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LIFTS REGULATION ACT  
1928.

## LIFTS REGULATION ACT 1928.

*At the Executive Council Chamber, Melbourne, the  
twenty-sixth day of June, 1945.*

### PRESENT :

His Excellency the Governor of Victoria.  
Mr. Tuckett | Mr. Chandler.

UNDER the powers conferred by the *Lifts Regulation Act* 1928 and all other powers enabling him in that behalf, His Excellency the Governor of the State of Victoria, by and with the advice of the Executive Council thereof, doth hereby make the following Regulations, that is to say:—

Citation, &c.

1. These Regulations may be cited as the *Lifts Regulations* 1945, and shall come into operation upon publication in the *Government Gazette*, and shall be divided into Parts and Divisions as follows:—

- Part I.**—Provisions applicable to Lifts generally—  
 Division 1.—Introductory—Clauses 5-6.  
 Division 2.—General—Clauses 7-20.  
 Division 3.—Machine Rooms and Overhead Equipment—Clauses 21-30.  
 Division 4.—Overruns for Cars and Counterweights—Clauses 31-32.  
 Division 5.—Buffers and Stops—Clauses 33-36.  
 Division 6.—Pits—Clauses 37-40.  
 Division 7.—Lift Enclosures and Lift Wells—Clauses 41-46.  
 Division 8.—Clearances in Wells and Enclosures—Clause 47.  
 Division 9.—Cars and Car Gates—Clauses 48-62.  
 Division 10.—Ropes, Rope Attachments and Fittings—Clauses 63-74.  
 Division 11.—Safety Gear—Clauses 75-83.  
 Division 12.—Machines—Clauses 84-90.  
 Division 13.—Counterweights—Clauses 91-92.
- Part II.**—Provisions applicable to Electric Lifts—  
 Division 1.—General—Clauses 93-97.  
 Division 2.—Passenger-Controlled and Attendant-Controlled Lifts—Clauses 98-102.  
 Division 3.—Operating Devices—Clauses 103-119.
- Part III.**—Provisions applicable to Hydraulic Lifts—  
 Division 1.—Testing of Apparatus—Clauses 120-122.  
 Division 2.—Stops and Valves—Clauses 123-128.  
 Division 3.—Enclosure Doors and Car Gates—Clauses 129-133.
- Part IV.**—Provisions applicable to Goods Lifts not Directly Driven by Electricity or Hydraulic Power—Clauses 134-137.
- Part V.**—Provisions applicable to Service Lifts—Clauses 138-150.
- Part VI.**—Provisions applicable to Escalators—  
 Division 1.—General—Clauses 151-156.  
 Division 2.—Safety Requirements—Clauses 157-167.
- Part VII.**—Provisions applicable to Power Lifts of the Hoist Type—Clauses 168-175.
- Part VIII.**—Provisions applicable to Hand-power Goods Lifts—Clauses 176-184.
- Part IX.**—Provisions applicable to Hand-power Goods Lifts of the Hoist Type—Clauses 185-193.

Repeal.

2. All Regulations heretofore made under the *Lifts Regulation Act* 1928 are hereby repealed.

Application of Regulations.

3. The Chief Inspector may exempt from the operation of any of these Regulations any lift which is in use at the date of the coming into operation of these Regulations and which in his opinion complies with the Regulations heretofore in force under the *Lifts Regulation Act* 1928 and may at any time withdraw any such exemption.

4. In these Regulations unless inconsistent with the context or subject-matter—

Interpretation.

- "Act" means the *Lifts Regulation Act 1928*.
- "Attendant-controlled lift" means a lift directly under the control and supervision of an attendant authorized by the owner lessee or occupier.
- "Approved" means approved by the Chief Inspector.
- "Car" means the load-carrying unit and includes its floor or platform, car frame or sling and its enclosing bodywork.
- "Car top overrun" means the distance the car platform could travel above the level of the upper terminal landing before any part of the car or devices attached thereto meets any obstruction.
- "Car bottom overrun" means the distance the car platform could travel below the level of the lower terminal landing before any part of the car or devices attached thereto meets an obstruction and includes the working stroke of the buffer.
- "Chief Inspector" means the Chief Inspector of Factories and Shops.
- "Contact" means a switch operated by the movement of a gate or door.
- "Counterweight top overrun" means the vertical distance, when the car is landed upon its stops or fully compressed buffers, between any part of the counterweight or attachment thereto and any obstruction above it.
- "Counterweight bottom overrun" means the distance the counterweight would require to travel to land measured when the car is at the top terminal landing and includes the working stroke of the buffer.
- "Division" means a division of a Part of these Regulations.
- "Drum drive" means a method of imparting motion to a lift in which the lifting ropes are secured to and wind on a drum.
- "Enclosure door" means a door in an opening in a lift well for the purpose of affording access from any floor or landing to the car.
- "Escalator" means a moving stairway used for raising or lowering persons and includes the driving machinery supports and enclosure thereof.
- "Goods lift" means a lift designed for and used primarily for carrying goods and materials only.
- "Hand-power lift" means a lift in which the motion of the platform or car is obtained solely through manual energy.
- "Hoist type lift" means a lift where the load is attached to a hook and is raised or lowered in a suspended state.
- "Levelling device" means any device designed to cause the car automatically to move at the levelling speed within the levelling zone and to stop substantially level with the floor or landing.
- "Levelling speed" means a speed of a lift lower than the running speed used only within the levelling zone whilst the lift is under the control of a levelling device.
- "Levelling zone" means the fixed distance above and below a floor level or landing within which the lift is under the control of the levelling device of that floor or landing.
- "Machine" means and includes the motor or motors, the reduction gear (if any) the brake or brakes and the winding drum or sheave by which the car is raised or lowered.
- "Maximum load" in respect of a lift for which a permit under clause 9 is issued after the coming into operation of these Regulations means the load which in such permit is stated to be the maximum load to be carried therein and in respect of a lift for which a permit was issued under any Regulations heretofore in force under the Act means the maximum load which according to the plans and specifications of such lift lodged with the Chief Inspector it is designed to carry.
- "Overspeed" means speed in excess of the normal running speed.
- "Part" means part of these Regulations.
- "Passenger lift" means any lift not being a goods lift in which it is permissible to carry passengers.
- "Passenger-controlled lift" means any lift not being an attendant-controlled lift which is capable of being set in motion by the pressing of a push button and is automatically caused to stop at any predetermined floor or landing.
- "Power lift" means a lift which is worked by any form of energy other than manual or gravitational.
- "Safety gear" means a mechanical device attached to a car frame or counterweight and designed to stop and hold the car or counterweight (as the case may be) in its guides in the event of one or more of the lifting ropes breaking or, where the overspeed is controlled by a governor, in the event of overspeed in a descending direction.

"Service lift" means a lift having a cubic capacity not exceeding thirty-six cubic feet, a height not exceeding four feet, designed to carry goods and materials only not exceeding a maximum load of five hundredweight and which is moved by power other than hand power.

"Traction drive" means a method of imparting motion to a lift in which the sheave is grooved so as to impart its motion to the ropes by friction.

## PART I.

## DIVISION 1.—INTRODUCTORY.

- Application of Part I. 5. Save as is otherwise provided either expressly or by necessary implication in this or in any other Part, the provisions of this Part shall apply to, and with respect to all lifts, and the provisions of any other Part, to the extent to which they may be inconsistent with anything contained in the provisions of this Part shall prevail.
- Exceptions. 6. (1) The following clauses and sub-clauses of this Part shall not apply to service lifts:—  
 Clauses 20, 22, 23, 24, 25, 28, 33, 35, 37, sub-clauses (2) and (3) of clause 38, and clauses 49, 88, 94, and 114.  
 (2) The following clauses and sub-clauses of this Part shall not apply to hand-power lifts:—  
 Clauses 20, 22, 23, 24, 25, 28, 33, 34, 35, 37, sub-clauses (2) and (3) of clause 38 and clauses 43, 49, and 85.  
 (3) The following clauses of this Part shall not apply to hydraulic lifts:—  
 Clauses 23 and 24.  
 (4) Clause 96 shall not apply to lifts of the hoist type.

## DIVISION 2.—GENERAL.

- Fees. Reg. 1936 (2). 7. (1) The owner, lessee, or occupier of any building in or in connexion with which there is a lift shall, on the 1st day of July in each year, or on the day such lift first comes into use, pay the following fees to the Chief Inspector for inspection:—  
 For each power lift running at a speed—  
     not exceeding 450 feet per minute .. 21s.  
     exceeding 450 feet per minute .. 42s.  
 For each lift not being a power lift .. 12s. 6d.  
 (2) In the case of a lift which is first used after the 1st day of January in any year, the fee payable for the inspection thereof shall be one-half of the appropriate annual fee.
- Responsibility of observance of regulations. Reg. 1936 (3). 8. Unless otherwise expressly provided, the owner, lessee, or occupier of any building in or in connexion with which there is a lift, or in or in connexion with which there is being constructed, re-constructed, or altered a lift shall be responsible for the observance of these Regulations.
- Permit to erect or alter lifts. Reg. 1936 (4). 9. No lift shall be constructed, re-constructed, or altered unless and until a permit, in the form following, has first been obtained from the Chief Inspector:—

## Permit.

I hereby authorize the \_\_\_\_\_ of a \_\_\_\_\_ lift to carry a maximum load of \_\_\_\_\_ at \_\_\_\_\_ such \_\_\_\_\_ to be effected in accordance with the plans and specifications filed with the application made on the \_\_\_\_\_ day of \_\_\_\_\_ 19 \_\_\_\_\_ by \_\_\_\_\_, together with such alterations or amendments of such plans and specifications as have been approved by me.

Dated at Melbourne this \_\_\_\_\_ day of \_\_\_\_\_ 19 \_\_\_\_\_

Chief Inspector of Factories.

- Specifications and plans to be submitted. 10. (1) Every applicant for such permit shall file at the Department of Labour complete plans, drawings, and specifications, showing correct measurements and describing the details of the machinery of such lift, the lift-well enclosures and doors, and the position of the lift in the building, and showing the maximum load proposed to be carried on such lift.  
 (2) Complete wiring plans of the safety circuit of each lift in respect of which a permit under clause 9 is issued shall be filed at the Department of Labour at least one week before such lift is placed in use.
- Chief Inspector may require alteration before granting permit. Reg. 1936 (6). 11. Before granting any such permit the Chief Inspector may require any alterations in design to be made which appear to him to be necessary for the safe working and efficiency of the lift.
- Inspection of work and apparatus. Reg. 1936 (7). 12. All work performed and all machines, apparatus, and material used in connexion with any lift shall be subject to the final approval of the Chief Inspector, who shall, as often as it appears to him necessary, cause such to be inspected and tested.
- Lifts in course of construction—persons allowed to operate. Reg. 1936 (9). 13. No person, other than a person engaged on the construction, re-construction or alteration of a lift, shall work, use, or interfere with any such lift until such lift has been approved by an Inspector for general use.

14. In order to prevent loss of life or bodily injury during Lifts in course of the course of construction, re-construction, or alteration of any construction—lift, every enclosure door opening in the well thereof shall be protection of adequately protected—openings.

- (a) until such time as the enclosure door and frame have been fitted—by a fence erected not less than 12 inches from the edge of the opening; such fence shall include a guard-rail at a height of 3 ft. 6 in. above the floor or stairway, and a toe-board at least 6 inches in height fixed at the level of the floor or stairway; and
- (b) after the enclosure door and frame have been fitted and until the general use of such lift has been approved by an inspector—by providing such means as may be necessary to prevent any such door being opened by any unauthorized person.

15. The owner, lessee, or occupier of any building in or in connexion with which there is a lift shall— Maintenance of lifts. Reg. 1936 (44).

- (a) cause such lift to be kept in a fit and serviceable condition and strictly in accordance with these Regulations; and
- (b) keep the lift well free from rubbish, dust, dirt, or any material not associated with the operation or maintenance of the lift.

16. (1) No person shall engage in the work of maintaining any lift without the approval of the Chief Inspector, who, upon being satisfied that any person is qualified and fitted to do so, may issue a permit authorizing such person to maintain lifts. Permits to maintain lifts. Reg. 1936 (45).

(2) Every such permit shall expire on the 30th day of June next following the date of the issue thereof.

17. The owner, lessee, or occupier of any building in or in connexion with which there is a lift, immediately after the occurrence of any accident which has been caused by or contributed to by any such lift or by its use or operation, shall notify the Chief Inspector thereof in writing. Accident to be reported.

18. (1) Every passenger lift, and the machine and all equipment thereof, shall be so constructed and maintained as to be capable of operating satisfactorily when every square foot of that portion of the car floor which is available for passengers bears a load of 75 lb. Conditions of load.

(2) The Chief Inspector may exempt from the operation of the immediately preceding sub-clause any hospital lift which is designed to carry beds or stretchers.

(3) Every passenger lift car shall have prominently displayed in it at all times a notice indicating the maximum number of passengers that may be carried in it at any one time.

(4) Every goods lift shall have prominently displayed in it at all times a notice stating—

- (a) the maximum load of such lift.
- (b) that not more than two persons shall be permitted to travel at any one time in such lift and that each of such persons shall be either the lift attendant or a person in charge of goods.

(5) The maximum load of any goods lift shall not at any time be exceeded and not more than two persons (each of whom shall be either the lift attendant or a person in charge of goods) shall be permitted to travel at any one time in the car.

19. All lifts of the following types shall be constructed so as to be incapable of being driven at a speed exceeding that indicated opposite such type— Speed. Reg. 1936 (40).

- (a) Electric passenger lifts .. 600 ft. per minute.
- (b) Hydraulic passenger lifts .. 300 ft. per minute.
- (c) Goods lifts which comply with the requirements of these Regulations relating to electric passenger lifts or with such modifications thereof as an inspector in any particular case may approve .. 600 ft. per minute.
- (d) All other goods lifts not being hand-power lifts .. 200 ft. per minute.
- (e) Hand-power lifts .. 50 ft. per minute.

20. All guides, whether for cars or for counterweights, shall consist of steel sections. Spring loaded guide shoes of an approved pattern shall be fitted on all cars and counterweights which have a maximum speed exceeding 200 feet per minute. Guides and shoes. Reg. 1936 (22).

#### DIVISION 3.—MACHINE ROOMS AND OVERHEAD EQUIPMENT.

21. The machine, control mechanism, and all parts of the equipment of a lift (other than those portions which must necessarily be placed elsewhere to effectively perform their function) shall be housed in the machine room or secondary floor. Housing of equipment.

22. All machine room floors shall be designed to carry a load of not less than 100 lb. per square foot over the whole area and also any load which may be imposed thereon by the equipment used in the machine room or by any re-action from such equipment, both during periods of normal operation and during dismantling or repair. Loadings on machine room floors.

Floor area.	23. The machine room shall be of such size as will permit of free access to all parts of the machines and equipment located therein for purposes of inspection, maintenance, and dismantling for repair. On at least two sides there shall be a minimum space of 2 feet between any part of the machine and the adjoining wall.
Head room.	24. There shall be sufficient height in the machine room to enable any portion of the machinery or apparatus to be raised clear for dismantling, and in no case shall the head room from the machine room floor be less than 6 ft. 6 in.
Machine room and secondary floor lighting.	25. (1) Every machine room and secondary floor shall be provided with effective electrical illumination controllable from a position adjacent to the entrance door thereof. (2) Every secondary floor shall be provided with one general purpose electric power outlet.
Means of access.	<p>26. Safe and convenient access to every machine room and secondary floor shall be provided in accordance with the following requirements:—</p> <p>(a) <i>Ladders</i>.—Access between a secondary floor and a machine room may be by ladder.</p> <p>Where the machine room entrance is less than 5 feet above or below the adjacent floor or roof surface, a substantial permanently attached ladder may be used.</p> <p>Every such ladder shall be fixed at least 6 inches clear of any wall, beam, or obstruction, and shall extend at least to the landing level. Above the landing level and for a height of at least 45 inches either the ladder shall be extended or suitable hand grips shall be provided.</p> <p>(b) <i>Stairs</i>.—Where the machine room entrance is 5 feet or more above or below the adjacent floor or roof surface, access shall be provided by means of stairs having an angle of not more than 65 deg. from the horizontal and not less than 2 feet clear width.</p> <p>The stairs shall have a minimum tread of 5½ inches and a maximum rise of 13 inches.</p> <p>A substantial handrailing fixed at a convenient height but not less than 18 inches high measured vertically from the nosings shall be provided on the outer strings of all stairways, and not less than 3 feet high on landings and platforms.</p> <p>Clear head-room of not less than 6 ft. 6 in., measured from the nosings of the stairway, shall be provided on every stairway.</p> <p>(c) <i>Landings</i>.—Where the entrance doorway to a machine room opens outwards, a landing having a length not less than the width of such door, plus 2 feet, and not less than 2 feet wide, shall be provided. The length or width of such landing shall be measured from the outer face of door when closed.</p> <p>(d) <i>Manholes</i>.—Where access to a machine room is through a manhole in the floor, the manhole shall be of such size as to provide a minimum clear dimension of 2 feet in all directions. All manholes in machine room floors shall be enclosed on three sides by a handrail, which shall be at least 3 feet high and provided with a midrail and toe-board or equivalent protection.</p>
Doors to machine rooms.	<p>27. (1) Every entrance to a machine room shall be provided with a door. Every such door shall be provided with a lock that can be opened from without only by the use of a key. If a snap lock is used it shall be of a type which does not require a key to unlock it from within the machine room.</p> <p>(2) The following notice in permanent characters shall be exhibited in a prominent position adjacent to the entrance:—</p> <p>“DANGER—Entry of Unauthorized Persons Prohibited.”</p> <p>The word “Danger” shall be printed in letters at least 1 inch high, and the remainder of the notice in letters at least ½ inch high.</p>
Supporting structure—design.	28. For the purpose of designing the supporting structure of every lift, the load thereof shall be regarded as being equal to twice the maximum rope loads obtaining when the lift is stationary, plus all other loads imposed on the supporting structure.
Safety factor of Supporting structure. Reg. 1986 (12).	29. The supporting structure, including overhead beams, of every lift, shall be so designed and constructed as to provide for a safety factor of not less than four.
Platforms under overhead sheaves. Reg. 1986 (14).	30. In the lift well, immediately under the overhead sheaves of any suspended lift there shall be built a substantial platform or grating with means of access from outside the lift well.

## DIVISION 4.—OVERRUNS FOR CARS AND COUNTERWEIGHTS.

31. The minimum overrun provided for cars and counter-weights shall not be less than that specified in the following table:—

Overruns for cars and counterweights.  
Reg. 1936 (20).

## MINIMUM OVERRUNS FOR CARS AND COUNTERWEIGHTS.

Rated Speed, Feet per Minute.	Top Overruns.				Bottom Overruns.	
	Car.		Counterweight.		Car.	
	Traction and Hydraulic.	Drum.	Drum.	Traction.	Drum.	Traction.
1 to 100 ..	ft. in.	ft. in.	ft. in.	ft. in.	ft. in.	ft. in.
101 " 200 ..	3 0	4 0	3 0	1 6	1 6	1 6
201 " 300 ..	3 0	4 0	3 0	1 6	2 0	2 0
301 " 400 ..	4 0	5 4	4 0	2 0	2 6	2 6
401 " 500 ..	5 0	..	..	2 6	..	3 0
501 " 600 ..	6 0	..	..	3 0	..	3 6
501 " 600 ..	7 0	..	..	3 6	..	4 0

(2) The bottom overrun for the counterweight of a traction drive lift shall not be greater than one-half of the top overrun actually provided for the car. The final limit gear of the lift shall be so constructed as to operate before the counterweight lands.

(3) The bottom overrun for the counterweight of a drum drive lift shall not be greater than one-quarter of the top overrun actually provided for the lift car. The counterweight of a drum drive lift shall not land in the normal operation of the lift.

32. A clearance of not less than 24 inches shall exist between the lowest point of the car platform and the bottom of the lift well when the car is landed with the springs or buffers fully compressed.

Minimum clearance below car platform.  
Reg. 1936 (21).

## DIVISION 5.—BUFFERS AND STOPS.

33. For the purpose of taking the impact upon landing, stops and buffers shall be provided for cars and counter-weights of all lifts in accordance with the requirements of the following table:—

Buffers and stops.  
Reg. 1936 (55).

## TYPE OF BUFFERS AND STOPS.

Running Speeds.		Type of Stop or Buffer.
Cars.	Counterweights.	
Not exceeding 100 ft. per minute	Not exceeding 200 ft. per minute	Solid stops, spring buffers, or oil buffers
Exceeding 100 ft. per minute, but not exceeding 300 ft. per minute	Exceeding 200 ft. per minute, but not exceeding 300 ft. per minute	Spring buffers or oil buffers
Exceeding 300 ft. per minute	Exceeding 300 ft. per minute	Oil buffers

34. (1) Buffers shall be of such design and construction as to be able to absorb within the limits of their stroke the whole of the kinetic energy of the car carrying its rated load or of the counterweight, when the speed of impact is the maximum running speed.

Essential requirements of buffers.

(2) Buffers shall be designed to ensure that the rate of retardation of the car, under any condition of loading from 100 lb. to the maximum load, and of the counterweight shall not exceed 80.5 feet per second per second in any part of the stroke when the initial speed of impact is the maximum governor operating speed.

(3) A spring shall be fitted to all oil buffer plungers or an equivalent provision shall be made for taking the initial impact between the car and buffer. Provision shall be made in the construction of an oil buffer for readily ascertaining the adequacy of the oil supply.

(4) Springs for buffers shall be designed so that they will not take a permanent set upon absorbing the energy of the fully loaded car at governor tripping speed.

Minimum stroke  
of oil buffers.

35. The stroke of every oil buffer shall not be less than that specified in the following table:—

MINIMUM STROKE OF OIL BUFFERS.

Maximum Permitted Speed in feet per minute of Car and Counterweight.	Minimum Stroke in Inches.
1 to 200 .. .. .	4
201 to 300 .. .. .	9
301 to 400 .. .. .	16
401 to 500 .. .. .	25
501 to 600 .. .. .	33

Permanent stops.

36. In the case of both drum and traction type machines, the final obstruction met at the top or bottom of the well, in the event of an over-running of the car, shall be such that the car and counterweight will remain in their guides and that during impact the car platform and the horizontal faces of the counterweight remain level. Any buffers or stops fitted to ensure this condition shall be placed symmetrically about the centre of gravity of the car and the centre of gravity of the counterweight.

#### DIVISION 6.—PITS.

Access to pits.  
Reg. 1936 (16).

37. (1) Where the depth of a pit, measured from the lower terminal landing, exceeds 3 ft. 6 in., and where no other means of access exists, a ladder shall be fixed permanently within reach of the lowest enclosure door.

Lighting of pits.

(2) A permanent electric light with a switch near the entrance shall be provided in each pit the depth of which exceeds 7 ft. 6 in. or in which compensating ropes or chains are used.

Wells to extend to solid ground.

38. (1) Every lift well shall extend to solid earth except when the floor of the pit has adequate strength to take twice the full buffer loads and the pit is so arranged that the counterweight will land on solid earth or on an abutment constructed on solid earth.

(2) Any lift the path of travel of which does not extend to solid earth shall have a minimum of six ropes and the ropes shall have a total factor of safety of twenty.

(3) Every drum drive lift shall have a pit which extends to solid earth.

Dryness of pits.

39. (1) Every pit shall be so constructed as to remain dry, or shall have adequate provision for removing any water which may collect therein.

(2) Agricultural or other drains shall not be run into lift pits.

Access to lift pits by special door.

40. Where access to a lift pit is provided by a special door below the lowest landing served, such door shall be electrically interlocked with the adjacent lift, shall be provided with a special key lock, and shall have legibly and permanently inscribed on the door in a prominent position the word "Danger."

#### DIVISION 7.—LIFT ENCLOSURES AND LIFT WELLS.

Lift well enclosure.

41. All lift well enclosures, including stairway enclosed wells, shall be complete from floor to ceiling. The counterweights shall be enclosed on the inside of the lift-well enclosure, over their whole width, to a height of seven feet from the bottom of the lift well.

Protection of windows and openings in lift wells.

42. All windows in lift well enclosures shall be closed and fixed. All windows and openings accessible from fire escapes, stairways, platforms, adjacent roofs, and those on ground floor and basement levels, and any window up to a height of 20 feet from and opening on to a public place, cartway, or yard or similar area shall be barred or otherwise permanently protected.

Maximum interspaces in grille work.

43. No grille or similar type of construction shall be used unless the interspaces therein comply with the following requirements:—

(i) Where any moving part of a lift, counterweight, or sliding door is 3 inches or less from the inside of the enclosure and within 7 feet of the floor or nosing of a stair tread the interspaces shall be not greater than  $\frac{3}{8}$ -in. mesh.

(ii) Where such distance of 3 inches is exceeded, the interspaces shall be not greater than  $\frac{1}{4}$ -in. mesh.

Transparent panels in landing doors.

44. The enclosure door of every passenger controlled lift shall be provided with a transparent panel, not more than 1 square foot in area, through which a view of the car may be conveniently obtained from a landing when the car is opposite such landing. The maximum width of any such panel shall not exceed 6 inches.

45. (1) The offset of the transparent panel shall not exceed  $\frac{1}{4}$  inch, both on the inside and outside of enclosure door, with 45 deg. splay on both inside and outside of enclosure door.

(2) The immediately preceding sub-clause shall not apply to the outside of doors of the swinging or folding type.

46. Piping, conduit, or other equipment not forming part of the lift installation shall not be installed in a lift well.



## DIVISION 8.—CLEARANCE IN WELLS AND ENCLOSURES.

47. (1) The inside face of a lift well adjacent to the path of travel of the car entrance, or entrances, shall form a flush surface within the limits laid down in this Regulation. Relation of well to car opening.

(2) The landing nosings and the enclosure in the path of travel of the car entrance, or entrances, shall be not less than  $\frac{1}{4}$  inch and not more than  $1\frac{1}{4}$  inches from the car floor nosing, and shall be flush without projection.

Provided that where a solid car door is used such distance of  $\frac{1}{4}$  inches may with the approval of an inspector be exceeded by a distance approved by him.

## DIVISION 9.—CARS AND CAR GATES.

48. (1) For computing the stresses in the structural parts of a car, the car shall, in the case of passenger and goods lifts, be considered to be suspended by its ropes or supported by its ram or rams with the maximum load evenly distributed over any area of the car platform equal to half the total area of the car platform. The load shall be considered static. Loadings to be assumed on platform.

(2) The structural parts of every car shall have a safety factor not less than as set out hereunder :—

Part of Car.	Minimum Factor of Safety.
Bow, Safety Gear Bearers, Members in Platform ..	6
Side Members and their Connexions to the Bow and the Platform	(i) In regard to direct tensional loads in the side members .. 6 (ii) In regard to stresses due to bending in side members .. 3

49. The roof of every car shall be so constructed as to provide a sound, even surface of as large an area as practicable and affording a firm foothold, and shall be of adequate strength to support safely the weight of such workmen as might require to go thereon and any equipment required to be placed thereon. Construction and strength of car roof

50. (1) Plain glass shall not be used in lift cars except to cover certificates, annunciators, signalling devices, and lamps. Mirrors in any lift car shall be mounted not less than 2 feet 6 inches from the car floor, and their aggregate area shall not exceed 3 square feet. Use of glass in lift cars.

(2) All lighting fittings shall be adequately secured in position and the aggregate area of the glass therein shall not exceed three square feet. No piece of glass therein shall exceed 1 square foot in area. Glass bowls shall not exceed 12 inches in diameter.

51. All car framing shall be of steel rigidly fixed to the car beam, and all car superstructures shall be rigidly fastened and braced to such car beam and floor framing. Car framing. Reg. 1936 (29).

52. The underside of every lift car shall be covered with sheet steel of thickness not less than 24 gauge or other durable fire-proofing material to eliminate risk of fire. Fire proofing underside of lift cars.

53. (1) The car of every lift not being a service lift or hand-power lift shall be adequately ventilated and shall be provided with effective means of electrical illumination. Lighting and ventilation in lift cars.

(2) Electric lighting and power facilities shall be provided on the top of the lift car by means of a batten holder and a 3-pin power outlet, and on the underside of the car by means of a bulk head fitting and batten holder, so as to illuminate adequately all equipment and parts of the lift.

54. Except as provided in clauses 55 and 56, every entrance to every lift car shall have a gate or door. Gates or doors to car entrances.

55. A gate or door need not be provided for the principal entrance of an attendant-controlled passenger lift. Principal car entrances—attendant-controlled passenger lifts.

- (a) if the control switch is fixed immediately adjacent to the principal car entrance or is so located that the attendant can readily extend one arm across such entrance;
- (b) if such principal entrance does not exceed 42 inches in width.

56. A gate or door need not be provided in the following cases :— Car entrance, goods lifts.

- (a) any goods lift car with only one entrance and with a maximum speed of 125 feet per minute;
- (b) service lifts;
- (c) hand-power lifts.

57. Where an approved levelling device is fitted, an attendant controlled lift may be so constructed as to be capable of moving when the enclosure door and car gate are open, if such movement be restricted to the levelling speed and to the limits of the levelling zone. Levelling with doors open.

Collapsible gates. Reg. 1936 (58).	58. Collapsible car gates shall be set back 3 inches from the car floor nosing (measured from the inside face of the gate) unless so arranged that a person's foot cannot protrude beyond the edge of the car floor nosing.
Operations of power-driven gates.	59. All power-driven car gates or doors shall be so constructed as to be capable of being operated manually.
Power on collapsible gates.	60. No collapsible gate shall be so constructed as to be capable of being opened by power other than hand power to a distance in excess of 12 inches.
Car gate contacts.	61. Car gate contacts in passenger-controlled lift cars shall be placed in a position inaccessible from inside the car.
Car platform toeguards.	62. Where levelling devices are used the car platform shall be provided with a substantial toeguard flush with its outer edge extending a sufficient distance below the car floor so that there shall be no opening into the lift well whilst the car is within the levelling zone.

## DIVISION 10.—ROPES, ROPE ATTACHMENTS, AND FITTINGS.

Diameter of pulleys, drums and sheaves. Reg. 1926 (28).	63. The ratio of the diameter of any sheave or drum used for hoisting or for counterweight ropes to the diameter of any rope used thereon shall be as follows:—  <div style="margin-left: 40px;"> Service lifts    ..    ..    ..    30 to 1  Hand power lifts ..    ..    ..    30 to 1  All other lifts    ..    ..    not less than 45 to 1 </div>
Anchoring of ropes to drums, cars, counterweights and overheads.	64. (1) The anchoring of a rope to a winding drum shall be effected by passing the rope through a hole in the drum and effectively clamping it so that the anchorage shall have a holding power of not less than twice the maximum static load on the rope.  (2) All ropes anchored to a winding drum shall have not less than one and a half turns on the winding drum when the car or counterweight has landed on its buffers or stops.
Grooving of drums. Reg. 1936 (52).	65. All drums shall be grooved to prevent any over-riding or jamming of lifting ropes.
Fastening of ropes.	66. The car and counterweight ends of every rope shall be fastened by spliced eyes or by individual tapered babbitted sockets
Materials.	67. Steel or iron car and counterweight ropes shall be used for all lifts.  Provided that chain may be used for hoisting a hand power goods lift the cubic capacity of which does not exceed 36 cubic feet, the maximum load of which does not exceed 5 hundredweight, and the car height of which does not exceed 4 feet.
Ropes, No. of.	68. Every suspended lift the maximum load of which exceeds five hundredweight, and every suspended passenger lift irrespective of load, shall be provided with at least four steel lifting ropes.  Provided that three ropes each having a diameter of not less than one-half of an inch may be used in the case of a passenger lift the maximum load of which does not exceed 1,200 pounds, and which is in any building used primarily for residential purposes and to which members of the public have not ordinarily access.  Provided further that a single rope may be used for a service lift.
Replacing of ropes. Reg. 1936 (24).	69. All controlling, lifting, or balance-weight ropes of any lift which show indications of splintering, stranding, or bunching so as to constitute a probable danger to persons using such lift shall be replaced forthwith.
Rope certificate required before installing. Reg. 1936 (26).	70. No steel lifting rope shall be installed in any lift unless and until a certificate setting forth the fact that such rope has been tested, and the breaking load of such rope has been filed in the office of the Chief Inspector.
Factor of safety of ropes. Reg. 1936 (27).	71. The factor of safety of ropes based on maximum static loads for all types of lifts shall be not less than 10.
Size of Ropes, minimum.	72. The minimum diameter of every suspension rope for cars and counterweights shall be three-eighths of one inch.
	73. Lift hoisting ropes shall not be spliced for purposes of extension or repair.
Compensating ropes.	74. If compensating ropes are used, means shall be provided to automatically stop the lift in the event of the compensating ropes fouling the compensating sheave or in the event of the compensating ropes stretching beyond a predetermined limit.

## DIVISION 11.—SAFETY GEAR.

75. (1) Every lift car shall be provided with effective safety gear. Safety gear.  
Reg. 1936 (31).
- (2) This clause shall not apply to—
- (a) Direct acting hydraulic lifts with a distance of travel not exceeding 18 feet. Reg. 1936 (31).
  - (b) Service lifts and hand-power lifts which are controlled from outside the lift-well enclosure and which are fitted with at least two lifting ropes.
  - (c) Lifts designed to carry a maximum load not exceeding 150 pounds.
76. (1) Instantaneous safety gear shall be so designed that in the event of the parting of the lifting ropes it will bring the car to rest without material additional travel, and quite independently of the overspeed action of the governor. Instantaneous safety gear.
- (2) Instantaneous safety gear may be used on timber backings where the maximum speed of the lift does not exceed 200 feet per minute.
- (3) Instantaneous safety gear operating on steel guides may be used on lifts the maximum speed of which does not exceed 125 feet per minute.
77. Lifts having a maximum speed exceeding 200 feet per minute shall be fitted with safety gear of such a pattern that in the event of failure of the lifting ropes or of the lift exceeding a predetermined maximum speed the car will be brought to an easy and gradual stop. Safety gear on lifts exceeding 200 f.p.m.  
Reg. 1936 (33).
78. With the exception of service lifts and hand power goods lifts, all lifts with a distance of travel greater than 18 feet shall be fitted with speed governing devices operating on the safety gear. Speed governing devices.  
Reg. 1936 (34).
79. The owner, lessee, or sole occupier of a building within or attached to which there is a lift fitted with safety gear shall cause such gear to be tested at least once in every six months by some person duly authorized by the Chief Inspector to conduct such tests. Testing of safety gear.
80. Lifts fitted with instantaneous safety gear shall be subjected to a drop test. All other types of safety gear shall be tested in such manner as an inspector may direct. Method of testing.
81. The owner, lessee, or sole occupier of a building within or attached to which there is a lift which is fitted with safety gear shall provide and keep a record book in the form set forth hereunder, in which particulars of every test shall be entered and signed by the person conducting such tests :—
- Name of owner, lessee, or sole occupier—  
Address—  
Type of lift—  
Result of test—  
Date of test—  
Test made by—  
(Signature of person conducting test)—
82. (1) Upon being satisfied that any person is qualified and fitted to do so, the Chief Inspector may issue a permit authorizing such person to conduct tests of safety gear. Particulars of testing.  
Reg. 1936 (37)
- (2) Every such permit shall expire on the 30th June next following the date of the issue thereof.
83. Any person who not being authorized by the Act or these Regulations so to do wilfully interferes with any safety appliance or safety gear or conducts any test of any safety gear shall be guilty of a contravention of these Regulations. Permits to test safety gear.  
Reg. 1936 (38).
- Interference with safety appliances.  
Reg. 1936 (39).

## DIVISION 12.—MACHINES.

84. (1) Save in the case of double-reduction machines the spider of the traction sheave and the spider of the worm wheel shall be constructed of one solid piece. Integral parts.
- (2) The use of direct spur gearing or direct friction drive on any lift is prohibited.
- (3) All lift machines shall be provided with efficient brake gear. Brake gear.  
Reg. 1936 (54).
- (4) Except in the case where three-phase alternating-current brakes are used, the voltage applied to any brake solenoid shall not be greater than 250 volts, one side of which shall be at earth potential.
85. Where shafts are stepped, that is where there is a variation in diameter, fillets shall be provided. The radius of a fillet shall be not less than half the difference in the diameters of the stepped portions of the shaft. Steps in shafts

- Keys and shafts. 86. Where the torque to the winding member from the final gear is transmitted through a shaft, two keys shall be fitted in each member of every service lift, lift of the hoist type, and hand power lift.
- Set screws and pins. 87. Set screws and pins shall not be used to transmit power
- Driving sheaves. 88. Machine driving sheaves shall not be over-hung.
- Worms and shafts in one piece. 89. Worms and their shafts shall be constructed in one piece.
- Speed of drum driven lifts. 90. No drum drive lift shall have a speed greater than 300 feet per minute.

## DIVISION 13.—COUNTERWEIGHTS.

- Counterweight sections. 91. Counterweight sections, whether carried in frames or not, shall be secured by two tie-rods passing through holes in all sections.
- Counterweights in separate wells not allowed. 92. No counterweight of any lift shall travel in any lift well other than that to which it belongs.

## PART II.—ELECTRIC LIFTS.

## DIVISION 1.—GENERAL.

- Compliance with S.E.C. regulations. 93. Unless otherwise provided for in these Regulations, the whole electrical installation of lifts and apparatus shall comply with the provisions of the Wiring Regulations of the State Electricity Commission of Victoria, published in the *Victoria Government Gazette* on the 28th day of May, 1934, or of any amendment thereof or substitution therefor.
- Circuit-breakers. 94. Each electric machine shall be provided with either an automatic circuit-breaker, or a main switch and fuses together with thermal overloads. In the case of a passenger-controlled lift the circuit-breaker shall have a time lag device.
- Position of circuit-breakers. 95. Circuit-breakers or main switches shall be fitted in an accessible position convenient to the entrance to the machine room.
- Operating circuit potentials. 96. The voltage applied to the following control circuits, viz.:—(a) main direction switch circuits; (b) safety circuits; (c) levelling control circuits; (d) hall and car button circuits shall not exceed 250, one side of which shall be at earth potential.
- Clearance round control board. 97. (1) The control board and other electrical apparatus of every lift shall be so located that there is a clear unobstructed passage at the back, front, and one side of the control board of not less than 2 feet from any live part and 18 inches from any projection, and at the front 2 feet from any projecting part.  
(2) The immediately preceding sub-clause shall not apply to any small wall-mounted controller which is hinged.

## DIVISION 2.—PASSENGER-CONTROLLED AND ATTENDANT-CONTROLLED LIFTS.

- Door lock wiring. 98. (1) The door interlock circuit shall commence at a terminal which is normally maintained at interlock circuit voltage above earth and which is protected by a cutout and shall terminate at terminals on the main control panel.  
(2) Terminals of the door interlock circuit shall be so separated from other terminals as to render accidental connexion between them unlikely and shall be plainly marked.  
(3) That section of the door interlock circuit which is taken to the car shall be run in separate flexible cables for lead and return which shall not contain the conductors of any other circuits.  
(4) The wiring to the main and contact locks shall be in separate conduits and shall not contain conductors of other circuits.  
(5) A door lock relay with contacts opening the neutral connexion of the lift control circuit when an enclosure door is open shall be fitted to all passenger-controlled lifts.  
(6) Nothing in this clause hereinbefore contained shall apply to any passenger-controlled lift for which rectifiers are installed with the lock circuit in the alternating current supply line.  
(7) The main lock and the auxiliary contact lock circuits may be in series, the main locks must be directly connected in the active or positive feed to the reversing-switch circuit and the lock relay coil must be in series only with the auxiliary lock contacts.  
(8) The minimum size of wire used for lock wiring shall be 3.029 gauge.
- Earthing of part of lift cars. 99. All conduit on cars and the metallic cases and covers of all electrical fittings in the car shall be earthed by an earthing conductor.
- Wiring of lift cars. 100. (1) Save as to the wiring to any annunciator, signal system or indicator which operates on a supply voltage not in excess of 40, electrical wiring on every car shall be in screwed conduit.

(2) Flexible cables used for connexion to lift cars shall be of the fire-resistant type.

(3) The securing of all flexible cables, conduit, and fittings shall be mechanically sound, with due regard to the conditions created in the running of the car, the operation of the safety gear, the landing of the car, and the need for the roof of the car being used for purposes of maintenance and inspection.

(4) Lighting, indicator, telephone, and other circuits of a like kind shall be kept entirely distinct and isolated from control current circuits.

(5) Junction boxes shall be of a totally enclosed metal type, and provision shall be made to isolate the lift control circuits from the lighting circuit and from the telephone indicator, or other low voltage circuits.

(6) Where metal or other form of wiring duct is used to carry the wiring of an installation, the lift door interlock circuit and other portions of the safety circuit shall be isolated entirely from all other circuits in separate conduits or ducts.

101. (1) Save as to the wiring to any annunciator signal system or indicator which operates on a supply voltage not in excess of 40, screwed conduit or armoured cable shall be used throughout the wiring of a lift, except that flexible conduit may be used for leading conductors into a fitting. Wiring, general.

(2) Where bushes are necessary at the termination of conduit, such bushes shall be mechanically strong and so shaped as to prevent any chafing or abrasion to the protecting covering of the conductors, and so secured that they will not move from their correct position.

(3) The master switch of any electrical installation in any building in which there is any lift shall be so arranged as to be incapable of cutting off the supply of electricity to any such lift.

(4) The switch for the lift or lifts in the building shall be clearly identified by having the word "Lift" or "Lifts" legibly and permanently inscribed adjacent thereto.

(5) All switches, circuit-breakers, and fuses used in connexion with a lift shall, unless identified by position in relation to the lift, be identified by appropriate word or words or identification number.

102. The control circuit shall be so arranged that the lift shall be inoperative in the event of an earth fault occurring in the circuit of any safety device. Earth faults on safety devices and circuits.

#### DIVISION 3.—OPERATING DEVICES.

103. Floor relays or other coils shall not be attached to the underside of the lift car platforms. Floor relays, position of.

104. The opening of every contact shall be positive and not dependent on the action of gravity or springs. Contact operation. Reg. 1936 (51).

105. The locking gear of every passenger-controlled lift shall conform to the following requirements:— Locking gear on passenger controlled lifts.

(a) Two separate locks, each of which is a combined mechanical and electrical lock, shall be fitted to each enclosure door and arranged to interlock each door mechanically and electrically.

(b) One of such locks shall be fitted in such a position as to be directly operated by the leading portion of the enclosure door when closing.

(c) Door latches shall be so designed that projection of fingers through the latch is prevented, and the hand hole of the latch shall be clear of the door surround when the door is fully opened.

(d) Door-closing mechanism shall be fitted to each enclosure door in order to prevent damage to locking equipment due to slamming. This may consist of an oil or air check device.

106. (1) Each enclosure door of a lift shall be interlocked with the control to ensure— Landing door control.

(a) That the lift-car cannot be started unless every enclosure door is closed and locked;

(b) That in the event of an enclosure door being opened the lift will come to rest; and

(c) In the case of a passenger-controlled lift, whether the lift is fitted with self-levelling devices or not, that an enclosure door may only be unlocked and opened, either from the car or from a landing, when the lift car is opposite such landing or under the control of the levelling device of the landing. The levelling device shall be so designed and installed that, in the event of a short circuit or earth fault occurring in the levelling control circuit, or of a mechanical breakdown in the levelling device occurring, the lift will not move out of the levelling zone.

(2) Inching levelling devices may operate with car gates closed and an enclosure door open, but only within the levelling zone and if controlled from inside the lift car.

(3) An enclosure door may be considered locked if it is so arranged that the locking operation is completed within the period that the car takes to move not more than 15 inches from any floor or landing.

Locking gear on attendant controlled lifts.

107. Every enclosure door of an attendant-controlled lift shall be fitted with one combined electrical and mechanical lock so arranged that the doors cannot be opened from outside the enclosure. The bottom floor enclosure door may be made capable of being opened from the outside with a special key when the car is opposite the door.

Main current limits.

108. (1) Every electric lift shall be provided with two separate and independent limit switches, namely, a control current limit switch and a main current tappet switch. Each shall automatically stop the lift machine independently of the normal operating devices in the car.

(2) Brake circuits shall be wired through the tappet switch on direct current resistance controlled installations.

(3) Drum drive lifts shall have main current limit switches integrated with the machine.

Slack rope switches.

109. Every lift shall be fitted with an automatic device so arranged that should one or more of the lifting ropes from any cause whatsoever become slack the lift control current shall immediately and automatically be cut off.

Controlling gear. Reg. 1936 (50).

110. (1) The electric controlling gear must operate without causing excessive strain in any part of the apparatus, and shall automatically slow down the car and cut off the control current at either limit of travel, and be arranged so that the rate of acceleration and of retardation shall be sufficiently gradual to avoid discomfort to passengers in the car. The electric switch gear must operate without excessive sparking.

(2) In every attendant-controlled lift the switch used in the lift car for normal operation of the lift shall automatically return to the "stop" position on the removal of the operator's hand.

Retarding devices enclosure doors.

111. Every bi-parting enclosure door having components which move vertically shall be provided with a speed-retarding device to operate when the leaves of the door upon closing are six inches apart, unless the bottom edge of the top leaf is provided with a suitable cushion to prevent injury to the hands of persons closing such doors.

Time delay device.

112. The controlling apparatus shall be so designed that—

(a) between the stopping of the lift car at any floor and its starting again there shall be a time interval at least sufficient to allow of the door or gate being opened; and

(b) the speed of the lift, when making a stop at any landing, shall not exceed 150 feet per minute.

Goods lifts control system.

113. (1) All goods lifts operated by push button shall have a control system similar to that required for passenger-controlled lifts. Such control system shall comply with the provisions of clauses 106 and 112.

Goods lifts locking equipment.

(2) Any passenger-controlled goods lift fitted with bi-parting enclosure doors the components of which move vertically shall have the two mechanical-electrical locks prescribed in paragraph (a) of clause 105.

Car stop devices.

114. Every passenger-controlled lift shall be provided with an emergency stop button or switch. Emergency stop buttons shall be clearly and distinctly marked and shall be placed in close proximity to the control buttons.

Maintenance safety switch.

115. Except in the case of a service lift or a lift which has fitted on the top of the car a slack rope switch, every lift shall be fitted with a stop switch wired in the control circuit and placed in a convenient position on the top of the car.

Totally enclosed switch gear.

116. All operating switch gear situated in lift wells shall be of the totally enclosed type.

Entrance doors, top of car.

117. The car of every lift not being a service lift shall be provided with an entrance door in the roof of the car of a size to permit ingress and egress of lift maintenance personnel.

Entrance doors, side of car.

118. Where there is a lift in an adjacent lift well without intervening enclosure, in addition to any door required by the immediately preceding clause, a door may be fitted in the side of the car adjacent to such adjoining car.

Entrance doors, general.

119. Every such door shall comply with the following requirements:—

(a) The door in the roof of the car shall be electrically interlocked, and such interlock and contact shall be effected by means of a bolt, which can be operated from inside and outside the car;

- (b) The door hinged in the roof of the lift car shall open outward, and be so fitted that it will remain open whilst in use and will not foul any portion of the lift enclosure;
- (c) Every side door shall be provided with a lock arranged so that it may be operated from the inside of the car by means of a removable key, and from the outside of the car by means of a non-removable handle;
- (d) Every side door shall be fitted with an electrical interlock of an approved design.

### PART III.—HYDRAULIC LIFTS.

#### DIVISION 1.—TESTING OF APPARATUS.

120. A certificate, given under the signature of the maker, that all apparatus subject to hydraulic pressure has been tested to three times the proposed working pressure per square inch, shall be furnished to the Chief Inspector before any such apparatus is put into use. Testing of apparatus.  
Reg. 1936 (65).

121. The whole of the machinery subject to hydraulic pressure shall be tested to twice the working pressure in the presence of an Inspector after erection and before being used. Pressure test, new installation.  
Reg. 1936 (66).

122. When any alteration, addition to, or replacement of existing cylinder or pipes is made, a similar test as required by the immediately preceding clause shall be made in the presence of an Inspector before any such cylinder or pipe is used. Pressure test after alterations.

#### DIVISION 2.—STOPS AND VALVES.

123. (1) Hydraulic machinery having rams working in cylinders shall, in addition to valves or tappet gear, be provided with permanent stops. Stops and valves.

(2) Overhead suspended lifts shall be fitted with tappet stop gear.

124. An independent screw-down pressure stop valve and exhaust cock shall be fitted to every service pipe. Independent stop valve and exhaust cock.  
Reg. 1936 (69).

125. A back-pressure valve shall be fitted to every service pipe. Back pressure valve.  
Reg. 1936 (70).

126. Every hydraulic cylinder shall be fitted with an air cock. Air cocks.  
Reg. 1936 (71).

127. Every lift shall have provision to prevent water from syphoning out of the cylinder thereof. Prevention of water syphoning out of cylinder.

128. The controlling valve shall cut off the water automatically at either limit of travel of the car. The valve must also cut off such water in the event of failure of the controlling handrope. Reg. 1936 (72).  
Reg. 1936 (73).

#### DIVISION 3.—ENCLOSURE DOORS AND CAR GATES.

129. Each enclosure door shall be electrically interlocked with the controlling handrope to ensure that the car cannot be moved unless every enclosure door is closed. Interlocking.

130. A car gate shall be provided at the principal entrance of a goods lift where access to the controlling handrope is provided on the outside of the lift enclosure. Car gates.

131. Each enclosure door of a passenger lift shall be capable of being unlocked and opened only from inside the car, except that the enclosure door, at the bottom floor, may be made capable of being opened from the outside by means of a special key when the car is opposite the door. Attendant operated passenger lifts.  
Special keys.

132. Each enclosure door of a goods lift shall be so constructed as to be capable of being opened from outside and inside the car when the car has arrived opposite the landing and has automatically unlocked the door. Mechanically locked doors.  
Reg. 1936 (75).

133. Every lift shall be fitted with a maintenance safety switch capable of rendering the lift inoperative, which switch shall be wired in the interlocking control circuit and placed in a convenient position on the top of the lift car. Maintenance safety switch.

### PART IV.—GOODS LIFTS NOT DIRECTLY DRIVEN BY ELECTRICITY OR HYDRAULIC POWER.

134. Every lift shall be fitted with efficient brake gear, which will automatically operate on the worm shaft when the machine is stopped. Efficient provision shall be made to prevent the car from descending except under power. Two limit stops, one controlled by the hand rope and the other an integral part of the lift gear, shall also be provided. Auxiliary and other power lifts.  
Reg. 1936 (77).

135. The use of direct spur gearing or direct friction drive in any lift is prohibited. Friction drive, &c.

136. Every drum drive lift shall be fitted with efficient gear to automatically stop the machine should the lifting ropes through any cause become slack. Drum winding lifts.  
Slack rope switches.  
Reg. 1936 (79).

137. Each enclosure door of every lift shall be interlocked with the control to ensure that the car cannot be moved unless all enclosure doors and car gates are closed. Interlocking.  
Reg. 1936 (80).

## PART V.—SERVICE LIFTS.

- Supporting structure.** 138. The supporting structure, including overhead beams of every lift, shall be so designed and constructed as to have a safety factor of not less than four.
- Beams directly supporting machine—maximum load 100 lbs.** 139. Where a lift has a maximum load not in excess of One hundred pounds, the beams directly supporting the machine or sheaves may be of sound timber so proportioned as to provide a safety factor of not less than eight.
- Machine rooms.** 140. The machine room of every lift shall be of such a size as will permit of free access to all parts of the machine and equipment located therein.
- Overrun for cars and counter-weights.** 141. (1) The top overrun for any car or counterweight and the bottom overrun for any counterweight shall be as set out in clause 31.
- Provided that, where structural difficulties prevent such overrun being obtained in the case of a car, such overrun may in such case be reduced to a distance equal to the sum of one-half of the appropriate overrun as set out in the said clause with the addition thereto of a distance equal to 2 per centum of such appropriate overrun for each 10 feet of travel of the car.
- (2) The bottom overrun for any car shall not be less than 1 foot, and when the car is landed there shall be a clearance of not less than 3 inches between the bottom of the car and the floor of the pit.
- Stops and buffers.** 142. Stops and buffers for the purpose of taking the impact upon the landing of the car or counterweight shall be provided for every lift.
- Lift well pits not extending to solid earth.** 143. Where the pit of a lift does not extend to solid earth, suitable provision must be made to withstand the effect of the car and counterweight falling as free falling bodies.
- Enclosures.** 144. Every lift well enclosure shall be complete from floor to ceiling.
- Transparent panels in enclosure doors.** 145. Where an effective device to indicate at each landing the position from time to time of the car is not provided, every enclosure door of a lift shall have a transparent panel not more than 36 square inches in area through which a view of the car may conveniently be obtained from a landing.
- Ropes.** 146. (1) No rope of any lift shall have a diameter of less than one-quarter of one inch.
- (2) The safety factor of the rope or ropes of every lift, based on the static load, shall be not less than six.
- (3) The car and counterweight ends of every rope shall be fastened by spliced eyes.
- (4) Ropes used for hoisting shall not be spliced for the purpose of extension or repair.
- Counter-weights.** 147. (1) Rod type counterweights may be used if the sections of each such counterweight are secured by at least two tie rods passing through holes in all sections and having locknuts at each end.
- (2) The guide shoes of every counterweight shall be fixed and adjusted so that the play in the direction of the width of the counterweight shall not be more than one-quarter of one inch.
- (3) Guide shoes for round steel guides shall have the sides extending at least three-eighths of one inch beyond the centre line of the guide.
- Materials for guides.** 148. Timber may be used for the guides of either the car or the counterweight.
- Car construction.** 149. (1) The car may be constructed of timber, but the bow shall be strapped to the platform with steel.
- (2) The construction of the bow and the roof of every car shall be such as to safely support a weight of not less than one hundred and fifty pounds.
- (3) The roof of every car shall be set back a distance of not less than 6 inches from the line of the platform nosing.
- (4) Every car shall have prominently and permanently displayed in it a notice stating the maximum load of the lift.
- Door interlocks.** 150. (1) Every enclosure door shall be fitted with one combined electrical and mechanical lock so installed that the car will not move until every enclosure door is closed.
- Limit switches.** (2) (a) Every electric lift shall be provided with limit switches which will automatically stop the machine by interrupting the power to the motor and applying the brake, and bring the car to rest within the limits of the top and bottom overrun without the car or counterweight landing.
- (b) Where a drum drive machine is used the limit switch gear shall be integrated with the machine.



## PART VI.—ESCALATORS.

## DIVISION 1.—GENERAL.

151. (1) The safety factor based on the static load of any truss or girder used in or in connexion with any escalator shall be not less than five. Strength of trusses or girders.

(2) Every such truss or girder shall be capable of safely retaining the steps and running gear in the event of the failure of the track system to retain the running gear in its guides.

152. The track arrangement shall be so designed as to prevent displacement of the treads and running gear in the event of the tread chain breaking. Track arrangement.

153. The angle of inclination of any escalator shall not be in excess of 30 deg. from the horizontal. Angle of inclination.

154. (1) An escalator shall not be less than 22 inches wide, nor more than 48 inches wide, such width to be measured between the balustrading at a vertical height of 24 inches above the nose line of the treads. Width of escalators.

(2) Every escalator having a width greater than 29 inches shall have a horizontal tread formation.

155. (1) Every escalator shall be provided on each side with a solid balustrade. On the escalator side such balustrade shall be smooth without depressed or raised panelling save that flush panels may be separated by metal mouldings of a thickness of not more than one-eighth of an inch and having bevelled edges. Balustrading.

(2) Glass panels shall not be used on the inside of any balustrade unless such glass is armour-plated glass of a thickness of not less than one-quarter of one inch and no individual piece thereof has a total area exceeding six square feet.

(3) Every balustrade shall be equipped with a handrail moving at the same speed and in the same direction as the treads.

156. The treads and landings of every escalator shall be composed of such a material as will afford a secure foothold. Treads and landings.

## DIVISION 2.—SAFETY REQUIREMENTS.

157. No electric motor shall be used to drive two or more escalators unless such escalators are situated side by side and are operated as a single unit.

158. The safety factor for chains used in any escalator shall be as follows:— Chains.

(a) for a chain composed of thoroughly annealed cast steel links—not less than twenty; and

(b) for any other chain—not less than ten.

159. Every escalator shall be provided with an electrically-released mechanically-applied brake which shall stop the escalator automatically whenever the power supply is cut off. Automatic brakes.

160. (1) An emergency stop button or other type of switch capable of opening the power circuit and causing the escalator to stop shall be provided at the top and bottom landing of each escalator. Stop button or switch.

(2) Every such stop button or switch shall be kept accessible to the public and shall be permanently and prominently marked "Escalator stop button" or "Escalator stop switch" (as the case may be).

(3) No escalator shall be capable of being set in motion by the operation of any such stop button or switch.

161. No starting button or switch shall be placed in any position which is accessible to the public unless either it is of the key-operated type or it is enclosed in a box which can be opened only with a key. Starting button or switch.

162. Every escalator which is designed to operate in the ascending direction only shall be equipped with a safety device which will in the event of the accidental reversal of the escalator cause the power to be cut off. Safety device for one-way escalators.

163. Every escalator which is designed to move in either an ascending or descending direction shall be equipped with a like safety device which will cause the power to be cut off only in the event of the accidental reversal of the escalator when it is set to operate in the ascending direction. Safety device for reversible escalators.

164. Every escalator shall be equipped with a safety device which will cause the power to be cut off— Safety device for excessive speed or broken tread chain.

(a) whenever the speed of the escalator exceeds the running speed by 40 per centum; or

(b) in the event of the breaking of any tread chain.

- Tension weights.** 165. Every escalator which is equipped with tightening devices operated by tension weights shall be provided with means whereby such weights shall be retained in the escalator truss in the event of the breaking or other failure of any rope.
- Polyphase A.C. motors.** 166. Every escalator operated by a polyphase alternating current motor shall be provided with a device which will prevent the motor being started whilst the phase rotation is in the wrong direction or whilst there exists a failure of any phase.
- Machine room.** 167. The machine room of every escalator shall be of such a size as will permit of free access to all parts of the machines and equipment located therein and shall be provided with effective electrical illumination, the light or lights to be controlled from a position adjacent to the entrance door.

## PART VII.—POWER LIFTS OF THE HOIST TYPE.

- Supporting structure and runways.** 168. (1) The supporting structure, including overhead beams, shall be so designed and constructed as to provide a safety factor of not less than four.  
(2) Hoist runways shall be provided with permanent stops to prevent overtravel.
- Hoist machines.** 169. (1) The hoist machine shall be fitted with effective brake gear.  
(2) Over-travel limit switch gear shall be attached to all hoist machines to prevent overwinding in each direction of travel.  
(3) The use of friction or clutch drive is not permitted.  
(4) Hoist machines operated by electric current shall be fitted with an isolating switch placed in an easily accessible position.  
(5) Hoist machine winding drums shall be grooved to prevent over-riding of the lifting ropes.  
(6) Means shall be provided for easy access to the hoist machine.  
(7) Every hoist machine shall have attached thereto a notice stating the maximum load.  
(8) A notice indicating the maximum load of the hoist shall be permanently and prominently displayed at each point from which the hoist can be operated and in such a position in relation to every opening through which the hoist operates as to be clearly visible to any person using the hoist.
- Size of ropes, drums, pulleys, &c., and rope replacements.** 170. (1) The minimum ratio of the diameter of a pulley, drum, or sheave to the diameter of the rope used on it shall be not less than as is set out in the following table:—

Tensile Breaking Strength of Wire.	6/19.	6/24.	6/37.
80/100 tons per square inch ..	23D	19D	16½D
100/120 tons per square inch ..	27D	22D	19D

D = Diam. of wire rope.

- Safety factor.** (2) The factor of safety of lifting ropes based on the maximum static load shall be not less than six.
- Rope replacement.** (3) All lifting ropes which show indications of splintering, stranding, or bunching so as to constitute a probable danger to any person shall be replaced forthwith.
- Electrical installation and operating devices.** 171. (1) The whole electrical installation shall comply with the provisions of the Wiring Regulations of the State Electricity Commission of Victoria, published in the *Government Gazette* on the 28th day of May, 1934, or of any amendment thereof or substitution therefor.  
(2) Where control by push buttons, or other control, is provided on more than one floor, such control shall be electrically interlocked so that the hoist machine cannot be operated from more than one floor simultaneously.  
(3) A suitable stop switch shall be provided at each point of hoist control.  
(4) Where a pendant cord is used to operate a control switch, the direction in which the hoist will travel upon such switch being operated shall be plainly marked on the cord.  
(5) Where control is provided by a pendant control box, such box shall be earthed and be provided with a stop switch.  
(6) The runway of every hoist operated by electricity shall be earthed.
- Guarding hatchways and door openings.** 172. All hatchways and openings in enclosed wells shall be adequately enclosed and guarded.
- Platform designed to carry the load.** 173. (1) No hoist shall have permanently attached to the hook thereof any platform or receptacle designed for the purpose of carrying the load.
- Riding in lifts of hoist type.** (2) No person shall ride on any lift of the hoist type.

174. On the bottom landing safeguards shall be provided to <sup>Protection at</sup> prevent persons passing under the load whilst the hoist <sup>bottom landing.</sup> machine is in use.

175. No hoist shall be used in or in connexion with any <sup>No exterior hoists</sup> building save through an opening or openings in a floor or unless enclosed. floors thereof or in an enclosed well.

#### PART VIII.—HAND-POWER GOODS LIFTS.

176. No lift having a cubic capacity exceeding thirty-six <sup>Maximum capacity.</sup> cubic feet or a height exceeding 4 feet or designed to carry a load exceeding five hundredweight shall be worked by hand power.

177. The supporting structure, including the overhead steel <sup>Overhead</sup> beams, shall be so designed and constructed as to provide for <sup>construction.</sup> a safety factor of not less than four.

178. The machine room and machine enclosure shall be so <sup>Machine rooms and</sup> designed as to provide access to all parts of the machine. <sup>access to same.</sup>

179. (1) The machine shall be fitted with an efficient brake <sup>Machines.</sup> so designed as to be automatically applied except when the machine is in operation.

(2) Set screws and pins shall not be used to transmit power.

180. The lift enclosure shall be complete from floor to ceiling <sup>Enclosures.</sup> for the full travel of the car and counterweight.

181. Every lift shall be fitted with enclosure doors so <sup>Enclosure doors and</sup> designed as to close automatically on the car leaving any <sup>locking gear.</sup> opening, and such doors shall be fitted with mechanical locks so installed as to prevent the opening of any enclosure door whilst the car is away from any opening in the enclosure.

182. (1) The lifting ropes or chains shall have a safety <sup>Ropes and chains.</sup> factor of not less than six.

(2) No rope of any lift shall have a diameter of less than one-quarter of one inch.

183. Timber may be used for guides of cars and counter- <sup>Guides.</sup> weights.

184. Every car shall have permanently and prominently <sup>Load Notices.</sup> displayed therein a notice stating the maximum load.

#### PART IX.—HAND-POWER GOODS LIFTS OF THE HOIST TYPE.

185. The supporting structure, including the overhead beams, <sup>Supporting structure.</sup> shall be so designed and constructed as to provide for a safety factor of not less than four.

186. Means shall be provided for easy access to the lift <sup>Access to machine.</sup> machine.

187. The lift machine winding gear shall be fitted with <sup>Winding gear and</sup> an efficient brake gear, or other self-sustaining means designed <sup>brake.</sup> to be automatically applied except when the machine is in operation and the winding gear shall have a safety factor of not less than four.

188. No lift shall be used or operated until a certificate <sup>Test certificate.</sup> given under the signature of the maker, that the winding gear has been tested to 50 per centum over the maximum load and that subsequently all the parts thereof have been inspected and found to be free from defect, has been furnished to the Chief Inspector.

189. (1) The lifting ropes or chains shall have a safety <sup>Ropes and chains.</sup> factor of not less than six.

(2) No rope of any lift shall have a diameter of less than one-quarter of one inch.

190. All hatchways and door openings in enclosed wells <sup>Guarding hatchways</sup> shall be adequately enclosed and guarded. <sup>and door openings.</sup>

191. No lift shall have permanently attached to the hook <sup>Platforms and boxes</sup> thereof any platform or receptacle designed for the purpose <sup>designed to carry</sup> of carrying the load. <sup>loading.</sup>

192. On the bottom landing safeguards shall be provided to <sup>Protection at</sup> prevent persons passing under the load whilst the hoist is in <sup>bottom landing.</sup> use.

193. No hoist shall be used in or in connexion with any <sup>No exterior hoists</sup> building save through an opening or openings in a floor or unless enclosed. floors thereof or in an enclosed well.

And the Honorable Thomas Tuke Hollway, His Majesty's Minister for Labour for the State of Victoria, shall give the necessary directions herein accordingly.

C. W. KINSMAN.  
Clerk of the Executive Council.

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