भारतीय मानक
Indian Standard

IS 15330 : 2020

दिव्यांग जन के उपयोग में आने वाली लिफ्टों की आवश्यकताएँ

(पहला पुनरीक्षण)

Requirements of Lifts for Persons with Disabilities

(First Revision)

ICS 91.140.90

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December 2020 **Price Group 5**

Lift and Escalators Sectional Committee, ETD 25

FOREWORD

This Indian Standard (First Revision) was adopted by the Bureau of Indian Standards after the draft finalized by the Lift and Escalators Sectional Committee had been approved by the Electrotechnical Division Council.

This standard was first published in 2003 to cater to the need of persons with disabilities so that they can access a building without difficulty; for this, the lift(s) in such a building need(s) to have special characteristics.

First revision of this standard is being brought out incorporating additional requirements based on stakeholder consultation and experience gained during this period.

Major changes in this revision include the following:

i) Addition of general requirements pertaining to building features for such lifts.
ii) Modification of minimum car dimensions for single entrance lift car.
iii) Expansion of requirements for equipment in the car.
iv) Addition of requirement for tip-up seat's ability to support load.
v) Addition of design requirements for keypad type system as Annex D.
vi) Enhancement of requirements for operating panels for car cont.
vii) Addition of requirements for the button 'exit floor'.
viii) Addition of requirements for destination control system.
ix) Modification in requirements for audible signals.

The composition of the Committee, responsible for the formulation of this standard is given at Annex E.

For the purpose of deciding whether a particular requirement of this standard is complied with the final value, observed or calculated, expressing the result of a test or analysis shall be rounded off in accordance with IS 2 : 1960 'Rules for rounding off numerical values (*revised*)'. The number of significant places retained in the rounded off value should be the same as that of the specified value in this standard.

Indian Standard

REQUIREMENTS OF LIFTS FOR PERSONS WITH DISABILITIES

(First Revision)

1 SCOPE

This standard specifies requirements of lifts for accessibility for persons including persons with disabilities.

This standard specifies the minimum requirements for the safe and independent access and use of lifts by persons, including persons with disabilities mentioned in the Annex A, Table 2.

Requirements specified in this standard are in addition to those specified in IS 14665 (Part 3), IS 15785, IS 14671, as applicable.

2 REFERENCES

The standards listed below contain provisions which, through reference in this text, constitute provisions of this standard. At the time of publication, the editions indicated were valid. All standards are subject to revision, and parties to agreements based on this standard are encouraged to investigate the possibility of applying the most recent editions of these standards.

IS No.	*Title*
14665 (Part 1) : 2000	Electric traction lifts Part 1 Guidelines for outline dimensions of passenger, goods, service and hospital lifts
(Part 2/Sec 1) : 2000	Part 2 Code of practice for installation, operation and maintenance, Section 1 Passenger and goods lifts
(Part 3/Sec 1) : 2000	Part 3 Safety rules, Section 1 Passenger and goods lifts
14671 : 1999	Code of Practice for installation and maintenance of Hydraulic Lift
15785 : 2007	Installation and maintenance of lift without conventional machine rooms — Code of practice

3 TERMINOLOGY

For the purpose of this standard, definitions given in IS 14665 (Part 2/Sec l) and the following shall apply.

3.1 Accessibility — Accessibility in the context of this standard is the quality of a building or structure or a lift which enables all people irrespective of their age, gender or abilities, to access it and use its features equally and independently.

3.2 Disability — Disability in the context of a person: 'Person with disability' means a person with long term physical, mental, intellectual or sensory impairment which, in interaction with barriers, hinders his full and effective participation in society equally with others.

4 REQUIREMENTS

4.0 General

It is recommended that in multi-storied buildings, there should be at least one lift accessible to transport persons with disabilities at all usable levels. The requirements given below are to be considered and provided by building planners and building designers.

Such lift(s) shall be provided with the following building features:

a) Lift shall be located at accessible routes.

b) Accessible landings at lift entrance shall be provided on each eligible floors.

c) Lift shall be marked with international symbol of accessibility.

d) Directional signage indicating the location of an accessible lift shall be provided at a location that is clearly visible from the accessible building entrance. The directional signs shall incorporate a representation of the international symbol of accessibility (*see* Fig. 1).

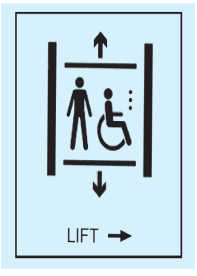


FIG. 1 WAY FINDING SIGNAGE FOR LIFT LOCATION

e) A sign indicating the number of the floor arrived shall be provided on each lift landing on the wall opposite the lift in big font with big colour contrast.

f) It is recommended to install a floor directory of the main facilities and services available on the lift landing, along with an accessible emergency exit route that clearly indicates the location of the nearest refuge area for persons with disabilities.

4.1 Entrances : Door Opening

4.1.1 Entrance clear opening shall be at least 900 mm. The doors shall be constructed as automatic horizontal sliding doors.

4.1.2 Obstacle-free accessibility on the landing floors is required on all eligible floors.

NOTE — Recommendations regarding landing free space in front of lift door are given in Annex B.

4.1.3 To allow users to enter and leave the lift unhindered, the door dwell time shall be adjustable from 2 s to 20 s.

NOTE — The present time for a certain lift may be reduced by using the door closing button in the car or by other means.

4.1.4 A non-contact sensor device shall be provided in the door opening to detect an entering or exiting passenger or an assistive device to prevent the risk of the passenger or an assistive device from being hit by the leading door panel(s). The sensor device shall cover at least 1 600 mm of the door height measured from a distance of 25 mm above the door sill.

4.2 Car Dimensions, Equipment in the Car, Levelling Accuracy

4.2.1 *Car Dimensions*

Inside minimum dimensions of lift cars with single entrance or with two opposite entrances for Type 1 and Type 2 lifts shall be chosen in accordance with Table 1.

4.2.2 *Equipment in the Car*

4.2.2.1 At least on one side wall of the car, a handrail shall be installed. The gripping of this handrail shall have a minimum circumscribed diameter of 30 mm and a maximum of 45 mm. The free space between the wall and the gripping part shall be at least 45 mm. The height of the top edge of the griping part shall be within 900 mm ± 25 mm from the finished car floor level. The handrail may be interrupted where the car operating panel is located in order to avoid obstructing buttons or controls.

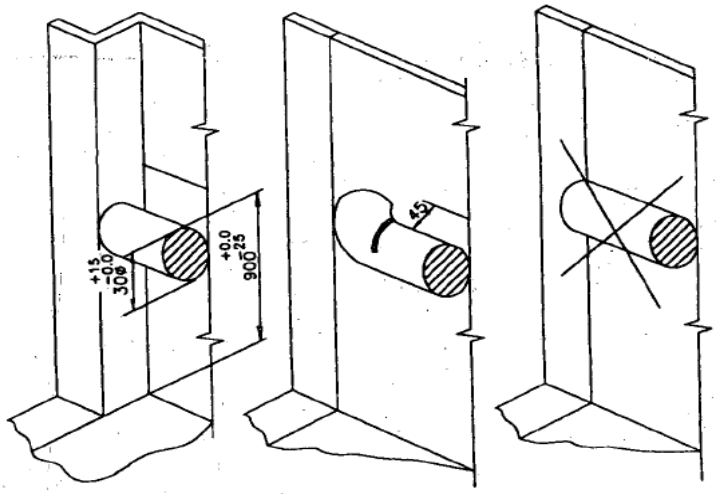
If the end of a handrail directly faces a doorway, it shall be returned to the wall (*see* Fig. 2).

Table 1 Minimum Car Dimensions for Lift Cars with a Single Entrance or Two Opposite Entrances

(*Clause* 4.2.1)

Sl No.	Type of Unit	Minimum Car Dimensions	Accessibility Level	Remarks
(1)	(2)	(3)	(4)	(5)
i)	1	1 100 W × 1 300 D	This lift car accommodates one wheel chair user and one other passenger	-
ii)	2	2 000 W × 1 300 D	This lift car accommodates one wheel chair user and more passengers	This type allows full maneuverability of a wheel chair.

NOTE — Shaft requirement for above lift cars are as specified in Annex C (*see* also Fig. 6).



(2A) Permitted **(2B) Permitted** **(2C) Prohibited**

FIG. 2 POSITIONS OF HANDRAILS AT DOORWAYS

4.2.2.2 Internal walls of the car shall have a non-reflective matt finish in a colour and tone contrasting with the floor.

4.2.2.3 The floor of the lift car shall be rigid and non-reflective matt finish and shall be slip resistant to decrease the risk of stumbling.

4.2.2.4 Internal car lighting should provide minimum level of illumination of 100 lux at floor level, uniformly distributed, avoiding spotlights.

4.2.2.5 Surface materials that a user can be allergic to include nickel, chromium, cobalt and natural or synthetic rubber. These materials should be avoided in buttons, controls, handles or handrails.

4.2.2.6 *Seats*

The design of the lift car shall have provisions to retrofit a tip-up seat. Where provided, the seat and its position must not impede the normal use of the lift, neither to the person using the seat nor to other users. The seat shall have following dimensions:

a) Seat height from the floor : 500 mm + 10 mm
b) Depth : 300 – 400 mm
c) Width : 400 – 500 mm
d) Ability to support load : 100 kg

4.2.2.7 In case of a car size of Type 1, as given in Table 1, where a passenger in a wheelchair is unable to turn around, a device to observe obstacles when moving backwards out of the car shall be installed, for example, a mirror installed in an appropriate position. Where glass is used as mirror, it shall be a laminated safety glass.

NOTE — The lowest part of the mirror should be a minimum of 300 mm from the floor.

4.2.3 *Stopping/Levelling Accuracy*

Under the intended use:

a) the stopping accuracy of the car shall be ± 10 mm; and
b) levelling accuracy of ± 20 mm shall be maintained.

4.3 Control Device, Signals and Additional Fittings

4.3.1 *Landing Controls*

4.3.1.1 On every landing where push button type systems are used for the operation of the lift, they shall meet the following requirements:

a) Operating force for the button shall be minimum 2.5 N and maximum 5 N.
b) Minimum area of the active part shall be 490 mm square and button shall be 20 mm minimum in the smallest dimension.

NOTE — In the case of two buttons, the vertical distance between the active parts shall be more than 10 mm and the buttons shall be arranged one above the other.

c) User shall be able to know that the button has been operated, either because it possesses perceivable movement or it is provided with a system of mechanical feedback. The call registration shall be confirmed by a visible signal.
d) Height from floor level to the center line of any button shall be between 900 mm and 1 100 mm.
e) Active part of the button shall be identifiable visually and by touch from the face plate or its surroundings.
f) Colour of any face plate of landing push button shall be contrasted to its surroundings.
g) For the benefit of wheelchair users, the minimum distance to the centre line of any of the buttons from any wall or door at right angles, shall be 500 mm.
h) Size of any symbols shall be minimum of 15 mm and maximum 40 mm, in relief with a thickness of $1^{+0.5}_{-0}$ mm and contrasted to their background. Symbols shall preferably be on the active part of the button or 10 mm to 15 mm left of it. This shall be measured from the edge of the relief.

4.3.1.2 Where a keypad type system is used, it shall meet the requirements in Annex D.

4.3.2 *Car Controls*

4.3.2.1 Operating Panel(s) shall have the following:

a) One button for each floor (marked – 2, –1, 0, 1, 2, etc) or a key pad;
b) One alarm button and intercom button (yellow with bell shaped symbol:May be linked or separate);
c) One door ‘reopen’ button (marked <|>); and
d) One door ‘close’ button (marked >|<).

4.3.2.2 Where buttons are located within the car they shall meet the following requirements:

a) Requirement of **4.3.1.1** (a), (b), (c), (e), (f) and (h) shall apply;
b) Distance between the active parts of two floor buttons shall not be less than 10 mm;
c) Center line of alarm and door open buttons shall be located from the floor at 900 ± 10 mm. This applies even to the door closing buttons;
d) Lowest floor buttons shall be located above the alarm or door buttons. The vertical distance between floor buttons and alarm or door buttons shall be not less than twice the distance defined as (b) above;
e) Highest floor button shall be located at not more than 1 200 mm above the floor. When possible the highest button should be not more than 1 100 mm from the floor;

f) Order of the floor buttons, for a horizontal single row shall be from left to right. The order of floor buttons for a vertical single row shall be from the bottom to the top and for multiple rows from left to right from the bottom to the top; and

g) Button exit floor should protrude 5 ± 1 mm beyond the other buttons (preferably green).

NOTE — When possible, the highest button should be not more than 1 100 mm from the floor.

4.3.2.3 The car control panel shall be on the side wall and located as follows:

a) With centre opening doors, it shall be on the right hand side when entering the car; and

b) With side opening doors, it shall be on the closing side.

4.3.2.4 The minimum distance to the centre line of any of the buttons from any wall or door at right angles shall be 400 mm.

4.3.2.5 Where keypads are used for call registration in the car, they shall meet the requirements of Annex D.

4.3.2.6 In destination control system, where a user has selected 'Temporary Activation', the start of the door closing shall be initiated by activating the door close button. If the car is not used, it shall return to normal operation after 30 to 60 s. This serves as an option to **4.1.3**.

4.3.3 *Landing Signals*

4.3.3.1 Where, prior to entering the car, the control system may establish the next direction of travel (collective control), the following shall be provided:

a) Two illuminated indicator arrows giving advance information on the next departure direction of the car (only one at the terminal landings) placed above or near the doors in a visible position, to indicate the direction in which the car will subsequently move.

Landing indicator arrows shall be located between 1.80 m and 2.50 m above the floor. The height of the arrows shall be atleast 40 mm.

b) An audible signal shall accompany the lighting of arrows. The audible signal shall use different sounds for up and down.

1) One sound for up; and

2) Two sounds for down.

The audible signal shall have a sound level of between 35 dBA and 55 dBA adjustable to suit the site conditions.

4.3.3.2 The requirement of **4.3.3.1** may in case of single lift be satisfied by a device in the car visible and audible from the landing.

4.3.3.3 For lifts with destination control systems:

a) The selected floor number shall be confirmed with visual and audible signal. The visual signal shall be placed near the input device for the destination call.

b) Each lift shall individually be marked (for example, A, B, C etc.). Preferably, this marking should be placed directly above the landing door. The designation marking shall have a height of at least 40 mm and be contrasted to its surroundings.

c) The allotted lift shall be indicated by a visual and audible signal. The visual signal shall be placed near the input device for the destination call.

d) Visual and audible information shall allow the lift to be easily identified.

e) The users shall visually and audibly be informed that they are about to enter the allocated car.

4.3.4 *Car Signals*

4.3.4.1 A car position signal shall be located with or above the car operating panel. The center line of the indicator shall be positioned between 1.60 m and 1.80 m from the car floor.

The height of the floor number shall be between 25 mm and 60 mm and have a contrasted colour to its surroundings.

Additional indicators, if provided, may be placed in any location.

4.3.4.2 When the car stops, a voice shall indicate the car position. The sound level of the information shall be adjustable between 35 dBA and 55 dBA adjusted to suit the site conditions.

4.3.4.3 Battery operated/back up emergency light, alarm and intercom preferably hands-free type, shall be provided.

4.3.5 *Temporary Activation of Features*

The features, extended door dwell time (*see* **4.1.3**) and voice announcement (*see* **4.3.3.1** (b) and **4.3.4.2**) may be activated for a single trip by a suitable device. If a button is used for this purpose, it has to meet the requirements of **4.3.1** and shall be marked with the international symbol of access.

4.3.6 *Automatic Rescue Device (ARD)*

In the event of a power failure during normal operation, a battery operated ARD shall automatically move the stalled lift to the nearest floor, open the doors, thereby facilitating rescue of the stranded passengers in the lift.

4.3.7 *Overload Prevention Device*

The lift car shall not start when the car is overloaded. The lift operation shall resume only upon removal of the overload.

ANNEX A

(*Clause* 1)

CATEGORIES OF DISABILITIES CONSIDERED

A-1 Categories of disability are defined in Tables 2 and 3.

A-2 The disabilities in Table 2, are considered in the scope of this standard.

Excluded are all combinations of disabilities (*see* Table 3).

Excluded are disabilities with requirements not clearly related to lift functions (for example, claustrophobia). *See* Table 3.

Table 2 Disabilities Included in the Scope of the Standard

(*Clauses* A-1 *and* A-2)

Sl No.	Category	Sub-Category	Characteristics
(1)	(2)	(3)	(4)
i)	Physical disability	Impaired mobility	Need for use of : a) Wheelchair; b) Walking stick; c) Crutches; d) Walking frame; e) Rollator.
ii)		Impaired endurance, equilibrium	Slow mover, poor balance
iii)		Impaired dexterity	Reduced function of upper limbs (arms, hands, fingers)
iv)		Impaired vision	Blind (stick, guide dog), partially sighted, colour blindness
v)	Sensory disability	Impaired hearing	Deaf, hard of hearing
vi)		Impaired speech	Reduced ability and inability to communicate by voice
vii)	Intellectual disability	Learning difficulty	Reduced understanding of controls

Table 3 Disabilities Not Included in the Scope of the Standard

(*Clauses* A-1 *and* A-2)

Sl No.	Category	Sub-category	Remarks
(1)	(2)	(3)	(4)
i)	Combinations	Included disabilities	*See* explanation in clause **A-2**
ii)	Physical disability	Extreme dexterity impairment	Upper limbs missing or paralyzed
iii)		Size related disability	Less than 1.5 m or over 2.0 m body length
iv)	Phobia	Claustrophobia	–

ANNEX B

(*Clause* 4.1.2)

WHEELCHAIR TURNING SPACE IN FRONT OF LIFT DOOR

B-1 In order for the lift to be fully accessible to all users, it is vital that a clear turning space is provided in the lobby outside the lift doors. The space should be 1 500 mm × 1 500 mm or 1 500 mm diameter. Where it is possible to provide more space, it should be done.

Space needed is illustrated in Fig. 3, Fig. 4 and Fig. 5.

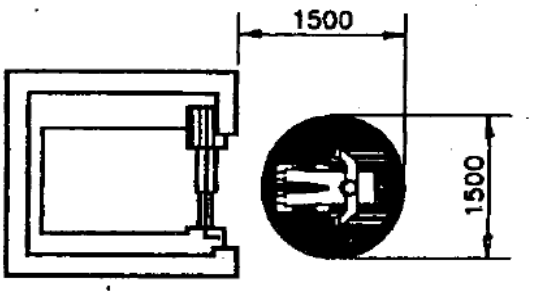


FIG. 3 SPACE FOR TURNING IN FRONT OF DOOR

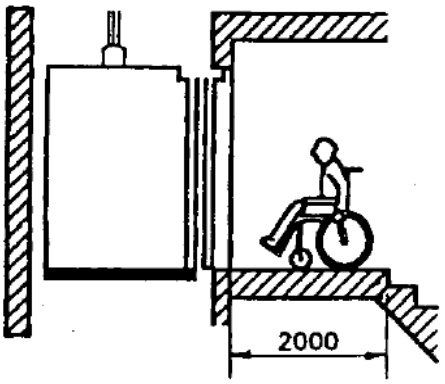


FIG. 4 SPACE BETWEEN FRONT OF LIFT DOOR AND STAIRCASE OPPOSITE THE DOOR

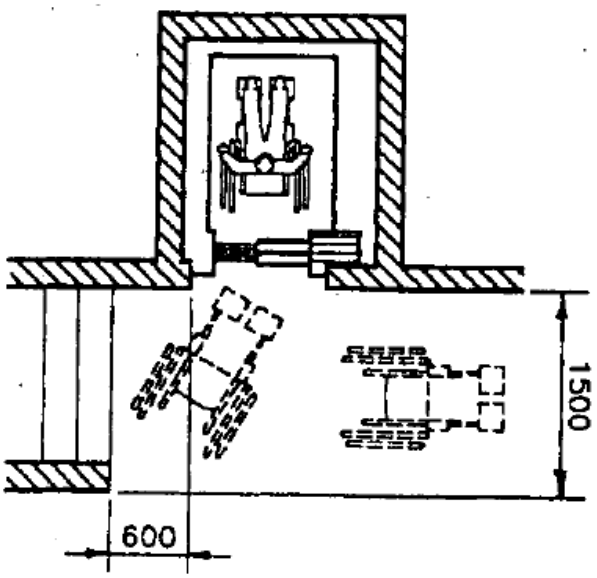


FIG. 5 SPACE BETWEEN FRONT OF LIFT DOOR AND STAIRCASE LOCATED BESIDE THE DOOR

ANNEX C

(*Table* 1)

SHAFT REQUIREMENTS FOR LIFT CARS

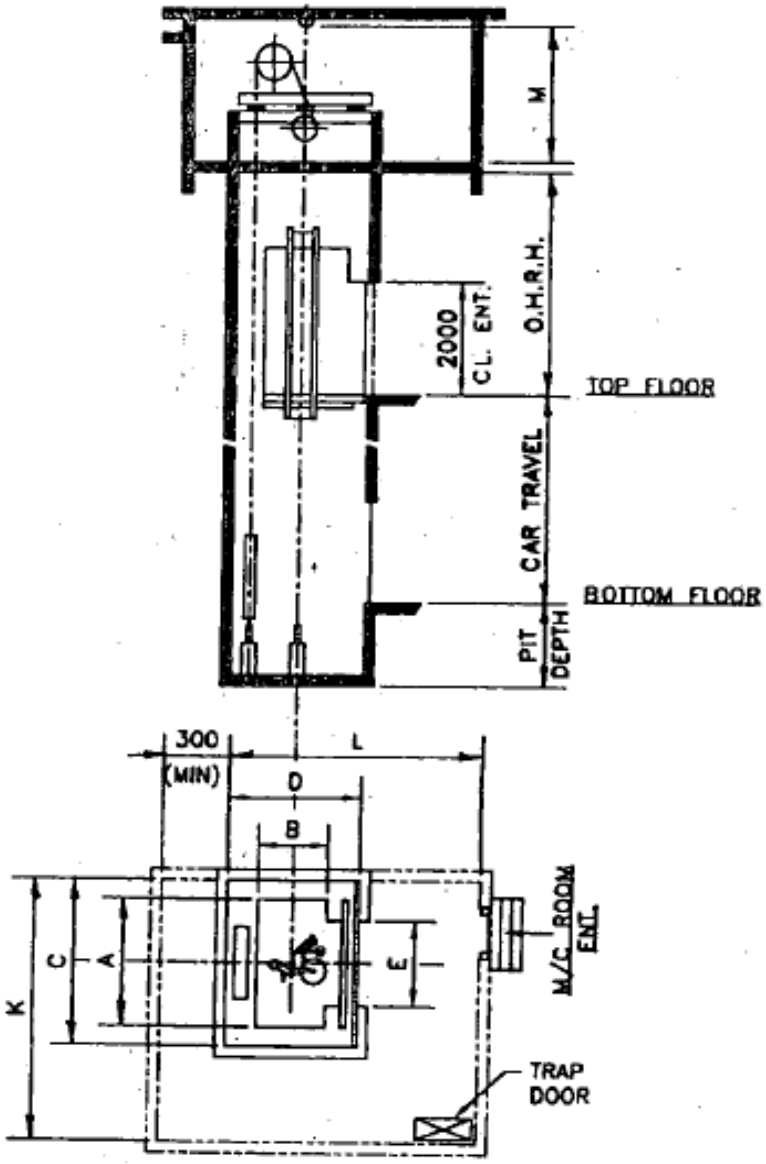


FIG. 6 SHAFT REQUIREMENTS FOR LIFT CARS

Sl No.	Load		Door	Car Inside		Lift Shaft		Entrance	Machine Room		
	Persons	kg		A	B	C	D	E	K	L	M
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
i)	8	544	COAD	1 100	1 300	2 000	2 000	900	3 400	4 500	2 500
ii)			TLAD			1 900					
iii)	16	1 088	COAD	2 000	1 300	2 500	2 100	1 000	4 000	4 600	2 500

NOTES

1 Key:

OHRH = overhead room height,

COAD = centre opening automatic door, and

TLAD = telescopic automatic door.

2 Pit Depth = 1 600 mm for 1 m/s and 1.5 m/s speed.

3 OHRH = 4 800 mm for 1 m/s and 1.5 m/s speed.

4 All civil dimensions as per IS 14665 (Part 1).

5 Lift Shaft dimensions are minimum plumb sizes. For tolerances, *see* **6.3** of IS 14665 (Part 2/Sec 1).

6 All dimensions are in mm, unless otherwise specified.

7 Car inside dimensions given above are recommended. Any variation mutually agreed between the manufacturer and the purchaser are permitted within the minimum and maximum area limits specified in IS 14665 (Part 3/Sec 1).

8 Above dimensions are for Machine room type of elevators. In case of elevators without conventional machine rooms, dimensions K, L and M are not applicable.

9 The above table is valid for lift car travel up to 75 m.

ANNEX D

(*Clauses* 4.3.1.2 *and* 4.3.2.5)

KEYPAD

D-1 GENERAL

Keypad may be applied in the car or at the landing. The arrangement of the numbered keys shall be according to the standards telephone type, *see* Fig. 7.

D-2 DESIGN REQUIREMENT

The requirements of **4.3.1** and **4.3.2** apply with the following exceptions and additional requirements:

a) In order to be recognized as keypad, the distance between the buttons shall be between 10 mm and 15 mm. For inclined keypads, the distance may be reduced between 5 mm and 15 mm.

b) The user shall be able to know that the button has been operated, either because it possesses perceivable movement or an audible feedback. The call registration shall be confirmed by a visible and audible signal adjustable between 35 dBA and 65 dBA. The audible signal shall be given on every individual call registration even if the call is already registered.

c) The size of the floor numbers shall be minimum 15 mm, maximum 40 mm and contrasted to the background.

d) The button number ‘5’ shall have a single tactile dot as orientation for users with impaired vision.

e) Numbers and symbols shall be on active part of the button.

f) For keypads in the car, the exit buttons (main floor) shall be clearly distinguishable from the other buttons. This shall be provided by green button protruding (5 ± 1) mm above the plane of the other buttons marked with relief star (“★”).

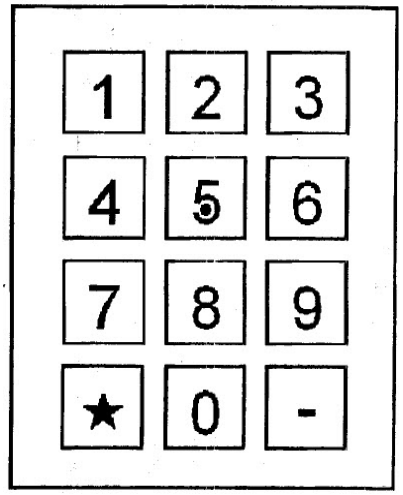


FIG. 7 ILLUSTRATION OF KEYPAD TYPE SYSTEM

ANNEX E

(*Foreword*)

COMMITTEE COMPOSITION

Lift and Escalators Sectional Committee, ETD 25

Organization	*Representative (s)*
Central Public Works Department (CPWD), New Delhi	Shri C. K. Varma (***Chairman***)
Chief Electrical Inspector, Maharashtra	Shri S. R. Bagde
Chief Electrical Inspectorate, Tamil Nadu	Shri T. Al Tenappan Shri D. Karthikeyan (*Alternate*)
Chief Electrical Inspectorate, Maharashtra	Shri N. G. Behram Shri V. H. Shahare (*Alternate* I) Shri D. M. Nikhate (*Alternate* II)
Chief Electrical Inspectorate, Energy & Petrochemical Department Government of Gujarat	Shri Haiderali H. Khoja Shri Ashwin B. Chaudhary (*Alternate* I) Shri Gopal K. Prajapati (*Alternate* II)
Electrical Inspectorate, Labour Deptt, Govt of NCT of Delhi	Shri Mukesh Kumar Sharma Shri Jogender Singh (*Alternate*)
Delhi Metro Rail Corporation Limited	Shri Manuj Singhal Shri Manjeet Kumar (*Alternate* I) Shri Sumit Kumar Sharma (H/Terna/E II)
Maharashtra Industrial Development Corporation (MIDC) Fire Service	Shri Santosh S. Warick
Electrical Contractors Association of Maharashtra	Shri Anil Gachke
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Kone Elevator India Private Limited, Chennai	Shri Tipnis P. M. Shri P. Gurumoorthy (*Alternate* I) Shri U. Viswanathan (*Alternate* II)
Lerch Bates Private Limited, Mumbai	Shri Sumeet Majumdar Shri Prashant Kulkarni (*Alternate*)
Otis Elevator Company (India) Limited, Mumbai	Shri Vijay Jaychandran Shri Abhijit Dandekar (*Alternate* I) Shri H. N. Prashanth (*Alternate* II)
Schindler India Pvt Ltd, Mumbai	Shri Nimish Deshpande Shri Ronnie Dante (*Alternate* I) Shri Nitin Kadam (*Alternate* II)
Tak Consulting Private Limited, Mumbai	Shri Tak Mathews Shri William Rebello (*Alternate*)
Thyssenkrupp Elevator India Pvt Ltd, Mumbai	Shri Vishnu Parashar Shri Rajesh Joshi (*Alternate*)
Bis Directorate General	Shri Rajeev Sharma, Scientist 'F' and Head (ETD) [Representing Director General (*Ex-officio*)]

Member Secretary

Ms Meghna Mudgal
Scientist 'C' (ETD), BIS

Bureau of Indian Standards

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Review of Indian Standards

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Amendments Issued Since Publication

Amend No.	Date of Issue	Text Affected

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