

## **BOMBAY LIFT RULES, 1958**

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## **BOMBAY LIFT RULES, 1958**

In exercise of the powers conferred by Section 12 of the Bombay Lifts Act, 1939 (Bom. X of 1939), and in supersession of the Bombay Lifts Act, 1940, the Government hereby makes the following rules, namely:-

### **1. Short title.- :-**

(a) All lift wells intended for the reception of lift shall be exclusively reserved for that purpose and shall not be used for any other purpose.

(b) Lift-wells and all equipments and apparatuses fixed therein shall be rendered fire proof to the greatest possible extent.

(c) The inner surface of the lift-well and its enclosure facing any lift-car entrance shall, so far as practicable, be kept smooth and flush devoid of projections or recesses. Where any projections or tops of the recesses cannot be rendered flush, shall be leveled on the underside to an angle of not less than 60 degrees from the horizontal, by means of metal plates, cement rendering or other fire-resisting materials.

(d) Where a lift-car levelling device is operative with the lift-car gate open such interior surfaces shall always form a smooth and flush surface below each landing level.

(e) Sufficient space shall be provided between the guides for the car and the said walls or the lift-well enclosure to allow safe and easy access to the parts of the safety gear for their maintenances and repairs.

(f) In the case of lift-well which is common to more than one lift and where the lift-car or the counterweight of one lift is working in juxtaposition to the lift-car or the counterweight of another lift, such lift-cars or counterweights shall be guarded carefully and adequately in order to protect persons working in the lift-well or on the lift-cars from accidental contact with such cars or counterweights in any part of their travel.

(g) In case of a completely enclosed lift-well a notice with the word

"Lift" shall be placed on the outside of each landing door.

## **2 \Definitions.-**

. In these rules;-

(1) "Act" means the Bombay Lifts Act, 1939:

(2) "bottom clearance" means:-

(i) in relation to the lift car, the space, including the space occupied by any buffer compression, which the car-floor can travel below the level of the bottom lift-landing until the full weight of the loaded lift-car rests on the buffers.

(ii) in relation to the counterweight, the space, including the space occupied by any buffer compression, which the counter- weight can travel below the position it occupies when the car- floor is level with the lift-landing until the full weight of the counter-weight rests on the buffers:

(3) "bottom over-travel" means the distance provided for the carfloor to travel below the level of the bottom lift- landing when the lift-car is stopped by the normal terminal stopping device:

(4) "buffer" means a device designed to absorb or reduce the impact of the lift-car or a counter-weight at the extreme bottom limit of travel:

(5) "call indicator" means a device for indicating to the lift operator the lift landing from which calls have been made:

(6) "car apron" or "landing apron" means a protective screen attached to the under-side of the car-plantform or lift or landing, as the case may be, to prevent an object from being trapped between the car-plantform and the lift-landing:

(7) "car enclosure" means the enclosing body work of the lift-car which comprises the sides and roof and is built upon the carplantform:

(8) "car-floor" or "car-platform" means that part of the lift-car which forms the floor and directly supports the load:

(9) "car-frame" means the supporting frame or sling to which car platform safety-gear, guide shoes and suspension ropes are attached:

(10) "car levelling device" means an automatic device designed to cause the lift-car to move at a reduced speed within a limited zone and to stop substantially level with the lift- landing independently of varying loads:

(11) "car-switch control" means a method of control whereby the movement of the lift-car is directly under the control of the lift operator by a switch in the lift car:

(12) "compensating ropes or chains" means the ropes or chains suspended from the car-frame or counter-weight to counterbalance the weight of the suspension ropes:

(13) "contract load" means the load specified in the approved plans and Form "A";

(14) "contract speed" means the speed specified in the approved plans and Form "A" and equivalent to the means of maximum speeds attained by the lift in any part of its travel in the up down directions, with contract load in the lift car;

(15) "control equipment" means the components of a lift by means of which motion, direction of a travel, speed and stopping are controlled:

(16) "Controller" means a device or group of devices comprising the principal components of a control equipment:

(17) "counter-weight" means a weight or series of weights to counterbalance the weight of the lift-car or part of the load thereof:

(18) "drum drive" means a method of transmitting power to the suspension ropes by means of a "winding drum";

(19) "dual control" means a method of alternative automatic or car-switch control, so arranged that either may be used but not at the same time;

(20) "electro-mechanical brake" means a brake consisting of friction shoes applied to a brake drum by means of springs or weights and released electrically;

(21) "emergency stop switch" means a device designed to cut off power to the control circuit to cause the lift-car to stop;

(22) "final or ultimate limit switch" means an emergency stop switch designed to stop the lift-car in the event of excessive over-

travel:

(23) "flexible guide clamp safety gear" means a safety gear in which the action on the guides is effected by means of rollers or cams applied gradually in an emergency;

(24) "floor selector" means a mechanism which forms part of the control equipment in certain automatic lifts and is designed to operate controls which cause the lift-car to stop at the required floor;

(25) "Form" means a Form appended to these rules:

(26) "gate closer" or "door closer" means a device which closes a gate or door, as the case may be, automatically;

(27) "gate lock" or "door lock" means a lock for application to a lift-landing or lift-car door or gate, as the case may be, and so designed that the door or gate, as the case may be, may only be opened when the lift-car is in the landing zone or by a special key;

(28) "gate operator" or "door operator" means a power operated device for opening and closing gates or doors, as the case may be:

(29) "gate switch", "gate contact door"] or "switch door contact" means a switch operated by the movement of a gate or door, as the case may be:

(30) "gradual wedge clamp safety gear" means a safety gear in which the action on the guides is effected by a screw and wedge or similar device applied gradually in an emergency;

(31) "guides" means the members used to guide the movement the lift-car or counter weight;

(32) " guide bracket" means the part of a guide fixing which carries the guide seating or guide clips and bolts serves to secure them to the building or structure:

(33) "Guide fixing" means an assembly of parts comprising a guide bracket carrying a guide-seating or guide clips and bolts and serving to secure a car guide or counter- weight guide to the building or structure:

(34) "guide shoes" means an attachment to the car-frame or counter weight for the purpose of guiding the lift-car or counterweight;

(35) "independent counter-weight" means a counter-weight intended to balance part of the weight of the lift-car and supported independently or the left machine:

(36) "instantaneous safety gear" means a mechanical device in which the action on the guides is effected by means of serrated rollers or came applied instantaneously in an emergency:

(37) "landing gate" or "landing door" means a hinged or sliding portion of a lift-well enclosure controlling access to the lift-car at a lift-landing:

(38) "landing zone" means the space between the positions not more than 15 inches above and not more than 15 inches below a lift-landing:

(39) "lift pit" means the space in the lift-well below the level of the lowest lift-landing served:

(40) "left well" means the unobstructed space within a lift-well enclosure provided for the vertical movement of lift- car and any counter-weight including the lift-pit and the space for top-clearance;

(41) "lift well enclosure" means any structure which separates the lift-well from its surroundings;

(42) "moveable floor" means a lift-car floor or plan form arranged to operate a switch under the influence of the weight thereon:

(43) "normal terminal limit" means a switch arranged to open the control circuit and to stop the lift-car automatically within the limits over-travel:

(44) "overspeed governor" means an automatic device which brings the lift car or counter weight to rest by operating the safety in the event of the speed in a descending direction exceeding a pre-determined limit:

(45) "safety gear" means a mechanical device attached to the car-frame or counter-weight to stop and to hold the lift-car or counterweight to the guides in the event of free fall or if governor operated or overspeed in descending direction;

(46) "schedule" means the Schedule appended:

(47) "section" means a section of the Act:

(48) "slack rope switch" means a device incorporating a switch used In a drum driven lift for automatically cutting off the power to the control circuit in case all or any of the suspension ropes becomes slack:

(49) "top over-travel" means the distance provided for the car-floor to travel above the level of the top lift-landing when the lift-car is stopping device;

(50) "traction drive" or "V-sheave drive" means a method of transmitting power to the/suspension ropes by means of a sheave;

(51) "trailing cable" means a flexible cable providing electrical connection between the lift-car and a fixed point or points:

(52) "top clearance" means-

(i) In relation to the lift-car, the space which the car-floor can travel above the level of the top lift-landing without any part of the lift-car or its attachment coming into contract with any overhead steel work or other obstruction;

(ii) in relation to the counterweight, the space which the counter-weight can travel above the position it occupies when the car-floor is level with the bottom landing served without any part of the counterweight assembly coming into contact with any overhead steel work or other obstruction:

(53) "travel" means the distance between the bottom and top lift landings served:

(54) "winding drum" means a drum forming part of a lift machine round which the suspension ropes are wound and to which they are attached.

### **3. Permission for installing lift or for making additions or alterations or lift installed.- :-**

(a) Lift-pits shall be soundly constructed and maintained in a dry and clean condition. Where necessary, provision shall be made for permanent drainage.

(b) Every lift-pit shall have a solid base, unless the floor of one pit is sufficiently strong to withstand successfully the impact of a full loaded lift-car descending at the gover-tripping speed.

### **4 \Licence for working lift.-**

(1) Every owner of a place who is permitted to install a lift in such place shall, within one month after the lift is installed, deliver or send or cause to be delivered or sent to the Inspector of Lifts, notice in writing of such installation and shall make an application to him for a licence for working the lift. The notice and the application shall be in Form "B".

(2) On receipt of an application under sub-Rule 91) the Inspector of Lifts shall, after making such inquiries as he may deem necessary, forward the application with his remarks to the Electrical Engineer to Government who may, subject to the provisions of Rule 5, either grant or refuse the licence. The licence shall be in Form "C".

**5. Licence for working lift not to be granted unless requirements laid down in the Schedule are complied with.-**

**:-**

(a) All landing opening shall be protected by gates or doors which shall extend the full height and full width of the landing opening. These openings shall in no case be less than 2 feet 3 inches clear in width when the gates or doors are full opened.

(b) All landing gates shall be at least 7 feet clear in height and the top tract of the gate or door shall not obstruct the entrance to the lift-car. They shall be, if collapsible, of a close picket type and no openings exceeding 2-1/2 inches in width shall be permitted between pickets or verticals when the gate is fully extended.

(c) In the case of lifts serving residential premises, if collapsible, landing gates are used, they shall be provided with overlapping or folding shutters.

(d) The landing gates or doors shall be securely fixed on metallic structures or frames.

(e) The landing gates or doors of every lift-well shall be placed as close to the edge of the lift-well as practicable, and in no case shall the distance between the lift-well side of the gate or door and the edge of the lift-well exceed 1-1/4 Inches. In no way shall the lift-way face of the landing gate or door project into the lift-way beyond the edge of the landing still.

(f) The openings for the landing gate or doors shall not be wider than the lift-car.



(g) The landing gates doors which are self-closing shall be equipped with safety devices preventing injury by trapping persons while entering or leaving the lift-car.

(h) All landing gates and doors and their tracts shall be capable of withstanding a thrust of 75 lbs. applied normally at any point excepting vision panels, without causing permanent deformation or without being sprung from their guides.

(i) When the landing doors are solid, they shall be fitted with vision panels which shall be of grill work, the openings of which shall not be greater than one inch. In swing type doors the vision panels shall be so located that lift-operator can have convenient vision when opening tile door from the lift-car side.

## **6 \Terms on which lifts shall be worked.-**

. Every lift shall be worked subject to the following terms:-

(i) The licensee shall maintain the lift and its installation in accordance with the requirements laid down in the Schedule to be Bombay Lift Rules, 1958 .

(ii) The licensee shall forthwith report to the Inspector of Lifts any defect in the working of the lift.

(iii) The licensee shall not carry out any additions or alterations to a lift installation without obtaining permission in that behalf from the Inspector of Lifts as required by the provisions of Section 7A and rule

(iv) The licensee shall not use or cause the lift to be used which is not in a safe working condition.

(v) Unless the licensee, in the opinion of the inspector of Lifts, has suitable means for the satisfactory maintenance of the lift, the licensee shall entrust the maintenance of the lift and its installation either to the manufacturer of the lift or to a firm or company of electrical and mechanical engineers of at least five years standing who in the opinion of the Inspector of Lifts, are competent and are approved by him for such work.

(vi) Every person, firm or company entrusted with the maintenance of the lift and its installation under clause (v) shall properly actuate all the safety devices while the lift is in use and report to the owner of the lift immediately any defect found in the installation.

(vii) If any part, enclosure, gate or fastening of a lift is damaged or broken, the licensee shall immediately repair and put it in good working order. He shall keep the safety gears in good order and all parts of the lift and safety gear clean and free from rubbish, dust or dirt. The licensee shall not weld any broken or damaged parts which are subject to tension, torsion or bending or parts on which the lift-car is supported.

(viii) The licensee shall forthwith replace all controlling, lifting and balance weight ropes which indicate excessive wear, splintering, stranding or bunching.

(ix) The licensee shall enter every repair and alteration to the lift in a log book, which shall be maintained in each lift installation.

(x) The licensee shall remove every fault in the lift installation reported by the lift-operator, immediately.

(xi) The licensee shall see that the following work is carried out by his contractor at least once a month and the result entered in the log book by the contractor, namely;-

(i) Cleaning and lubricating the guides,

(ii) Examining the ropes and their attachments,

(iii) Examining the safety devices,

(iv) Examining and lubricating the door locks,

(v) Lubricating all moving parts,

(vi) Examining the worm and the gear,

(vii) Whenever the lift is out of order, the licensee shall see that all the landing gates or doors are securely locked and the users of the lift are informed by a notice posted at any conspicuous place at each floor that the lift is out of order.

(viii) No person shall wilfully interfere with any mechanism of the lift installation.

(ix) No person below the age of 18 years shall be engaged as a lift operator. The lift operator shall be a person who is mentally and physically fit and trained in the correct operation of the lift.

## **7. Form of notice and order under Section 8.- :-**

(a) Lift-cars shall be enclosed on all sides by means of the cage

body, gates or doors and such enclosures shall be at least 6 feet 6 inches clear in height and sufficiently strong to withstand a thrust of at least 75 lbs. applied normally at any point without deformation and it shall be so secured to the car-floor and lift-car frame that it cannot work loose or become displaced in ordinary service. There shall be provided a roof solid or perforated capable of supporting a weight of a man weighing 150 lbs. Any performance in the roof shall reject a one-inch diameter sphere.

(b) Open work panels within a height of 6 feet from the lift-car and glass shall not be used for the enclosure of a lift-car. The floor of the lift-car shall be of a smooth and non-slippery surface.

(c) Every lift shall be provided with an alarm signal operated by a push button which shall be fixed in a conspicuous position in the lift-car and clearly marked. The alarm shall be wired from electric mains other than the lift mains and shall be clearly audible outside the lift well in order to obtain assistance in case of a break-down or failure between the floors.

(d) Every lift installation controlled by an operator shall be operated by a removable handle or key which shall remain at all times in the possession of the operator. The handle or key shall automatically return to the off position and lock there automatically return to the off position when pressure is removed.

(e) Every lift-car shall be provided with a light to give sufficient illumination on the floor and such light shall be left burning during the whole time the lift is available for use. Such light shall be on a circuit independent of the lift circuits and the controlling switch for light shall be in the machine room close to the main switch for the machine.

(f) The approach to the landing gate on each floor shall be kept lighted during the whole time the lift is available for use at night, and during the day time, if so required by the Inspector of Lifts.

(g) Lift-car having solid enclosure and doors and lift-cars installed in totally enclosed lift-wells shall be provided with adequate ventilation by means of an electric fan which shall be connected on electric mains other than the lift mains and shall always be maintained in working condition.

(h) A door or gate shall be provided at each entrance of the lift-car. Such doors or gates shall guard the full height and width of the lift-

car opening and shall be sufficiently strong to withstand a thrust of 75 lbs. applied normally at any point without permanent deformation and without their being sprung from their guides. Where gates are used they shall be of close picket type and no opening exceeding  $2\frac{1}{4}$  inches in width shall be permitted between the verticals when the gate is fully extended.

(i) Each door or gate shall be provided with an electric switch which shall prevent the lift-car from being started or kept in motion unless the door or gate is properly closed. Such switches shall be opened positively when the door or gate is opened.

Note.- This requirement prohibits the practice of short circuiting the lift-car door or gate switch to enable an unoccupied lift-car of an automatically operated lift to be called at a landing with the lift-car door or gate open.

(j) In the case of lift-cars having more than one entrance, the lift-car gates shall be provided with electro-mechanical interlocking device so that the gate can be opened only at the landing at which access to the lift-car is provided.

(k) In the case of lift-cars having solid doors, every door shall be provided with wide vision panels which shall be of grill work the openings of which shall not greater than one inch.

(l) Lift-Car platforms shall be of framed construction and shall be designed on the basis of contract load evenly distributed. Platforms for goods car shall be designed to suit the particular conditions of loading. The minimum factor of safety shall be 5 for steel and 8 for timber.

(m) Every lift-car shall be provided with an emergency exit which shall be fitted into the roof of the car in case where one lift operates in the lift-well or where more than one lift is installed in a lift-well, it shall be provided in the side adjacent to the adjoining lift-car. Where conditions will not allow the provision of an emergency exits, the safety-gear shall be of a type that can be released by hoisting up the lift-car.

(n) Top exits shall open outwards and shall be clear of all gear or equipment mounted on top of the lift-car.

(o) All emergency exit doors or panels shall be provided with an electric switch to prevent the lift from being operated when doors

or panels are opened or removed.

(p) A plug socket shall be provided on top of the lift-car for a hand lamp for use by persons working thereon.

(q) When lift-car levelling devices are used, aprons shall be fitted to the car-floor to ensure that no space is permitted between the threshold and the landing whilst the lift-car is being leveled to a floor.

## **8 \Report of accidents.-**

. Notice of accident required to be given under Section 9 shall be in Form "F". Such notice shall be given within 24 hours of the occurrence of the accident.

## **9. Unused lifts.- :-**

The contract load in relation to the lift- car floor area shall not be less than the figures shown in graphs 1 and 1A.

## **10 \Saving.-**

. Notwithstanding the supersession of the Bombay Lifts Rules, 1940, any permission granted or licence issued or any order made, or anything done or any action taken under those rules shall be deemed to have been granted, issued, made, done or taken under the corresponding provisions of these rules.

### SCHEDULE 1

#### SCHEDULE

### **1. Lift wells :-**

(a) All lift wells intended for the reception of lift shall be exclusively reserved for that purpose and shall not be used for any other purpose.

(b) Lift-wells and all equipments and apparatuses fixed therein shall be rendered fire proof to the greatest possible extent.

(c) The inner surface of the lift-well and its enclosure facing any lift-car entrance shall, so far as practicable, be kept smooth and flush devoid of projections or recesses. Where any projections or tops of the recesses cannot be rendered flush, shall be leveled on the underside to an angle of not less than 60 degrees from the horizontal, by means of metal plates, cement rendering or other fire-resisting materials.

(d) Where a lift-car levelling device is operative with the lift- car gate open such interior surfaces shall always form a smooth and flush surface below each landing level.

(e) Sufficient space shall be provided between the guides for the car and the said walls or the lift-well enclosure to allow safe and easy access to the parts of the safety gear for their maintenances and repairs.

(f) In the case of lift-well which is common to more than one lift and where the lift-car or the counterweight of one lift is working in juxtaposition to the lift-car or the counterweight of another lift, such lift-cars or counterweights shall be guarded carefully and adequately in order to protect persons working in the lift-well or on the lift-cars from accidental contact with such cars or counterweights in any part of their travel.

(g) In case of a completely enclosed lift-well a notice with the word "Lift" shall be placed on the outside of each landing door.

## **2. Lift-well enclosure :-**

(a) Lift-wells and wells for the counterweight if located independently of the lift-well shall be adequately protected by means of suitable enclosure work which shall be extended on all sides from floor to ceiling.

(b) In all counterweight wells located independently of the main lift-well, suitable access shall be provided for the inspection, maintenance and repairs to counterweights, wire ropes and their anchorages, guides and guide supports.

(c) All such doors giving access to such counterweight wells shall be provided with electro-mechanical locking devices.

(d) Where wire grille or similar construction is used, the mesh or opening shall be greater than 1-1/4 inches and the lift way enclosure shall be of sufficient strength to resist accidental from users of the stair-case or adjoining floors.

(e) Where the clearance between the lift-well enclosure, if of an open type, and moving or moveable part of the lift equipment or apparatus is less than two inches, the openings in the enclosure shall be further protected by settings of square mesh not greater than one-half inch and of wire not smaller than 20 S.W.G.

(f) No counterweight shall be allowed to travel in any lift-well or part of any lift-well other than that to which it belongs.

(g) Where lifts are installed in totally enclosed wells, there shall be

provided a device showing at each floor the position of the lift-car in the well.

(h) Glass shall not be used for lift-well enclosure.

(i) The lift-well enclosure on the sides facing any lift-car entrance shall, so far as is practicable, be not more than one inch from the edge of the lift-car platform.

(j) The distance between the edge of any landing sill and the sill of the car platform shall not be more than one inch.

(k) No automatic fire door or shutter which operates by means of a fusible link or otherwise due to the action of heat, shall be allowed in any landing opening or the lift-way enclosure of any lift, if such opening gives access to any exist from the building.

### **3. Lift-pits :-**

(a) Lift-pits shall be soundly constructed and maintained in a dry and clean condition. Where necessary, provision shall be made for permanent drainage.

(b) Every lift-pit shall have a solid base, unless the floor of one pit is sufficiently strong to withstand successfully the impact of a full loaded lift-car descending at the gover-tripping speed.

### **4. Top and bottom clearances :-**

(a) The top and bottom clearance for the lift-car shall not be less than those indicated in the following table:-

#### **TABLE**

(b) The top clearance for the counterweight shall be 6 inches greater than the bottom clearance actually provided for the lift- car for contract speed up to 200 feet per minute.

(c) The bottom clearance for the counterweight shall not be greater than one-half the top clearance actually provided for the lift-car.

(d) When the lift-car rests on full compressed buffers there shall be at least 2 feet clearance vertically between the lowest projection of the under side of the car-platform and any obstruction in the pit exclusive of the buffers and buffer supports.

(e) When the lift-car crosshead is 2 feet from the nearest obstruction above it no projection on the lift-car shall strike any

part of the overhead structure.

## **5. Landing gates and doors :-**

(a) All landing opening shall be protected by gates or doors which shall extend the full height and full width of the landing opening. These openings shall in no case be less than 2 feet 3 inches clear in width when the gates or doors are full opened.

(b) All landing gates shall be at least 7 feet clear in height and the top tract of the gate or door shall not obstruct the entrance to the lift-car. They shall be, if collapsible, of a close picket type and no openings exceeding 2-1/2 inches in width shall be permitted between pickets or verticals when the gate is fully extended.

(c) In the case of lifts serving residential premises, if collapsible, landing gates are used, they shall be provided with overlapping or folding shutters.

(d) The landing gates or doors shall be securely fixed on metallic structures or frames.

(e) The landing gates or doors of every lift-well shall be placed as close to the edge of the lift-well as practicable, and in no case shall the distance between the lift-well side of the gate or door and the edge of the lift-well exceed 1-1/4 Inches. In no way shall the lift-way face of the landing gate or door project into the lift-way beyond the edge of the landing still.

(f) The openings for the landing gate or doors shall not be wider than the lift-car.

(g) The landing gates doors which are self-closing shall be equipped with safety devices preventing injury by trapping persons while entering or leaving the lift-car.

(h) All landing gates and doors and their tracts shall be capable of withstanding a thrust of 75 lbs. applied normally at any point excepting vision panels, without causing permanent deformation or without being sprung from their guides.

(i) When the landing doors are solid, they shall be fitted with vision panels which shall be of grill work, the openings of which shall not be greater than one inch. In swing type doors the vision panels shall be so located that lift-operator can have convenient vision when opening the door from the lift-car side.



## **6. Locking devices for landing gates and doors :-**

(a) Every landing gate or door shall be fitted with an electro-mechanical locking device which shall comply with appropriate requirements given hereafter.

(b) (i) It should not be possible to open the landing gate or door from the landing side until the lift-car is within that particular landing zone. Provision shall be made for the opening of the gate or door in case of emergency by means of a special key, which shall be kept in a secure position. (ii) It should not be possible to start the lift-car or keep it in motion unless all the landing gates or doors are locked in closed position. Exception.- Where lift-car levelling device is provided, it is permitted to move the lift-car with the lift-car and landing gates doors open within the landing zone. Note.- The door shall be considered closed and the lift- car may be moved away from the landings when the door is within 2-1/2 inches of the jamb, or in the case of center opening doors, when these are within 2-1/2 inches of each other, provided an approved attachment is fitted which will effectively prevent the doors from being reopened after they have reached a limit of 2- 1/2 inches, and provided also that the door closer is of such a type as will eventually carry the door or doors to and lock it or them in the closed position. (iii) The electrical and mechanical parts of all locking devices shall be of substantial design and construction. The removal of any inspection cover or covers shall not affect the operation of a devices shall be fixed secure to the enclosure by suitable means. (iv) The locking devices for landing gates or door is locked. (v) Any springs used in the locking device shall be in compression and properly supported. (vi) The contacts of the locking device shall be of solid and sturdy construction and shall be opened positively and the functioning of the interlock to prevent movement of the lift-car shall not be solely dependent on the action of a spring or springs, nor solely upon gravity, nor upon the closing of an electric circuit. (vii) The design shall be such that reasonable wear and tear of working parts shall not create an unsafe condition or permit of interference with the operation of the lift-by movement of the gate or door or its fittings. (viii) The conduct carrying the conductors to the lock or contract boxes shall be fixed securely to the boxes and shall maintain electrical and mechanical continuity. (ix) The locking device together with the actuating roads or levels shall be protected from Interference from the landing side of the lift-well enclosure. (x) Provision shall be made on all lifts for device to prevent the opening

of any landing gate or door while the lift-car is passing through a landing zone to another floor.

## **7. Lift-cars :-**

(a) Lift-cars shall be enclosed on all sides by means of the cage body, gates or doors and such enclosures shall be at least 6 feet 6 inches clear in height and sufficiently strong to withstand a thrust of at least 75 lbs. applied normally at any point without deformation and it shall be so secured to the car-floor and lift-car frame that it cannot work loose or become displaced in ordinary service. There shall be provided a roof solid or perforated capable of supporting a weight of a man weighing 150 lbs. Any performance in the roof shall reject a one-inch diameter sphere.

(b) Open work panels within a height of 6 feet from the lift-car and glass shall not be used for the enclosure of a lift-car. The floor of the lift-car shall be of a smooth and non-slippery surface.

(c) Every lift shall be provided with an alarm signal operated by a push button which shall be fixed in a conspicuous position in the lift-car and clearly marked. The alarm shall be wired from electric mains other than the lift mains and shall be clearly audible outside the lift well in order to obtain assistance in case of a break-down or failure between the floors.

(d) Every lift installation controlled by an operator shall be operated by a removable handle or key which shall remain at all times in the possession of the operator. The handle or key shall automatically return to the off position and lock there automatically return to the off position when pressure is removed.

(e) Every lift-car shall be provided with a light to give sufficient illumination on the floor and such light shall be left burning during the whole time the lift is available for use. Such light shall be on a circuit independent of the lift circuits and the controlling switch for light shall be in the machine room close to the main switch for the machine.

(f) The approach to the landing gate on each floor shall be kept lighted during the whole time the lift is available for use at night, and during the day time, if so required by the Inspector of Lifts.

(g) Lift-car having solid enclosure and doors and lift-cars installed in totally enclosed lift-wells shall be provided with adequate

ventilation by means of an electric fan which shall be connected on electric mains other than the lift mains and- shall always be maintained in working condition.

(h) A door or gate shall be provided at each entrance of the lift-car. Such doors or gates shall guard the full height and width of the lift-car opening and shall be sufficiently strong to withstand a thrust of 75 lbs. applied normally at any point without permanent deformation and without their being sprung from their guides. Where gates are used they shall be of close picket type and no opening exceeding 2-1/4 inches in width shall be permitted between the verticals when the gate is fully extended.

(i) Each door or gate shall be provided with an electric switch which shall prevent the lift-car from being started or kept in motion unless the door or gate is properly closed. Such switches shall be opened positively when the door or gate is opened.

Note.- This requirement prohibits the practice of short circuiting the lift-car door or gate switch to enable an unoccupied lift-car of an automatically operated lift to be called at a landing with the lift-car door or gate open.

(j) In the case of lift-cars having more than one entrance, the lift-car gates shall be provided with electro-mechanical interlocking device so that the gate can be opened only at the landing at which access to the lift-car is provided.

(k) In the case of lift-cars having solid doors, every door shall be provided with wide vision panels which shall be of grill work the openings of which shall not greater than one inch.

(l) Lift-Car platforms shall be of framed construction and shall be designed on the basis of contract load evenly distributed. Platforms for goods car shall be designed to suit the particular conditions of loading. The minimum factor of safety shall be 5 for steel and 8 for timber.

(m) Every lift-car shall be provided with an emergency exit which shall be fitted into the roof of the car in case where one lift operates in the lift-well or where more than one lift is installed in a lift-well, it shall be provided in the side adjacent to the adjoining lift-car. Where conditions will not allow the provision of an emergency exits, the safety-gear shall be of a type that can be released by hoisting up the lift-car.

(n) Top exits shall open outwards and shall be clear of all gear or equipment mounted on top of the lift-car.

(o) All emergency exit doors or panels shall be provided with an electric switch to prevent the lift from being operated when doors or panels are opened or removed.

(p) A plug socket shall be provided on top of the lift-car for a hand lamp for use by persons working thereon.

(q) When lift-car levelling devices are used, aprons shall be fitted to the car-floor to ensure that no space is permitted between the threshold and the landing whilst the lift-car is being leveled to a floor.

### **8. Lift-car frame :-**

(a) Every lift-car shall be carried in a complete frame of steel girders which shall be sufficiently rigid to withstand the operation of the safety gear without permanent deformation.

(b) The factor of safety of the component parts of the lift-car frame and their connections shall be not less than 5 based on the ultimate strength of the material and the static load imposed on them.

(c) Renewable guide shoes or guide renewable linings shall be provided at the top and bottom of both sides of the lift-car frame.

### **9. Lift-car capacity :-**

The contract load in relation to the lift- car floor area shall not be less than the figures shown in graphs 1 and 1A.

### **10. Load to be marked in lift-cars :-**

(a) There shall be marked conspicuously in every lift-car the maximum number of persons (calculated at 150 lbs. per person) which it can safely carry. Persons in excess of the said limit shall not be carried in the lift-car.

(b) For goods lift the load shall be given in pounds and also in persons calculated at 150 lbs. per person.

### **11. Counter-weights :-**

(a) All counterweights shall travel in rigid steel guides.

(b) If two counterweights travel in the same guides, the lift-car counterweight shall be above the machine counterweight and the

clearance between them shall not be less than 8 inches. Where the ropes of the machine counterweight pass through the lift-car counterweight they shall be covered or protected by metal or other suitable sleeves. Such sleeves shall have "belled" ends and be firmly attached to the suspension ropes, and be not less than 6 inches longer than the lift-car counter-weight.

(c) If an independent counterweight is used, it shall not be of such a weight to cause undue slackening of any of the suspension ropes during acceleration or retardation.

(d) All counterweight section shall be carried in a structural steel frame and shall be secured by at least two tie rods passing through holes in all the sections. The factor of safety of the frame members and their connections shall not be less than 8.

(e) The travel-way of the counterweight in the lift-pit shall be protected by means of a suitable enclosure work up to a height of 7 feet from the floor of the pit.

## **12. Guides :-**

(a) The guides for the lift-car and the counterweight shall be rigid and shall be of steel except where the nature of the processes carried on in the building tenders such material unsuitable due to acidfumes or similar causes.

(b) In case of lifts working at a speed exceeding 30 feet per minute special "Lift Tee Section Guides" only shall be used and they shall be joined by means of machined spigot and socket joints.

(c) Guides shall be continuous throughout the entire length of the lift-well and shall be provided with adequate iron or steel brackets or equivalent fixings of such design and spacing so that the guides shall not deflect more than 1/4 inch under normal operation.

(d) If the guides are attached to overhanging stairs the method of fixing shall be such that no vertical stress is transferred from the guides to the stairs.

(e) Guides shall be of such length that it will not possible for any of the car or counterweight guide shoes to run off guides.

(f) Guide brackets and shims if any shall be of steel and shall not be directly supported and fastened to the lift-well enclosure wall unless wall is of such construction and strength as to adequately

withstand the thrust imposed on the guides under all conditions of the left-service.

The fastening shall be by means of bond blocks built into the wall or expansion bolts or through bolts of such thickness and size as to adequately distribute the load on the wall.

(g) Guides and their fixing shall withstand the application of the safety gear when stopping a fully loaded lift-car or the counterweight if provided with a safety gear.

### **13. Buffers :-**

(a) Buffers of the spring, oil or equivalent type shall be fitted under the lift-car of every lift. Rubber buffers may be used with lifts having a contract speed not exceeding 50 feet per minute.

(b) Buffers shall be of such design and constructions as to be able to absorb within the limits of their stroke the whole of the kinetic energy of the lift-car carrying its rated load when the speed of impact is the maximum running speed.

(c) Spring buffers of adequate size and strength shall be used with lifts having contract speed not exceeding 200 feet per minute.

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

(e) Oil buffers or their equivalent shall be used with lifts having a contract speed in excess of 300 feet per minute.

(f) The maximum rate of retardation of oil buffers, based on governor tripping speed, shall not be in excess of 80.5 feet per second i.e. 2.5 times gravity retardation.

(g) The minimum total stroke of oil buffers shall be based on an average retardation of 32.2 feet per second based on governor tripping speed.

(h) Oil buffers shall be provided with a device for determining easily the amount of oil in them.

(i) Buffers shall be placed symmetrically with respect to the center of gravity of the lift-car and shall be so arranged that the lift-car in normal circumstances of operation cannot strike them.

(j) Buffers shall be fitted under the counterweight similar to those

specified for lift-car arranged symmetrically below the weight.

#### **14. Suspension ropes :-**

(a) Chain shall not be used for the suspension of a lift-car. Not less than three Independent suspension ropes shall be used for the lift-car or counterweight of any lift with traction drive, and not less than two Independent ropes with drum drive.

(b) Each suspension rope shall be separately and independently fixed to the car and to the counterweight. The simple suspension of the lift-car or the counterweight by means of a sheave or the like shall count as one suspension only.

(c) All ropes anchored to a winding drum shall have not less than one and one half turns of the ropes on the winding drum when the lift-car or counterweight has reached the extreme limit of its overtravel.

(d) The winding drum end of the lift-car and counter-weight ropes shall be secured by clamps on the inside of the drum.

(e) Every lift-car or counterweight rope shall be in one length and free from joints.

(f) The materials, quality, construction and fixing of ropes shall, so far as is applicable, conform to the appropriate British Standard Specification.

(g) The factor of safety of the combined suspension ropes shall be not less than 12, based on static contract load, plus the weight of the lift-car and accessories.

(h) The lift-car and counterweight ends of the suspension ropes shall be fastened by spliced return loops, clipped return loops or individual tapered babbitted sockets. Loops shall not bear directly on their fixings, but shall be lined with proper thimbles, eyes or equal protection. In all cases, the fastenings shall be capable of sustaining a load of not less than 80 per cent of the ultimate strength of the undisturbed rope.

(i) Means shall be provided for adjusting the lengths of the ropes to equalise the load of the individual suspension ropes. No equaliser shall be used unless the equaliser and its fastenings, in its several parts and assembly, have a strength of at least 10 per cent in excess of the strength of the cable required by sub- clause (h).

(j) Tensioning devices for compensating ropes, governor ropes, and the like shall be protected against damage due to falling objects.

**15. Emergency Safety Devices. :-**

**16. Overspeed Governor :-**

(a) Every lift having a travel exceeding 18 feet shall be equipped with an overspeed governor device which will operate to apply the safety gear in the event of the speed of the lift-car in the descending direction exceeding a predetermined limit.

(b) The governor shall be placed where it is easily accessible and where it cannot be struck by the lift-car in case of over travel and where there is sufficient space for the full movement of the governor parts.

(c) Governor ropes shall be not less than 5/16 inches in diameter and shall be of steel or phosphor bronze and of suitable construction.

(d) The area of contact made by the governor rope and the governor sheave shall, in conjunction with the rope tension device, provide sufficient tractive effort to cause proper operation of the governor.

(e) Governor ropes shall run clear of the governor jaws during the normal operation of the lifts.

(f) Governor jaws and their mountings shall be so designed that any cutting, tearing or deformation of the rope resulting from their application shall not prevent proper operation of the safety gear.

(g) The motor control circuit and the brake control circuit shall be opened before the governor trips.

(h) The lift-car speed governor shall be set to cause the application of the safety at a speed not more than 40 per cent, and not less than 15 per cent., above the contract speed, provided that no governor shall be required to trip at a speed less than 175 feet per minute and with the instantaneous type of safety gear shall trip at a speed not exceeding 250 feet per minute.

(i) The proper tripping speed of the governor shall be stamped on the governor base or on a brass plate attached to the base.

**17. Slack Rope switch :-**



(a) All lifts, having winding drum machines, shall be equipped with an effective slack rope switch which will cut off the power and stop the machine if the lift-car is obstructed in its travel in the descending direction.

(b) Slack-rope switches shall be so constructed that they will not automatically reset when the slack in the ropes is removed.

(c) Live parts of the slack-rope switches shall be enclosed to prevent accident contact.

#### **18. Machine rooms and overhead structures :-**

(a) The lift machine controller and all other apparatus and equipment of a lift installation, excepting such apparatus and equipment as functions in the lift-well or other position, shall be placed in the machine room.

(b) The machine room shall be so designed as to allow free and easy access to all parts of the equipment and the width of clear space around the machine shall in no case be less than 2 feet. Provision shall be made to allow the removal and replacements of various units.

(c) The machine room floor shall be designed constructed to cany safely at any point the heaviest part of the equipment and if the floor does not extend to the enclosing wall the open sides shall be adequately guarded by suitable means.

(d) The height of the machine room shall be sufficient to allow any portion of the equipment to be accessible and removeable for repairs and shall not be less than 6 feet 6 inches clear from the floor or the platform of machine whichever is higher.

(e) The machine room shall be provided with easy and safe access which shall be permanent and direct from the top lift landing. The entrance door shall be of sufficient operating to allow for the removal and replacements of parts of the machinery therein.

(f) The machine room shall be soundly constructed and shall be weather proof. It shall be ventilated effectively to prevent under rise in the temperature of the room. It shall be provided with sufficient artificial illumination and at least one plug socket point. The switch for the light shall be fixed near the entrance of the machine room.

(g) The machine room shall be locked and shall be accessible only to those who are concerned with the operation and maintenance of the machinery or equipment. When the electrical pressure used is above 250 volts D.C. or 125 A.C., danger notice shall be displayed permanently on the outside of the door and near the machinery.

(h) The machine room shall not be used as a store room or for any purpose other than for housing the machinery connected with the lift installation.

(i) The machine room shall be provided with an insulated portable hand lamp with workshop flexible for examining the machinery.

### **19. Overhead pulleys :-**

The place in which overhead pulleys, overspeed governors and similar machinery are fixed shall have a clear height of at least 4 feet, and shall be easily accessible for maintenance and repair purposes. It shall be lighted adequately and shall be provided with a substantial floor or staging, spacious enough to enable maintenance and repairs to be carried out in safety. In cases where the floor or staging does not extend to the full area of the lift-well a guard rail or its equivalent shall be provided.

### **20. Machine supports :-**

(a) All machines, pulleys, overspeed governors and similar units shall be supported and held to prevent any unit from becoming loose or displaced. Supporting beams shall be of steel or reinforced concrete.

(b) The loads on overhead beams and their supports shall be calculated as follows:- (i) The total load on overhead beams shall be assumed as equal to all equipment resting on the beams plus twice the maximum load suspended from the beams. (ii) The factor of safety for all overhead beams and supports based on the ultimate strength of the material and the load in accordance with paragraph (i) shall be not less than the following: - For steel = 5 For reinforced concrete = 7 (c) The deflection of the overhead beams under the maximum static load calculated in accordance with sub-section (i) shall not exceed 1/1500 of the span. (d) Wood shall not be used for structural frame work of any lift.

### **21. Lift Machines :-**

(a) No friction gearing and clutch mechanism shall be used for

connecting the main gear to the hoisting drum or sheaves.

(b) No belt or chain driven machine shall be used to raise the lift-car. No worm gear having cast iron teeth shall be employed.

(c) Every lift machine shall be equipped with brakes which shall be mechanically applied when the operating device is in the off position or when power is cut off from any cause. If spring are used they shall be of substantial size and construction and shall work in compression only.

(d) Electric lift machines shall be provided with brakes released electrically.

(e) No brake shall be released in normal operation until power has been applied to the motor.

(f) Any emergency release device fitted to a brake shall not be capable of holding the brake in the "off position during normal operation.

(g) No single earth fault, short circuit or conduct E.M.F., shall prevent the brake from being applied during normal operation.

## **22. Sheaves and drums :-**

(a) All sheaves and leading pulleys shall preferably be of disc construction. If spoke construction is used, the spokes shall be of sufficient cross-section and properly stiffened.

(b) The diameter of the drum or sheave and the diverter pulleys shall be in accordance with the terms of B.S.S. current 329 current edition.

(c). Where the driving sheaves or drum is connected through worm gear, the worm gear shall be of non-reversible type.

(d) The strength of spur and worm gear shall be in accordance with B.S.S. 436 and 271 (current editions) respectively.

(e) Drums, sheaves and pulleys shall be of cast iron steel and shall have machined ropes grooves and be provided with suitable flanges.

(f) The sheave, drum, wor wheel or spur gear of any lift machine shall be fixed to its shaft or driving unit by one of the following methods:- (i) Sunk keys in accordance with B.S.S. 46, Part 1 (current edition). (ii) Splines in accordance with B.S.S. 46, Part 2

(current edition). (iii) Secured to a flange forming an integral part of the shaft or driving unit by means of turned tight-fitting bolts.

(g) No set screw fastenings shall be used in lieu of keys or other positive connections.

(h) The motor of each lift machine or the worm shaft shall be so between as to provide hand winding facilities and shall be suitably marked for the direction of up and down travel of the lift-car

### **23. Shafts :-**

(a) Any shaft carrying a sheave or pulley and fitted between dead eyes or other housing shall be stepped, i.e. reduced in diameter at or near the point of entry at each end.

(b) Any where stepped shall be turned to a reasonable radius at the point of reduction in diameter.

### **24. Controllers :-**

(a) Where gravity or spring-opened contractors having metal to metal contacts are employed to open a main circuit to stop a lift machine, such circuit shall have at least two independent breaks.

(b) Each lift machine operated by a Polyphase A.C. Motor shall be protected against phase reversal or phase failure. This shall not apply to A.C. Motors used in motor-generator sets.

(c) The installation of condensers, the operation or failure of which will cause an unsafe condition, shall be prohibited.

(d) Provision of emergency stop switches for short-circuiting the landing lock circuit is prohibited.

(e) All control circuits shall be fused, or otherwise protected against faults or overload, independently of the main circuits.

(f) The voltage of any controller operating circuits shall not exceed low pressure as defined in the Indian Electricity Rules, 1937.

(g) Controllers, operated by hand ropes, levers or similar devices shall not be permitted.

### **25. Operation and Operating Devices :-**

(a) A manually operated main disconnecting switch shall be installed in the main circuit cables of electric lift machines or motor-generator sets. This switch shall be placed close to and visible from

the machine or motor-generator set it controls.

(b) With D.C. power supplies, the disconnecting switch and any circuit breaker shall be so arranged that the brake coil circuit is opened at the same time that the main circuit is opened.

(c) The interruption of the electrical circuit shall stop or shall prevent the movement of the car.

(d) No control shall depend upon the completion or maintenance of an electric circuit for-

(i) the interruption of the power supply to the motor and the application of the brake to stop the lift-car at terminal landings or to stop the lift-car when the emergency stop switch is operated:

(ii) the operation of the safety gear:

Provided that this requirement does not apply to dynamic braking or to speed control devices.

(e) Control circuit shall be so arranged that an earth fault or open circuit not create an unsafe condition.

(f) Automatic (push button operated) lift shall conform to the following requirements. (i) No automatic lift shall be constructed to travel at a speed exceeding 300 feet per minute. (ii) Automatic lifts which travel at a speed over 150 feet per minute shall automatically slow down to a speed for 150 feet per minute when making a stop at any landing. (iii) In the case of an automatic lift, no operation of a spring nor the completion of another electric circuit shall depended upon to break the circuit to stop the lift at terminal landings. (iv) The landing push buttons shall be inoperative the whole time an occupied lift-car is in use. The landing push buttons shall remain inoperative until the person or persons using the lift have vacated the lift-car and the landing gate or door has been again closed, except that in cases where a pre selector circuit is used, the push buttons may be utilised for their purpose, provided they do not in any way interfere with the direction of the current Journey and that a time leg is provided to regulate the restarting of the lift-car. (v) If a movable floor construction is used in the lift-car the entire floor within the care enclosure shall be movable and shall operate when a weight of 30 lbs. is placed upon it at any point. (vi) No hand-rail or seat shall be fitted in the lift-car with movable floor construction.

(g) The lift-car of every automatically controlled lift and of every lift having a lift-car-levelling device shall be provided with an emergency stopping device operated by a switch of manually opened and closed type which shall be fixed in a conspicuous position above the push button box in the car and it shall be clearly marked in red. The wires connecting this switch to the controller shall not be run in the same trailing cable.

(h) An emergency stop switch, of manually opened and closed type shall be provided on the top of every lift-car and in the lift pit and shall be marked conspicuously.

(i) Drum drive machines shall not be used for speeds exceeding 100 feet per minute.

(j) All lifts travelling at a speed of 200 feet per minute and over shall be provided with an approved floor levelling device.

(k) Signal bells or similar apparatus, which can be operated from any floor in conjunction with an indicator in the lift-car shall be provided on all lift operated by lift operators.

(l) When more than one operating device is used in a lift-car the operating devices shall be so interlocked that only one device is effective at a time.

## **26. Electric wiring :-**

(a) All wiring in connection with the lift installation shall be installed in accordance with the rules and regulations made under the Indian Electricity Act, 1910 and the rules and regulations of the Bombay Fire Insurance Association and metallic covering shall be used to protect all cables wherever possible.

(b) All trailing cables shall be of flexible construction and shall comply with the specifications laid down in the regulations of the Bombay Fire Insurance Association and B.S.S. 977 current edition.

(c) Circuits which supply current to the motor shall not be included in any twin or multicore trailing cable used in connection with the control and safety devices.

(d) A trailing cable which incorporates conductors for the control circuit shall be separate and distinct from that which incorporates conductors for lighting and signaling circuits.

## **27. Terminal limit switches :-**

(a) Every electric lift shall be provided with upper and lower terminal limit switches arranged to stop the car automatically within the top and bottom overtravels from any speed attained in normal operation. Such limit switches are to act independently of the operating device, the ultimate or final limit switches and the buffers.

(b) Terminal topping limit switches may be fitted to the lift- car, in the lift-well, or in the machine room, and such switches shall be brought into operation by the movement lift-car.

(c) The contacts of all terminal limit switches shall be opened positively and mechanically by the movement, of the lift-car.

(d) When terminal switches are situated in the machine room, they shall be mounted on and operated by stopping device mechanically connected to and driven by the lift-car- without dependence upon friction as a driving means. An automatic safety switch shall be provided which will stop the machine should the tape, chain, rope or other similar device, mechanically connecting the stopping device to the car fail:

Provided that when the floor controlling or selector of an automatically operated lift is driven in accordance with this requirement the floor stopping contacts for each terminal floor may serve as normal terminal floor stopping devices

## **28. Ultimate or Final Limits Switches :-**

(a) Electric lifts shall, in all cases be provided with ultimate or final limit switches arranged to stop the lift-car automatically within the top and bottom clearances independently of the normal operating device and the terminal limit switches, but with the buffers operative. The switches and the oil buffer shall be so arranged that the opening of the switch and the engagement of the buffer shall be as nearly, simultaneous as is possible. When spring buffers are employed, the switch shall open before the buffers are engaged.

(b) Ultimate or final limit switches shall act to prevent movement of the lift-car under power in both directions of travel and shall, after operating remain open until the lift-car has been moved by hand winding to a position within the limit of normal travel.

(c) Ultimate or final limit switches shall be operated by the movement of the lift-car in the lift-well they shall not be mounted

on the lift-car.

(d) Every lift having drum machine shall have two final limit switches, one being operated by the machine and the other by the movement of the lift-car.

(e) Ultimate or final limit switches shall not control the same relay switches on the controller as the terminal limit switches unless two or more separate and Independent relay switches on the controller are provided, two of which shall be closed to complete the motor and brake circuit in each direction of travel. When the ultimate or final switches control the same relay switches on the controller as the operating device or the terminal limit switches, they shall be connected in the control circuit on opposite sides to the terminal limit switches.

(f) Ultimate limit switches designed to open the main circuit of the motor may control the same switch or switches on the controller as the terminal limit switches, but when such ultimate limit switches are employed on direct current power supplies, they shall be provided with additional contacts to control the brake circuit.

(g) The contacts of all final or ultimate limit switches shall be opened positively and mechanically by the movement of the lift-car. The cam or Cams for operating the limit switches shall be of metal.

(h) The terminal and the ultimate or final limit switches shall be held in open position when the lift-car is in contact with the overhead structure or resting on the fully compressed buffers.

## **29. Tests :-**

(a) A contract load test of each new lift shall be made by the Engineer, who is entrusted with the work of installing the lift, in the presence of the inspector of Lifts, before such lift is put into service for normal and regular operation. This test shall be made to determine whether the machinery and safety gear will operate satisfactorily within the specified limits with full load in the lift-car.

(b) The brakes, limit switches, buffers, safety gear or gears and speed governor if fitted, shall be made to function during the test, and the electrical wiring and connections shall be tested for earthing insulation resistance and general soundness.

(c) In the case of traction drive lifts, it shall be ascertained by a



trial descent with  $1\frac{1}{2}$  times the full load whether the friction between the ropes and the sheave is sufficient.

(d) The runway test shall be made with all electrical apparatus operative, except for the overspeed contact or cut-out on the governor. For lifts operating directly from alternating current the governor shall be tripped by hand at the maximum speed obtainable.

(e) At each subsequent inspection the safety gear shall be tested with the lift-car stationary and the lift-car shall be lowered to ensure that the safety gear functions correctly.

(f) The insulation of the electrical parts of all operating and similar devices shall be tested to withstand an alternating test-voltage equal to 10 times the working voltage for one minute, with a maximum of 2,000 volts, applied between contacts or similar parts, in the open position and between such contacts and earthed parts.

### **30. Notices :-**

In case of automatic lifts the following notices shall be placed in a conspicuous position in the lift-car and no other notices shall be fixed in the lift-car.

(i) The lift shall not be used by more than person.

(ii) On entering or leaving the lift-car, close properly the landing gate and the car-gate.

(iii) Do not open the lift-car when the lift-car is moving. The gate should only be opened after the lift-car has stopped opposite a landing gate.

(iv) In case of danger, press the alarm button, but leave the lift-car gate closed. Wait inside until the lift-car is brought opposite a landing, and do not attempt to leave the lift-car until the landing gate is opened fully.

(v) Children under 12 years of age shall not use the lift unless accompanied by an adult.