Indian Standard

LIFTS FOR THE TRANSPORT OF PERSONS AND GOODS PART 11: SAFETY NORMS FOR EXISTING LIFTS RISK ASSESSMENT AND RISK REDUCTION

मौजूदा लिफ्टों के सुरक्षा मानदंड — जोखिम मूल्यांकन और जोखिम में घटाव

Lift and Escalators Sectional Committee, ETD 25

FOREWORD

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

Lakhs of lifts are in use today in India and almost 50 percent were installed more than 20 to 30 years ago. Existing lifts were installed to the safety level appropriate at that time. This safety level is less than today's state-of-the art safety due to new technologies being used in latest lifts. The lower level of safety means there is potential for accidents to take place.

The objective of this standard is to provide requirements for improving safety of existing Passenger and Goods cum Passenger Lifts. This revision was made to IS 17491 to align this standard with IS 17900 (Part 1 & 2) requirements.

The Part 11 of this IS 17900 series of standards supersedes IS 17491: 2020

Furthermore, the life cycle of a lift is longer than most other transportation systems and building equipment, which, therefore, means that lift design, performance and safety can fall behind modern technologies. If existing lifts are not upgraded to today's state-of-the art safety, the number of injuries will only increase (especially in buildings which can be accessed by the general public).

Thus, this standard helps to identify the risk situations in earlier built lifts having lower level of safety and proposes remedies to enhance their safety level to mitigate the risk. It also suggests priority for work on various identified risks considering the severity and the frequency of occurrence.

This standard can be used as a guideline for:

a) Programme of implementation in a reasonable and practicable way may be determined based on the level of risk (for example, extreme, high, medium, low) and economic considerations (*see* Annex A);

b) owners to follow their responsibilities according to existing regulations;

c) maintenance companies and/or inspection bodies to inform the owners on the safety level of their installations; and

d) owners to upgrade the existing lifts on a voluntary basis in accordance with (c) if no regulations exist. In making an audit of an existing lift installation, Annex A can be used to identify the hazards and corrective actions in this standard. However, where a hazardous situation is identified which is not covered in this standard, a separate risk assessment should be made. This risk assessment should be based on ISO 14798 : 2009 Lifts (elevators), escalators and moving walks — Risk assessment and reduction methodology.

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

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: 2022 '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

SAFETY NORMS FOR EXISTING LIFTS
RISK ASSESSMENT AND RISK REDUCTION

1. SCOPE

1.1 This standard gives rules for improving the safety of existing lifts with the aim of reaching an equivalent level of safety to that of a newly installed lift by the application of today's state-of-the-art safety norms.

This standard applies for permanently installed electric lifts with traction and hydraulic lifts (where applicable), serving defined landing levels, having a car designed for the transportation of persons or persons and goods and moving between guide rails inclined not more than 15° to the vertical.

NOTE — Due to situations such as the building design, etc., it may not be possible in all cases to reach today's state-of-the-art safety.

1.2 This standard includes the improvement of safety of existing passenger and goods passenger lifts for:

a) Users;

b) Maintenance and inspection personnel;

c) Persons outside the well, machine room and the pulley room (but in their immediate vicinity); and

d) Any authorized persons.

1.3 This standard is not applicable to:

a) lifts with drive systems others than those defined in IS17900, IS 15259, IS 15330, IS 17386 and any other relevant Indian Standard introduced from time-to-time.
b) lifting appliances such as paternosters, mine lifts, theatre lifts, appliances with automatic caging, skips, lifts and hoists for building and public works sites, ships' hoists, platforms for exploration or drilling at sea, construction and maintenance appliances;
c) installations where the inclination of the guide rails to the vertical exceeds 15°;
d) safety during transport, installation, repairs and dismantling of lifts; and
e) Firefighting operation.

2. REFERENCES

The standard 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*
IS17900 (Part1) 2022 :	Lifts for the Transport of Persons and Goods : Part 1 Safety Rules
IS17900 (Part2) 2022 :	Design Rules, Calculations, Examinations and Tests of Lift Components
SP 7 : 2016	National Building Code of India (NBC): Part 8 Building services, Section 5 Installation of lifts, escalators and moving walks, 5A Lifts — Annex C
15259 : 2002	Installation and maintenance of home lifts — Code of practice
15330 : 2020	Requirements of lifts for persons with disabilities (*first revision*)
17386 : 2020	Electric traction lifts — Replacement of existing passenger and goods passenger lifts in existing building

3 TERMS AND DEFINITIONS

For the purpose of this Standard, the terms and definitions given in relevant Indian Standards on lifts shall apply. Terms and definitions specifically needed for this Indian Standard are added below.

3.1 Authorized Person — A person authorized by appropriate authority for carrying out one or more of lift related functions, such as inspection, testing, maintenance, rescue and who may carry out the function(s) with permission from the owner of the lift.

3.2 Existing Lift — Lift which is in service at the disposal of its owner.

3.3 Levelling Accuracy — Maximum vertical distance between car sill and landing sill during loading or unloading of the lift.

3.4 Stopping Accuracy — Maximum vertical distance between car sill and landing sill at the moment when a car is stopped by the control system at its destination floor and the doors reach their fully open position.

3.5 Owner of the Installation — Natural or legal person who has the power of disposal of the installation and takes the responsibility for its operation and use.

4 LIST OF SIGNIFICANT HAZARDS

This clause contains all the significant hazards, hazardous situations and events, as far as they are dealt with in this standard, identified by risk assessments as significant for existing lifts and which require action to eliminate or reduce the risk.

Significant hazards not dealt with by this standard include the following**:**

a) Fire in well, machine room and pulley room;

b) Environmental conditions including, for example, earthquake and flooding;

c) Electromagnetic compatibility; and

d) Shearing due to sharp edges.

5 SAFETY REQUIREMENTS AND/OR PROTECTIVE MEASURES

5.1 General

The following requirements and/or protective measures shall not be considered as the only possible solution. Alternatives are permitted, provided they lead to an equivalent safety level.

A risk assessment shall be made on a case by case basis for safety items not covered in this standard.

Where the requirements of this standard cannot be met and a residual risk remains, or cannot be avoided, then appropriate procedures such as signs, instructions and training shall be given.

For specific requirements such as accessibility, requirements against vandalism and behaviour of lifts in the event of fire, the conditions in the building shall be checked to see what is practical to be applied for lifts.

If a lift has been upgraded by one of the measures described in this standard, the consequences to other parts of the lift have to be considered.

5.2 Risk: Presence of Harmful Materials: Priority Level: High

Harmful materials like asbestos in brake linings, contactor shields, cladding of the well, landing doors, cladding of the machine room, etc., shall be replaced by Non-harmful materials which ensure the same performance level.

5.3 Accessibility Requirements

5.3.1 *Risk: No or Limited Accessibility for Persons with Disabilities: Priority Level: Medium*

Where existing lifts are intended to be used also by persons with disabilities, the requirements of IS 15330 shall be considered. The items considered are subject to a risk assessment on a case by case basis

5.3.2 *Risk: Drive System with Bad Stopping/Levelling Accuracy: Priority Level: High*

Of particular importance, the stopping and levelling accuracy shall comply with **5.12.1.1.4** of IS 17900 (Part1): 2022, which means:

a) the stopping accuracy of the lift shall be ±10 mm; and
b) the levelling accuracy of ±20 mm shall be maintained.
NOTE — It is recommended to apply the above to all lifts by retrofitting V3F drive to single speed lifts and two speed lifts.

5.4 Risk: No or Inadequate Vandal Resistance: Priority Level: Medium

Where the lift is installed in an environment where it is subjected to vandalism, the special requirements,
if available, shall be considered. The items to be considered are subject to a risk assessment on a case by case basis.

5.4.1 *Risk: No or Inadequate Control Functions in Case of Fire: Priority Level: Medium*

When the fire security strategies ask for a recall control, then the requirements given sin 5.12.5 of IS 17900 (Part1): 2022 shall be considered. The items to be considered are subject to a risk assessment on a case by case basis.

5.4.2 *Risk: Inadequate fire protection requirement in building: Priority Level: High*

Provide building protection according to **5.12.5** of IS 17900 (Part1): 2022

5.4.3 *Risk: No Or Inadequate Earthquake Resistance: Earthquake resistance if at least the building is earthquake resistant. Priority Level: Low: Zone II/III & Medium: Zone IV/V*

Refer **9.5** of NBC 2016 - Part 8-Sec 5A, if at least the building is earthquake resistant

5.5 Well

5.5.1 *Risk: Well Enclosures with Perforate Walls: Priority Level: High*

Where wire grill construction is used, the mesh should comply with **5.2.5.2** of IS 17900 (Part1): 2022.

a) Where wire grill or similar construction is used, the mesh or opening shall be such that the opening between the bars shall reject the ball of 32 mm in diameter and the lift well enclosure shall be of sufficient strength to resist accidental impact by users of the staircase or adjoining floors.

b) Where the clearance between the inside of an open type lift well enclosure and any moving or movable part of the lift equipment of apparatus is less than 50 mm, the opening in the enclosure shall be further protected by netting of square mesh of aperture not greater than 12 mm and of wire not smaller than 1 mm dia.

c) A protective imperforate rigid screen shall be provided around the landing door locking devices in order to prevent any manipulation of the locking devices by means of a rigid rod 0.30 m long.

NOTE — Preservation of historical buildings may require retention of an existing perforate enclosure.

5.5.2 *Risk: Partially Enclosed Well with too low Enclosure: Priority Level: High*

The dimensions of the partial enclosure shall be in accordance with **5.2.5** of IS 17900 (Part1): 2022**.**

5.5.3 *Risk: Inadequate Locking Devices on Access Doors to well and pit: Priority Level: High*

Locking devices and their electrical safety devices of any such doors shall be such, that on opening any door, the lift should not move.

5.5.4 *Risk: Inadequate Vertical Surface below Landing Door Sills: Priority Level: High*

Below each landing doorsill, the wall of the well shall be in accordance with **5.2.5** of IS 17900 (Part1) : 2022.

5.5.5 *Risk: Counterweight without Safety Gear in case of Accessible Spaces below Well : Priority Level: Low*

If accessible spaces do exist below the car, the counterweight, or the balancing weight; the counterweight / Balancing weight shall be provided with a safety gear as per **5.2.5.4** of IS 17900 (Part1) : 2022.

5.5.6 *Risk: No or Inadequate Partition for Counterweight: Priority Level: Low*

The travelling area of the counterweight shall be protected by an adequate screen in the pit as per **5.2.5.5.1** of IS 17900 (Part1): 2022.

5.5.7 *Risk: No or inadequate inspection control station in the pit: Priority Level: Low*
Provide inspection control station in the pit as per **5.2.1.5.1 b)** of IS 17900 (Part1): 2022.

5.5.8 *Risk: Too large distance between leading edges of car and landing doors: Priority Level: High*
Persons shall be prevented from entering between the car door and landing door in accordance with **5.3.4.2** of IS 17900 (Part1) : 2022

5.6 Screens

5.6.1 *Risk: No or Inadequate Pit Screen for Several Lifts in the Same Well: Priority Level: High*

Where there are adjacent lifts in a common well, the installation shall have a partition in the pit in accordance with **5.2.5.5.2** of IS 17900 (Part1) : 2022.

5.6.2 *Risk: No or Inadequate Partition for Several Lifts in the Same Well: Priority Level: High*

Where the well contains several lifts, a partition for the full height of the well shall be fitted in accordance with **5.2.5.5.2** of IS 17900 (Part1) : 2022.

5.7 Risk: Insufficient Safety Spaces in Headroom and Pit: Priority Level: High

Where top and/or pit clearances are found not to be in accordance **5.2.5.7 & 5.2.5.8** of IS 17900 (Part1) : 2022, the relevant requirements as per IS 17386 shall be followed.

5.8 Risk: No or Inadequate Stopping Devices in the Pit or in the Pulley Room: Priority Level: High

The pit and pulley room shall have appropriate stopping devices in accordance with **5.12.1.11** of IS 17900 (Part1) : 2022

5.9 Risk: No or Inadequate Lighting of the Well: Priority Level: High

The well shall have adequate lighting for safety of maintenance personnel when working on lift car top or in the lift lit. Where it is not adequate, it shall be fitted in accordance with **5.2.1.4** of IS 17900 (Part1) : 2022.

5.10 Machine and Pulley Rooms

5.10.1 *Risk: No or Unsafe Means of Access to Machine and Pulley Room: Priority Level: High*

A site evaluation of the hazardous situations shall be carried out to bring the access to the machine and pulley room to a safety level reflected by **5.2** of IS 17900 (Part1): 2022.

5.10.2 *Risk: Slippery Floor in Machine or Pulley Room: Priority Level: Low*

The floors of machine rooms and pulley rooms shall be non-slippery in accordance with **5.2** of IS 17900 (Part1) : 2022.

5.10.3 *Risk: Insufficient Clearances in Machine Room: Priority Level: Medium*

The machine room shall be checked so that the horizontal clearances are in accordance with **5.2.6** of IS 17900 (Part1) : 2022.
Where this is found not to be the case, protection from the moving equipment shall be provided, where practical.

5.10.4 *Risk : No or Inadequate Protection on Different Levels in Machine: Priority Level: High*

A site evaluation of the hazardous situations shall be carried out to ensure the levels and recesses in the machine room are to an acceptable safety level.

5.10.5 *Risk: Inadequate Lighting in Machine or Pulley Room: Priority Level: High*

The lighting in the machine and pulley room shall be adequate. Where it is not adequate, it shall be fitted in accordance with **5.2.1.4** of IS 17900 (Part1) : 2022.

5.10.6 *Risk: Inadequate Means of Handling Equipment: Priority Level: Medium*

The existing metal supports or hooks for the handling equipment in the machine room or well shall be checked that they are safe for use, suitably positioned and marked with the safe working load.

5.10.7 *Risk: No or inadequate stopping device at the machine in the machinery space: Priority Level: Low*

Provide devices according to **5.12.1.11.1 e)** of IS 17900 (Part1) : 2022.

5.10.8 *Risk: Inadequate machine brake (only one brake set): Priority Level: High*

Provide brakes according to **5.9.2.2.2 of** IS 17900 (Part1) : 2022.

5.11 Landing Doors and Car Doors

5.11.1 *Risk: Perforate Landing Doors and Car Doors: Priority Level : High*

Landing and car doors shall be imperforate in accordance with **5.3** of IS 17900 (Part1) : 2022.

5.11.2 *Risk: Inadequate Design of Landing Door Fixings: Priority Level : High*

Each landing door fixing (for example, fixing screws, bottom door guides, top door rollers, etc.) shall resist the forces and derailment as defined in **5.3.5.3** of IS 17900 (Part1) : 2022 to avoid the door panel falling into the well.

5.11.3 *Risk: Inadequate Glass in Doors: Priority Level: High*

Landing and car doors which contain glass shall be checked to see that the glass fitted is in accordance with

5.3.5.3 of IS 17900 (Part1) : 2022

5.11.4 *Risk: No or Inadequate Lighting on Landing Doors: Priority Level: Medium*

The lighting of the landings in the vicinity of the landing doors shall be in accordance with **5.3.7** of IS 17900 (Part1) : 2022.

5.11.5 *Risk: No or Inadequate Protective Devices on Power Operated Doors: Priority Level: High*

All lifts shall be provided with door protective devices in accordance with **5.3.6.2** of IS 17900 (Part1) : 2022.

Where the existing lifts are intended to be used also by persons with disabilities, the requirements of **4.1.3** of IS 15330 shall be met.

5.11.6 *Risk: Unsafe Locking Device of Landing Door: Priority Level: High*

All landing door locking devices shall have an equivalent or better safety level to **5.3.9.1** of IS 17900 (Part1) : 2022. Where they have not, they shall be replaced with locking devices in accordance with **5.3.8 to 5.3.15** of IS 17900 (Part1) : 2022.

Landing door locking devices shall not be accessible from the outside of the well (for example, reaching through a mesh well) by unauthorized persons to prevent deliberate misuse.

5.11.7 *Risk: Unlocking of Landing Door without a Special Tool: Priority Level : High*

Any emergency unlocking of a landing door shall only be possible by the use of a special device (for example, triangular key).

5.11.8 *Risk: No Automatic Closing Device on Sliding Doors: Priority Level: High*

Horizontal sliding landing doors which can be driven by the car doors shall have an automatic closing device.

5.11.9 *Risk: Inadequate Link between Panels of Landing Doors: Priority Level: High*

Sliding doors with multiple panels shall comply with **5.3.11** of IS 17900 (Part1) : 2022.

5.11.10 *Risk: Inadequate Fire Resistance of Landing Doors: Priority Level: Medium*

The landing doors shall conform with the fire rating as required by **5.12.5.1** of IS 17900 (Part1) : 2022.

5.11.11 *Risk: Car Door Moving with Open Landing Door: Hinged Landing Doors in Combination with Power Operated Horizontally Sliding Car Doors: Priority Level: Medium*

The car door shall only operate when the landing door has been closed.

5.11.12 *Risk: No car door restrictor where the landing door locking device is accessible when the car door is opened outside of the door zone: Priority Level: Medium*

a) Provide car door restrictor according to **5.3.15.2** of IS 17900 (Part1) : 2022, or

b) provide a car door locking device according to **5.3.9.2** of IS 17900 (Part1) : 2022.

5.11.13 *Risk: No or inadequate protective device (150 N) for re-opening of power operated doors other than sliding doors: Priority Level: High*

Provide devices according to **5.3.6.2.2.1 c) and d)** of IS 17900 (Part1) : 2022.

5.11.14 *Risk: Inadequate strength of car doors: Priority Level: Medium*

Provide car doors according to **5.3.5.3** of IS 17900 (Part1) : 2022.

5.12 Car and Counterweight

5.12.1 *Risk: Large Car Area in Relation to Rated Load: Priority Level: Low*

The car floor area shall be in accordance with **5.4.2** of IS 17900 (Part1) : 2022.
Where this is not the case, appropriate measures shall be taken, for example:

a) Reduce the available car floor area, or

b) Restrict the use to instructed users, or

c) Verify the intended use of the lift.

5.12.2 *Risk: Inadequate length of car apron: Avoidance of the risk of people falling into the well (car apron): Priority Level: Medium*

The car shall have an apron in accordance with **5.4.5** of IS 17900 (Part1) : 2022.

5.12.3 *Risk: Unsafe Locking of Car Roof Trap Door: Priority Level: Medium*

Emergency trap door in the car roof, if any, shall be interlocked with an electric contact such that the lift will not move if the trap door is open.

5.12.4 *Risk : Insufficient Strength of Car Roof: Priority Level : Low*

The car roof shall be solid and strong enough to support weight of 2 persons.

5.12.5 *Risk: No or Inadequate Balustrade on Car : Priority Level: High*

The car roof shall be checked to ensure that the free distance in the horizontal plane beyond and perpendicular to its outer edge does not exceed 0.30 m. If this is not the case, then one of the following provisions shall be taken:

a) The car roof shall be extended so that the free distance is less than 0.30 m;

b) A balustrade shall be fitted on the car roof in accordance with **5.4.7.4** of IS 17900 (Part1) : 2022 and

c) A full height partition shall be installed so that the free distance is less than 0.30 m.

5.12.6 *Risk: Insufficient Ventilation in Car: Priority Level: Medium*

The car ventilation shall be according to **5.4.9** of IS 17900 (Part1) : 2022.

5.12.7 *Risk: Inadequate Lighting in Car: Priority Level: Medium*

The car shall have permanently installed electric lighting. The light intensity shall be at least 50 lux at the floor level.

5.12.8 *Risk : No or Inadequate Emergency Lighting in Car: Priority Level: Medium*

Emergency lighting in accordance with **5.4.10.4** of IS 17900 (Part1) : 2022

5.12.9 *Risk : No emergency lighting on the car roof: Priority Level: Low*

Provide emergency lighting on the car roof according to **5.4.10.4** of IS 17900 (Part1) : 2022

5.13 Suspension, Compensation and Over Speed Protection

5.13.1 *Risk: No or Inadequate Protection Means on Sheaves, Pulleys or Sprockets against Introduction of Objects, Bodily Injury, Ropes leaving Pulley Grooves: Priority Level: Medium*

Traction sheaves, pulleys and sprockets shall be protected to avoid:

a) Bodily injury,

b) Ropes leaving pulleys, and

c) Introduction of objects between ropes and pulleys.

5.13.2 *Risk: No or Inadequate Safety Gear and/ or Over Speed Governor on Electric Lifts: Priority Level: High*

All electric lifts shall have a safety gear actuated by an over speed governor.

The total system including safety gear and over speed governor shall be checked for compatibility and a test be carried out to ensure that the system functions correctly. If not, adjust the system (without interfering with the safety component), or if adjustment is not possible, fit a safety gear actuated by a compatible over speed governor in accordance with **5.6.2** of IS 17900 (Part1) : 2022.

5.13.3 *Risk: No Protection Means against Ascending Car Over Speed on Traction Drive Lifts with Counterweight: Priority Level: Medium*

Electric lifts shall meet the following requirements:

a) Traction lifts with counterweight shall be provided with an overspeed governor which will open in up direction as per **5.6.6** of IS 17900 (Part1) : 2022

b) Machines shall be fitted with a double acting brake as defined in **5.9.2** of IS 17900 (Part1) : 2022.

5.14 Risk: No or Inadequate Buffers: Priority Level: High

Lifts shall be provided with adequate buffers or alternative means. Where this is not the case, they shall be provided with buffers in accordance with **5.8** of IS 17900 (Part1) : 2022

5.15 Risk: No or Inadequate Final Limit Switches: Priority Level: Medium

Lifts shall be provided with final limit switches according to **5.12.2** of IS 17900 (Part1) : 2022.

5.16 Distance Between Car Door and Landing Door

5.16.1 *Risk: Large Gap between Car and Wall Facing the Car Entrance: Priority Level: High*

The horizontal distance between the inner surface of the well and the car sill shall be as per **5.2.5.3** of IS 17900 (Part1) : 2022.

5.16.2 *Risk: Excessive Distance between Car Door and Landing Door: Priority Level: High*

Persons shall be prevented from being present between closed car and landing doors or entering between the open car and landing doors. This is fulfilled when the distances comply with **5.3.4** of IS 17900 (Part1) : 2022.

5.17 Risk: No Redundancy in the Brake of the Lift Machine: Priority Level: High

Electro-mechanical brake (electric lifts) shall be provided. The electro-mechanical brake shall comply with **5.9.2.2** of IS 17900 (Part1) : 2022.

5.18 Risk: No Independent Starting Contactors : Priority Level: High

There shall be a stopping means as defined in **5.10.3** of IS 17900 (Part1) : 2022.

5.19 Risk: No Lockable Main Switch: Priority Level: Medium

A lockable main switch as defined in **5.10.5** of IS 17900 (Part1) : 2022 shall be available in the machine room for every lift.

5.20 Protection against Electric Faults, Controls, Priorities

5.20.1 *Risk: No Protection against Phase Reversal: Priority Level: High*

The installation shall be checked to ensure that the phase shall not be on its own the cause of a dangerous malfunction of the lift.

5.20.2 *Risk: No or Inadequate Inspection Control Station and Stopping Device on Car Roof: Priority Level: High*

Each car roof shall be provided with an inspection control station in accordance with **5.4.8** of IS 17900 (Part1) : 2022.

5.20.3 *Risk: No or Inadequate Alarm Device : Priority Level: High*

An emergency alarm device allowing two-way voice communication shall be fitted in accordance with **5.12.3** of IS 17900 (Part1) : 2022.

5.20.4 *Risk: No or Inadequate Communication System between Machine Room/Lobby and Car (Travel Height greater than 30 m): Priority Level: Medium*

a) Where there is no direct means of audible communication between the car and the machine room, an intercom system, or similar device, shall be fitted.

b) Where there is no direct means of audible communication between the car and the Lobby/ Security, an intercom system or similar device, shall be fitted.

5.20.5 *Risk: No or Inadequate Load Control on Car: Priority Level: Medium*

To avoid the risk of the car starting if overloaded, a load control shall be fitted in accordance with **5.12.1.2** of IS 17900 (Part1) : 2022.

5.20.6 *Risk: No earth fault protection in circuits with electric safety devices or in circuits controlling the brake or the down valve: Priority Level: Medium*

Provide earth fault protection according to
5.11.1.4 of IS 17900 (Part1) : 2022.

5.21 Risk: Missing Notices, Markings and Operating Instructions: Priority Level: Medium

The installation shall be provided with notices, markings and operating instructions as defined in **5.1.2 and 5.2.4** of IS 17900 (Part1) : 2022.

5.22 Risk: No or Inadequate Automatic Emergency Rescue Operation: Priority Level: High

The installation shall be provided with Battery operated Automatic Rescue Device (ARD) in accordance with **5.12.3.3** of IS 17900 (Part1) : 2022

6 VERIFICATION OF SAFETY MEASURES AND/OR PROTECTIVE DEVICES

Before putting a lift back into service after modifications, it shall be subject to relevant examinations and tests.

Modifications made on a specific component may have implications on the safety or function of other associated
components. Therefore, the examinations and tests after modification shall not be limited only to those items modified but shall include the additional affected components and systems.

7 INFORMATION FOR USE

Relevant documentation shall be provided for those components which are changed and completed in accordance with **5** of this standard.

ANNEX A

(Foreword)

RISK PROFILE WITH PRIORITY LEVELS

Frequency	**Severity**			
	I	II	III	IV
	Priority			
A	Extreme	Extreme	High	Low
B	Extreme	High	High	Low
C	Extreme	High	Medium	
C-D	High	High	Medium	
D	High	Medium	Low	
D-E	Medium	Low		
E	Low	Low		
F				

Frequency: Hazard cause level

A Frequent
B Probable
C Occasional
D Remote
E Improbable
F Impossible

Severity: Hazard effect category

I — Catastrophic
II — Critical
III — Marginal
IV — Negligible

Priority Level (Suitable time-frame to be defined for initiating action during implementation, *see* example in note below) :

Extreme : Immediate action is to be taken. Lift has to be stopped.
High : Short Term action is to be initiated.
Medium : Medium Term action is to be initiated.
Low : Long Term action is to be initiated.

NOTES

1 Programme of implementation in a reasonable and practicable way is to be determined based on the level of risk and economic considerations. For example, Priority 'Extreme' requires immediate action, 'Short term' Within 5 years, ‘Medium term’ within 10 years and so on.

2 Definitions for severity and frequency levels used above:

a) Severity:

i) Catastrophic — Which can lead to death, system loss, or severe environmental damage

ii) Critical — Which can lead to severe injury, severe occupational illness, or major system or environmental damage

iii) Marginal — Which can lead to minor injury, minor occupational illness, or minor system or damage

iv) Negligible — Which do not result in injury, occupational illness, or system or environmental damage

b) Frequency:

i) Frequent — Likely to occur repeatedly

ii) Probable — Likely to occur several times

iii) Occasional — Likely to occur at least once

iv) Remote — Unlikely, but may possibly occur

v) Improbable — Very unlikely to occur

vi) Impossible — Probability tends to zero