

**Ind 1.07 Ladders.** (1) **DEFINITION.** A ladder is an appliance usually consisting of 2 side rails joined at regular intervals by rungs or steps called steps, rungs or cleats, on which a person may stand, ascend or descend.

(2) **GENERAL REQUIREMENTS.** (a) All ladders shall be substantially constructed and so maintained.

(b) Wood side rails shall be of sound straight grained spruce, or of other material which will give equivalent strength and resiliency.

(c) Wood treads and cleats shall be of material at least equivalent in strength to that required for side rails.

(d) Wood rungs shall be of oak, hickory or white ash.

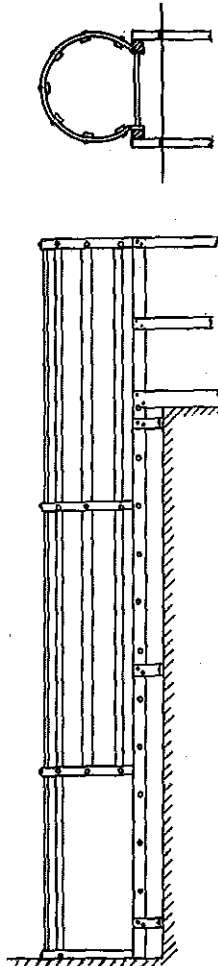


Fig. 2

(e) Treads, cleats and rungs shall have uniform size and a uniform spacing not exceeding 12 inches center to center.

(f) No wood ladder shall be painted with an opaque pigment. If preservation is needed, a transparent oil or varnish shall be used.

(g) Metal parts or fittings of ladders shall be of mild steel, malleable cast iron, or their equivalent.

(3) **FIXED LADDERS.** A fixed ladder is a ladder permanently attached to a structure, building or equipment.

(a) Every fixed ladder shall be installed with a minimum clearance of 6 inches from the back of the rung to the nearest permanent object.

(b) A cage or basket guard shall be placed on permanent fixed ladders, with or without side rails, if of 20 feet or more in length, and on fixed ladders 12 feet or more in length if the top of the ladder is 20 feet or more above the level to which a person might fall.

1. **Exception:** This requirement shall not apply to mine ladders, smokestack ladders, and fire ladders; electric power line ladders and communication line ladders the bottoms of which terminate 10 feet or more above the ground; nor shall it apply to radio or television tower ladders constructed before the effective date of this code.

2. Fixed ladders making an angle of not exceeding 75 degrees with the horizontal need not be provided with cages. All fixed inclined ladders making an angle of less than 75 degrees with the horizontal shall be equipped with handrails 30 to 36 inches high on both sides, measured vertically from the top of the rung or tread, where consisting of 4 or more rungs or treads.

(c) The cage shall extend from the top of the ladder to a point 7 feet above the base with the bottom flared 4 inches, or the portion of the cage opposite the ladder shall be carried to the base.

(d) The cage shall be substantially built and securely fastened to the ladder and shall be not less than 27 inches in width. Cages constructed before the effective date of this code shall be not less than 24 inches in width.

*Note 1:* Figure 2 shows a typical cage arrangement.

*Note 2:* For detailed specifications for construction of fixed ladder cages that will comply with the requirements of this rule, see American Standards Association Code for fixed ladders, 70 East 45th Street, New York 17, New York.

(4) **PORTABLE LADDERS.** All non-self supporting portable ladders shall be equipped with adequately maintained non-slip bases reasonably effective to prevent slipping. However, where conditions of use are such that non-slip bases are not reasonably effective to prevent slipping, additional precautions, such as lashing, blocking or holding the ladder shall be provided.

(5) **STEPLADDERS.** (a) A stepladder is a ladder having rungs or flat treads and a hinged back and so constructed and used as to be self-supporting.

(b) Stepladders shall be built in accordance with the general requirements of subsection Ind 1.07 (2).

(c) An attendant shall hold the stepladder when it is in use if the ladder is more than 10 feet in height, unless it is securely lashed or blocked.

(d) The use of a stepladder more than 20 feet in height is not permitted.

(8) STORAGE. Abrasive wheels shall be stored so as to prevent damage.

*Note:* For detailed specifications for hoods, flanges and storage procedures, that will comply with the requirements of this rule, see the American Standards Safety Code, entitled "The use, care and protection of abrasive wheels", issued by the American Standards Association, 70 East 45th Street, New York 17, New York.

**History:** Cr. Register, February, 1962, No. 74, eff. 3-1-62.

**Ind 1.35 Rolls, wheels and brushes.** (1) Rolls, wheels, brushes and similar revolving parts of machines not otherwise specifically covered elsewhere in these rules, when revolving in such a way as to create a hazard, shall be guarded or equipped with a device to prevent injury.

*Note:* The most effective method of accomplishing this is by means of an enclosure.

(a) A feed table, where used, will be acceptable as a guard, provided it is of sufficient size from front to rear and equipped with side protection, so as to prevent a person's hands from entering the danger zone.

(2) Vertical feed rolls shall be guarded on the sides, front (in-feed) and open ends by an enclosure. The enclosure for the front and open sides shall extend to within  $\frac{1}{2}$  inch of the plane formed by the working edge of each roll.

(3) Horizontal feed rolls shall be enclosed by a cover over the top, front (in-feed) and open ends. The lower edge of the cover shall come down to a point  $\frac{1}{2}$  inch above the plane level with the bottom edge of the roll.

(4) In the case of rolls where it is impracticable to install fixed guards, a positive quick stopping device shall be provided which can be operated from any work position of the machine.

**History:** Cr. Register, February, 1962, No. 74, eff. 3-1-62.

**Ind 1.36 Revolving drums and cylinders.** (1) Revolving barrels, drums or other containers, where exposed to contact, shall be guarded by an enclosure or standard guard rail in accordance with the specifications given in section Ind 1.03.

(a) Exception: For butter churns a single rail located approximately 6 inches from the churn may be used.

(2) Tanning drums, where exposed to contact, shall be guarded by an enclosure built in accordance with the specifications of subsection Ind 1.03 (2), to a height of 6 feet.

(3) Every drum or other revolving container, which must be loaded or unloaded shall be equipped with a brake or lock which will enable the operator to lock the drum while loading or unloading it.

**History:** Cr. Register, February, 1962, No. 74, eff. 3-1-62.

**Ind 1.37 Fans.** The blades of every fan when exposed to contact, shall be guarded in accordance with subsection Ind 1.03 (2).

Exception: Fans more than 7 feet above the floor or working level need not be guarded providing the blades cease to revolve before any work of a character which would expose any person to contact with such fan is permitted.

*Note:* This rule also applies to the ordinary office fan.

**History:** Cr. Register, February, 1962, No. 74, eff. 3-1-62.

Ind 1.38 Presses; guards. (1) Protection from the dies of every press, except hot-metal presses, shall be provided by means of the following:

- (a) Complete enclosure, or,
- (b) Full automatic feed, with ram enclosure, or,
- (c) Semi-automatic feed with ram enclosure, or,
- (b) Limited opening ( $\frac{3}{8}$ " ) between dies.

(2) The maximum width of opening in the enclosure or between the enclosure and working surface shall be not greater than shown in the following table:

Distance of Opening from Nip Point (Inches)	Maximum Opening (Inches)
0 to $2\frac{1}{2}$	$\frac{3}{8}$
$2\frac{1}{2}$ to $3\frac{1}{2}$	$\frac{1}{2}$
$3\frac{1}{2}$ to $5\frac{1}{2}$	$\frac{5}{8}$
$5\frac{1}{2}$ to $6\frac{1}{2}$	$\frac{3}{4}$
$6\frac{1}{2}$ to $7\frac{1}{2}$	$\frac{7}{8}$
$7\frac{1}{2}$ to $12\frac{1}{2}$	$1\frac{1}{4}$

(3) Only in case none of the methods in subsection Ind 1.38 (1) above can be applied, then a device which will reasonably prevent injury by contact with the dies shall be installed as follows:

(a) A two-hand tripping device for each person engaged in the operation of a single press, so designed and arranged as to prevent tying, wedging or otherwise securing one handle or button and operating the press with one hand only, or,

(b) An interlocking gate guard operated by the tripping device of the press, which interposes a barrier on the front and sides of the ram before the plunger descends and will not permit the press to operate until the hand or hands of the operator have been removed from the danger zone, or,

(c) A sweep or gate guard with the sweep arm, or gate interconnected to the ram and so designed and constructed as to sweep the hands of the operator from the die zone as the ram descends; with each single sweep arm provided with a flag or barrier attached thereto so that the operator cannot reach behind the sweep, or,

(d) A pull-out protective device attached to the operator's hands or arms and connected to the ram, or outer slide of the press in such a way that the operator's hands or fingers will be withdrawn from the danger zone as the ram or outer slide descends; and designed so that where the open distance between the top of the work and the lower extremity of the punch is less than 2 inches that the multiplying action of this guard shall be such that the hands will be withdrawn a safe distance from the nip point during the first quarter of the stroke, or,

(e) Any other device approved in writing by the industrial commission previous to use as providing equivalent protection.

(4) Special hand tools shall be accepted only as an accessory to the guards listed herein and not as a substitute for any guard.

(5) Guards which are attached to the ram and which move downward so that the operator's hand or fingers may be caught between the gate and lower die shall not be used.