should cover the whole of the blade protruding above the bench including the riving knife.

The top hood should be adjusted as low as practicable while allowing the individual log/flitch/timber to be cut.

*Fig. 9. Safety features giving protection to the operator*



#### b. Infeed drive hobb

The infeed drive hobb should be fitted with a guard which shields the operator from the friction drive area on the opposite side to the timber infeed area, ie. through 180 degrees opposite the timber infeed.

c. Riving knife

To reduce the likelihood of the flitch coming into contact with the back of the sawblade, a riving knife or some other system of work such as a power operated wedge, should be used with bench saws (see section 4.1.a.).

### **6.3 Bench trolley**

Bench trolleys should be positioned between the sawyer/tailer-out and the edge of the bench where the length of timber requires support.

### **6.4 Controls for infeed bench**

The operator of a power infeed bench is in constant danger of being drawn into the working parts of the bench by the infeeding timber and contacting the infeeding drive hobb and/or saw blade. This can be caused by the infed timber catching on to the sawyer's clothing. The risk of injury is largely dependent on the distance the sawyer is away from the infeed drive hobb and/or the saw blade.

When a sawyer's work position is located within two metres of the bench a suitable emergency stop should be fitted. For example, an infeed stop bar should be used to stop or isolate the infeed drive the moment any part of a sawyer's body rests against the bar.

a. Remotely located gauge controls

The width gauge controls of an infeed power bench should be remote from the bench. That is:

- the sawyer may be located in a cabin which is remote from the bench.
- the gauge control switch box may be located on an overhead beam and be able to traverse along the beam.
- the gauge controls may be operated by a 'friction drive operator' located to one side of a bench.

### **6.5 Standing a saw - packing adjustment**

One of the most dangerous operations within the sawmilling industry is adjusting the packing of circular saws while the blade is running. There have been many incidents where fingers have been severed during the adjustment of the packing of a running saw.

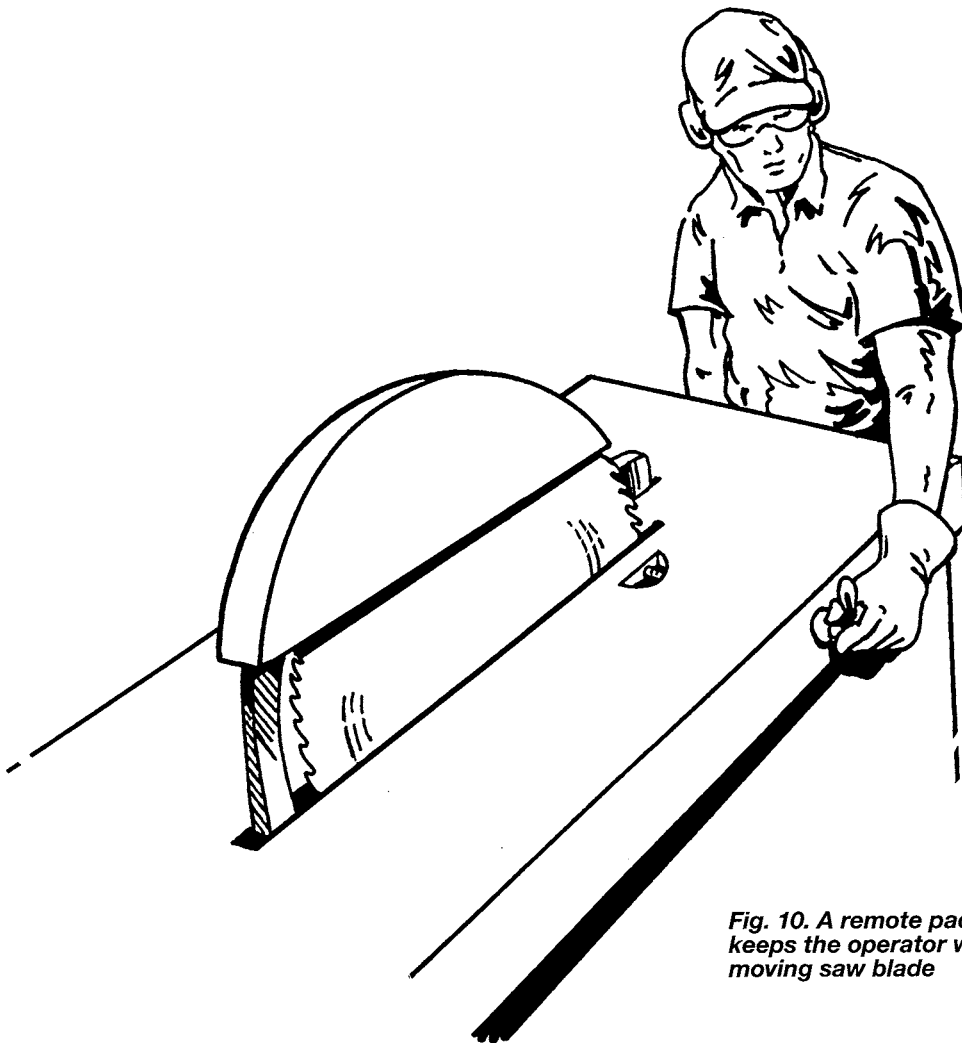
The manual adjustment packing nut of the packing adjustment mechanism should be relocated away from the top surface of the bench. This can be achieved by:

a. Screw adjustment

Increase the length of the adjusting screws (both sides) so that they extend past the sides of the bench. Alternatively, hand adjustments can be relocated to the front of the bench by the use of steel rods and swivel joints. Some minor re-design of the bench may be necessary.

b. Hydraulic adjustment

Existing screw adjustment mechanisms may be removed and replaced by a hydraulic (grease gun) system. Adjustment controls can be located on the front skirt of the bench.



*Fig. 10. A remote packing adjustment keeps the operator well away from the moving saw blade*

## **7. Docking saw**

The following are examples of docking saws:

- saw pivoted from overhead
- saw pivoted from below
- saw mounted on horizontal bars
- saw mounted in a fixed position
- automatic 'firewood' docking saw.

### **7.1 Mode of operation**

#### **a. Manual**

The saw is manually pulled through the timber. The saw should be set up so that it will automatically return to its rest position upon release of the handle and not rebound back into the work area. This can be achieved by either spring return or counter-balanced return.

#### **b. Power (air or hydraulic)**

The saw is powered through the timber and should be set to automatically return to its rest position when:

- the hand control is released
- the hand control is returned to the neutral position
- air/hydraulic pressure is lost.

### **7.2 Operator controls**

A docking saw should be designed so that its movement is operated by a hand control only.

### **7.3 Guarding**

The following provisions are in addition to those in section 4.1.

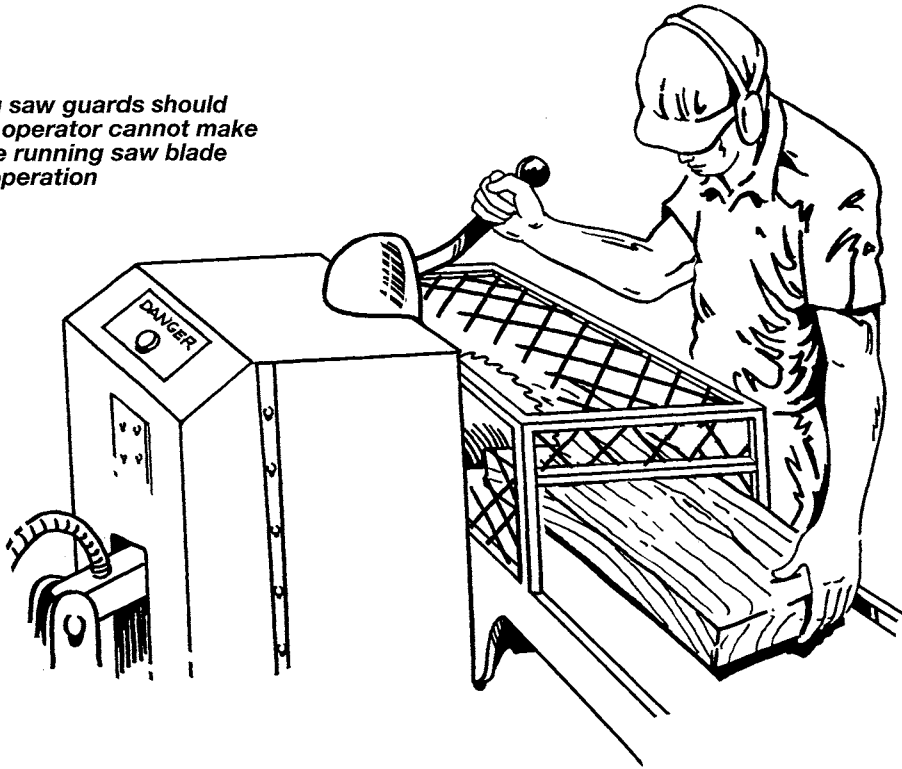
#### **a. Docking saw at rest**

When a docking saw is at its rest position, the saw blade should be fully enclosed.

#### **b. In cutting position**

The saw should be guarded to prevent human contact with the blade from directly in front of the saw and from either side of the saw. When operating a docking saw with a two button hand control system, both buttons should be pressed simultaneously, using both hands, before the saw will come forward to cut the timber. Control buttons should be spaced apart to prevent a one-handed operation (See fig. 11).

*Fig. 11. Docking saw guards should ensure that the operator cannot make contact with the running saw blade during normal operation*



c. Fixed docking saw

A fixed saw should be effectively guarded to prevent persons bumping or leaning against the saw. This can be achieved by placing a barrier on top of the saw which extends to the front and both sides of the saw.

d. Automatic docking saw

An automatic docking saw is designed to operate on a continuous basis, without the need of an operator. They should be fully guarded by a perimeter fence incorporating an access gate fitted with a fail-safe interlock switch. When activated the switch should prevent the saw from moving to cut timber. The reset control should be located outside the perimeter fence.

An automatic docking saw should be fitted with an emergency stop switch (see section 4.3).

## **7.4 Location of docking saw in relation to timber infeed**

A docking saw should be located so that the operator is not at risk from being struck or having a finger or hand jammed by the infeed timber.

Timber on the infeed rollcase/transfer deck/conveyor should come to rest before it is handled by the docking saw operator.

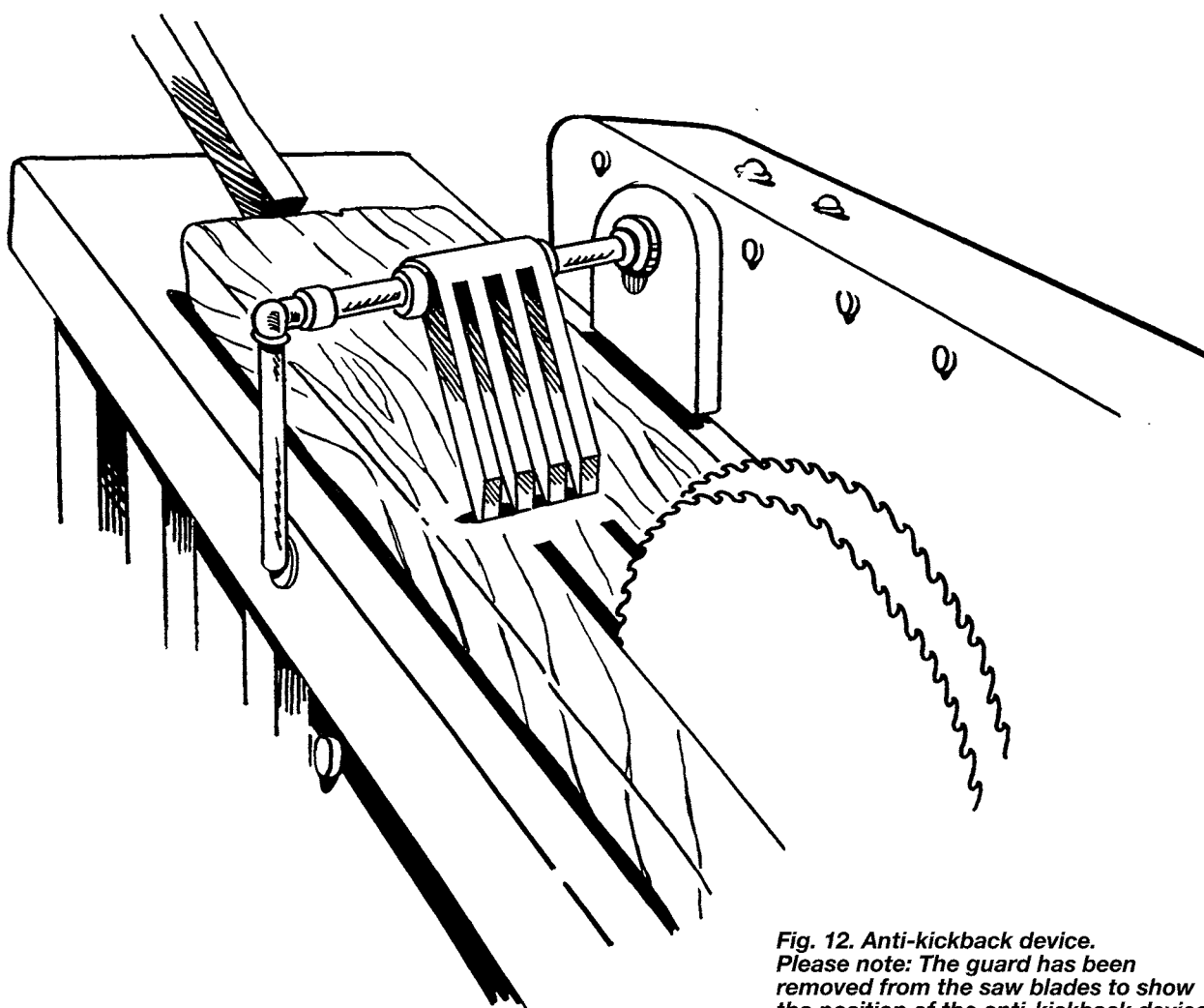
## 8. Multi-saw (gang saw)

### 8.1 Location of operator

Multi-saw operator controls should be located so that the operator is not put at risk from kickback. The controls should be located to one side of the saw or far enough behind the saw so that the operator will not be in any danger in the event of a kickback.

### 8.2 Anti-kickback devices

Anti-kickback devices such as fingers, combs, or other barriers should be fitted to multi-saws to prevent the risk of injury from flying timber. Guarding should comply with the provisions of section 4.1.



*Fig. 12. Anti-kickback device.  
Please note: The guard has been  
removed from the saw blades to show  
the position of the anti-kickback device*

## **9. Woodchipper and debarker**

### **9.1 Location**

A mill's debarker and waste chipper should be located away from the mill building or shed to reduce the noise impact on employees.

Those in close proximity to this plant are particularly at risk from the noise generated. A risk assessment should be conducted and appropriate control measures implemented (see section 13.1).

### **9.2 Guarding**

All dangerous parts of the debarker or chipper should be effectively guarded with either fixed or interlocked guarding to prevent injury from flying timber or contact with working parts of the machine (see section 4.1).

### **9.3 Access to infeed**

A system of work, including lock-out procedures, should be in place to prevent access to the infeed until the plant is stationary (see section 4.3).

## **10. Bush mills**

The following provisions which apply to bush mills are in addition to the provisions for other types of mills outlined in this code.

A bush mill is a small portable sawmill located at or close to a harvesting area. There are a number of additional risks involved with working in a bush mill. Employers or persons in control should ensure that bush crews are provided with a safe system of work which includes adequate communication systems.

### **10.1 Safe operation**

In addition to the hazards of a normal sawmill, bush mill crews should consider the following special issues:

- isolation
- use of high risk plant (refer to *Guide to the safe use of chainsaws* WorkCover NSW)
- fire safety
- tree felling and associated functions
- natural environment.

### **10.2 Communication systems**

The following should be considered:

- notifying the base of the commencement of work (home, sawmill, police station or local State Forests District Office)
- regular check-ins by the crew during the day to say that all is okay.
- notifying the base that the worker(s) are leaving the bush mill site.

### **10.3 First aid facilities**

Due to the isolation of bush mills a first aid kit should be provided and should comply with at least the type 'B' requirements of the *OHS (First Aid) Regulation*. Bush crew members should have formal training in first aid.

## **11. Load shifting equipment and practices**

Work practices used for loading, unloading and securing logs to haulage vehicles should comply with the WorkCover NSW *Code of practice: Safe loading and unloading of logs*.

### **11.1 Driver certification**

Under the *Occupational Health and Safety Act (Certificates of Competency) Regulation 1996*, any person who operates load shifting equipment requires a Certificate of Competency.

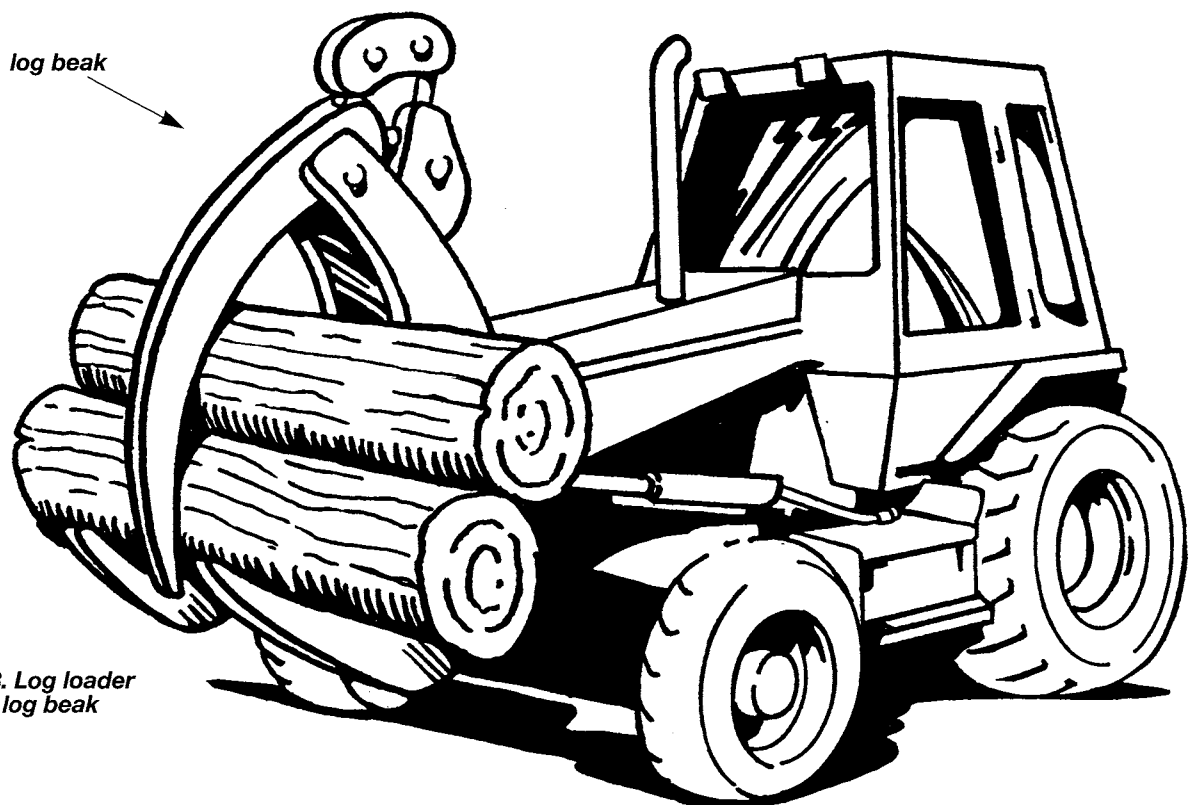
Most log loaders used in the industry are classified as either a front end loader or a forklift truck and this will determine the certificate required.

Where a log loader is also used as a mobile crane, the operator may also need to hold a Non-slewing Mobile Crane Certificate of Competency or equivalent. The person slinging and directing the load may require a Dogging Certificate of Competency.

### **11.2 Type and capacity of log loader**

The load shifting equipment used to handle logs should be suitable for the mill's terrain. Load shifting equipment must only handle the size/weight of timber in accordance with the displayed load rating plate.

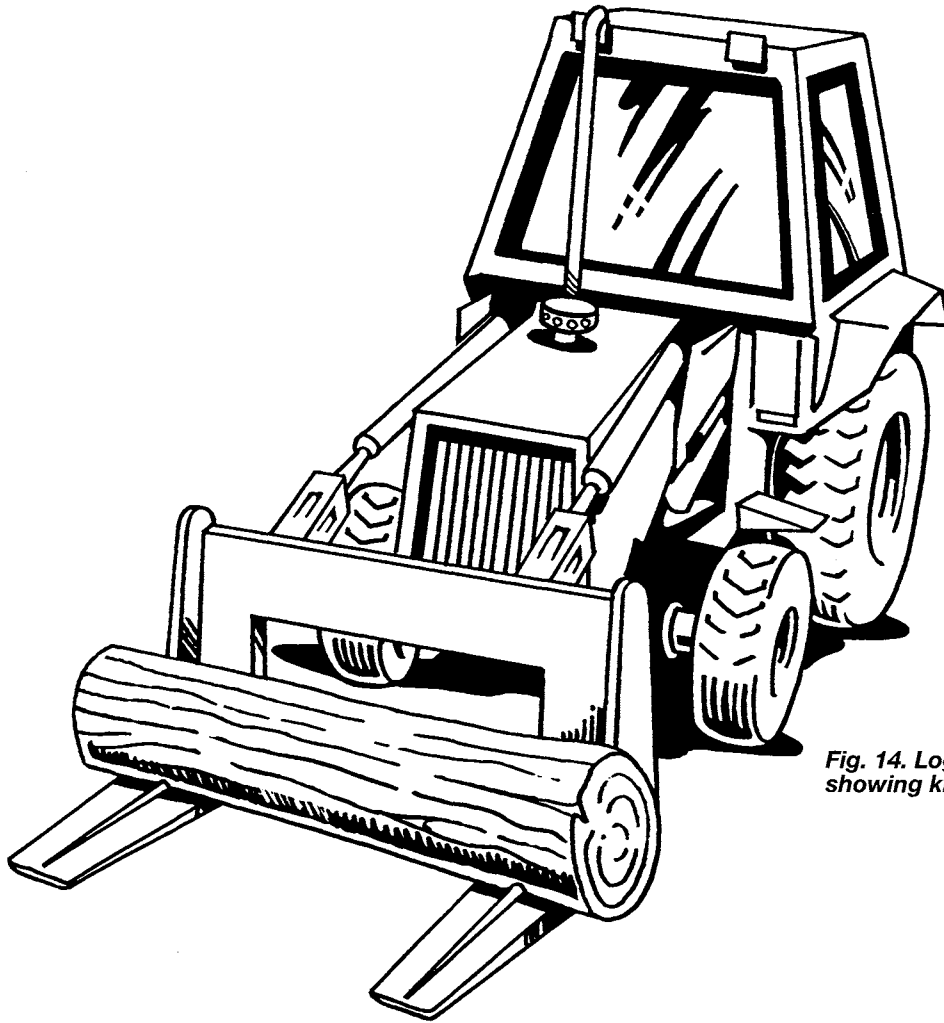
### **11.3 Fork design**



**Fig. 13. Log loader  
with a log beak**

Log loaders should be fitted with a log beak (grab) that has the capacity to secure a single log on to the fork arms.

When using a forklift, the tines may be fitted with knife edges to the manufacturer's design specifications.



*Fig. 14. Log loader showing knife edge forks*

#### **11.4 Log servicing - docking**

Persons who use a chainsaw to dock logs should be competent in the use of a chainsaw at least at a cross-cut level.

Logs should be docked in a designated area within a log yard, away from the log loader working area and located on even ground.

#### **11.5 Security of log stacks**

Logs should be stacked to ensure:

- ease of use of log operation
- security of stack
- minimal stack height
- suitable stanchions and chokes to secure the log stack.

## **12. Workplace access and general safety**

### **12.1 Log receiving - dispatch yard**

#### **a. Signposting**

All vehicle and pedestrian entry points to a mill yard should be clearly signposted and should include the following information where appropriate:

- Danger - working machinery
- Authorised personnel only
- No public access
- Mill visitors must report directly to office
- Speed limits
- No log truck passenger to proceed past this point (boundary of mill yard or other designated place).

#### **b. Where multiple mobile plant are being operated around the workplace or in close proximity to each other a risk assessment should be conducted and appropriate control measures implemented. The following should be considered:**

- that persons on the ground are not placed at risk when working near moving plant.
- that pedestrian workers are provided with and use safety vests during night work.
- that mobile plant or equipment is fitted with audible reversing alarms.
- that the physical size of a log-receiving and dispatch yard is large enough to allow all yard based operations to be conducted without risk to other persons.
- that the ground surface of a log-receiving yard is even, hard and free of humps and hollows so that logs may be transported and stacked without risk to other persons.

### **12.2 Access to mill**

All persons should be able to move throughout a mill without risk of injury and walkways should be clearly defined and free from obstructions. Walkways must comply with the *Occupational Health and Safety (Floors, Passageways and Stairs) Regulation* which is based on *AS 1657 Fixed Platforms, Walkways, Stairways and Ladders - Design, Construction and Installation*.

a. Elevated walkways

One safe method of allowing employees and others to have access to all parts of a mill is by elevated walkways. The *Occupational Health and Safety (Floors, Passageways and Stairs) Regulation* requires that they be designed to allow risk free access to all work locations throughout a mill for all employees and others without the need to climb over machinery such as conveyors and roller cases and so on, or climb through active work locations. Stair treads must be anti-slip.

Elevated walkways should begin close to a mill's infeed and end close to the stacking area. All work locations within the mill should have ready access to the elevated walkway.

To increase the overall awareness of safety within a mill, walkway handrails should be painted a highly visible colour such as yellow.

b. Passageways

Where it is impractical to install an elevated walkway, it is recommended that a series of designated passageways be constructed. A passageway should be clearly defined (eg. yellow painted borders on concrete floors) and be free from any obstructions.

All persons should be able to walk the entire length of a passageway without risk of an accident such as being struck by moving timber or caught in working machinery.

A passageway should not go through a roller case/transfer deck unless a crossing gate is fitted and should not pass through a recognised work station.

c. Crossing gates

A crossing gate should be installed and used to deny access through a roll case/transfer deck from both sides. The gate should be constructed to open upwards and should form an effective barrier on the roller case feed side. It should also be constructed to automatically stop the roller/chain drive using a fail-safe interlock system.

d. Conveyor crossings

The *Construction Safety Regulations* require that all conveyors and conveyor crossings comply with AS 1755 *Conveyors - Design, Construction, Installation and Operation - Safety Requirements* (see section 4.4. of this code for requirements). Persons must only cross a conveyor at designated crossing points.

### **12.3 Waste management**

Employers should have in place a waste management system which safely provides for the collecting, storage and disposal of sawdust and other waste.

a. Hydraulic pumps, oil reservoirs and feed lines

Immediate attention should be given to oil spills to eliminate slip and fall hazards. All hydraulic plant and fittings must be designed and maintained so that oils, spills or leakage are contained in purpose designated bends or drip trays.

### **12.4 First aid**

All mills must comply with the provisions of the *Occupational Health and Safety Act (First Aid) Regulation 1989*.

### **12.5 Fire protection**

Employers or persons in control should consider possible fire hazards and assess the risks. Suitable control measures should be implemented. Evacuation procedures and fire protection equipment and procedures should be established.

### **12.6 Non-employee visitors to a sawmill**

Employers and persons in control also have an obligation to ensure the health and safety of all non-employees while they are at the sawmill. The following should be provided to protect visitors:

- appropriate sign posting
- PPE
- instructions regarding the conditions and procedures for visiting.

## **13. Work location and general safety**

An employee's work location should be designed to ensure:

- freedom of movement
- safe access and egress
- ease of operation of plant
- no obstruction
- level standing surface
- adequate protection from the weather and UV radiation (see section 14.1)
- adequate level of lighting to prevent risks to health and safety.

### **13.1 Protection from noise**

The risk of causing permanent hearing damage is related to both loudness of the noise and the length of exposure. For example, two minutes working in noise levels of 114 decibels dB(A) may cause the same amount of damage as eight hours working 85 dB(A).

Noise management provisions and noise level measurements must be carried out by the employer or person in control to ensure compliance with the *Occupational Health and Safety (Noise) Regulation 1996* and the *WorkCover NSW Code of practice for noise management and protection of hearing at work* to control noise levels.

Where the noise level is in excess of the noise exposure limits, engineering control measures must be implemented. Where this cannot be achieved, appropriate hearing protection equipment must be provided to all persons in the vicinity of the cutting operations.

### **13.2 Manual handling**

Manual handling (manually lifting, moving or restraining loads) is a major cause of sawmill workplace injuries.

#### **a. Manual Handling Regulation**

The *Occupational Health and Safety (Manual Handling) Regulation 1991* requires employers to design equipment, tasks and work environments so that manual handling risks are eliminated or reduced as far as reasonably practicable. The Regulation also requires employers to assess and control the risks in manual handling tasks. General guidance on identifying, assessing and controlling manual handling risks can be found in the *National standard and code of practice for manual handling*.

b. Design

Employers or persons in control must ensure that all plant and equipment, activities involving manual handling and the working environment are designed, constructed and maintained to ensure there is no risk to employees' health and safety, arising from manual handling activities in the sawmill.

c. Risk assessment

Employers or persons in control must conduct a risk assessment (see section 3.) on all manual handling tasks in consultation with the employees who are required to carry out those tasks. The assessment must take into account, but is not limited to the following:

- actions and movement
- workstation layout
- working posture and position
- duration and frequency of manual handling
- location of load and distances moved
- types of load
- weights and forces
- work methods
- work environment
- skills and experience of workers
- age of workers
- clothing
- special needs
- any other factor considered relevant by the employer, person in control or employees.

d. Risk control

The employer should control risks by:

- re-designing the manual handling task to eliminate or control the risk factor.
- providing appropriate training to employees in safe handling techniques.

Where re-design is not practicable, or as a short term/temporary measure, the employer should:

- provide mechanical aids and/or PPE
- arrange for team lifting in order to reduce the risk
- ensure employees receive appropriate training in methods of manual handling involving team lifting procedures, correct use of the mechanical aids and PPE.

e.     Sorting tables

Types of sorting tables include green chain/cables, stacker's sorting tables and carousels.

The layout of a stacker's sorting table/carousel should be designed so that timber stackers are not put at risk by the inflow of sawn timber falling on to the table.

Sorting tables should also have a good ergonomic design to minimise manual handling injuries. The employer or person in control should consider the following ergonomic issues:

- The relationship of a green chain/sorting table/carousel to the finished product stacks.
- The leading edge of a sorting table/carousel should be approximately the waist height of the stacker.
- The top of a stack's bed log or the height of the base of a stacking cradle, should not be lower than the shin/knee height of a stacker. The bottom layer of a stack should not be placed directly on the ground.
- A full stack (sling/bundle of timber) should not be higher than a stacker's shoulders.
- A stacker should be able to slide a piece of timber off the sorting table and slide it directly onto a stack. The distance between the edge of a sorting table/carousel to front edge of a stack should be as close as practicable.
- The height of a stack of steel-banded slings/bundles of sawn timber should be kept as low as practicable. The stack should be stable at all times.
- Multiple stacks of slings can be made more stable by the use of timber gluts placed across two stacks.
- Steel banding of slings/bundles of sawn timber should be conducted at ground level.

### **13.3 Electrical safety**

Electrical work and wiring must be performed by a licensed electrician and comply with *AS 3000 Electrical Installations-Buildings, Structures and Premises* ( also known as *SAA Wiring Rules*).

For more information also refer to *AS 3760, In-Service Safety - Inspection and Testing of Electrical Equipment*.

### **13.4 Hazardous substances**

Where there is a risk of contact with hazardous substances, the employer or person in control must ensure compliance with the provisions of the *Occupational Health and Safety (Hazardous Substances) Regulation 1996*.

## **14. Personal protective equipment (PPE)**

### **14.1 Provision of PPE**

Before commencing work employers or persons in control should assess conditions likely to affect the health and safety of the employees or themselves, as identified during the risk assessment procedure, and arrange for the provision and use of appropriate PPE.

The following PPE should be provided and used where necessary:

- a. Safety helmets complying with *AS1800 Selection, care and use of industrial safety helmets*, and *AS1801 Industrial safety helmets*.
- b. Hearing protection complying with *AS1270 Acoustics - hearing protectors*.
- c. Eye protection complying with *AS1337 Eye protectors for industrial applications*.
- d. Safety clothing such as safety boots, waterproof clothing, gloves, and reflective safety vest. All clothing should be comfortable and suitable for the work and the weather conditions. Loose clothing which may snag or create a hazard should be avoided and long hair should be contained. Where employees are exposed to inclement weather they should be issued with protective clothing.
- e. Respiratory protective equipment complying with *AS1716 Respiratory protective devices* and *AS1715 Selection, use and maintenance of respiratory protective devices* should be used to reduce the risk of inhalation of dust and other harmful particulates.
- f. Protection from sunlight/UV radiation by using a sunscreen with an SPF(sun protection factor) rating of at least 15+ and wearing hats, long sleeves and long trousers. Even with protection workers should avoid overlong exposure to strong sunlight, including any reflected light. Monitoring should be conducted to ensure that employees do not have excessive exposure to strong sunlight, including any reflected light.

Refer to *Skin cancer and outdoor workers - a guide for employers* and *Skin cancer and outdoor workers - a guide for employees* available from WorkCover NSW.

### **14.2 Maintenance of PPE**

All PPE used by persons doing cutting should be regularly inspected and replaced as necessary.

## **15. Training and instruction**

Under Section 15 of the OHS Act employers must provide training and instruction, including information and supervision to ensure the health and safety at work of their employees.

All persons involved in sawmilling should be trained to follow systems of work and work practices that enable them to perform their work in a manner that is safe and without risks to health. Only those persons who have received training and instruction should carry out the work.

The employer should monitor the systems of work and provide refresher training to ensure that safe systems and work practices are being followed, including the use of PPE.

The training provided and the instruction given should include:

- a. the work method to be used for sawmilling operations including manual handling and control measures based on the risk assessment to prevent injury.
- b. the correct use, care and storage in accordance with the manufacturer's recommendations or Australian Standards of PPE, tools and equipment to be used.
- c. the use of plant and associated equipment including electrical safety and hazardous substances.
- d. procedures to be adopted in the event of accident, injury or other emergency.

## **16. Legal requirements**

### **16.1 Occupational health and safety**

Every person at the place of work has a duty under the *Occupational Health and Safety Act 1983*, whether as an employer, an employee, a self-employed person or a person in control of the workplace. While the obligation for each person is different, all persons must ensure that the way they carry out their work does not interfere with the health and safety of other persons who are present at the place of work.

### **16.2 Employers' responsibilities**

Employers have an obligation to ensure the health, safety and welfare of employees and other persons at the place of work and to comply with the OHS Act and Regulations. This includes the provision or maintenance of adequate amenities at work.

### **16.3 Employees' responsibilities**

Employees have an obligation to take reasonable care of the health and safety of other persons in the workplace and to cooperate with their employer in the interests of health, safety and welfare.

### **16.4 Self-employed persons' responsibilities**

Self-employed persons have an obligation to ensure that persons not in their employment are not exposed to risks to their health and safety arising from their conduct while they are at a place of work.

### **16.5 Person in control**

Any person who has, to any extent, control of a workplace, the means of access or egress or plant or substances used has an obligation to ensure the health and safety regarding the place of work, the means of access or egress and plant or substances used at the place of work.

### **16.6 Manufacturers'/suppliers' responsibilities**

Manufacturers and suppliers have an obligation to ensure health and safety regarding plant or substances used at places of work. They are required to carry out all necessary research, testing and examination.

They are also required to make available adequate information about the safe use of the plant or substances, and any conditions necessary to ensure that the plant or substances will be safe and without risks to health when properly used.

## **16.7 Statutory provisions**

The following Acts and Regulations apply to sawmill operations:

- *Occupational Health and Safety Act 1983*
- *Construction Safety Act and Regulations*
- *OH & S (Certificates of Competency) Regulations 1996*
- *OH & S (Noise) Regulations 1996 (commences 31 May 1997)*
- *OH & S (Committees in Workplace) Regulation 1984*
- *OH & S (Manual Handling) Regulation 1991*
- *OH & S (Notification of Accidents) Regulation 1990*
- *OH & S (First Aid) Regulation 1989*
- *OH & S (Floors, Passageways & Stairs) Regulation 1990*
- *OH & S (Hazardous Substances) Regulation 1996*
- *AS 1755-Conveyors - Design, Construction, Installation and Operation - Safety Requirements*
- *AS 1657-Fixed platforms, walkways, stairways and ladders - Design, Construction and Installation*

The provisions of the OHS Act and Regulations, the *Construction Safety Act* and Regulations and the Australian Standards mentioned above are mandatory provisions in the legislation and must be complied with. They have been mentioned in the code of practice to provide assistance in directing readers to other legislative requirements which may have some application. The list is not exhaustive and included in this code by way of assistance only.

For information about codes and standards refer to page 51.

## **17. Definitions**

Below is a list of terms which relate specifically to the timber sawmilling industry.

### **Bed log**

Log on the ground to provide a base for a stack of logs kept in readiness for the mill.

### **Billet (Balk or Cant)**

Larger portion of log left after a flitch has been cut from the log.

### **Blowing down**

Process using compressed air to clean machinery or the mill's floor area.

### **Breakdown saw**

Large saw used to cut a large log into billets. Billets are then sawn using a bench saw.

### **Bund**

Leak proof enclosure designed to contain leakage of any fluid, such as hydraulic oil.

### **Bushmill**

Small portable sawmill located at or close to a harvesting area. Operated by 1 to 3 workers.

### **Canadian saw**

A circular saw which has two saw blades, one mounted above the other designed to saw large logs.

### **Come-a-long**

Portable hand operated winch.

### **Competent person**

A person who has acquired through training, qualification, or experience, or a combination of these, the knowledge and skills enabling that person to perform specific tasks.

### **Conveyor**

Power operated apparatus or equipment which raises, lowers or transports load by means of a continuously driven endless belt, rope or chain (or similar means). Note: Rollcase/transfer case/green chain are considered to be a conveyor.

### **Cross cutting**

Cutting round logs, crossways.

### **Crossing gate**

A gateway which is designed to stop the flow of timber on a rollcase when the gate is opened. It is installed in a passageway crossing a rollcase or conveyor.

**Cutting action - downwards**

Where the saw blade is rotating so that the saw cuts down into the log.

**Cutting action - upwards**

Where the saw blade is rotating so that the saw cuts up into the log.

**Dog**

Steel pointed lever, attached to a log carriage and driven into the log to hold the log steady as it is cut by a breakdown saw.

**Not dogged**

A log is resting unsecured on a log carriage while it is passed through the breakdown saw.

**Docking**

Cross cutting sawn timber.

**Drive hobb**

Hydraulically driven hobb which drives timber through a powered saw bench.

**Ergonomic**

To optimise the functioning of the plant and systems of work associated with the plant by adapting them to human capacity or need.

**Feed side**

The side the timber is coming from.

**Flitch**

Slab of timber cut from a log. Flitch is passed through a saw bench to achieve desired size.

**Flipper**

Mechanical device installed in a roll case/transfer case to turn flitch over or push a flitch sideways.

**Friction driver**

Employee who adjusts the hand gauge, sets the width of timber to be cut and drives the bench's power feed.

**Glut**

Timber piece used for levelling and separating slings/bundles of banded sawn timber.

**Green chain**

A type of conveyor used to transport the finished sawn timber to a sorting table. Can be used as a sorting table.

**Guard**

Device that prevents or reduces access to a danger point or area.

**Hand gauge**

Device used by the sawyer/friction driver to set the width of timber to be cut by the bench.

**Hazard**

Potential to cause injury or illness.

**Infeed, infeed deck**

Machinery on which logs are placed to be fed into a breakdown or bench saw. Entry point of logs to the sawmill.

**Kerf**

The width of the cut.

**Kick-back**

Violent action of timber when thrown back by saw. Can be caused by timber closing on to the saw blade.

**Knife edge**

Sharp-edged steel welded to fork blade upper surface and the fork shank front face to prevent the log slipping sideways when transported by a log loader.

**Lock-out**

Lock placed on machinery to prevent it from being operated.

**Log beak (grab)**

Device fitted to forks on a log loader to secure a log against the back of the forks.

**Log loader**

Lowered mobile plant, designed to move goods, materials or equipment, equipped with an elevating load carriage and normally, a load-holding attachment.

**Log restraining cage**

Purpose designed steel cage designed to protect the operator during log unloading in a mill yard.

**Off cut**

Scrap timber

**Operator protective devices**

Safety devices designed to protect operator ie: rollover protective structures from falling objects, protective structures, operator restraining devices and seat belts.

**Outfeed**

Transporting:

- flitch/billet/sawn timber away from saw.
- sawn timber to sorting table.
- scrap to chipper.
- sawdust away from mill.

**Plant**

Includes any machinery, equipment (including scaffolding), appliance, implement or tool and any component fitted to it, or associated accessory.

**Personal protective equipment (PPE)**

Includes PPE such as ear muffs, safety glasses and gloves (see section 14.).

**Repair**

To restore plant to an operating condition, but does not include routine maintenance, replacement or alteration.

**Risk**

The probability and severity of occurrence of injury or illness.

**Risk assessment**

The process of evaluating the probability and severity of injury or illness arising from exposure to identified hazards.

**Risk management**

The ongoing process of conducting a hazard identification and risk assessment and then implementing appropriate control measures.

**Riving knife**

Shaped steel plate designed to prevent timber which is being cut pinching on saw blade.

**Round log**

Uncut log as transported from forest.

**Roll case (roller case)**

Conveyor consisting of a series of steel rollers set up in a straight line. Used to transport timber to and from a saw or throughout a sawmill. Roll case can be free-wheeling or driven.

**Sawyer**

Employee in charge of a saw bench.

**Sling (sling of sawn timber)**

Stack of finished sawn timber bound by steel wire or steel tape.

**Stacker**

Employee who sorts and stacks sawn timber into slings.

**Stacking area**

Area in the immediate vicinity of a sorting bench where sawn timber is sorted and stacked into different products.

**Standing a saw**

Process of adjusting a circular saw blade on a saw bench so that it cuts true.

**Tag-out**

Tag placed on machinery to prevent it from being operated. Used by production employees.

**Tailor-out**

Employee who assists the sawyer by returning timber back to the sawyer. Also sorts timber at the back of the bench.

**Tangle (build-up)**

Pieces of partially sawn timber caught in a roll case, conveyor and so on, hindering the flow of timber.

**Timber line (TL)**

Edge of timber protruding over a sorting table.

**Transfer deck (case)**

Conveyor similar to roll case, but is used to transfer timber (sideways) from one saw bench to another saw bench or green chain/sorting table.

**Unrecoverable timber**

Off cut portion of log unsuitable for milling.

**Wing**

Offcut round portion of log unsuitable for cutting.

## Appendix

### A typical risk assessment

This example of a generic assessment can be applied easily to any item of plant or hazardous substance and will assist in identifying any controls that need to be implemented.

When conducting a risk assessment the following process should be carried out:

1. Identify the hazards
2. Assess the risks from the hazards including the:
  - likelihood of possible injury arising from those hazards
  - frequency of exposure to the hazard
  - severity of possible injury
3. Implement control measures to eliminate or reduce the risks (for more information see section 3.3).

Use the following table to help you identify the priority of each hazard. The numbers show how important it is to do something. A priority 1 shows that it is extremely important to do something about the hazard as soon as possible. A priority 6 hazard may not need your immediate attention.

<b>Likelihood →</b>	Very likely	Likely	Unlikely	Very unlikely
<b>Severity:</b> hazards that could kill or cause permanent disability or illness	1	1	2	3
long term illness or serious injury	1	2	3	4
medical attention and several days off work	2	3	4	5
First aid	3	4	5	6

Two worked examples:

1. A machine that is without guards over moving parts such as a Canadian saw which is likely (likelihood) to entrap and create a fatal situation (severity).

This should be identified as a priority 1 hazard.

2. A work process which involves the use of a machine table with a sharp edge which is likely (likelihood) to cause a laceration requiring first aid (severity).

This should be identified as a priority 4 hazard.

Using this method as a guide, it is reasonably simple to assess the priority of the hazard based on the amount of risk associated with the hazard. Once this has been done, the method needed to control the hazard should be identified and implemented.

### **Some examples of specific controls**

#### Electrocution

All cables and switchgear should be installed to the requirements of *AS 3000 Electrical Installations - Buildings, Structures and Premises*.

#### Nip, shear, drawing in and crush

These are all hazards which can be identified with the main motor drive and its associated gears or belts. All transmission equipment should be guarded, with fixed guards that comply with relevant legislation. If a fixed guard is not possible, use a suitable interlocking system.

#### Shear or cut

This is a hazard mainly associated with the saw blade itself. As the cutting edge is impossible to guard completely, training in the safe use of the equipment should be given to the operator. Refer to the appropriate standards to assess the type and setting of guards needed to minimise the risk.

#### Ejection

The guard on a docking saw blade should cover the area not used to cut the material. This guard as well as the downward cutting action of the blade prevent material being ejected towards the operator.

#### Noise

The cutting action and the main drive of saws contributes to the amount of noise produced. If above the legal limit, the noise can be controlled by engineering out the problem by installing sound reducing enclosures or, as a last resort, by issuing appropriate PPE to the personnel in the area.

## More information

For more guidance refer to the codes and standards listed below:

- **WorkCover NSW publications**

*Code of practice Electrical practices for construction work*

*National standard and code of practice for manual handling*

*Code of practice Noise management and protection of hearing at work*

*Code of practice - Safe loading and unloading logs*

*Skin cancer and outdoor workers - a guide for workers*

*Skin cancer and outdoor workers - a guide for employers*

*How to prevent silicosis*

*Chainsaw safety*

- **Standards Australia publications**

*AS 4024.1 - Safeguarding of Machinery Part 1 General Principles*

*AS 1657 -Fixed Platforms, Walkways, Stairways and Ladders - Design, Construction and Installation*

*AS 3000 - Electrical Installations- Buildings, structures and premises ( also known as SAA Wiring Rules)*

*AS 3760 -In-Service Safety - Inspection and testing of electrical equipment*

*AS1270 Acoustics - Hearing protectors*

*AS1336 Recommended Protection for Eye Protection in the Industrial Environment.*

*AS/NZS1337 Eye Protectors for Industrial Applications*

*AS1473 Guarding and Safe Use of Wood Working Machinery*

*AS/NZS1715 Selection, Use and Maintenance of Respiratory Protective Devices*

*AS/NZS1716 Respiratory Protective Devices*

*AS1800 Selection, Care and Use of Industrial Safety Helmets*

*AS1801 Industrial Safety Helmets*

*AS2865 Safe Working in a Confined Space*

*AS1680.1 Interior Lighting - General Principles and Recommendations*

*AS1680.2 Interior Lighting - Recommendations for specific tasks and interiors*

*SAA HB9 Occupational Personal Protection*

- **Other publications**

*Code of Logging Practice - State Forests of NSW  
Hardwood & Softwood*

*National code of practice and guidance note for the  
safe handling of timber preservatives and treated  
timber.*

*Worksafe guide - Arsenic and its compounds*

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