

4123:1-5-11 Forging machines, other power machines and machine tools, hydraulic and pneumatic presses, and power press brakes.

(A) Reserved.

(B) Reserved.

(C) Forging machines.

(1) Hammers and presses.

(a) The ram shall be blocked when dies are being changed or other work is being done on the hammer. Blocks or wedges shall be made of material, the strength and construction of which shall meet or exceed the specifications and dimensions shown in table 4123:1-5-11(C) to this rule.

(b) Tongs shall be of sufficient length to enable the employee to keep himself in the clear in case of kickback and the tongs shall not have sharp handle ends.

(c) Oil swabs, or scale removers, or other devices to remove scale, shall be provided. These devices shall be long enough to enable an employee to reach the full length of the die without placing hands or arms between the dies.

(2) Power-driven hammers.

(a) Safety cylinder head.

Steam or air hammers shall have a steam cushion, air cushion, spring head, or other effective means to prevent the piston from striking the top cylinder head.

(b) Stop valve - shutoff valve.

Steam or air hammers shall be provided with a stop valve in the admission pipe line, which can be locked in closed position. The stop valve shall be within easy reach of the operator.

(c) Cylinder draining.

The steam hammer cylinder shall be constructed with a self-draining arrangement, or a quick-acting type drain cock shall be provided, which

should be piped to a sump or drain pipe. If it discharges into the air, it shall be located so as not to endanger employees.

Table 4123:1-5-11(C)

STRENGTH AND DIMENSIONS FOR WOOD RAM PROPS

Size of timber inches*	Sq. in. in cross section	Minimum allowable crushing strength parallel to grain p.s.i.**	Maximum static load within short column range***	Safety Factor	Maximum recommended weight of forging hammer for timber used	Maximum allowable length of timber, inches
4x4	16	5,000	80,000	10	8,000	44
6x6	36	5,000	180,000	10	18,000	66
8x8	64	5,000	320,000	10	32,000	88
10x10	100	5,000	500,000	10	50,000	100
12x12	144	5,000	720,000	10	72,000	132

* Actual dimension.

**Adapted from US Department of Agriculture Technical Bulletin 479. Hardwoods recommended are those whose ultimate crushing strengths in compression parallel to grain are 5,000 p.s.i. (pounds per square inch) or greater.

***Slenderness ratio formula for short columns is $L/d = 11$, where L = length of timber in inches and d = least dimension in inches; this ratio should not exceed 11.

(3) Air-lift hammers.

Air-lift hammers shall be provided with two drain cocks; one on main head cylinder, and one on clamp cylinder.

(4) Board-type drophammers.

(a) Guarding.

A guard shall be provided around the boards above the rolls. This requirement shall not apply to hammers that have a clamp.

(b) Releasing lever.

Means shall be provided to prevent releasing lever from falling in case the front rod or releasing lever breaks.

(c) Front rod (friction rod).

Means shall be provided to prevent the front rod (friction rod) from falling in case it breaks.

(d) Protection over workplace.

A screen or other guard shall be installed over the workplace of hammer operator at the normal operating position.

(e) Board clamp rod.

Means shall be provided to prevent the board clamp rod from falling in case it breaks.

(5) Forging presses.

The employer shall provide and require the use of safety blocks for use whenever dies are being adjusted or repaired in all forging presses.

(6) Mechanically-operated hammers.

(a) Where only one hand is used for holding materials.

On mechanically-operated hammers where only one hand is used for holding the material, a safety stop, dog, or catch shall be provided which shall prevent the hammer from coming down until such device has been released and held out of the way by the other hand; or a hand lever instead of the foot treadle shall be provided for tripping the hammer.

(b) Where neither hand is used for holding material.

On hammers where neither hand is used for holding the material:

(i) A safety stop or tripping lever shall be provided which will require the use of both hands to trip the hammer; or

(ii) A pull guard shall be provided.

(D) Other power machines and machine tools.

(1) Upsetting machines.

Tension and safety springs shall be covered to prevent the bolt or nut from being thrown out in case of breakage.

(2) Bulldozers.

A guard shall be provided which will prevent employees from stepping between the dies.

(3) Power shears

(a) Alligator shears.

(i) Alligator shears facing an aisle or passageway shall be located a minimum of four feet therefrom, unless guarded.

(ii) A guard shall be installed which shall prevent a kickup. This requirement shall not apply to alligator shears which operate automatically or by remote control on production lines.

(b) Squaring shears.

Squaring shears, where material is fed or removed by hand, shall have the blade guarded at feed and discharge sides of the shear.

(4) Hollow spindle lathes, cutting-off machines, etc.

On hollow spindle lathes, cutting-off machines or any machine used on bar stock, pipe tubing, etc., where the material is revolved by power, substantial troughs or guards shall be provided which will prevent the operator or other employees from coming in contact with the projecting unused portion of the revolving material.

(5) Machines with reciprocating tables.

Machines with reciprocating tables shall have the openings guarded; guards shall also be provided at each end and the sides of the table if the clearance of the table, which includes the work being machined and its chuck does not exceed twenty-four inches.

(6) Die casting machines.

Danger zones on die casting machines shall be guarded.

(7) Hopper fed machinery.

(a) All hopper fed machinery, such as rotaries, die machines, and extruders, shall have the entire opening protected with substantial grid type guards to prevent access of the employee's hands into the danger zone, or the hopper shall be extended high enough to prevent entry into moving parts. The guards shall be permanently attached to the hopper. If the hopper is removable, it shall be provided with an interlock device so that the machine cannot operate when the hopper is removed.

(b) Exception.

Machinery covered expressly by requirements contained in other codes of specific requirements of the industrial commission of Ohio.

(8) Guillotine cutters.

(a) All power guillotine cutters where the blade is exposed to contact shall be equipped with a two-hand control device.

(b) Exception.

Machinery covered expressly by requirements contained in other codes of specific requirements of the industrial commission of Ohio.

(9) Tumblers.

Power driven tumblers, rattlers, drums, barrels, containers, or similar machines that rotate, spin, or rock shall be guarded on an area or individual basis. The guard shall be interlocked with the drive mechanism so that the machine cannot operate unless the guard or enclosure is in place.

(10) Nip points.

(a) Means shall be provided to protect employees exposed to contact with nip points created by power driven in-running rolls, rollover platen, or other flat surface material being wound over roll surface.

(b) Exception.

Machinery covered expressly by requirements contained in other codes of specific requirements of the industrial commission of Ohio.

(11) Food mixers.

All power driven food mixers shall be equipped with a two-hand control device to keep agitator in motion under power when bowl is opened more than one-fifth of its total opening.

(12) Fastening machines.

All power driven fixed fastening machinery, such as riveting machines, wire stitchers, staplers, sewing machines, and similar fastening machinery shall be guarded.

(13) Knives.

(a) All power driven knives or cutting blades, such as reciprocating knives, endless band knives, flying knives, slicer blades, and similar cutting machines, where exposed to contact, shall be guarded except for the necessary working portion of the blade while being used.

(b) Exception.

Machinery covered expressly by requirements contained in other codes of specific requirements of the industrial commission of Ohio.

(E) Hydraulic or pneumatic presses.

Every hydraulic or pneumatic (air-powered) press shall be constructed, or shall be guarded, to prevent the hands or fingers of the operator from entering the danger zone during the operating cycle. Acceptable methods of guarding are:

(1) "Fixed barrier guard" - an enclosure to prevent hands or fingers from entering the danger zone;

(2) "Gate guard" - a movable gate operated with a tripping device to interpose a barrier between the operator and the danger zone and to remain closed until the down stroke has been completed;

(3) "Two-hand control" - an actuating device which requires the simultaneous use of both hands outside the danger zone during the entire closing cycle of the press;

(4) Pull guard - attached to hands or wrists and activated by closing of press so that movement of the ram will pull the operator's hands from the danger zone during the operating cycle;

(5) Restraint or hold-back guard - with attachments to the hands or wrists of the operator to prevent hands or fingers entering the danger zone during the operating cycle;

(6) Other practices, means or methods which will provide safeguards, preventing the hands or fingers of the operator from entering the danger zone during the operating cycle and which are equivalent in result to one of the types specified above.

(F) Power press brake (when used as a power press).

The requirements of rule 4123:1-5-10 of the Administrative Code shall be applicable to power press brakes when used for other than bending.

Effective Date: 1/1/86

Prior Effective Dates: 4/1/64; 8/1/77