

PERSONNEL HOISTS

Chapter Ind 44

Ind 44.001	Definition; personnel hoist	Ind 44.19	Hoist cable data
Ind 44.01	General requirements	Ind 44.20	Capacity and data plates
Ind 44.02	Plan examination fee	Ind 44.21	Structural connections and stresses allowed in design
Ind 44.03	Application	Ind 44.22	Guide rails
Ind 44.04	Tests and inspections. New installations	Ind 44.23	Minimum size of sheaves
Ind 44.05	Inspections. Interval	Ind 44.24	Machinery, general requirements
Ind 44.06	Inspection fee	Ind 44.25	Prohibited installations
Ind 44.07	Inspection by cities	Ind 44.26	Car safety devices
Ind 44.08	Repair	Ind 44.27	Speed governors
Ind 44.09	Tower construction	Ind 44.28	Car speed
Ind 44.10	Hoistway enclosure	Ind 44.29	Brakes
Ind 44.11	Platforms and sill clearances	Ind 44.30	Control mechanism
Ind 44.12	Car construction	Ind 44.31	Control and operating circuits
Ind 44.13	Car enclosure	Ind 44.32	Electrical protection
Ind 44.14	Number and size of cables required	Ind 44.33	Wiring and voltage limitations
Ind 44.15	Factors of safety for cables	Ind 44.34	Lighting
Ind 44.16	Cable (wire rope) terminal fastenings	Ind 44.35	Operation
Ind 44.17	Renewing of cables	Ind 44.36	Maintenance
Ind 44.18	Cable guards for sheaves and idlers	Ind 44.37	Temporary elevators

Ind 44.001 **Definition; personnel hoist.** A temporary structure designed and installed primarily for the purpose of transporting personnel vertically during the period of building construction or construction projects.

History: Cr. Register, March, 1965, No. 111, eff. 4-1-65.

Ind 44.01 **General requirements.** (1) Personnel hoists shall be installed to conform with the requirements as outlined in this subsection:

(a) *Plans; new installations.* 1. Before starting the erection on any new installation of a personnel hoist 3 copies of plans shall be submitted to the industrial commission for approval with 2 copies of application for each unit, properly filled out on blank forms furnished by the commission.

(b) *Forms.* The forms referred to under Wis. Adm. Code section Ind 44.01 (1) (a) 1. are SB-22, application for construction and erection, may be obtained from the Industrial Commission, Hill Farms State Office Building, 4802 Sheboygan Avenue, Madison, Wisconsin 53702.

(c) *Submission of plans and application.* Every manufacturer who furnishes equipment as described in Wis. Adm. Code section Ind 44.01 (1) to be installed by the owner or an agent of the owner shall submit plans and application.

History: Cr. Register, March, 1965, No. 111, eff. 4-1-65.

Ind 44.02 Plan examination fee. A plan examination fee in the amount established by the Wis. Adm. Code section Ind 69.20 (2) shall be paid for each installation requiring approval.

History: Cr. Register, March, 1965, No. 111, eff. 4-1-65.

Ind 44.03 Application. Before starting the erection of a hoist moved to a new location, application in duplicate, properly filled out, shall be submitted to the industrial commission for approval, on blank forms furnished by the commission. (See Wis. Adm. Code section Ind 44.01 (1) (b)).

History: Cr. Register, March, 1965, No. 111, eff. 4-1-65.

Ind 44.04 Tests and inspections. New Installations. (1) Every personnel hoist shall be tested and inspected in conformance with the code requirements before the installation is placed in service.

(a) The party erecting such an installation shall give notice to the industrial commission not less than 10 days prior to the time the installation is complete and ready for inspection.

(b) An owner or agent representing the personnel hoist shall be present during the final inspection of each installation.

History: Cr. Register, March, 1965, No. 111, eff. 4-1-65.

Ind 44.05 Inspections. Interval. Every personnel hoist shall be subjected to a regular inspection at least once within a period of 60 days.

History: Cr. Register, March, 1965, No. 111, eff. 4-1-65.

Ind 44.06 Inspection fee. A charge in accordance with the fee schedule by Wis. Adm. Code section Ind 69.25 (1) will be made by the industrial commission for each inspection of each personnel hoist.

History: Cr. Register, March, 1965, No. 111, eff. 4-1-65.

Ind 44.07 Inspection by cities. (1) In cities that provide certified inspectors, the industrial commission will accept inspection by such cities.

(a) Wis. Adm. Code section Ind 44.01 (1) (a) shall not apply to cities where permits are issued by the city in a manner approved by the industrial commission.

History: Cr. Register, March, 1965, No. 111, eff. 4-1-65.

Ind 44.08 Repair. Where the part or parts of equipment of a personnel hoist are impaired through ordinary wear, damage or deterioration by fire or other causes, to 50% of the original condition, the equipment shall be repaired or rebuilt in conformance with the requirements for new installations.

History: Cr. Register, March, 1965, No. 111, eff. 4-1-65.

Ind 44.09 Tower construction. (1) Overhead beams, floors and their supports shall be designed for not less than the sum of the following loads:

(a) The load resting on the beams and supports which shall include the complete weight of the machine, sheaves and governor and other equipment together with that portion supported thereon.

1. Where the car safety device operates on tension members suspended from the top of the tower, the tower construction and supports for the tension members shall withstand the application of the car safety device, when stopping the car with its rated capacity at governor tripping speed, within the deflection of $\frac{1}{4}$ inch.

2. The tension members shall withstand the forces of not less than twice the sum of the tension in all cables (wire ropes) passing over sheave supported by the beams with the rated capacity in the car.

(b) The tower shall be girthed "postwise" with channels or the equivalent to prevent the spreading of the car guide rails.

(c) Calculations shall be submitted covering the structural design for the height maximum of travel to be served.

(d) The tower and supporting footings shall be adequate to support the entire tower structure for the height of travel to be served and the loads imposed upon them.

History: Cr. Register, March, 1965, No. 111, eff. 4-1-65.

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Ind 44.10 Hoistway enclosure. (1) The hoistway at the ground floor shall be enclosed to the height of not less than 7 feet. If of wood, the enclosure shall be solid. If of metal, the enclosure shall be the equivalent in strength, rigidity, and protection of wire screen of not less than No. 16 U. S. Standard gauge with mesh not greater than 1½ inch.

(a) Every hoistway entrance opening shall be equipped with a door or gate located not more than 8 inches from the edge of the car platform; and not less than 6 feet in height completely filling the width of the opening; and shall be of wood or metal to conform with Wis. Adm. Code section Ind 44.10 (1).

(b) Every hoistway landing entrance door or gate shall be equipped with a mechanical lock. The lock shall not be accessible from the landing side. *Account Mar*

History: Cr. Register, March, 1965, No. 111, eff. 4-1-65.

Ind 44.11 Platforms and sill clearances. (1) Where a platform is provided between the tower and the building, the open or exposed sides shall be provided with a standard guard rail 42 inches in height with an intermediate guard and a toeboard not less than 4 inches in height at the edge of the platform.

(a) The clearance between the car sill and any landing sill shall be not less than ½ inch or more than 3 inches.

History: Cr. Register, March, 1965, No. 111, eff. 4-1-65.

Ind 44.12 Car construction. (1) Every personnel hoist shall have a car frame consisting of a crosshead, uprights (stiles), and a plank located approximately at the middle of the car platform.

(a) Car frames shall be guided on each guide rail by upper and lower guide shoes attached to the frame.

(b) The frame and its guiding members shall be designed to withstand the forces resulting under the loading conditions for which the hoist is designed.

(c) When cars are suspended by hoist cables attached to the car frame by means of cable shackles, the shackles shall be attached to the steel hitch plates or to structural steel shapes. Such plates or shapes shall be secured to the underside or to the webs of the car frame members with bolts or rivets so located that the tensions in the hoisting ropes will not develop direct tension on the bolts or rivets.

(d) Every hoist shall have a platform consisting of a solid floor attached to the platform frame supported by the car frame and extending over the entire area within the car enclosure. The plat-

form frame members and the floors shall be designed to withstand the forces developed under the loading conditions for which the elevator is designed and installed.

(e) Cast iron shall not be used for any part subject to tension, torsion, or bending.

(f) The car frame members shall be securely welded, bolted and/or riveted and braced.

History: Cr. Register, March, 1965, No. 111, eff. 4-1-65.

Ind 44.13 Car enclosure. (1) The car of every personnel hoist shall be permanently enclosed on all sides and top, except the sides used for entrance, and shall conform with the requirements outlined as follows:

(a) The car enclosure shall be of wood or metal. If of wood, it shall be solid. If of metal, it shall be of the equivalent and strength, rigidity and protection of wire screen of not less than No. 10 U. S. Standard gauge with mesh not greater than 1 inch measured along the wires from center to center at points where they cross and shall extend from the floor to the car top.

(b) The enclosure shall be securely fastened to the car platform and so supported that it cannot loosen or become displaced in ordinary service or on the application of the car safety device.

(c) An exit cover shall be provided in the top of the car and shall conform with the requirements as follows:

1. Shall be so located as to provide a clear passage unobstructed by fixed equipment.

2. The exit opening shall have an area of not less than 400 square inches.

3. The exit cover shall open upward and shall be hinged to the car top so that the cover can be opened from both inside and from on top of the car without the use of tools.

4. Tops of car enclosures shall be so designed and installed as to be capable of sustaining a load of 300 pounds on any square area 2 feet on a side.

(d) Each car entrance shall be equipped with a door or car gate which shall be equipped with an electric contact.

1. The car door or gate at the secondary car entrance shall in addition to an electric contact be equipped with a zoned mechanical lock. This lock shall be so designed to prevent the opening of the car gate after the car leaves the lower terminal landing.

2. Each car door or gate shall be not less than 6 feet in height, completely filling the width of the opening; and shall be of wood or metal to conform with Wis. Adm. Code section Ind 44.13 (1) (a).

(e) There shall be not more than 2 entrances to any car.

History: Cr. Register, March, 1965, No. 111, eff. 4-1-65.

Ind 44.14 Number and size of cables required. (1) Every traction-type personnel hoist shall have not less than 4 cables.

(2) Every winding drum-type personnel hoist shall have not less than 2 cables.

(a) The hoisting cables of every winding drum-type machine shall have at least 1½ turn on the drum when the car is at the lower terminal landing. The winding drum end of every hoisting cable shall be secured inside the drum.

(2) The design and installation of the control and operating circuits shall conform with the requirements outlined in this subsection:

(a) If springs are used to actuate switches, contactors or relays to break the circuit to stop the hoist at terminal landings, they shall be of the compressive type.

(b) The completion or maintenance of an electric circuit shall not be used to interrupt the power to the driving machine, motor or brake at the terminal landings nor to stop the car when the emergency stop switch is opened or any other electrical devices operate.

(c) The failure of any single magnetically operated switch, contactor, or relay to release in the intended manner or the occurrence of a single accidental ground, shall not permit the car to start or run if the hoistway-door or gate contact lock is unlocked or if any hoistway-door or car-door or gate contact is in the open position.

History: Cr. Register, March, 1965, No. 111, eff. 4-1-65.

Ind 44.32 Electrical protection. (1) Every electrically driven personnel hoist shall be provided with a potential switch which will cause and maintain interruption of power to the main circuit during failure of supply voltage, and the operation of any emergency stopping switches.

(2) A reverse phase relay shall be provided which will prevent starting the motor if the phase rotation is in the wrong direction.

(a) *Exception.* Alternating-current motors used in motor generator sets.

(3) Directional and final limit switches shall be provided to stop the car at each terminal of travel.

(4) A slack cable switch shall be provided on the hoist cables of every drum-type driving machine which shall automatically shut off the power to the driving machine motor in the event the cables break or become slack. This switch shall not reset automatically when the slack in the cable is removed.

History: Cr. Register, March, 1965, No. 111, eff. 4-1-65.

Ind 44.33 Wiring and voltage limitations. (1) The nominal voltage used for operating control and signal circuits, operating equipment, driving-machine motors and brakes shall not exceed the requirements as outlined in this subsection.

(a) For operating control and signal circuits and related equipment—300 volts, except that higher potentials may be used for frequencies of 25 to 60 cycle alternating current.

(b) Driving-machine motors, machine brakes—600 volts.

(2) All live parts of electrical apparatus in the hoistway, at the landing, or in or on the cars shall be enclosed to protect against accidental contact.

(3) The insulation of conductors shall be installed to conform with the following:

(a) Cabled conductors for operating and control circuits, without metal encasement shall be of the weatherproof type and shall be securely fastened.

(b) Power feeders for the hoist shall be of the weatherproof type and securely fastened to the tower.

(c) Fittings, switches and all electrical equipment shall be of the weatherproof type.

(4) The thickness of insulation of all conductors shall be suitable for the voltage to which the conductors are subjected.

(5) The minimum size of conductors used, which form an integral part of control equipment, shall conform with the following:

(a) Traveling cables. For lighting: No. 14 wire.

(b) Operating, control and signal circuits: No. 18 wire and shall be properly fused.

(6) Conductors for operating, control, power, signal and lighting circuits of 600 volts or less may be run in the same traveling cable or raceway system provided that all conductors are insulated for the maximum voltage found in the cables or raceway system and all live parts of the equipment are insulated from ground for this maximum voltage.

History: Cr. Register, March, 1965, No. 111, eff. 4-1-65.

Ind 44.34 Lighting. (1) Cars shall be provided with illumination of an intensity of not less than 5 foot-candles at the edge of the car platform.

(a) A warning or signal light shall be provided on the top and bottom of every car.

History: Cr. Register, March, 1965, No. 111, eff. 4-1-65

Ind 44.35 Operation. (1) Hoist shall be operated by authorized personnel.

(2) Material shall not be carried on the car when transporting personnel.

History: Cr. Register, March, 1965, No. 111, eff. 4-1-65.

Ind 44.36 Maintenance. (1) Hoists shall be kept in safe operating condition.

(2) Material which is not a permanent part of the hoist shall not be permitted on top of the hoist cover.

(3) Machines located at the lower level shall be protected from falling objects; and shall be enclosed on all open sides to the height of not less than 42 inches.

History: Cr. Register, March, 1965, No. 111, eff. 4-1-65.

TEMPORARY USE OF PERMANENT ELEVATORS IN BUILDINGS UNDER CONSTRUCTION

Ind 44.37 Temporary elevators. (1) Permanent elevators being installed in buildings under construction may be used prior to their completion for carrying workmen or material, providing they are specially approved. Approval shall be subject to the requirements outlined in this subsection:

(a) Material shall not be carried on the car when transporting personnel.

(b) The hoistway shall be solidly enclosed to a height of not less than 7 feet above each floor, the entire height of the car travel.

1. The hoistway in front of the counterweight runway shall be solidly enclosed.

(c) All hoistway openings shall be provided with doors equipped with mechanical locks. The lock shall not be accessible from the landing side.

(d) The car shall be solidly enclosed on all sides and top, except the sides used for entrance.

1. The car top shall be provided with a hinged section and arranged to open upward.

(e) Each car entrance shall be provided with a car door or gate and equipped with an electric contact.

(f) The elevator machine and equipment shall be protected from accidental contact.

(g) The car shall be controlled by means of car switch or continuous pressure push button operation from the car only.

(h) A charge in accordance with the fee schedule established by Wis. Adm. Code section Ind 69.25 (1) will be made by the industrial commission for each inspection.

(j) The elevator shall be operated by authorized personnel.

History: Cr. Register, March, 1965, No. 111, eff. 4-1-65.