

**RECOMMENDED SAFETY
SPECIFICATION**

FOR

HAND-FED PLATEN PRESSES

MARCH 2002

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INTRODUCTION

The Health and Safety Committee of the Corrugated Packaging Association (CPA) is dedicated to maintaining the provision of health and safety information for the protection and well being of all.

In the past the provision of information was given through the Pink Books that enjoyed great success and recognition providing the user with guidance and information on safety when operating various machines. In addition, guidance was given on procedures and practices associated with the corrugated packaging industry. The Pink Book was often cited by the HSE as a prime source of information for those with the responsibility for the making ready, operation and maintenance of machinery and its safe and efficient use, and could also be used as a source of guidance for machinery suppliers.

The aim of this, and future publications remain to give best advice and guidance, to promote safety and in so doing comply with current legislation and best practice. This booklet should be used in conjunction with the CPA Guide – ‘Management Standards in Health and Safety ‘ which replaces the General Items and Standards booklet and gives advice about the selection of guards and related matters.

It has become evident during the recent past, that safety specifications for particular machines or groups of associated machines do not warrant a complete Pink Book. To do so would needlessly repeat information already given. Therefore, it was decided that where practicable, future publications would be in loose-leaf format, and hopefully more beneficial to both user and producer.

This “Book” is intended to give guidance and information to employers and employees alike, where Hand Fed Platens are employed.

This publication should be made available to those persons who are actively involved with the machinery, particularly those who operate, maintain and clean Hand Fed Platens.

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HAND FED PLATEN PRESSES

These hand fed machines are used in the corrugated fibreboard industry to cut or crease prepared board blanks. They are labour intensive and are mainly used for low volume, short run operations.

Unfortunately, there have been a considerable number of injuries resulting from their use, some resulting in fatalities.

OPERATION

The cycle of operation generally involves three phases:

1. Setting - The operator secures the prepared cutting / creasing forme in a chase or recess in the near vertical fixed platen.

Dependent upon the size of the machine and / or the forme, the operator may need to climb onto and work from the stationary but movable platen. Alternatively leaning in from the front or side of the press to carry out the operation.

2. Proof testing - it is necessary to adjust the closing pressure between the platen to vary the depth of the cut or crease. Initially, altering the settings at either end of the pressure bar at each side of the movable platen makes adjustments. Using strips of self-adhesive tape carries out finer adjustments; these are stuck in the appropriate position on the underside of the pressure plate on which the boards are placed. The thickness of the tape is sufficient to result in a deformation in the pressure plate, then as the platens close together this will increase the depth of the cut or crease.

Whilst making these fine adjustments, the operator will need access from both the front and the sides of the press.

3. Normal operations - once set up is complete, the operator stands in front of the press and places the blank sheets singly onto the movable platen, after each cycle each board is removed and replaced.

Tables are often positioned on each side of the operation position, for the stacks of board blanks and processed boards

The closing (operation) pressure between the platens can be adjusted to allow for either cutting or creasing requirements.

Platen sizes vary between:

- i) 700mm wide x 500 depth. (Small hand fed plates)
- ii) 2050mm wide x 1280 depth. (Large hand fed platens)

Continued: -

Some very early models had mechanical (positive) clutches and operate through a pedal linkage and were basically a single stroke operation.

Modern machines have either electro magnetic pneumatic operated friction clutches with a dwell facility; this will allow the machine to operate continuously, but with a pre-determined interval between strokes. This gives the operator time to remove and replace the sheets of board. Alternatively, these types of machines can be set to run continuously with no appreciable dwell or to operate only when the operator initiates each stroke.

HAZARDS

CONTROL MEASURES

Operation / Workplace

Trapped/Crushed between the fixed platen and the movable platen.

a) A trip bar covering all three sides of the fixed platen. This trip bar must closely envelop the moving platen. Access must not be possible between this trip device and any fixed parts of the press. Clearance between any fixed part of the trip guard and the movable platen must not exceed 12mm.

Trip bars offer a reasonable standard of body protection provided that they are positioned at waist height or about 0.9 to 1.1 metres from the working floor. Operation of the device is inevitable where, if the operator is picked up bodily on the platen. Trip bars at knee height or thereabouts is not acceptable since this can only be considered as an emergency stop device.

Note: The trip guard on the horizontal edge of the fixed platen must be a minimum of 300mm distance from the punching plane on those presses with a maximum operating width up to 1 metre. On those presses with an operating width above 1 metre then it must be a minimum of 400mm distance. This guard shall be designed so that a force of 20 N will displace it and actuate the clutch/brake unit.

When actuated the movable platen must come to rest not less than 90mm from the fixed platen or on presses less than 1 metre working width and where the total travel distance of the movable platen is less than 350mm, not less than 65mm from the fixed platen. These measurements shall be made between the front edges of the fixed and movable platens.

Continued: -

HAZARDS

CONTROL MEASURES

Operation / Workplace

b) A pressure sensitive horizontal strip trip device/ safe edge system must be fitted on the front edge of the movable platen. This trip device must extend over the entire width of the platen. A pressure sensitive safe edge system fitted to the moving platen will cut off the driving power as soon as it is depressed.

c) The dwell time must be restricted to 10 seconds maximum.

d) An indicator light to be installed in view of the operator and to clearly indicate when the press is in the automatic mode.

e) An emergency stop button installed on the operator control panel.

f) On large presses fitted with electro-pneumatically-operated clutch/brake units single air control valves must be replaced with cross monitoring duplicated valve systems.

Operation of these machines involves regular and routine access to the danger zone, therefore on new machines the increased control requirements defined in

5.2.6.2 EN 1010-1 must be applied:

- i) All trip devices must be provided with two safety switches each.
- ii) The signals of the switches allocated to the individual trip device shall be processed separately, each complying with category 4 of EN 954-1. Safety switches must be physically separated up to the electrical control cabinet.

Continued: -

HAZARDS

CONTROL MEASURE

Operation / Workplace

Drive mechanism and access to dangerous parts associated with the drive, transmission and any entry points allowing access into the platen closing mechanism.

The fly wheel is likely to take up to 5 minutes to stop and will have sufficient stored energy to enable the movable platen to stroke several times before coming to final rest.

Fully enclosed by fixed guarding methods. Access points to be fitted with fully interlocked guards.

Side protection is required to prevent access into the platen from both sides of the machine whilst the machine is in the operating mode. These can be either:

- i) Worktables of sufficient width to prevent personnel reaching into the dangerous parts. The tables must fit as close as possible to the side of the machine and secured to the floor without creating an additional hazard.
- ii) Pressure sensitive mats can be fitted to both sides of the machine. The mats are interlocked with the control circuit to the clutch / brake unit.

To provide the appropriate measure of protection, the dimension of the mat must be:

- i) A width of 1000mm (measured from the machine frame to the outer edge of the mat).
- ii) Of significant length to reach from the front edge of the open platen and extend 250mm beyond the rear edge of the machine. See Fig. 1.
A barrier (railing or fencing) along the outer edge of the mat is a useful addition.

All pressure sensitive mats must comply with at least Category 3 of EN954-1. See Fig. 1.

Brake performance monitoring.

This must take the form of frequent tests to the specification set out in Appendix 1.

Continued: -

HAZARDS

CONTROL MEASURE

Operation / Workplace

When mounting the cutting/creasing forme onto the fixed platen the machine must be isolated and locked off at the control panel.

Cuts when handling formes

Appropriate PPE as defined by a Risk Assessment.

Falls from the platen during Set-ups

Safe access and egress must be provided for when climbing onto and off the movable platen for set-up purposes.

Strains when carrying out manual handling activities

Correct manual handling techniques must be applied.
Assistance where appropriate when handling larger formes.
Manual handling training.
Variable height pile loading platforms.

Repetitive strain injuries

Managed job rotation.
Installation of anti-fatigue mats.

Housekeeping/cleaning

PPE must be issued and used as appropriate.

Maintenance of air supply on machine with Electro-pneumatic clutch/brake units

Air supplies must be clean and dried by filtration and or condensation traps, which are cleaned and maintained regularly.
It should be possible to access the filter trap and drain cocks without removing any guarding.

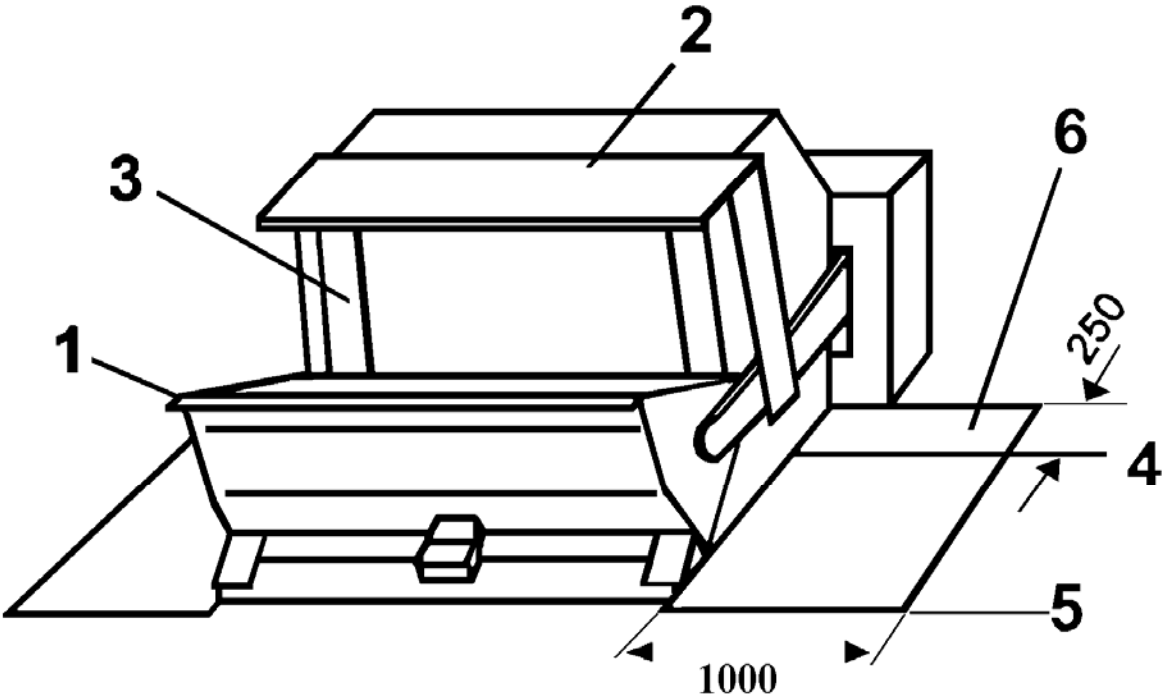
Safeguard Testing

Each safeguard must be tested individually to ensure that when activated it brings the motion of the dangerous parts to rest sufficiently early to eliminate the risk of injury.

Test must be carried out frequently enough to ensure that proper performance is maintained, when the machine is cold and again after it has warmed up. The test must be carried out at the start of work when the machine is to be used and the result of the test recorded and verified by a person appointed as competent to decide whether the machine should continue to be used.

**DIAGRAM SHOWING FITTING POSITION
OF PRESSURE SENSITIVE MATS**

Fig. 1



- 1. INTERLOCKED TRIP BAR
- 2. TRIP BAR
- 3. PUNCHING PLANE
- 4. LOWER EDGE OF PUNCHING PLANE
- 5. FRONT EDGE OF MOVABLE PLATEN
- 6. PRESSURE SENSITIVE MAT

APPENDIX 1(a)

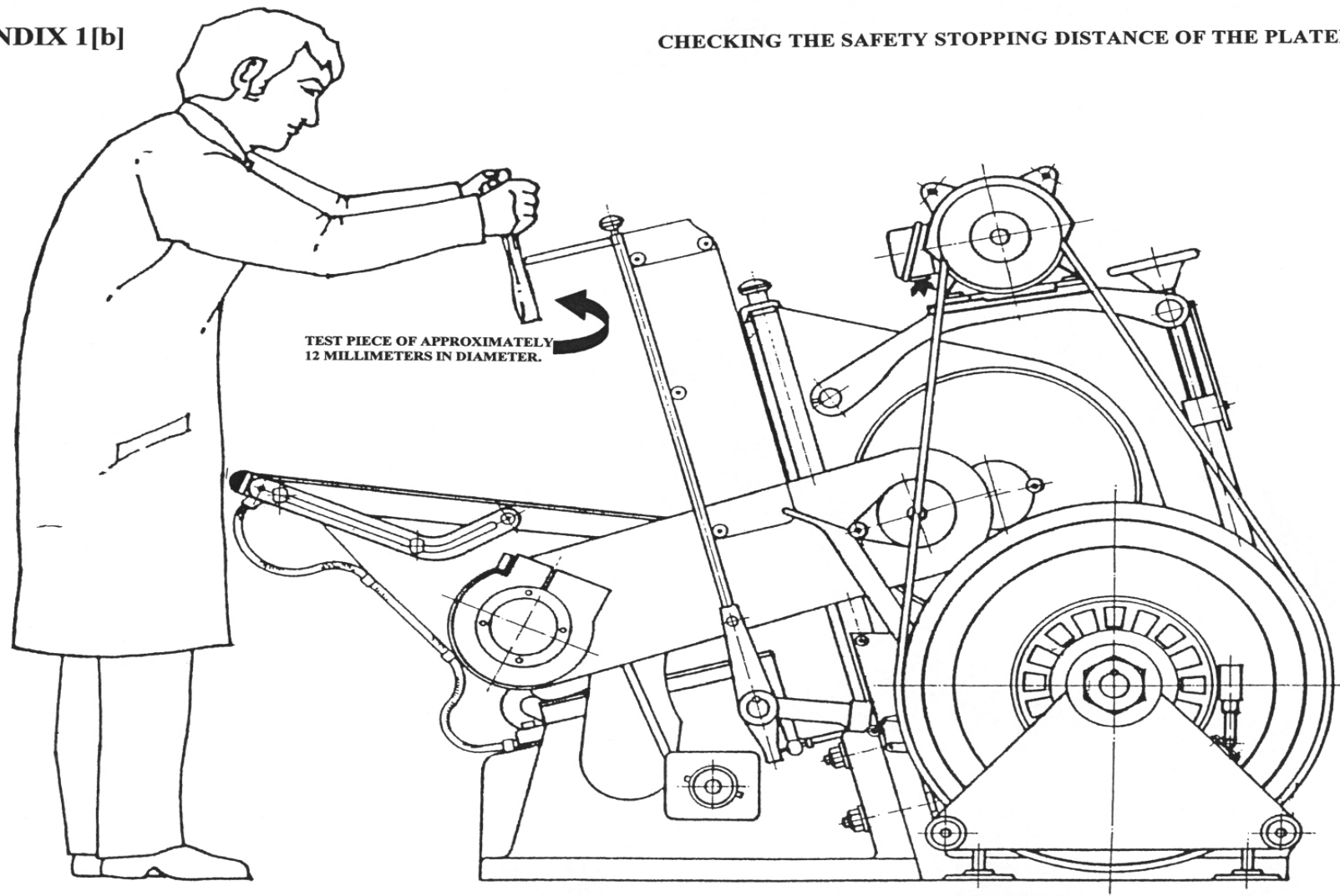
Test for trip guard over the forme-test under power

The following test is intended to indicate when the performance of the trip has deteriorated sufficiently to not prevent serious injury.

- i) The stopping effect of the device must be tested by running the machine at its normal working speed. Holding a test piece of about 12mm diameter, i.e. not thicker than a person's finger, on the edge of the platen so as to strike the guard as the platen passes under it. (See illustration 1(b)).
- ii) When tripped in this way, the platen must come to rest not less than 90mm (3.5 inches) from the forme, or on small machines where the total travel is less than 14 inches, not less than 65mm (2.5 inches).
- iii) Do the test daily at the start of work when the machine is cold and again when it has warmed up.
- iv) Record results using a daily check sheet. (See sample blank sheet Appendix "C") and retain all results on file.
- v) If the machine fails the test, it should be taken out of service immediately and not put back into service until all faults have been rectified.

APPENDIX 1[b]

CHECKING THE SAFETY STOPPING DISTANCE OF THE PLATEN



Company

Machine

Type:

Model:

Serial No:

Age:

Required Stopping Distance

Month	JAN		FEB		MARCH		APRIL		MAY		JUNE		JULY		AUG		SEPT		OCT		NOV		DEC		
	Day	Distance	Day	Distance	Day	Distance	Day	Distance	Day	Distance	Day	Distance	Day	Distance	Day	Distance	Day	Distance	Day	Distance	Day	Distance	Day	Distance	
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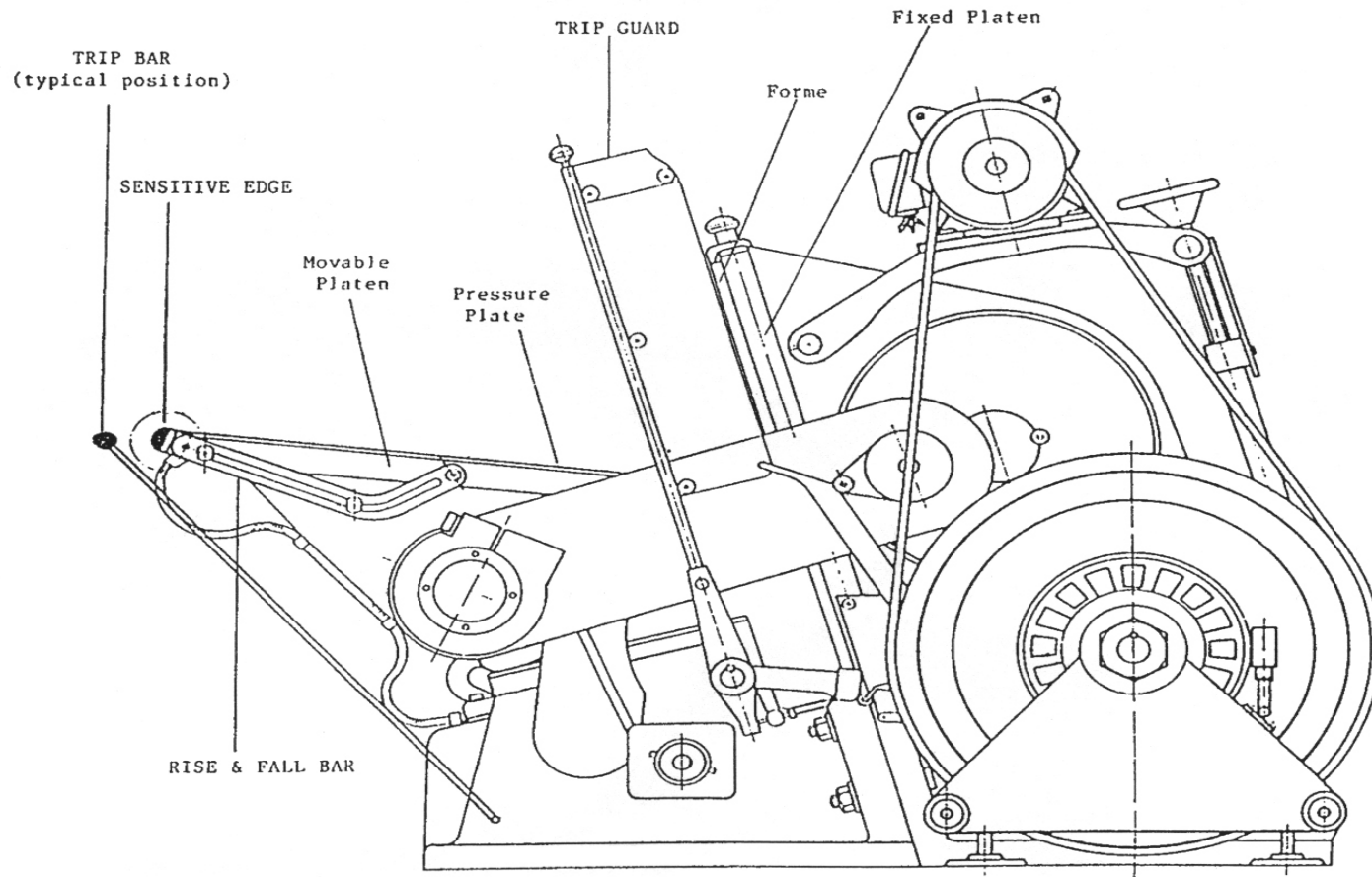
The safe stopping distance of the platen should be checked at the start of the shift of which the machine is to be used, as shown in appendix 1(b). The distance to be measured is between the top edge of the cutting plate on the platen and the front of the wooden cutting forme. If the distance is less than the requirement for this machine, the platen is unsafe to use and requires immediate attention.

HAND FED PLATEN - MAINTENANCE CHECK LIST (EXAMPLE)

	Checked	Serviced		Comments
		Yes	No	
1. Safety system (4 points)				
2. Lubrication system (pipe, pump, fittings etc)				
3. Guards				
4. Clutch & brake (for wear and balance)				
5. Foundation bolts and fixings				
6. Anti-vibration pads (if any)				
7. Operation of panel (dwell, constant, 1-shot and counter)				
8. Crank pin bushes (remove keep plates)				
9. Adjuster bushes (remove keep plates)				
10. Swan neck pins and roller				
11. Swan neck casting				
12. Skirt raiser mechanism				
13. Grease points (3 points yellow)				
14. Parallel across table				
15. Parallel table (vertical)				
16. Motor fixings				
17. Belt tension				
18. Fitters for pneumatic (if any)				
19. Pneumatics hoses				
20. Flexible cables (for wear or damage)				

APPENDIX 2

DIAGRAM SHOWING MAIN FEATURES OF HAND-FED PLATEN PRESS

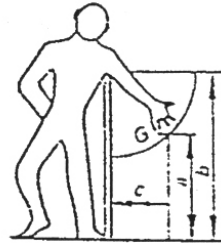


APPENDIX 3

Safe Distance Needed for Prevention of Access to Dangerous Points by Reaching Over a Guard.

The distance to be maintained from the upper edge of a guard, framework, etc., depends on four factors:-

- (a) height above ground of nip point;
- (b) height of the horizontal edge;
- (c) horizontal distance of the edge from the nip point;
- (d) reaching distance : 850mm.



Distances for Prevention of Access

Height of nip point above ground (a)	Height of edge of guard (b)							
	2400	2200	2000	1800	1600	1400	1200	1000
	Horizontal distance (c) from nip point							
2400	-	100	100	100	100	100	100	100
2200	-	250	350	400	500	500	600	600
2000	-	-	350	500	600	700	900	1100
1800	-	-	-	600	900	900	1000	1100
1600	-	-	-	500	900	900	1000	1300
1400	-	-	-	100	800	900	1000	1300
1200	-	-	-	-	500	900	1000	1400
1000	-	-	-	-	300	900	1000	1400
800	-	-	-	-	-	600	900	1300
600	-	-	-	-	-	-	500	1200
400	-	-	-	-	-	-	300	1200

NB Dimension (b) should not be less than 1000mm because of the danger of falling into the danger zone.